CITY OF MESQUITE

MESQUITE HERITTAGE TRAIL PHASE II

FROM GROSS ROAD TO TOWNE CENTRE DRIVE
CITY OF MESQUITE CONTRACT NO. 2024-014

TDLR INSPECTION REQUIRED

DESIGN SPEED 18 MPH

CONSTRUCTION TYPE

NEW CONSTRUCTION OF HIKE & BIKE TRAIL
(PAVING, DRAINAGE, BRIDGE, RETAINING WALLS)

TOTAL LENGTH OF PROJECT

TRAIL	A	=	4376 FT (0.83 MI)
TRAIL	B	=	1980 FT (0.38 MI)
TRAIL	C	=	176 FT (0.03 MI)
TOTAL		=	6532 FT (1.14 MI)

MESQUITE TEXAS
Real. Texas. Service.

MAYOR

DANIEL ALEMAN, JR.

CITY COUNCIL

DISTRICT 1 - JEFF CASPER
DISTRICT 2 - KENNY GREEN
DISTRICT 3 - ELIZABETH RODRIGUEZ-ROSS
DISTRICT 4 - TANDY BOROUGHS
DISTRICT 5 - B.W. SMITH
DISTRICT 6 - BRANDON L. MURDEN

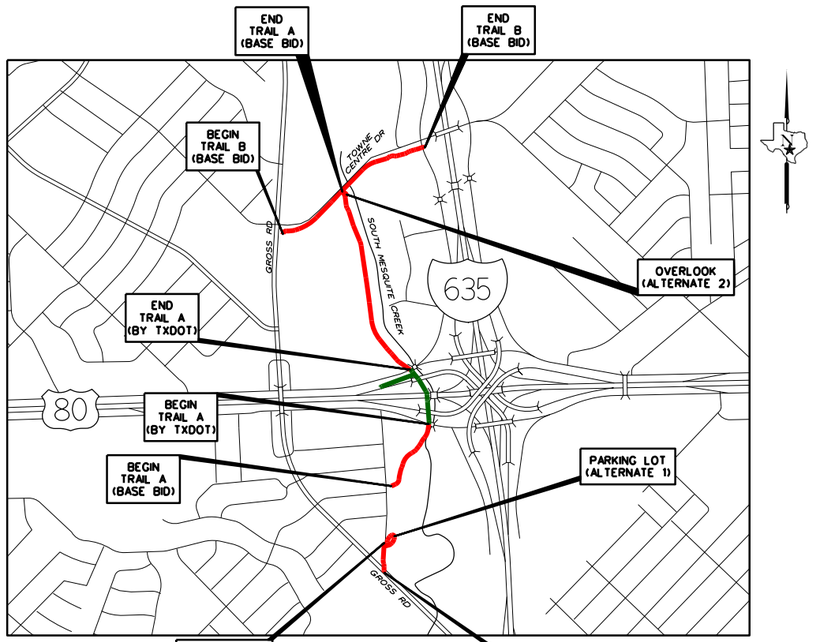
CITY MANAGER

CLIFF KEHELEY

DIRECTOR OF PUBLIC WORKS

CURT CASSIDY, P.E., CFM

NOTE:
THE SEGMENT OF TRAIL A WITHIN TXDOT ROW IS NOT PART OF THE CITY OF MESQUITE CONTRACT AND SHALL BE CONSTRUCTED AS PART THE US80/IH635 INTERCHANGE PROJECT BY TXDOT CONTRACTOR



LOCATION MAP
(NOT TO SCALE)

INDEX OF SHEETS

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

BGE INC.
F-1046

PREPARED BY:

BGE

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

LANDSCAPE ARCHITECT:

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Dallas, Texas 75206
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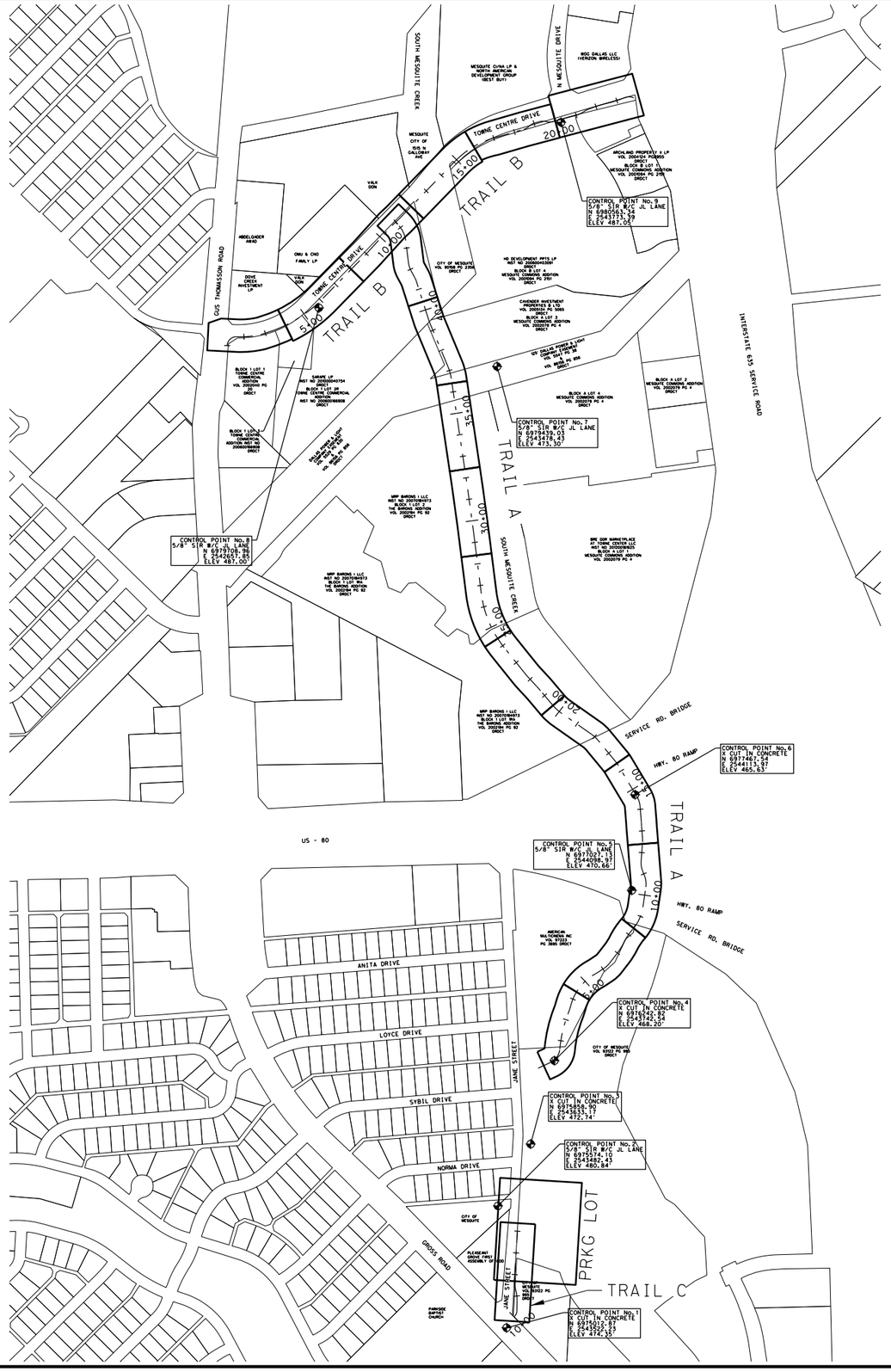

N

LEGEND

EXISTING

- WIRE FENCE
- UNDERGROUND ELEC
- OVERHEAD ELEC
- OVERHEAD ELEC & TELEPHONE
- UNDERGROUND TELEPHONE
- TELEPHONE
- GAS
- SANITARY SEWER
- WATER
- STORM SEWER
- R.O.W. LINE
- LOT LINE
- EASEMENT LINE
- MAJOR CONTOURS
- MINOR CONTOURS
- UTILITY POLE
- UTILITY POLE
- STREET LIGHT
- STREET LIGHT
- IRON ROD FOUND
- GAS METER
- WATER METER
- WATER VALVE
- SS MANHOLE
- STORM DRAINAGE MANHOLE
- TELEPHONE MANHOLE
- ELECTRIC PEDESTAL
- TELEPHONE RISER
- FIRE HYDRANT
- GUY WIRE
- SIGN
- STOP SIGN
- TREE

PROPOSED

- MAJOR CONTOURS
- MINOR CONTOURS
- WATER LINE
- PROPERTY LINE
- LIMITS OF DISTURBANCE
- 100 YR - DFIRM FLOODPLAIN
- RETAINING WALL
- SINGLE WATER METER
- WATER VALVE
- WATER MJ SOLID SLEEVE
- CONTROL POINT
- STORM DRAIN INLET
- STORM DRAIN WITH HEADWALL
- CONCRETE PAVEMENT
- ROCK RIP RAP
- STREET LIGHT
- SIGN
- STEEP SLOPE AHEAD
- MILE MARKER & GPS

ABBREVIATIONS

INCR	INCREMENT
CONC	CONCRETE
EXIST	EXISTING
ENCSMNT	ENCASEMENT
GV	GATE VALVE
RELOC	RELOCATE
HZ	HORIZONTAL

NOTES

1. BEARINGS ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE 4202, NORTH AMERICAN DATUM OF 1983, (2011). COORDINATES SHOWN ARE SURFACE COORDINATES BASED ON THE TXDOT COMBINED SCALE FACTOR OF1.000136506
2. CONTRACTOR SHALL VERIFY CONTROLS PRIOR TO NOTICE TO PROCEED (NTP).

STATE OF TEXAS
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DATE	BY	REV	REVISION

MESQUITE
TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

KEY MAP & PROJECT CONTROL PLAN & LEGEND

SCALE: 1" = 600'

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TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 2

2163-01-CP01.dgn

GENERAL NOTES FOR CONSTRUCTION ACTIVITIES:

1. ALL WORK SHALL CONFORM TO THE CITY OF MESQUITE'S GENERAL DESIGN STANDARDS. IN THE EVENT AN ITEM OF WORK IS NOT COVERED IN THE PLANS OR THE CITY OF MESQUITE GENERAL DESIGN STANDARDS, THE MOST CURRENT NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND THE MOST CURRENT VERSION OF TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES SHALL APPLY WITH CONCURRING NOTIFICATION TO THE CITY ENGINEER AND THE PROJECT ENGINEER. THE CITY ENGINEER SHALL HAVE FINAL DECISION ON ALL CONSTRUCTION MATERIALS, METHODS, AND PROCEDURES.

2. ALL CONTRACTORS AND DEVELOPERS, WITH THEIR EMPLOYEES AND AGENTS, SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY LAWS AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AND ORDINANCES RULES, REGULATIONS AND ORDERS OF ANY PUBLIC AUTHORITY HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY TO PROTECT THEM FROM DEATH, INJURY, DAMAGE OR LOSS.

3. ALL COMMUNICATION BETWEEN THE CITY AND THE CONTRACTOR SHALL BE THROUGH THE ENGINEERING CONSTRUCTION INSPECTOR AND CITY ENGINEER ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE APPROPRIATE DEPARTMENT FOR INSPECTIONS OF WORK NOT FALLING UNDER THE ENGINEERING CONSTRUCTION PERMIT.

4. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL HAVE IN THEIR POSSESSION ALL NECESSARY PERMITS, PLANS, LICENSES, ETC. CONTRACTOR SHALL HAVE AT LEAST ONE SET OF APPROVED ENGINEERING PLANS AND SPECIFICATIONS ON-SITE AT ALL TIMES.

5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY UTILITY COMPANIES TO ARRANGE FOR EXACT LOCATIONS AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION. THE COMPLETENESS AND ACCURACY OF THE UTILITY DATA SHOWN ON THE PLANS IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE DEPTH AND LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING, TRENCHING, OR DRILLING AND SHALL BE REQUIRED TO TAKE ANY PRECAUTIONARY MEASURES TO PROTECT ALL LINES SHOWN AND / OR ANY OTHER UNDERGROUND UTILITIES NOT ON RECORD OR NOT SHOWN ON THE PLANS. THE CONTRACTOR WILL BE RESPONSIBLE FOR DAMAGES TO UTILITIES IF THE DAMAGE IS CAUSED BY NEGLIGENCE OR FAILURE TO HAVE LOCATES PERFORMED.

   i. TEXAS 811 811
   ii. CITY OF MESQUITE UTILITIES 972-216-6940
   iii. CITY OF MESQUITE TRAFFIC 972-216-6278

6. VERIFICATION OF THE CONDITION OF EXISTING CITY UTILITIES PRIOR TO CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL REQUEST FOR LINE LOCATES AS DIRECTED IN ITEM #5.

7. CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING LANDSCAPE IRRIGATION SYSTEMS. DAMAGE TO EXISTING IRRIGATION SYSTEMS SHALL BE RESTORED TO EQUAL OR BETTER CONDITION BY A LICENSED IRRIGATOR AT THE CONTRACTOR'S EXPENSE.

8. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES OR ADJACENT PROPERTIES DURING CONSTRUCTION. ANY REMOVAL OR DAMAGE TO EXISTING FACILITIES OR ADJACENT PROPERTIES SHALL BE REPLACED OR REPAIRED TO EQUAL OR BETTER CONDITION BY THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE ALL REPAIRS TO PRIVATE PROPERTY WITH THE PROPERTY OWNER. CONTRACTOR SHALL PAY AND/OR SETTLE WITH PRIVATE PROPERTY OWNER FOR ALL COSTS RELATED TO ANY DAMAGE. FOR MORE DETAIL, REFER TO NCTCOG 107.24.

9. TESTING AND INSPECTION OF MATERIALS SHALL BE PERFORMED BY A COMMERCIAL TESTING LABORATORY APPROVED BY THE CITY. CONTRACTOR SHALL FURNISH MATERIALS OR SPECIMENS FOR TESTING AND SHALL FURNISH SUITABLE EVIDENCE THAT THE MATERIALS PROPOSED TO BE INCORPORATED INTO THE WORK ARE IN ACCORDANCE WITH THE SPECIFICATIONS. ALL TESTING AND RE-TESTING COSTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. FOR MORE DETAIL, REFER TO NCTCOG t06.5.

10. CONTRACTOR SHALL NOTIFY THE CITY AT LEAST 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

11. ALL SHOP DRAWINGS, WORKING DRAWINGS OR OTHER DOCUMENTS WHICH REQUIRE REVIEW BY THE CITY SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF SCHEDULED CONSTRUCTION TO ALLOW NO LESS THAN 10 BUSINESS DAYS FOR REVIEW AND RESPONSE BY THE CITY.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED CONSTRUCTION SURVEYING AND STAKING AND SHALL NOTIFY THE CITY OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH ANY WORK. FOR MORE DETAIL, REFER TO NCTCOG 105.4.

13. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL SURVEY MARKERS INCLUDING IRON RODS, PROPERTY CORNERS, OR SURVEY MONUMENTS WITHIN THE LIMITS OF CONSTRUCTION AND OUTSIDE RIGHT-OF-WAY DURING CONSTRUCTION. ANY SURVEY MARKERS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE CITY.

14. CONTRACTOR SHALL NOT STORE MATERIALS, EQUIPMENT OR OTHER CONSTRUCTION ITEMS ON ADJACENT PROPERTIES OR RIGHT-OF-WAY WITHOUT THE PRIOR WRITTEN CONSENT OF THE PROPERTY OWNER AND THE CITY. THE PROJECT SHALL NOT BE ACCEPTED UNTIL THE CONTRACTOR PROVIDES A LETTER FROM THE PROPERTY OWNER STATING THEY ARE SATISFIED WITH THE CONDITION OF THE PROPERTY.

15. UNUSABLE EXCAVATED MATERIAL OR CONSTRUCTION DEBRIS SHALL BE REMOVED AND DISPOSED OF OFFSITE AT AN APPROVED DISPOSAL FACILITY BY THE CONTRACTOR.

16. ALL SIGNAGE SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).

GENERAL NOTES FOR EROSION CONTROL/STORM WATER POLLUTION PREVENTION:

17. THE CONTRACTOR SHALL COMPLY WITH THE CITY OF MESQUITE'S STORM WATER ORDINANCE, THE TDPES GENERAL CONSTRUCTION PERMIT TXR150000 AND ANY OTHER STATE AND/OR LOCAL REGULATIONS.

18. CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND DRIVEWAYS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS AT ALL TIMES. CONTRACTOR SHALL CLEAN UP AND REMOVE ALL LOOSE MATERIAL RESULTING FROM CONSTRUCTION OPERATIONS. STOCKPILING OR STAGING OF MATERIALS WILL NOT BE ALLOWED IN RIGHT-OF-WAY WITHOUT PRIOR AUTHORIZATION. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. ANY DIRT, MUD OR DEBRIS TRACKED OFFSITE SHALL BE CLEANED UP BY THE CONTRACTOR IMMEDIATELY.

19. ALL EROSION CONTROL DEVICES SHOWN ON THE PLANS RELEASED FOR CONSTRUCTION SHALL BE INSTALLED IN ACCORDANCE WITH THE SWPPP SEQUENCING PRIOR TO COMMENCING ANY EARTH DISTURBING ACTIVITIES. FAILURE TO INSTALL THE EROSION CONTROL DEVICES BEFORE STARTING THE EARTH DISTURBING ACTIVITIES MAY RESULT IN SANCTIONS INCLUDING, BUT NOT LIMITED TO, WITHHOLDING OF RELEASE OF CONSTRUCTION PERMITS, INSPECTIONS, PAYMENT OF CITY FUNDED PORTIONS OF THE PROJECT, SUSPENSION OF CONSTRUCTION ACTIVITIES, OR CITATIONS. EROSION CONTROL DEVICES SHALL BE INSTALLED AND MAINTAINED IN COMPLIANCE WITH THE PROJECT PLANS, CITY STORMWATER ORDINANCE AND/OR SWPPP AND CONSTRUCTION GENERAL PERMIT. THE CONTRACTOR SHALL INSPECT THE SITE DAILY AND KEEP THE SITE FREE OF TRASH AND CONSTRUCTION DEBRIS.

20. CONTRACTOR MUST EXECUTE AND KEEP A COPY OF THE CONSTRUCTION SITE NOTICE (CSN) FOR THOSE ACTIVITIES DISTURBING MORE THAN 1 ACRE AND A NOTICE OF INTENT (NOI) FOR THOSE ACTIVITIES DISTURBING 5 ACRES OR MORE.

GENERAL NOTES FOR TRAFFIC CONTROL:

21. THE CONTRACTOR MAY PROPOSE AN ALTERNATE TRAFFIC CONTROL PLAN TO THE PROJECT ENGINEER WITHIN AT LEAST 10 BUSINESS DAYS BEFORE ANY WORK ON A CITY STREET, IF SUBMITTED, THE CONTRACTOR SHALL PREPARE DETAILED TRAFFIC CONTROL PLANS SHOWING ALL SIGNS AND DETOUR ROUTES IN ACCORDANCE WITH THE LATEST REVISION OF THE TMUTCD. THE CONTRACTOR SHALL BE REQUIRED TO DEVELOP A SEQUENCE OF CONSTRUCTION ALONG WITH THE TRAFFIC CONTROL PLAN AND SCHEDULE AND SUBMIT THEM FOR REVIEW AND APPROVAL BY THE CITY.

22. CONTACT TRAFFIC ENGINEERING DIVISION, 972-216-6917, AT LEAST 48 HOURS PRIOR TO WORK REQUIRING THE REMOVAL OR RELOCATION OF TRAFFIC SIGNS, TRAFFIC CONTROL EQUIPMENT OR OTHER TRAFFIC CONTROL APPURTENANCES. ONLY CITY TRAFFIC PERSONNEL SHALL REMOVE TRAFFIC SIGNS.

23. IN THE EVENT THE CONSTRUCTION WORK REQUIRES THE CLOSURE OF AN EXISTING STREET, ALLEY, OR FIRE LANE, THE CONTRACTOR SHALL REQUEST THE ROAD CLOSURE THROUGH THE CITY INSPECTOR A MINIMUM OF 48 HOURS IN ADVANCE OF THE REQUESTED CLOSURE. CLOSURES WILL NOT BE ALLOWED PRIOR TO 9:00 A.M. OR AFTER 3:30 P.M. MONDAY THROUGH FRIDAY UNLESS OTHERWISE APPROVED BY THE CITY. IN THE EVENT A DRIVEWAY(S) NEEDS TO BE CLOSED, THE CONTRACTOR SHALL REQUEST THE DRIVEWAY CLOSURE THROUGH THE CITY INSPECTOR, WHO WILL IN TURN NOTIFY DISPATCH AND OTHER PERTINENT CITY DEPARTMENTS. CLOSURES ARE PROHIBITED DURING SCHOOL ZONES TIMES IN AND AROUND SCHOOLS.

24. IF THE CONSTRUCTION ZONE AFFECTS THE MOVEMENTS OF PEDESTRIANS, ADEQUATE PEDESTRIAN ACCESS AND WALKWAYS SHALL BE PROVIDED IN ACCORDANCE WITH THE DISABILITIES ACT ACCESSIBILITY GUIDELINES, PROWAG, TAS AND THE TMUTC D. WHERE DEVELOPMENTS OCCUR WITHIN 0.5 MILES OF A SCHOOL SITE, TEMPORARY SIDEWALKS MUST BE CONSTRUCTED CONNECTING THE DEVELOPMENT TO THE SCHOOL SITE. THE ROUTE SHALL BE APPROVED BY THE CITY ENGINEER. TEMPORARY SIDEWALKS MAY BE CONSTRUCTED WITH MATERIALS OTHER THAN CONCRETE. THE MATERIAL SHALL BE APPROVED BY THE CITY ENGINEER AND BE AN ALL-WEATHER MATERIAL OF A COLOR AND TEXTURE DISTINCTLY DIFFERENT FROM THE PERMANENT SIDEWALK.

25. OVERNIGHT LANE CLOSURES SHALL BE APPROVED BY CITY PRIOR TO CLOSING THE LANE. ANY LANE OR SHOULDER CLOSURE ON AN ARTERIAL ROAD THAT EXTENDS INTO THE NIGHT SHALL REQUIRE THE MANDATORY USE OF ARROW BOARDS.

GENERAL NOTES FOR PAVING

26. ABSOLUTELY NO EARTHWORK, LIME APPLICATION, OR OTHER PREPARATION OF THE SUBGRADE FOR PAVING OF STREETS, ALLEYS, SIDEWALKS, TRAILS, FIRE LANES OR OTHER TRANSPORTATION RELATED FLATWORK SHALL BE INITIATED WITHOUT AUTHORIZATION FROM THE CITY. THE CITY WILL AUTHORIZE THE SUBGRADE WORK IN PREPARATION FOR PAVING AFTER UTILITY TRENCH BACKFILL TESTING HAS BEEN COMPLETED AND VERIFIED TO MEET THE CITY REQUIREMENTS.

27. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT AND THE TEXAS ARCHITECTURAL BARRIERS ACT. THE CITY OF MESQUITE HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, TEXAS ARCHITECTURAL BARRIERS ACT, OR ANY OTHER ACCESSIBILITY LEGISLATION, AND DOES NOT WARRANTY OR APPROVE THESE PLANS FOR ANY ACCESSIBILITY STANDARDS. PRIOR TO PROJECT ACCEPTANCE, THE CONTRACTOR SHALL SUBMIT TO THE CITY DOCUMENTATION THAT THE PROJECT WAS INSPECTED BY A REGISTERED ACCESSIBILITY SPECIALIST, REGISTERED WITH THE TEXAS DEPARTMENT OF LICENSING AND REGULATION CERTIFYING THE PROJECT IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE TEXAS ARCHITECTURAL BARRIERS ACT.

28. ALL CONCRETE PAVING (STREETS, ALLEYS, SIDEWALKS, DRIVEWAYS) WITHIN CITY ROW SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI, CONTAINING A MINIMUM OF 6 SACKS OF CEMENT PER CUBIC YARD , WITH A SLUMP RANGE OF 1" TO 3" SLUMP FOR MACHINE POURS AND 3" TO 5" SLUMP FOR HAND POURS UNLESS OTHERWISE NOTED IN THE GENERAL DESIGN STANDARDS. ALL MATERIALS AND REQUIREMENTS FOR CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT NCTCOG ITEM "PORTLAND CEMENT CONCRETE PAVEMENT' WITH THE EXCEPTION THAT FLY ASH MAY BE SUBSTITUTED FOR UP TO 20% OF THE CEMENT CONTENT REQUIREMENT AT 1 TO 1.25 CEMENT TO FLY ASH SUBSTITUTION RATE.

29. ALL CONCRETE MUST BE MECHANICALLY VIBRATED. THE FORMING OF NEW STREET AND ALLEY PAVEMENT IS BY USING THE SLIP FORM METHOD. CONCRETE SHALL BE HAND PLACED AT INTERSECTIONS AND MISCELLANEOUS AREAS.

30. TEMPERATURE DURING CONCRETE PLACEMENT:
   a. THE TEMPERATURE OF CONCRETE AS PLACED SHALL NOT EXCEED 95°F.
   b. NO CONCRETE SHALL BE PLACED ON A FROZEN SUBGRADE.
   c. IF THE AMBIENT AIR TEMPERATURE IS LESS THAN 40°F AND DROPPING CONCRETE SHALL NOT BE PLACED.
   d. IF CONCRETE IS PLACED AND THERE IS AN ANTICIPATED LOW TEMPERATURE OF LESS THAN 40°F WITHIN 5 DAYS AFTER PLACEMENT THE CONCRETE MUST BE COVERED AND KEPT AT A TEMPERATURE OF NOT LESS THAN 50°F.
   e. IN ALL CASES, CONCRETE SHOULD NOT BE KEPT AT A TEMPERATURE OF LESS THAN 50°F FOR A PERIOD OF 5 DAYS MINIMUM.

31. REINFORCING SHALL CONFORM TO ASTM A 615 AND BE A MINIMUM GRADE OF 60 PER ASTM A B70. REINFORCING STEEL BAR LAPS ARE TO BE 30 BAR DIAMETERS OR 15" PER ACI 318, WHICHEVER IS GREATER. A MINIMUM OF 50% OF REBAR INTERSECTIONS ARE TO BE SECURED WITH TIE WIRE AND SUPPORTED WITH CHAIRS. ALL REINFORCEMENT SHALL BE FREE FROM RUST, SCALE, OIL, PAINT AND OTHER SUBSTANCES WHICH PREVENT BONDING TO THE CONCRETE. UNLESS OTHERWISE SPECIFIED, STEEL SHALL BE PLACED AT HALF THE PAVEMENT DEPTH.

32. WHITE CURING COMPOUND IS TO BE APPLIED, PER MANUFACTURER'S RECOMMENDATIONS, TO ALL EXPOSED CONCRETE SURFACES (INCLUDING BACKS OF CURBS) IMMEDIATELY AFTER COMPLETION OF FINISHING OPERATIONS, PER ASTM C-309, TYPE 2, NCTCOG SECTION 303.2.13.1.1.

33. NO VEHICLE TRAFFIC SHALL BE PERMITTED ON NEWLY PAVED AREAS FOR SEVEN DAYS AFTER CONCRETE POUR OR UNTIL 3,000 PSI IS ACHIEVED.

34. ALL FILL AND LIME SUBGRADES SHALL BE PLACED IN MAXIMUM 8" COMPACTED LIFTS AND BE COMPACTED TO 95% STANDARD PROCTOR AT A MOISTURE RANGE OF 0% TO 6% OF OPTIMUM MOISTURE. MOISTURE LEVEL MUST BE MAINTAINED, BY WETTING OR APPLICATION OF ASPHALT EMULSION PRIME COAT (0.25 TO 0.50 GAL/SY) IF NECESSARY, UNTIL PLACING OF CONCRETE PAVING.

GENERAL NOTES FOR TRENCHING AND CONFINED SPACE

35. ALL EXCAVATION AND TRENCH OPERATIONS SHALL BE CONDUCTED IN ACCORDANCE WITH 29 CODE OF FEDERAL REGULATIONS (CFR), PART 1926, SUBPART P AND ALL OTHER APPLICABLE STATE AND CITY REGULATIONS. PRIOR TO COMMENCING ANY EXCAVATION OR TRENCHING OPERATION, THE CONTRACTOR SHALL SUBMIT TO THE CITY ENGINEER A PLAN SEALED BY A TEXAS LICENSED PROFESSIONAL ENGINEER INDICATING THE INTENDED PROCEDURES TO BE USED BY THE CONTRACTOR TO COMPLY WITH OSHA REQUIREMENTS. SUCH PLAN SHALL FURTHER IDENTIFY THE "COMPETENT PERSON" AS REQUIRED BY PARAGRAPH 1926.651(K)(1) THAT WILL WORK WITH EACH CREW. AN AFFIDAVIT FROM THE CONTRACTOR INDICATING THE COMPETENT PERSON MUST BE SUBMITTED WITH THE TRENCH SAFETY PLAN TO THE CITY ENGINEER. A COPY OF THE TRENCH SAFETY PLAN MUST BE ON THE JOB AT ALL TIMES. THE CITY RESERVES THE RIGHT TO DENY PAYMENT FOR ANY CONSTRUCTION ACTIVITIES IN EXCAVATIONS OR TRENCHES THAT ARE NOT IN ACCORDANCE WITH THE SUBMITTED PLAN. THE CITY DOES NOT APPROVE OR DISAPPROVE TRENCH SAFETY PLANS BUT WILL RETAIN A FILE COPY.

36. IMPLEMENTATION OF TRENCH SAFETY SHALL COMPLY WITH SUBMITTED TRENCH SAFETY DESIGN PLAN. SUBMIT DESIGNATED COMPETENT PERSON WHO WILL BE ON-SITE FULL TIME AND IS CAPABLE OF IDENTIFYING EXISTING AND PREDICTABLE HAZARDS IN SURROUNDING OR WORK CONDITIONS WHICH ARE UNSANITARY, HAZARDOUS, OR DANGEROUS TO EMPLOYEES AND WHO HAS THE AUTHORIZATION TO TAKE PROMPT CORRECTIVE MEASURES TO ELIMINATE THEM. INSTALL, OPERATE, MAINTAIN, ADJUST, AND REMOVE TRENCH SAFETY EQUIPMENT, AND PRECAUTIONS IN ACCORDANCE WITH TRENCH SAFETY DESIGN.

37. ALL ENTRY INTO CONFINED SPACES SHALL BE CONDUCTED IN ACCORDANCE WITH 29 CODE OF FEDERAL REGULATIONS (CFR), PART 1910.147 P AND ALL OTHER APPLICABLE STATE AND CITY REGULATIONS. PRIOR TO COMMENCING ANY CONFINED SPACE ENTRY, THE CONTRACTOR SHALL SUBMIT TO THE CITY ENGINEER A COPY OF THE CONFINED SPACE ENTRY PLAN WITH A COMPLETED PERMIT.

GENERAL NOTES FOR UTILITIES

38. ALL WATER AND WASTEWATER MAINS THAT ARE PROPOSED TO BE ABANDONED WITHIN STREET ROW AND LESS THAN 10 FEET IN DEPTH, UNDER ANY MAJOR INTERSECTIONS, OR IN AREAS THAT COULD IMPACT MAJOR INFRASTRUCTURE, SHALL BE ABANDONED BY DRAINING THE EXISTING MAIN AND CUTTING AND FILLING THE EXISTING MAIN WITH GROUT.

MATERIAL	DESIGNATION	TEST	FREQUENCY	REQUIREMENTS	NOTES
SUBGRADE	ASTM D-6938	IN-PLACE DENSITY AND WATER CONTENT	EVERY 300 LINEAR FEET (1)	MOISTURE CONTENT: 0% - 6% OFOPTIMUM: DENSITY : 95% OF STANDARD PROCTOR	EVERY 8" LIFT
		LIME STABILIZED SUBGRADE - DEPTH CHECK		DEPTH OF STABILIZATION AS SPECIFIED PER PLANS	
		LIME STABILIZED SUBGRADE - SIEVE ANALYSIS		175 SIEVE: 100% PASSING: NO.4 SIEVE: 60%	
	ASTM D-698	PROCTOR	EVERY NEW MATERIAL SOURCE		
CONCRETE PAVING	ASTM C-143	SLUMP OF PORTLAND CEMENT	FIRST TRUCK EACH DAY + 1 EVERY 150 CY	1" - 3" MACHINE POURS; 3"-5" HAND POURS	
	ASTM C-231	CONCRETE AIR CONTENT BY PRESSURE METHOD (FOR FRESH CONCRETE)		MINIMUM 3%	
	ASTM C-1064	TEMPERATURE OF FRESHLY MIXED PORTALND CEMENT CONCRETE	EVERY TRUCK	95 F MAX (HOT WEATHER) AND 50 F MIN (COLD WEATHER)	
	ASTM C-39	COMPRESSIVE STRENGHT OF CYLINDRICAL CONCRETE SPECIMENS	3 CYLINDERS TAKEN FROM FIRST TRUCK EVERY DAY + 3 EVERY 150 CY	3,000 PSI MINIMUM FOR TRAFFIC; 4,000 PSI MINIMUM AT 28 DAYS	1 BROKEN AT 7 DAYS AND THE OTHER 2 BROKEN AT 28 DAYS; IF NEEDING TO GET TRAFFIC ON PAVEMENT FASTER THEN ADDITIONAL CYLINDER BROKEN AT 3 DAYS
	ASTM C-42	OBTANING AND TESTING OF DRILLED CORES OF CONCRETE	EVERY 300 LINEAR FEET (1)	4,000 PSI COMPRESSIVE AT 28 DAYS	4" DIAMETER TAKEN 28 DAYS AFTER POUR
	ASTM C-174	MEASURING LENGTH OF DRILLED CONCRETE CORES		DEPTH OF PAVEMENT AS SPECIFIED PER PLANS	

NOTE (1): PER LANE, TRENCH, ALLEY OR SIDEWALK

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MESQUITE HERITAGE TRAIL, PHASE II

GENERAL NOTES

SHEET 1 OF 1

BGE, Inc.
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CONTRACT NO. 2024-014 SHEET NO. 3

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STATE OF TEXAS
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11/22/2023

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MESQUITE HERITAGE TRAIL, PHASE II

SHEET OMITTED

SHEET OF

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CONTRACT NO. 2024-014 SHEET NO. 4

BASE BID - TRAIL A

ITEM NO	ITEM DESCRIPTION	TRAIL A							
SWPPP		UNITS	SHEET 20	SHEET 21	SHEET 22	SHEET 23	SHEET 24	SHEET 25	TOTALS
	MOBILIZATION	LS							1
	FIELD OFFICE AND LABORATORY	MO							8
1	BROADCAST SEED (TEMP) (WARM)	AC	1.03	0.10	0.30	0.14	0.45	0.22	2.24
2	BROADCAST SEED (TEMP) (COOL)	AC	1.03	0.10	0.30	0.14	0.45	0.22	2.24
3	TEMP SEDMT CONT FENCE (INSTALL)	LF	375			800	665	400	2,240
4	TEMP SEDMT CONT FENCE (REMOVE)	LF	375			800	665	400	2,240
5	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	151		155			148	454
6	BIODEG EROSN CONT LOGS (REMOVE)	LF	151		155			148	454

DRAINAGE		UNITS	SHEET 70	SHEET 71	SHEET 72	TOTALS
9	TRENCH EXCAVATION PROTECTION	LF	270	273	119	662
10	CL A CONC (FLUME)	CY	2	24		26
11	RIPRAP (STONE PROTECTION) (36 IN)	CY	56	56		112
13	RC PIPE (CL III) (30 IN)	LF	270			270
14	RC PIPE (CL III) (48 IN)	LF		273	119	392
15	INLET (COMPL) (PAZD) (SL) (3FTX3FT)	EA	1			1
16	INLET (COMPL) (PAZD) (RC) (3FTX3FT)	EA	1			1
17	INLET (COMPL) (PAZD) (MOD)(4FTx4FT)	EA		1	1	2
19	SET (TY II) (30 IN) (RCP) (3: 1) (C)	EA	1			1
20	SET (TY II) (48 IN) (RCP) (3: 1) (C)	EA		1		1

DEMOLITION		UNITS	SHEET 8	SHEET 9	SHEET 10	SHEET 11	SHEET 12	SHEET 13	TOTALS
21	REMOV & DISPOSE EXIST WL	LF	91	80	80				251
22	PREPARING ROW	STA	8	8	8	8	8	4	44
23	PREPARING ROW (TREE) (6" TO 24" DIA)	EA			1		15	13	29
25	REMOVING CONC (SIDEWALKS)	SY	143						143
27	REMOVING CONC (PAVERS)	SY	40						40
28	REMOVING CONC (SLOPE PROTECTION)	SY	18						18
29	REMOVE BARRIER	EA	1						1
31	REMOV STR (INLET)	EA					1		1
32	REMOV STR (HEADWALL)	EA	2						2
33	REMOV STR (PIPE)	LF	31						31
34	REMOVE GABIONS	SY	150	23	357				530

STRUCTURES		UNITS	SHEET 78 (RW-A)	SHEET 79-83 (RW-B)	SHEET 84	TOTALS
39	FL BS (CMP IN PLC) (TY D GR 1 - 2)	SY	565	871		1,436
40	TEMPORARY SPL SHORING	SF	1,776	6,143		7,919
41	DRILL SHAFT (18 IN)	LF			192	192
44	CL A CONC (FLUME)	CY	10	25		35
45	CL C CONC (ABUT)	CY			22	22
48	REINF CONC SLAB	SF			300	300
49	APPROACH SLAB	CY			6.9	6.9
51	RETAINING WALL (CAST - IN - PLACE)	SF	776	5,143		5,919
52	RAIL (HANDRAIL) (TY B)	LF	241	1,772	50	2,063
54	ANTI - GRAFFITI COATNG (PERMANENT -	SF	776	5,143		5,919
55	25.34 PEDESTRIAN TRUSS BRIDGE SPAN	EA			1	1

UTILITIES		UNITS	SHEET 76	SHEET 77	TOTALS
60	PIPE (PVC)(12IN) (OPEN CUT)	LF	186	80	266
61	DUCTILE IRON FITTINGS	TON	1.3	0.3	1.6
63	12" GATE VALVE	EA	2	1	3
65	18" STEEL ENCASEMENT	LF	12	49	61
67	CONN TO EXISTING 12"WL	EA	2	2	4
68	TRENCH EXCAVATION PROTECTION	LF	186	80	266

PAVING		UNITS	SHEET 47	SHEET 48	SHEET 49	SHEET 50	SHEET 51	SHEET 52	SHEET 53	SHEET 54	SHEET 55	SHEET 56	SHEET 57	TOTALS
71	EXCAVATION (ROADWAY) (UNCLASSIFIED)	CY	244	644	964		903	882	438	736	469	303	137	5,720
72	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	1	1,052	4						295	120	598	2,070
79	GABION MATTRESSES (GALV)(12 IN)	SY		150	23									173
83	CONC TRAIL (6")	SY	508	609	64		402	622	623	622	594	533	528	5,105

DIMENSION CONTROL AND SIGNAGE		UNITS	SHEET 31	SHEET 32	SHEET 33	SHEET 34	SHEET 35	SHEET 36	TOTALS
87	SIGN ASSEMBLY	EA	2	3	3	1	1	2	12
88	GPS MARKER (Mesquite)	EA		1	1		1		3
89	MILE MARKER (Mesquite)	EA		1	1		1		3
90	BARRICADES, SIGNS AND TRAFFIC	MO							8
95	REFL PAV MRK TY II (Y) 4" (BRK)	LF	561		330	800	755	383	2,829
96	REFL PAV MRK TY II (Y) 4" (SLD)	LF	230	50	220		45		545
98	STOP AHEAD PAVEMENT MARKING	EA						1	1
99	PREFAB PAV MRK TY C (W) (SYMBOL) for STOP symbol	EA						1	1
102	PAV SURF PREP FOR MRK (4")	LF	791	50	550	800	800	383	3,374
105	PAV SURF PREP FOR MRK (SYMBOL)	EA						2	2
106	REMOVABLE BOLLARDS	EA	1	1			2	1	5

TXDOT BID ITEM NUMBERS*										
CITY BID ITEM	TxDOT BID ITEM	ITEM DESCRIPTION	UNITS	SHEET 32	SHEET 33	SHEET 49	SHEET 50	SHEET 51	TOTAL
71	0110 6001	EXCAVATION (ROADWAY) (UNCLASSIFIED)	CY			2,890	1,153	904	4,947
78	0450 6052	RAIL (HANDRAIL) (TY F)	LF			342	400	138	880
83	0531 6003	CONC TRAIL (6")	SY			647	714	601	1,962
86A	0531 6057	CONC SIDEWALK (SPECIAL)(RETAINING WALL)	SF				348		348
96	0666 6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	750	250				1,000
102	0678 6001	PAV SURF PREP FOR MRK (4")	LF	750	250				1,000

(*) ITEMS ARE FOR CONTRACTOR INFORMATION ONLY. QUANTITIES ARE NOT INCLUDED IN CITY OF MESQUITE CONTRACT NO. 2024-014.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/27/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

BID QUNATITIES

SCALE: N/A SHEET 1 OF 3

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 5

BASE BID - TRAIL B

TRAIL B						
ITEM NO	ITEM DESCRIPTION	TRAIL B				
SWPPP		UNITS	SHEET 26	SHEET 27	SHEET 28	TOTALS
1	BROADCAST SEED (TEMP) (WARM)	AC	0.13	0.30	0.25	0.68
2	BROADCAST SEED (TEMP) (COOL)	AC	0.13	0.30	0.25	0.68
3	TEMP SEDMT CONT FENCE (INSTALL)	LF	519	312	108	939
4	TEMP SEDMT CONT FENCE (REMOVE)	LF	519	312	108	939
5	BIODEG EROSN CONT LOGS (INSTL) (12")	LF		28	112	140
6	BIODEG EROSN CONT LOGS (REMOVE)	LF		28	112	140
7	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY		80		80
8	CONSTRUCTION EXITS (REMOVE)	SY		80		80

DEMOLITION		UNITS	SHEET 14	SHEET 15	SHEET 16	TOTALS
22	PREPARING ROW	STA	6	8	6	20
23	PREPARING ROW (TREE) (6" TO 24" DIA)	EA		16		16
24	REMOVING CONC (PAV)	SY			124	124
25	REMOVING CONC (SIDEWALKS)	SY	118	34	194	346
26	REMOVING CONC (CURB AND GUTTER)	LF	18		126	144
35	ELIM EXT PAV MRK & MRKS (24")	LF			80	80

STRUCTURES		UNITS	SHEET 85	TOTALS
37	REMOVING CONC (RIPRAP)	SY	29	29
41	DRILL SHAFT (18 IN)	LF	197	197
42	DRILL SHAFT (24 IN)	LF	224	224
43	DRILL SHAFT (36 IN)	LF	38	38
45	CL C CONC (ABUT)	CY	62	62
46	CL C CONC (BENT)	CY	21	21
48	REINF CONC SLAB	SF	2,892	2,892
49	APPROACH SLAB	CY	7.0	7.0
53	RAIL (HANDRAIL) (TY F)	LF	482	482

PAVING		UNITS	SHEET 58	SHEET 59	SHEET 60	SHEET 61	SHEET 62	SHEET 63	TOTALS
69	ADJUST WATER VALVE COVERS & STACKS	EA	1	1			1		3
70	ADJUSTING MANHOLES (SANITARY)	EA		1	1				2
71	EXCAVATION (ROADWAY) (UNCLASSIFIED)	CY	32	27			18	33	110
72	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	5	52	575	719	195	4	1,550
73	LIME (HYD, COM, OR QK(SLURRY))	TON						3	3
74	LIME TRT (SUBGRADE) (8")	SY						118	118
77	CONC PVMT (CONT REINF-CRCP)(HES)(10")	SY						118	118
80	CONC CURB (TY II)	LF	38					93	131
83	CONC TRAIL (6")	SY	102	357	360	253	435	35	1,542
84	CURB RAMPS (TY 2)	EA						2	2
85	CURB RAMPS (TY 7)	EA					2	4	6
86	CURB RAMPS (TY 10)	EA	2						2

DIMENSION CONTROL & SIGNAGE		UNITS	SHEET 37	SHEET 38	SHEET 39	SHEET 40	TOTALS
87	SIGN ASSEMBLY (Mesquite)	EA		1	8		9
91	RELOCATE SM RD SN SUP&AM (SIGN ONLY)	EA			1		1
93	REF PAV MRK TY II (W) 12" (SLD)	LF				454	454
94	REF PAV MRK TY II (W) 24" (SLD)	LF				135	135
95	REFL PAV MRK TY II (Y) 4" (BRK)	LF		232	379		611
96	REFL PAV MRK TY II (Y) 4" (SLD)	LF		250	280		530
98	STOP AHEAD PAVEMENT MARKING	EA			1		1
99	PREFAB PAV MRK TY C (W) (SYMBOL) for STOP SYMBOL	EA			2		2
102	PAV SURF PREP FOR MRK (4")	LF		482	659		1,141
103	PAV SURF PREP FOR MRK (12")	LF				454	454
104	PAV SURF PREP FOR MRK (24")	LF				135	135
105	PAV SURF PREP FOR MRK (SYMBOL)	EA			3		3
106	REMOVABLE BOLLARDS	EA		2	2		4

ILLUMINATION		UNITS	SHEET 103	SHEET 104	TOTALS
107	DRILL SHAFT (24 IN)	LF	48	24	72
108	CONDT (HDPE) (2") BORE	LF	135	165	300
109	CONDT (PVC) (SCH 40) (2")	LF	210		210
110	CONDT (PVC) (SCH 80) (2")	LF	900	390	1,290
111	CONDT (RMC) (2")	LF	75		75
112	ELEC CONDR (NO.8) BARE	LF	60		60
113	#8 XHHW-2 CONDUCTORS	LF	60		60
114	GROUND BOX TY A (122311) W / APRON (ONCOR)	EA	2	4	6
115	GROUND BOX TY A (122311) W / APRON (CITY)	EA	1		1
116	ELC SRV TY A 120 / 240 060 (NS) AL (E) PS (U) (ONCOR)	EA	2		2
117	ELC SRV TY A 120 / 240 060 (NS) AL (E) PS (U) (CITY)	EA	1		1

LANDSCAPE AND IRRIGATION		UNIT	TOTALS
118	LANDSCAPE IRRIGATION REPAIR	LF	1,265
119	TREE MITIGATION PER CALIPER INCH	EA	27
120	PRIMARY TRAIL 'CELEBRATION' BERMUDA SOD - CYNODON DACTYLON '	SY	8,307
121	TOWN CENTRE DR. 'CELEBRATION' BERMUDA SOD - CYNODON DACTYLON '	SY	2,097

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MESQUITE HERITAGE TRAIL, PHASE II

BID QUNATITIES

SCALE: N/A

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 6

2163-01-QNT03.dgn

ALTERNATE 1 - PARKING LOT

ALTERNATE 1 - PARKING LOT				
ITEM NO	ITEM DESCRIPTION	PARKING LOT		
SWPPP		**UNITS**	**SHEET 30**	**TOTALS**
3	TEMP SEDMT CONT FENCE (INSTALL)	LF	525	525
4	TEMP SEDMT CONT FENCE (REMOVE)	LF	525	525
5	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	71	71
6	BIODEG EROSN CONT LOGS (REMOVE)	LF	71	71
DRAINAGE		**UNITS**	**SHEET 73**	**TOTALS**
9	TRENCH EXCAVATION PROTECTION	LF	303	303
11	RIPRAP (STONE PROTECTION) (36 IN)	CY	17	17
12	RC PIPE (CL III) (18 IN)	LF	95	95
13	RC PIPE (CL III) (30 IN)	LF	208	208
17	INLET (COMPL) (PAZD) (MOD)(4FTx4FT)	EA	2	2
18	10' CURB INLET (MESQUITE STANDARD)	EA	1	1
19	SET (TY II) (30 IN) (RCP) (3: 1) (C)	EA	1	1
DEMOLITION		**UNITS**	**SHEET 18**	**TOTALS**
22	PREPARING ROW	STA	5	5
23	PREPARING ROW (TREE) (6" TO 24" DIA)	EA	6	6
25	REMOVING CONC (SIDEWALKS)	SY	67	67
27	REMOVING CONC (PAVERS)	SY	15	15
29	REMOVING STAB BASE AND ASPH PAV (2"	SY	19	19
32	REMOV STR (HEADWALL)	EA	1	1
36	REMOVE BOLLARD	EA	1	1
UTILITIES		**UNITS**	**SHEET 73**	**TOTALS**
57	PIPE (PVC)(1IN)	LF	45	45
58	PIPE	LF	54	54
59	PIPE (PVC)(8IN) (OPEN CUT)	LF	288	288
61	DUCTILE IRON FITTINGS	TON	0.1	0.1
62	8" GATE VALVE	EA	1	1
64	1" WATER SERVICE TAP	EA	1	1
66	CONN TO EXISTING 8"WL	EA	1	1
68	TRENCH EXCAVATION PROTECTION	LF	387	387
PAVING		**UNITS**	**SHEET 67**	**TOTALS**
71	EXCAVATION (ROADWAY) (UNCLASSIFIED)	CY	5812	5812
72	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	5532	5532
73	LIME (HYD, COM, OR QK(SLURRY))	TON	29	29
74	LIME TRT (SUBGRADE) (8")	SY	1275	1275
75	D - GR HMA (SQ) TY D PG64-22	TN	2	2
76	CONC PVMT (CONT REINF - CRCP) (8")	SY	1275	1275
80	CONC CURB (TY II)	LF	224	224
81	CONC CURB (MOUNTABLE)	LF	88	88
82	DRIVEWAYS (6" CONC)	SY	0	0
83	CONC TRAIL (6")	SY	786	786
84	CURB RAMPS (TY 2)	EA	2	2
85	CURB RAMPS (TY 7)	EA	2	2
86	CURB RAMPS (TY 10)	EA		0
DIMENSION CONTROL & SIGNAGE		**UNITS**	**SHEET 42**	**TOTALS**
87	SIGN ASSEMBLY (Mesquite)	EA	4	4
88	GPS MARKER (Mesquite)	EA	1	1
89	MILE MARKER (Mesquite)	EA	1	1
91	RELOCATE SM RD SN SUP&AM (SIGN ONLY)	EA	1	1
92	PREFAB PAV MRK TY C (W) (4") (SLD)	LF	489	489
100	PRE PM TY C (ACC PRK) (BL&WH) (W/BORDR) LG	EA	2	2
101	HANDICAP PRKG PAV MRK	EA	2	2
102	PAV SURF PREP FOR MRK (4")	LF	489	489
104	PAV SURF PREP FOR MRK (SYMBOL)	EA	2	2

ALTERNATE 1 - PARKING LOT

ALTERNATE 1 - PARKING LOT			
HARDSCAPE ELEMENTS & VERTICLE STRUCTURES (LS1.1)		PARKING LOT	
ITEM NO	ITEM DESCRIPTION	UNIT	TOTALS
137	BIKE RACK	EA	5
138	DRINKING FOUNTAIN	EA	1
139	STEEL EDGING	LF	730
140	INTEGRAL COLOR CONCRETE	SY	121
141	STANDARD BENCH	EA	3
142	DECOMPOSED GRANITE	SY	92
143	CRUSHED GRANITE BASE	SY	326
144	TEJAS BLACK CRUSHED GRANITE	SY	234
145	LANDSCAPE STONE PILASTER W/ ARBORS	EA	5
146	TRAIL SIGN	EA	1
LIGHTING		**UNIT**	**TOTALS**
107	DRILL SHAFT (24 IN)	LF	50
108	CONDT (HDPE) (2") BORE	LF	35
109	CONDT (PVC) (SCH 40) (2")	LF	675
111	CONDT (RMC) (2")	LF	25
112	ELEC CONDR (NO.8) BARE	LF	790
113	#8 XHHW-2 CONDUCTORS	LF	1,580
115	GROUND BOX TY A (122311) W / APRON (CITY)	EA	4
117	ELC SRV TY A 120 / 240 060 (NS) AL (E) PS (U) (CITY)	EA	1
LANDSCAPE AND IRRIGATION		**UNIT**	**TOTALS**
122	CELEBRATION' BERMUDA SOD - CYNODON DACTYLON 'CELEBRATION'	SY	1,910
123	IRRIGATION - PARKING LOT	LS	1
124	MULCH	SY	973
125	CHINESE PISTAHE - PISTACIA	EA	6
126	RED OAK - QUERCUS SHUMARDII (100 GAL)	EA	2
127	LIVE OAK - QUERCUS BIRGINIANA (100 GAL)	EA	5
128	NATCHEZ CRAPE MYRTL - LAGERSTROEMIA INDICA 'NATCHEZ' (65 GAL)	EA	4
129	AGAVE NEOMEXICANA - AGAVE	EA	28
130	THORNLESS PRICKLY PEAR - OPUNTIA ELLISIANA	EA	68
131	NEW GOLD LANTANA - LANTANA X HYBRID 'HOLD' & LANTANA X HYBRID (1 GAL)	EA	380
132	REGAL MIST FULF MUHLY - MUHLENBERGIA CAPILLARIS 'REGAL MIST' (3 GAL)	EA	453
133	MEXICAN FEATHER GRASS - NASSELLA TENUISSIMA (1 GAL)	EA	1,992
134	INDIAN HAWTHORN 'PINKIE' - RHAPHIOLEPIS INDICA 'PINKIE' (3 GAL)	EA	437
135	ASIAN JASMINE - TRACHELOSPERMUM ASIATICUM (1 GAL)	EA	998
136	PLANT SOIL MIX	SY	973

ALTERNATE 2 - OVERLOOK

ALTERNATE 2 - OVERLOOK			
ITEM NO	ITEM DESCRIPTION	OVERLOOK	
STRUCTURES		**UNITS**	**TOTALS**
38	EMBANKMENT (FINAL)(ORD COMP)(TY D)	SY	257
47	CL C CONC (MISC)	SF	13.2
50	RETAINING WALL (CONC BLOCK)	SF	1389
HARDSCAPE ELEMENTS & VERTICLE STRUCTURES		**UNIT**	**TOTALS**
139	LANDSCAPE EDGE (TYPE I)(STEEL	LF	237
140	INTEGRAL COLOR CONCRETE	SY	145
141	STANDARD BENCH	EA	3
142	DECOMPOSED GRANITE	SY	25
143	CRUSHED GRANITE BASE	SY	100
144	TEJAS BLACK CRUSHED GRANITE	SY	75
146	TRAIL SIGN	EA	1
147	LANDSCAPE STONE PILASTER	EA	2
148	LANDSCAPE STONE PILASTER AT BRIDGE	EA	8
149	LIMESTONE SEAT BLOCKS	EA	3
150	RAIL (HANDRAIL) (TY F)	LF	285
LANDSCAPE AND IRRIGATION		**UNIT**	**TOTALS**
122	CELEBRATION' BERMUDA SOD - CYNODON DACTYLON 'CELEBRATION'	SY	135
123	IRRIGATION - OVERLOOK	LS	1
124	MULCH	SY	253
125	CHINESE PISTAHE - PISTACIA CHINENSIS (100 GAL)	EA	3
126	RED OAK - QUERCUS SHUMARDII (100 GAL)	EA	1
127	LIVE OAK - QUERCUS BIRGINIANA (100 GAL)	EA	1
129	AGAVE NEOMEXICANA - AGAVE NEOMEXICANA (5 GAL)	EA	14
130	THORNLESS PRICKLY PEAR - OPUNTIA ELLISIANA (5 GAL)	EA	24
131	NEW GOLD LANTANA - LANTANA X HYBRID 'HOLD' & LANTANA X HYBRID (1 GAL)	EA	58
133	MEXICAN FEATHER GRASS - NASSELLA TENUISSIMA (1 GAL)	EA	1,533
136	PLANT SOIL MIX	SY	253

ALTERNATE 3 - TRAIL C

ALTERNATE 3 - TRAIL C				
ITEM NO	ITEM DESCRIPTION	TRAIL C		
SWPPP		**UNITS**	**SHEET 29**	**TOTALS**
1	BROADCAST SEED (TEMP) (WARM)	AC	0.1	0.1
2	BROADCAST SEED (TEMP) (COOL)	AC	0.1	0.1
3	TEMP SEDMT CONT FENCE (INSTALL)	LF	305	305
4	TEMP SEDMT CONT FENCE (REMOVE)	LF	305	305
DEMOLITION		**UNITS**	**SHEET 17**	**TOTALS**
22	PREPARING ROW	STA	2.70	2.70
23	PREPARING ROW (TREE) (6" TO 24" DIA)	EA	11	11
24	REMOVING CONC (PAV)	SY	74	74
26	REMOVING CONC (CURB AND GUTTER)	LF	60	60
30	REMOVING STAB BASE AND ASPH PAV (2" - 6")	SY	9	9
PAVING		**UNITS**	**SHEET 66**	**TOTALS**
71	EXCAVATION (ROADWAY) (UNCLASSIFIED)	CY	33	33
72	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	62	62
73	LIME (HYD, COM, OR QK(SLURRY))	TON	2	2
74	LIME TRT (SUBGRADE) (8")	SY	74	74
80	CONC CURB (TY II)	LF	63	63
82	DRIVEWAYS (6" CONC)	SY	74	74
83	CONC TRAIL (6")	SY	175	175
85	CURB RAMPS (TY 7)	EA	2	2

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MESQUITE HERITAGE TRAIL, PHASE II

BID QUNATITIES

SCALE: N/A SHEET 3 OF 3

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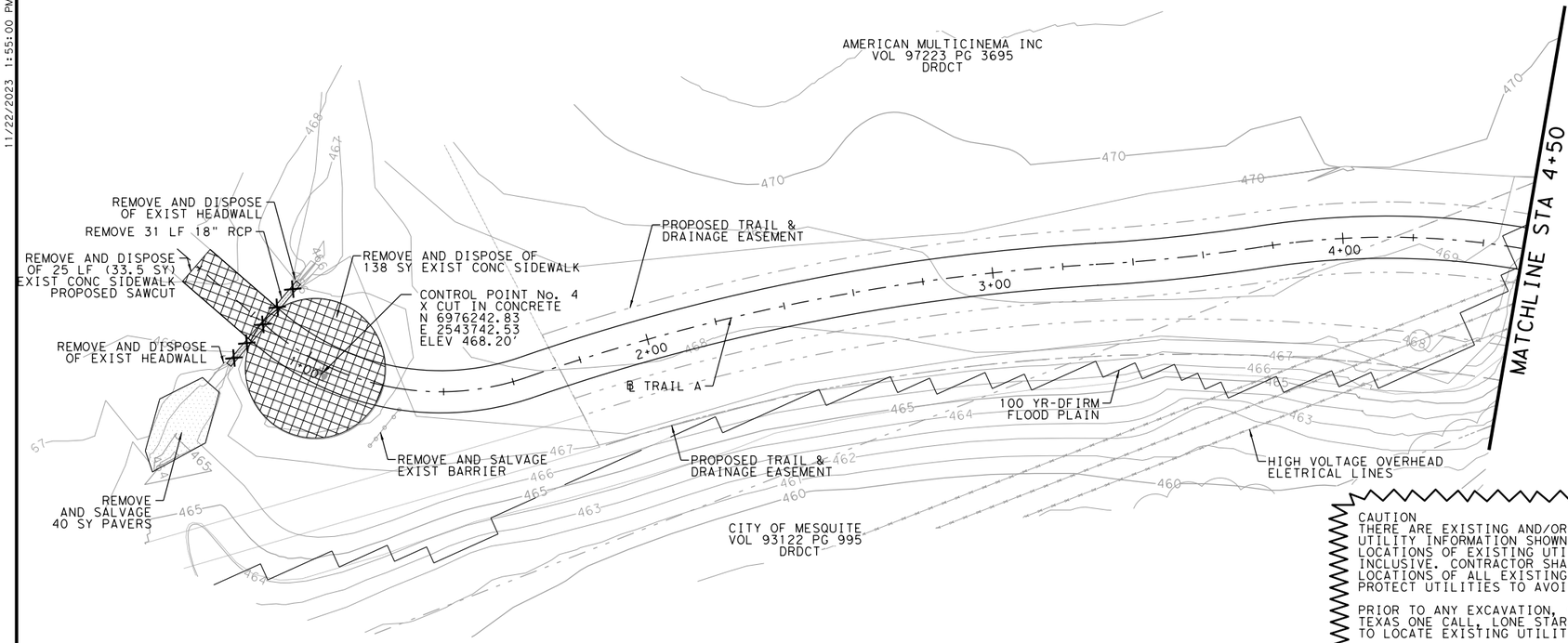
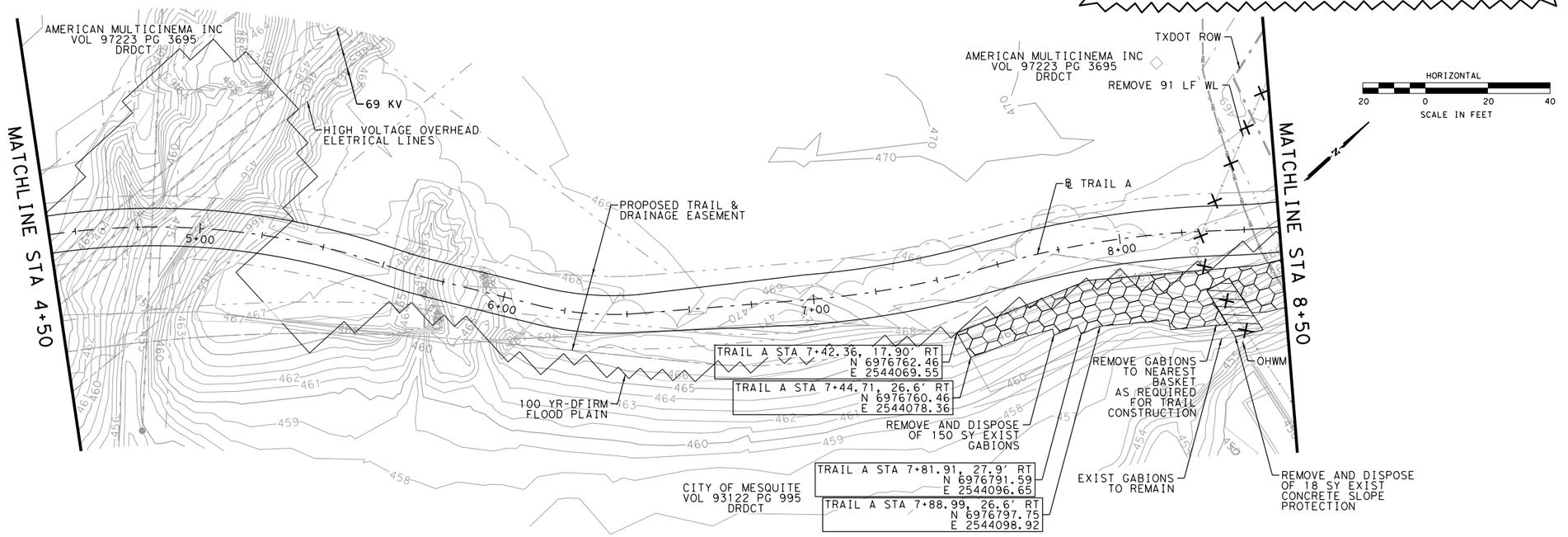
CONTRACT NO. 2024-014 SHEET NO. 7



TRAIL A



HORIZONTAL
20 0 20 40
SCALE IN FEET

LEGEND

- PROPOSED TRAIL BASE LINE DEMOLITION (114+00)
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- EXIST TREE TO BE REMOVED (15" YELLOW)
- REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BYANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. REMOVE GABIONS TO NEAREST BASKET AS REQUIRED FOR TRAIL CONSTRUCTION

CAUTION
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PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

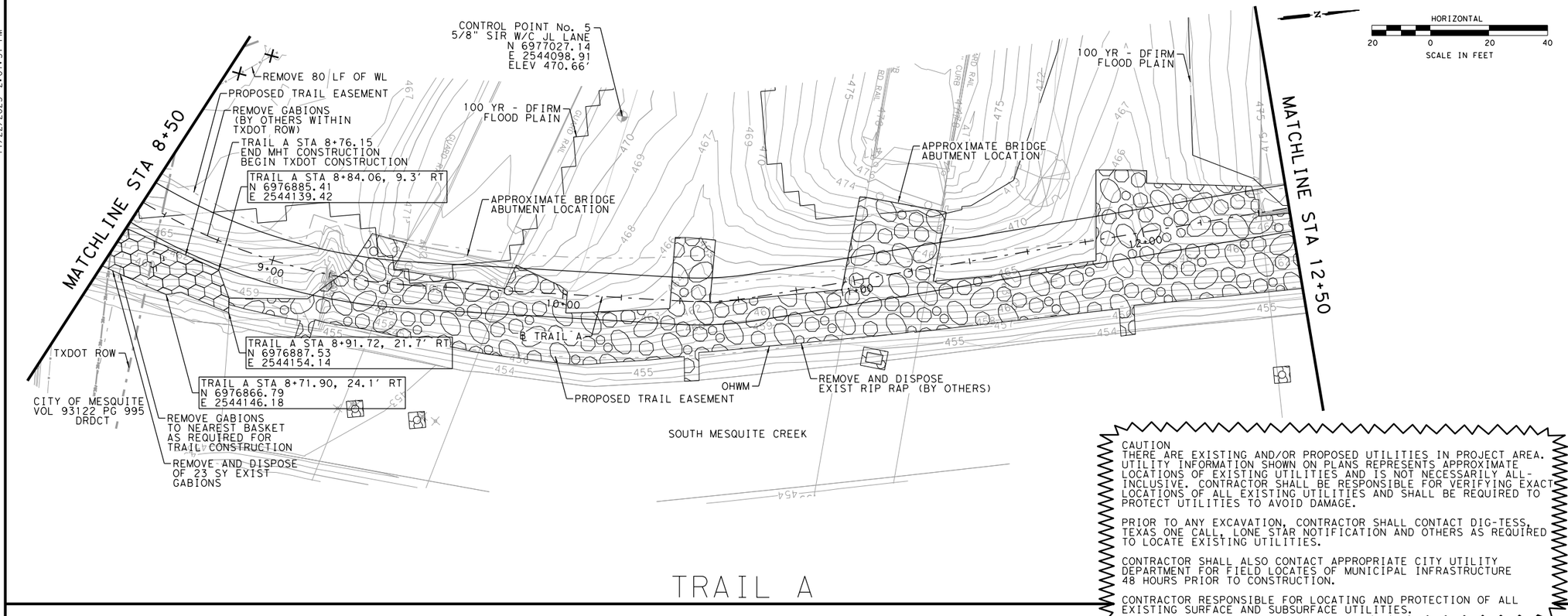
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A DEMOLITION PLAN

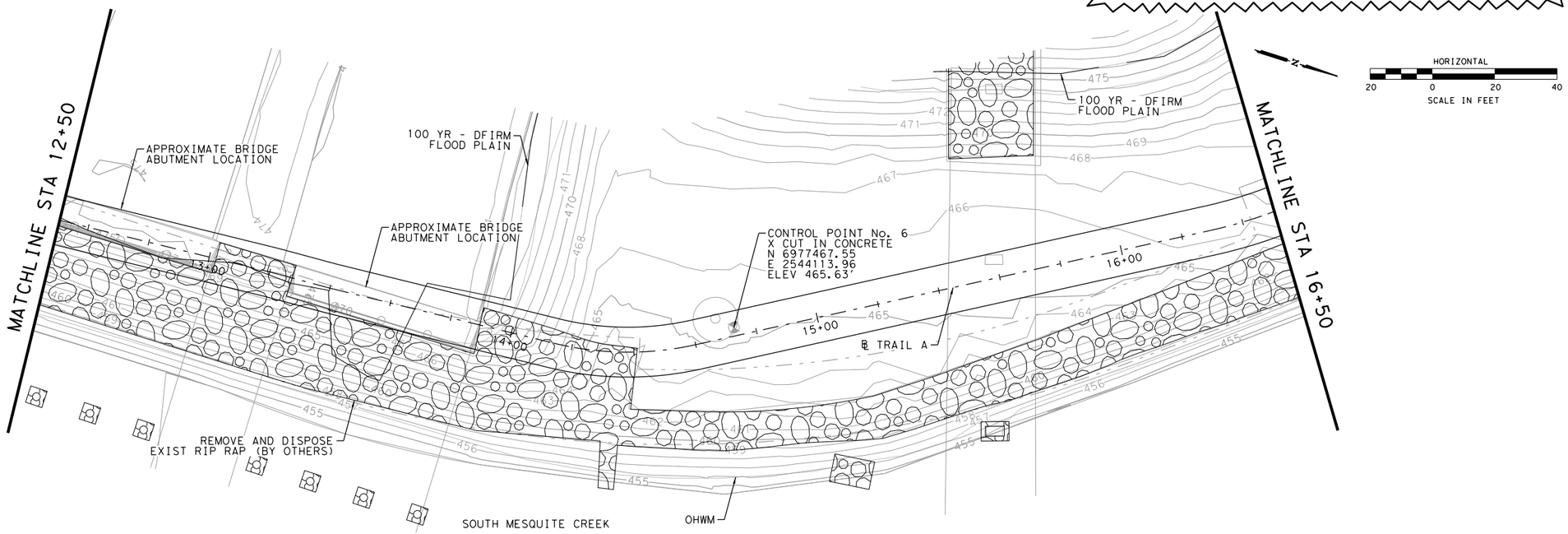
SCALE: 1" = 40' SHEET 1 OF 6

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 8



TRAIL A



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CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

LEGEND

- PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- EXIST TREE TO BE REMOVED
- REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BYANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS, TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. REMOVE GABIONS TO NEAREST BASKET AS REQUIRED FOR TRAIL CONSTRUCTION

4. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL ILLUMINATION, SURVEILLANCE AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

5. PROTECT ALL BRIDGE ELEMENTS DURING CONSTRUCTION.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

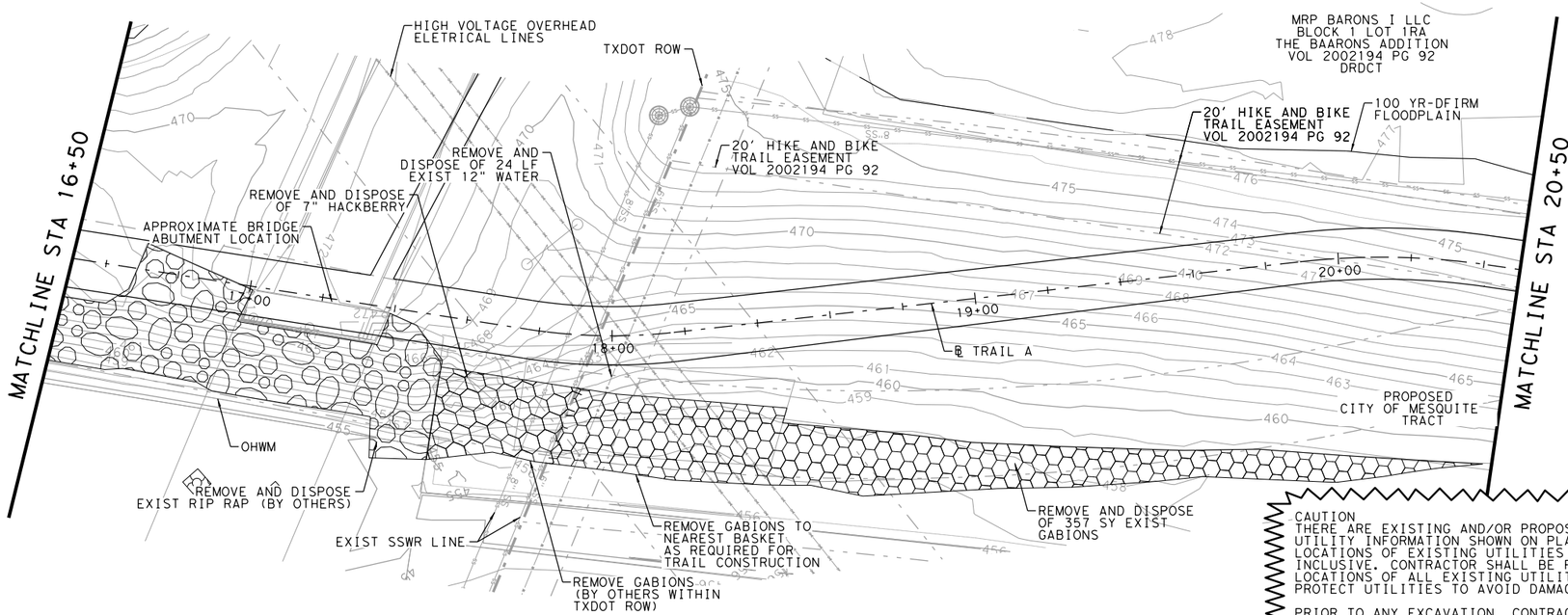
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A DEMOLITION PLAN

SCALE: 1" = 40' SHEET 2 OF 6

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 9



TRAIL A

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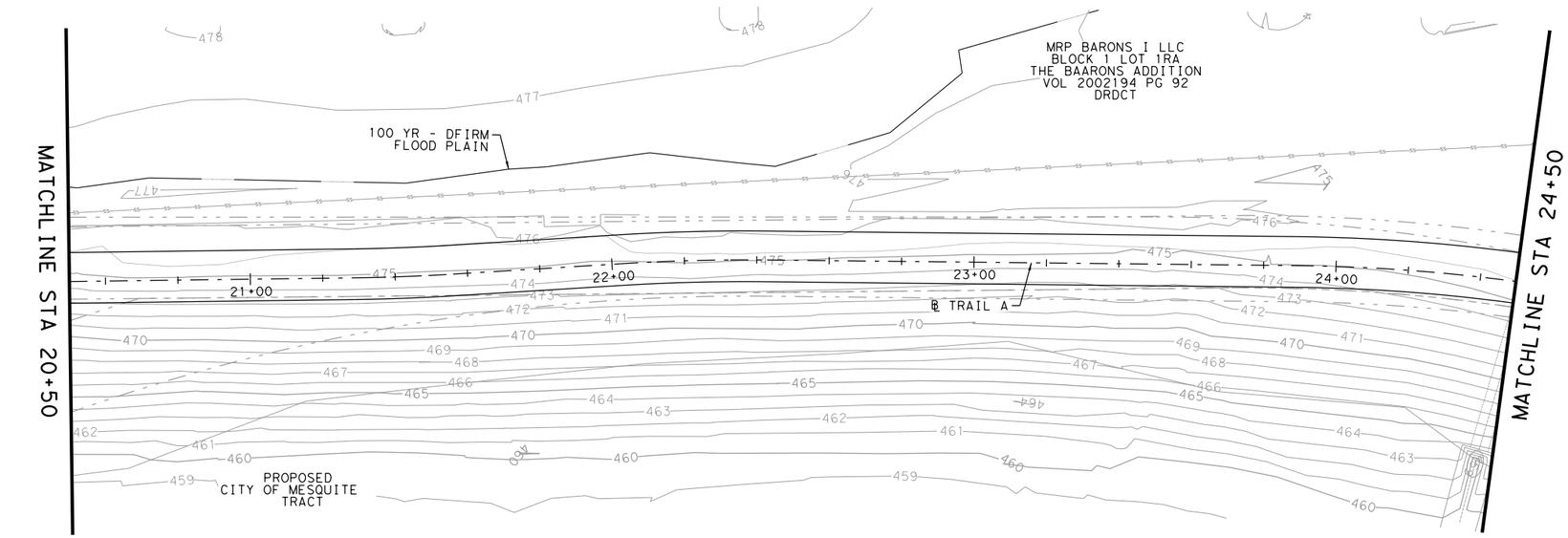
CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.



LEGEND

- PROPOSED TRAIL BASE LINE DEMOLITION (114+00)
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- EXIST TREE TO BE REMOVED (15" WILLOW)
- REMOVE WATER LINE (W)
- REMOVE STORM LINE (S)

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BYANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. REMOVE GABIONS TO NEAREST BASKET AS REQUIRED FOR TRAIL CONSTRUCTION

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5. PROTECT ALL BRIDGE ELEMENTS DURING CONSTRUCTION.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

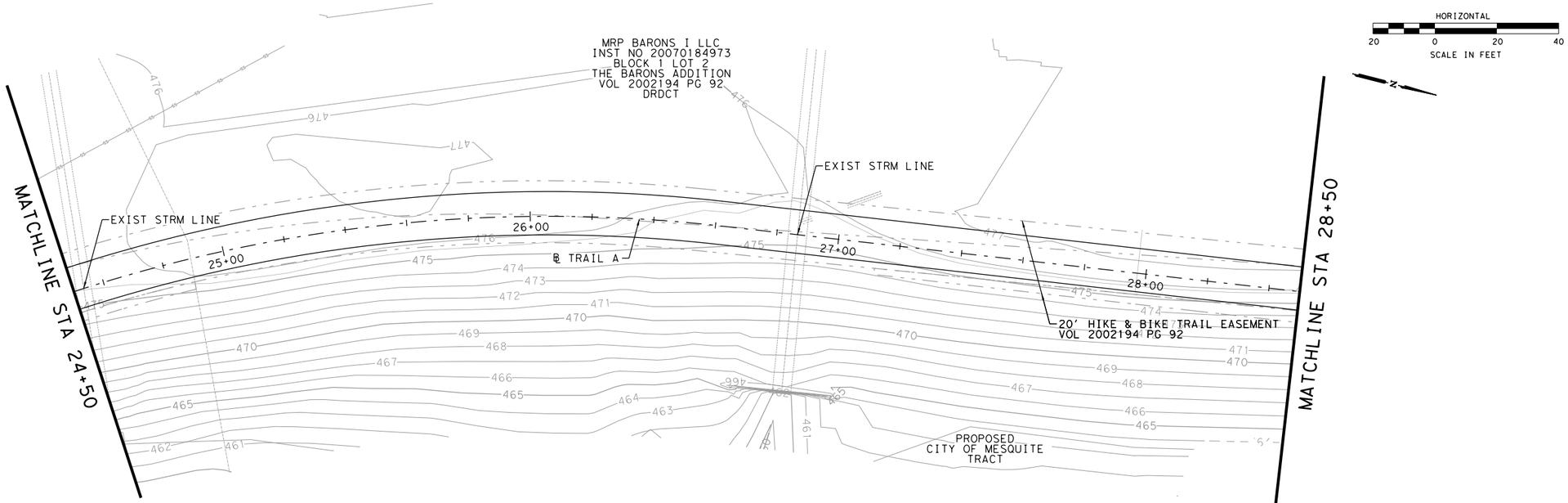
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A DEMOLIITION PLAN

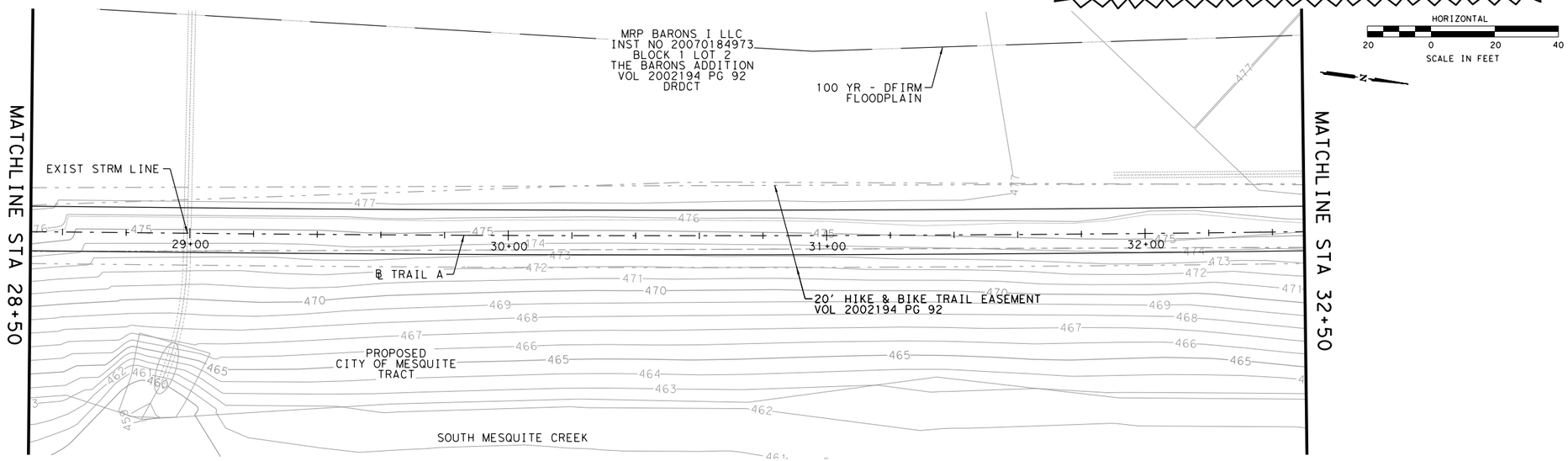
SCALE: 1" = 40' SHEET 3 OF 6

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 10



TRAIL A



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CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

LEGEND

- 114+00 — PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- 15" YELLOW — EXIST TREE TO BE REMOVED
- W W — REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BYANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

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STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

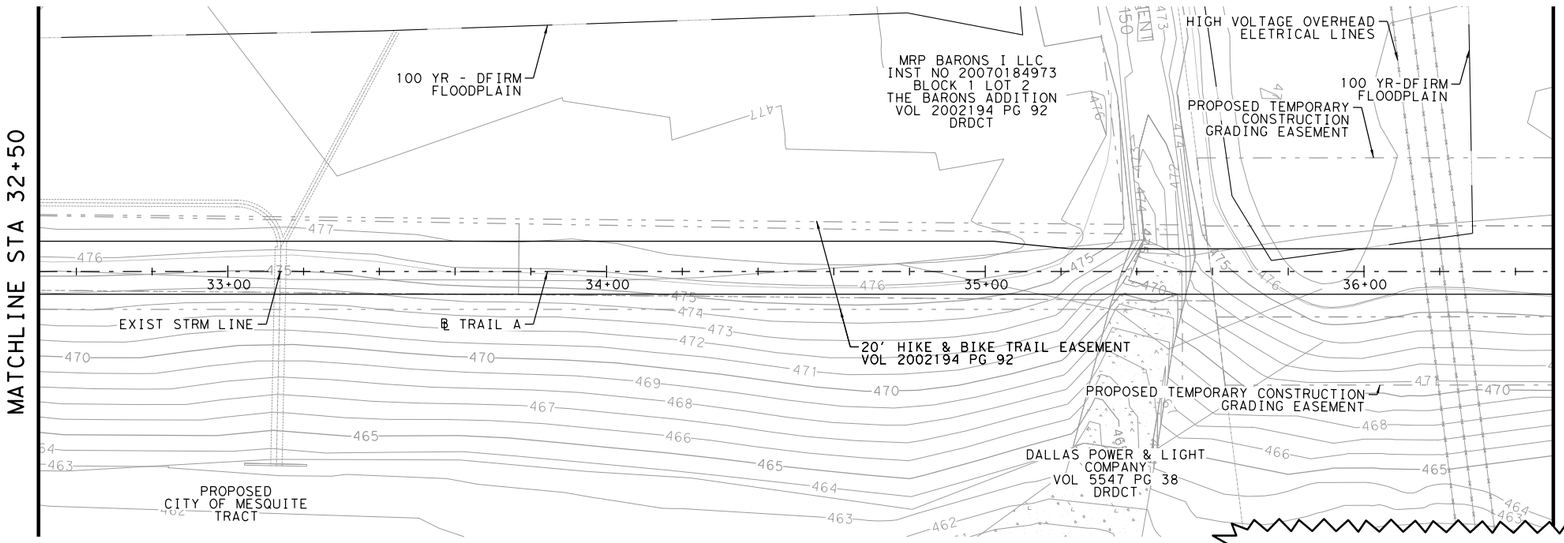
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A DEMOLITION PLAN

SCALE: 1" = 40' SHEET 4 OF 6

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 11



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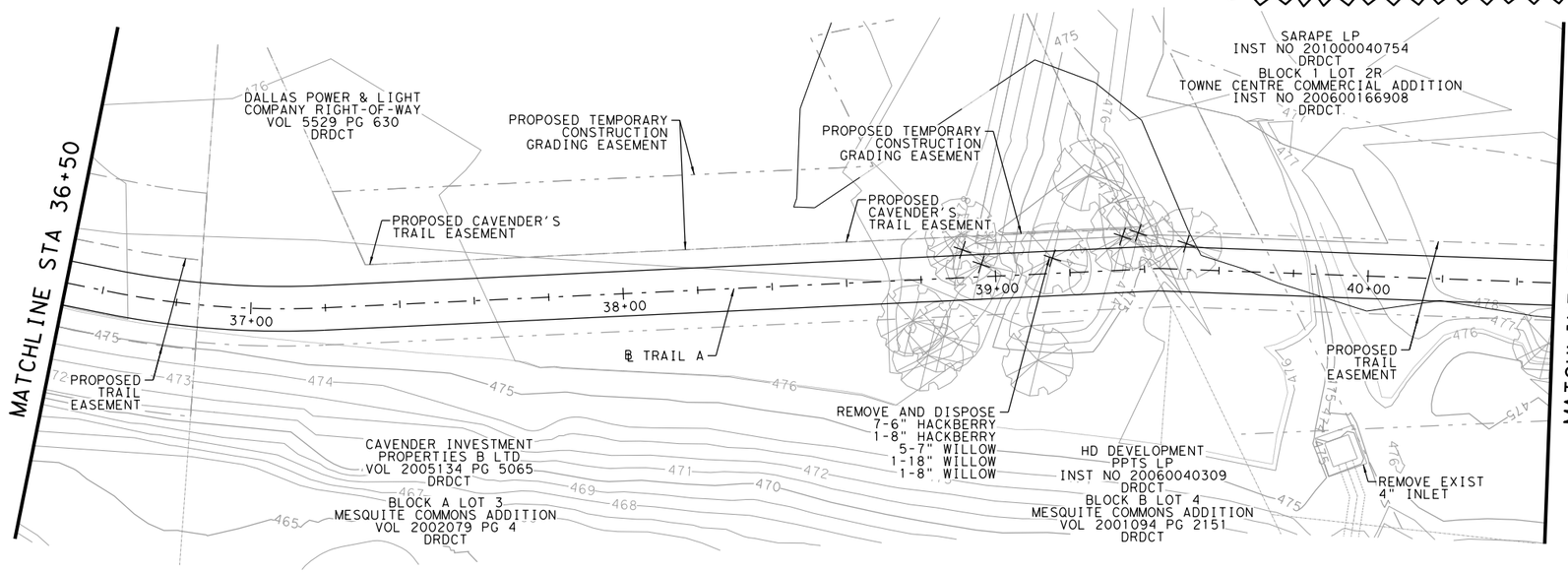

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CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

HORIZONTAL
20 0 20 40
SCALE IN FEET

LEGEND

- 114+00 — PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- 15" YELLOW — EXIST TREE TO BE REMOVED
- W W — REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BYANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

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STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

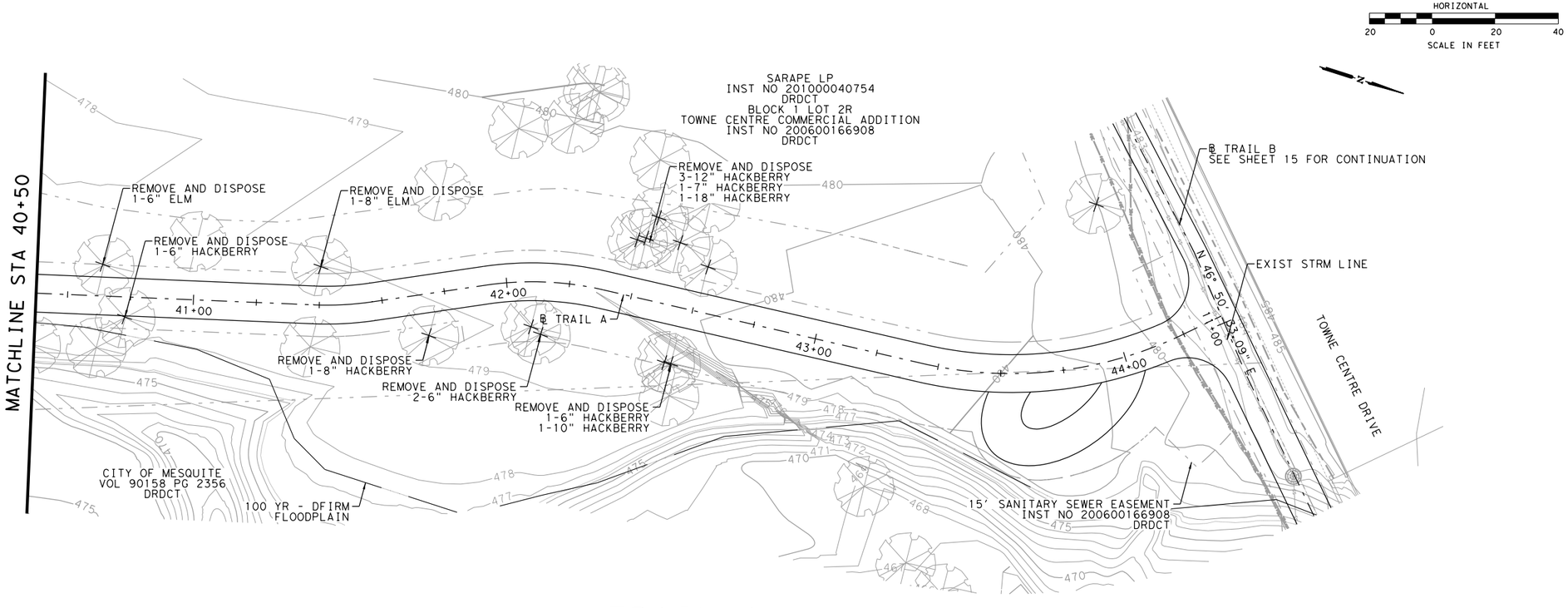
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A DEMOLITION PLAN

SCALE: 1" = 40' SHEET 5 OF 6

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 12



TRAIL A

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LEGEND

- PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
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- EXIST TREE TO BE REMOVED
- REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

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STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
DEMOLITION PLAN

SCALE: 1" = 40' SHEET 6 OF 6

BGE, Inc.
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Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 13

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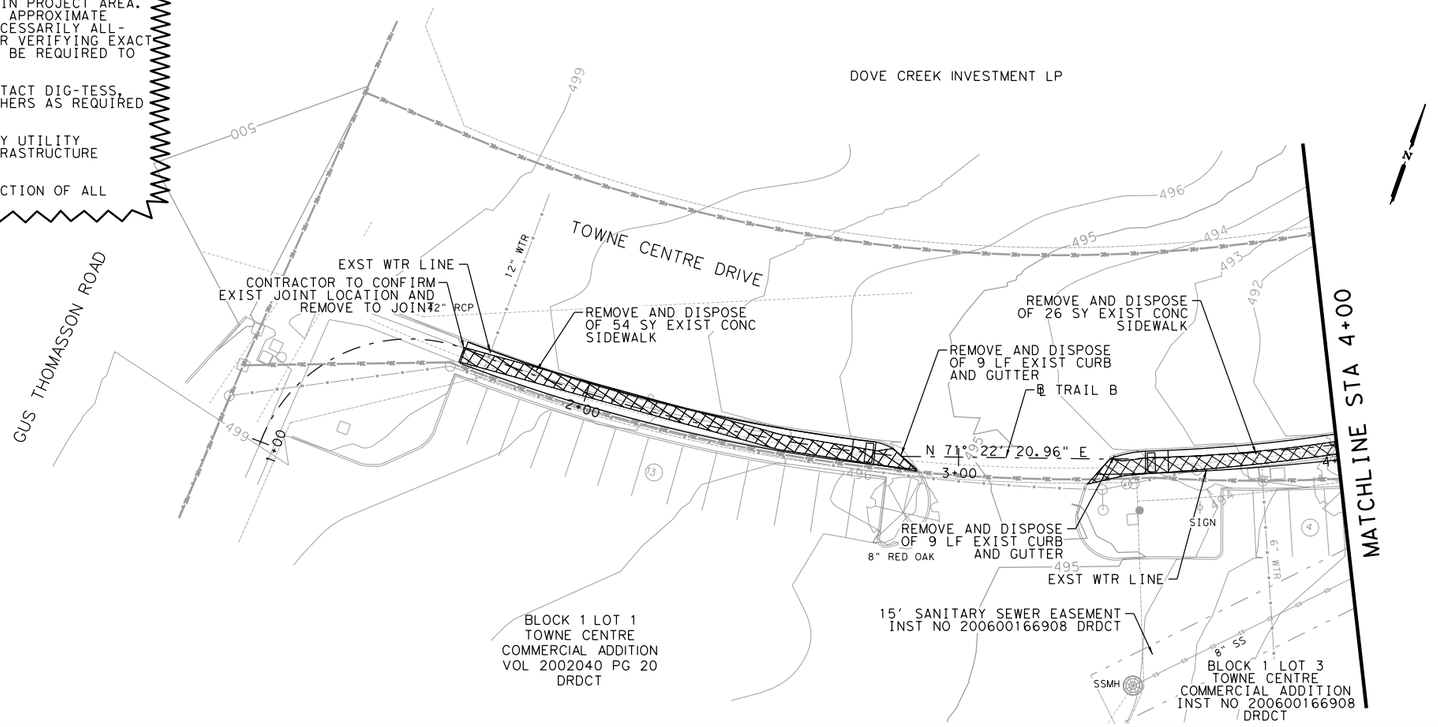

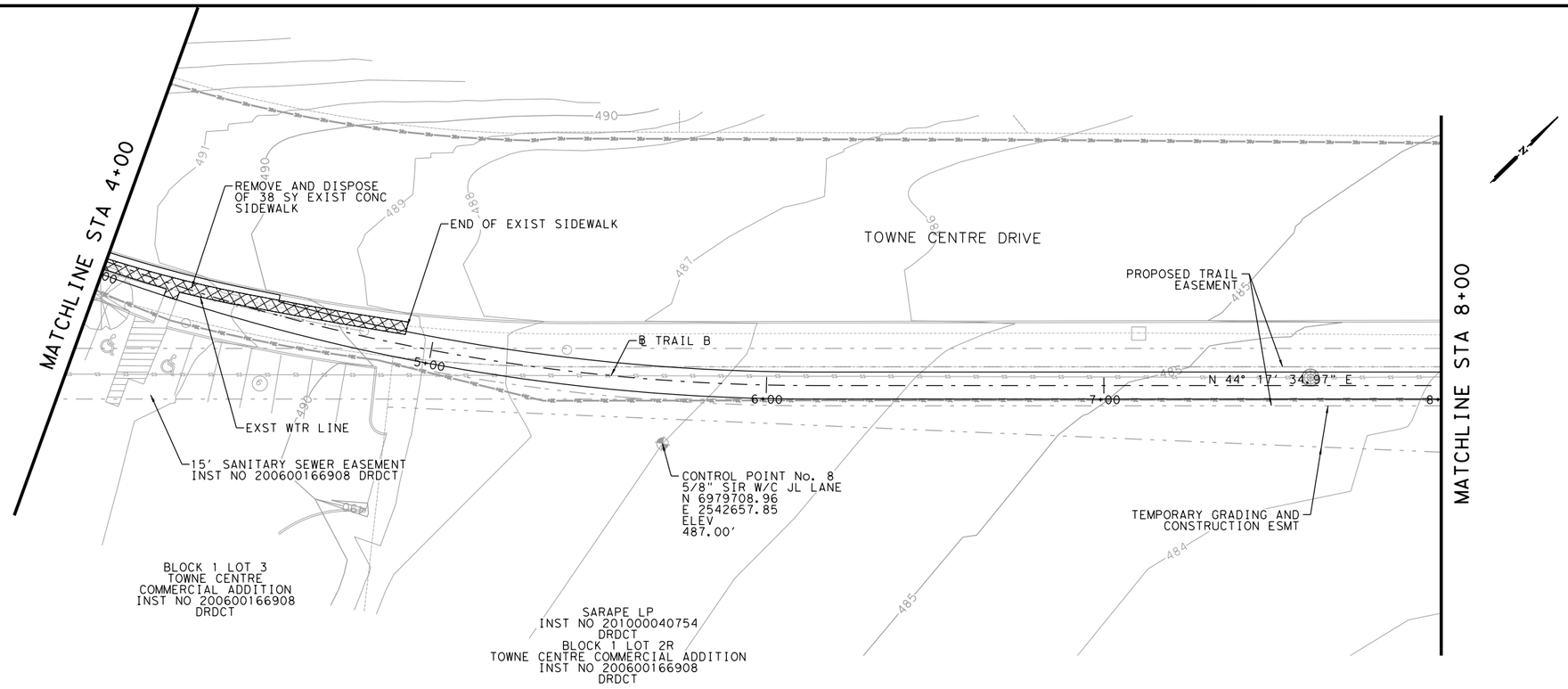

LEGEND

- PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- EXIST TREE TO BE REMOVED
- REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

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2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. CALL CITY OF MESQUITE TRAFFIC ENGINEERING DIVISION FOR TRAFFIC SYSTEMS LOCATE BEFORE ANY DEMOLITION OR CONSTRUCTION AT INTERSECTION. (972)216-6955

4. USE CAUTION AND PROTECT EXISTING SIGNAL EQUIPMENT (LOOP DETECTOR RUNS, CONDUIT, GROUND BOXES, SIGNAL CABINETS AND SIGNAL POLES) AT SIGNALIZED INTERSECTIONS. REPAIR ANY DAMAGE CAUSED DURING DEMOLITION.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B DEMOLITION PLAN

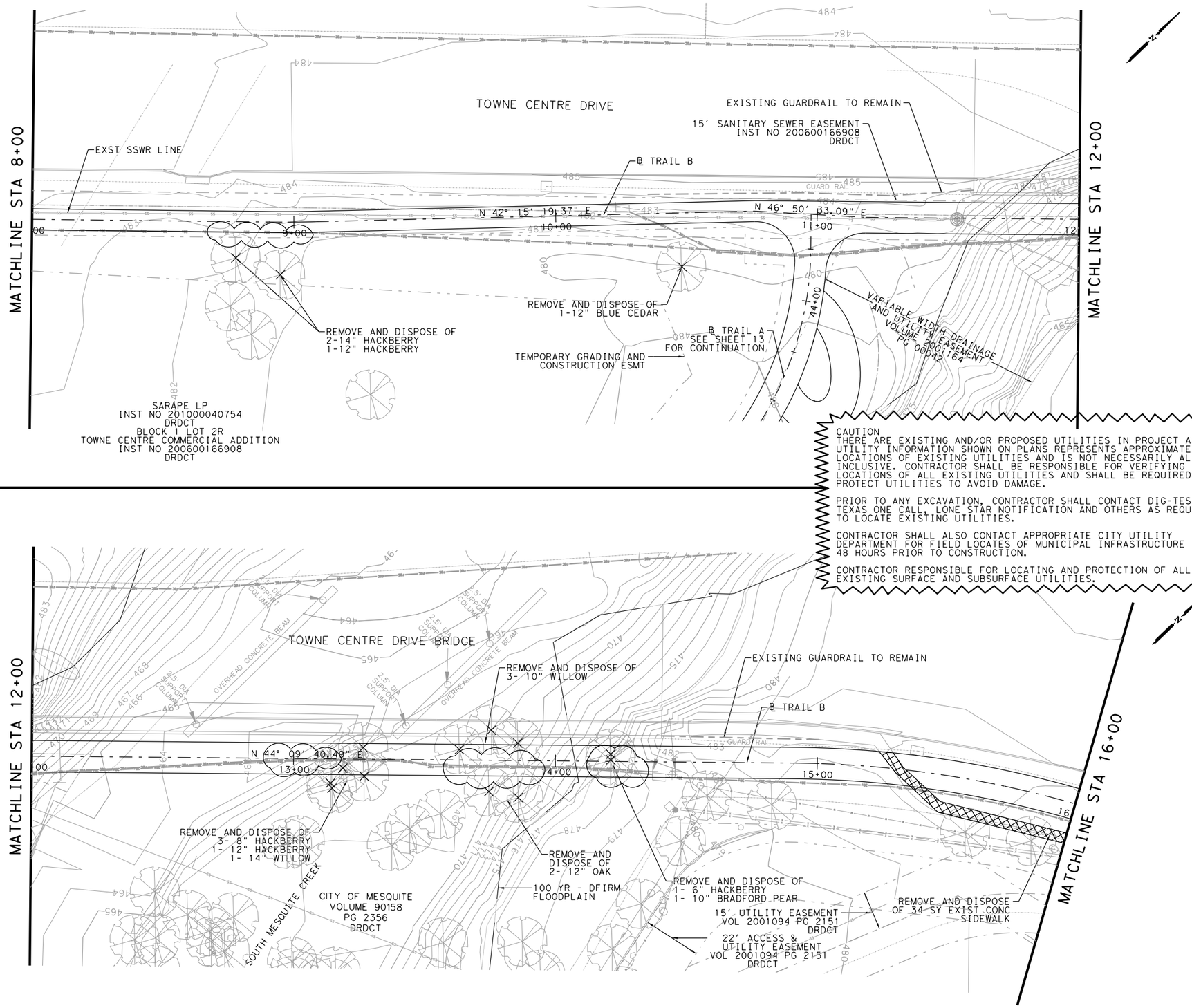
STA 1+00 TO STA 8+00

SCALE: 1" = 40' SHEET 1 OF 3

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 14

2163-01-TBDP01.dgn



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CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

LEGEND

- PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- EXIST TREE TO BE REMOVED
- REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

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STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

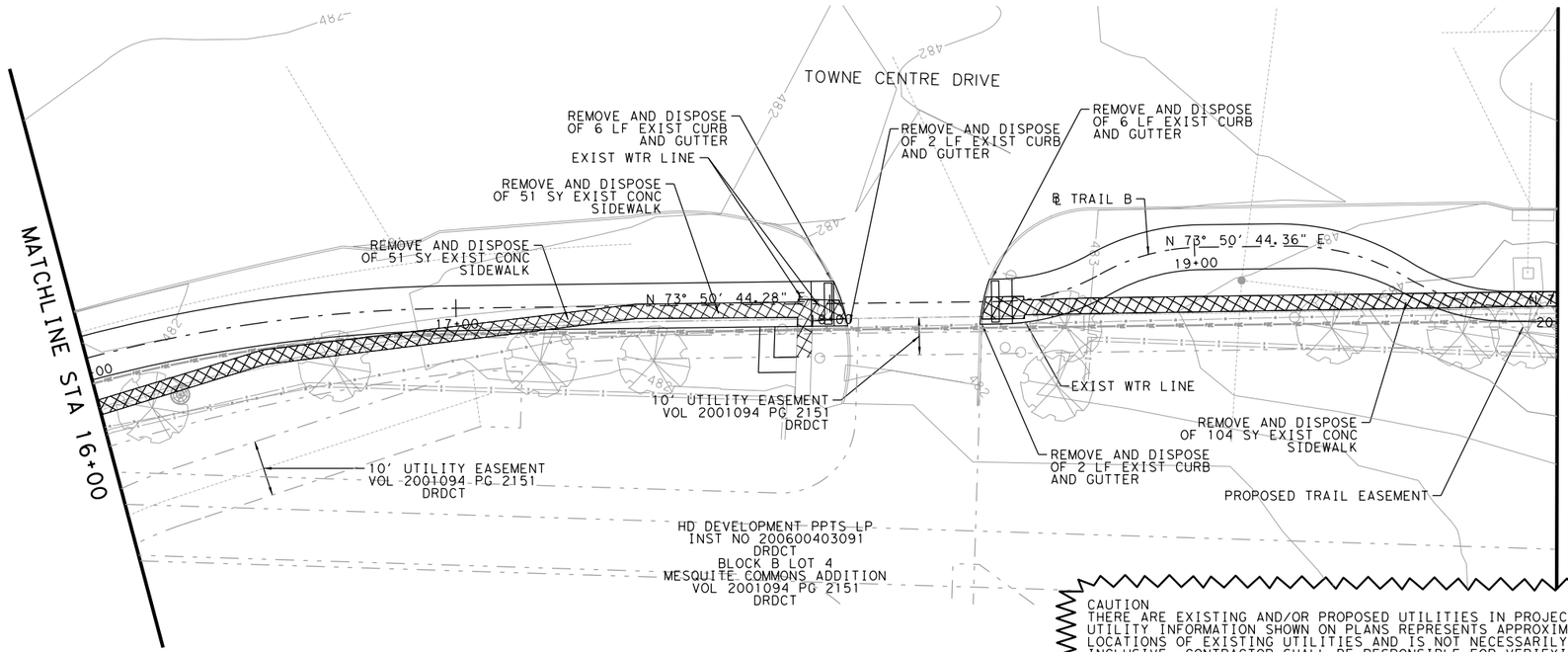
MESQUITE HERITAGE TRAIL, PHASE II

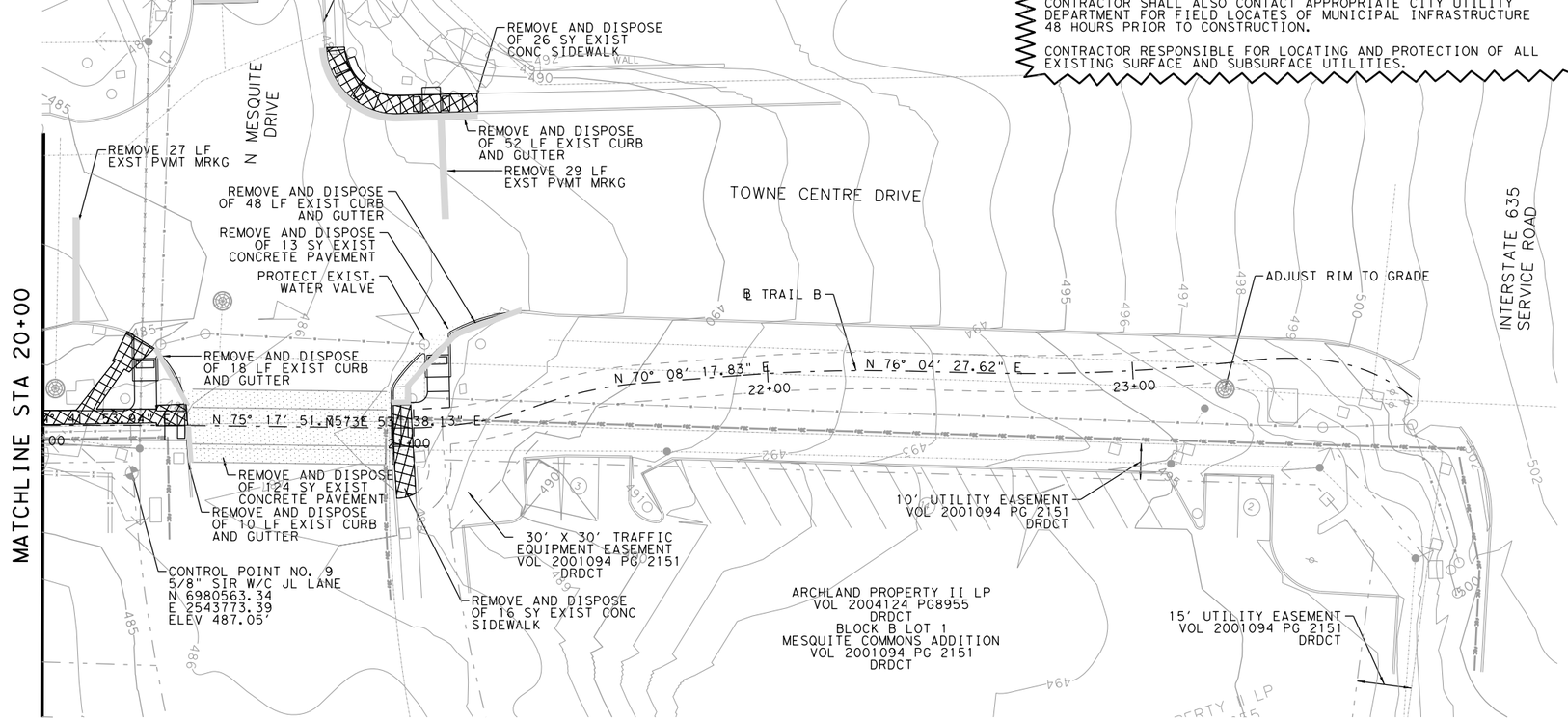
TRAIL B DEMOLITION PLAN STA 8+00 TO 16+00

SCALE: 1" = 40' SHEET 2 OF 3

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 15





CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

LEGEND

- PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- EXIST TREE TO BE REMOVED
- REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. CALL CITY OF MESQUITE TRAFFIC ENGINEERING DIVISION FOR TRAFFIC SYSTEMS LOCATE BEFORE ANY DEMOLITION OR CONSTRUCTION AT INTERSECTION. (972)216-6955

4. USE CAUTION AND PROTECT EXISTING SIGNAL EQUIPMENT (LOOP DETECTOR RUNS, CONDUIT, GROUND BOXES, SIGNAL CABINETS AND SIGNAL POLES) AT SIGNALIZED INTERSECTIONS. REPAIR ANY DAMAGE CAUSED DURING DEMOLITION.

5. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

6. CONTRACTOR MAY ONLY CLOSE ONE LANE AT A TIME CONSTRUCTING THE CROSSING OF TRAIL B AND NORTH MESQUITE DR.

7. USE HIGH EARLY STRENGTH (HES) CONCRETE PER BID ITEM.

8. NO CONSTRUCTION IN STREET FROM THANKSGIVING TO JANUARY 3RD OR BACK-TO-SCHOOL TAX-FREE WEEKEND. CONTRACTOR SHALL COORDINATE WITH CITY OF MESQUITE ON EXACT DATES.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

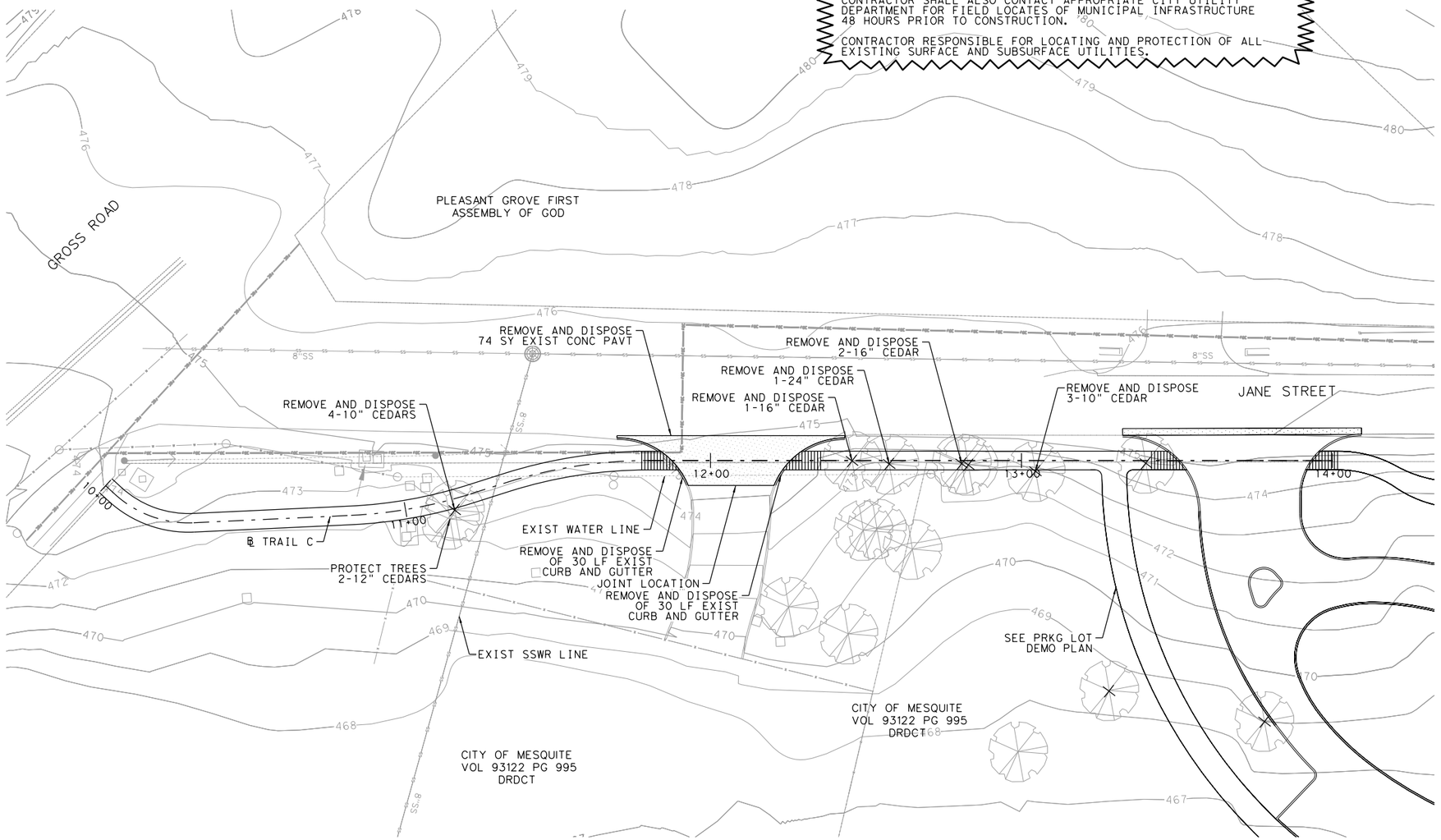
TRAIL B DEMOLITION PLAN

STA 16+00 TO END PROJECT

SCALE: 1" = 40' SHEET 3 OF 3

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 16



LEGEND

- 114+00 — PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- 15" YELLOW — EXIST TREE TO BE REMOVED
- W W — REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

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2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL C
DEMOLITION PLAN
ALTERNATE 3

SCALE: 1" = 40'

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CONTRACT NO. 2024-014 SHEET NO. 17

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CAUTION
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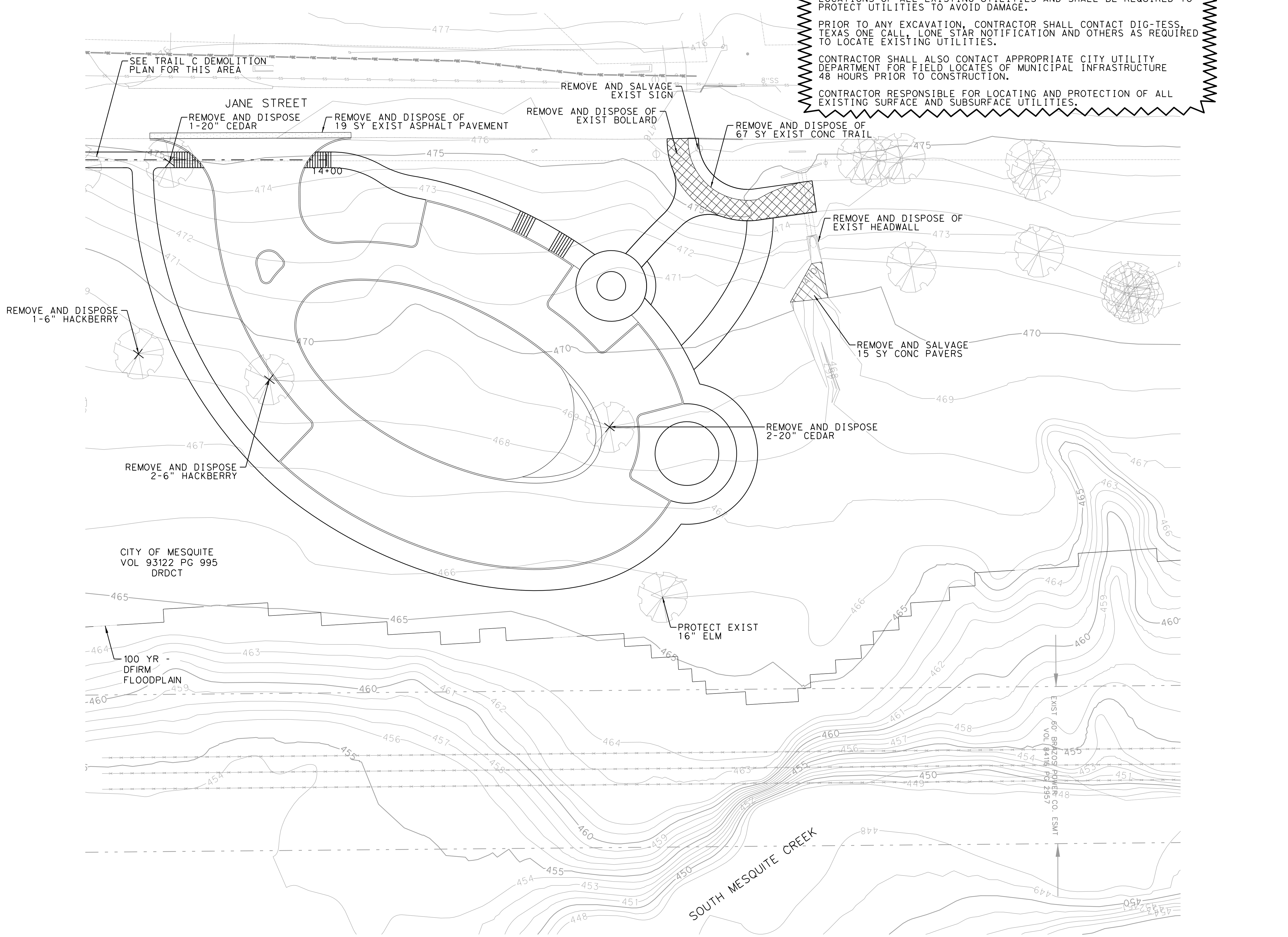

LEGEND

- 114+00 — PROPOSED TRAIL BASE LINE DEMOLITION
- REMOVE EXIST CONC SIDEWALK
- REMOVE EXIST GABIONS
- REMOVE EXIST CONC SLOPE PROTECTION
- REMOVE EXIST CONC PAVEMENT
- REMOVE EXIST CONC CURB & GUTTER
- EXIST TREE TO BE REMOVED
- REMOVE WATER LINE
- REMOVE STORM LINE

NOTES

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STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

PARKING LOT DEMOLITION PLAN
ALTERNATE 1

SCALE: 1" = 40'

BGE, Inc.
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Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

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STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

SHEET OMITTED

SHEET OF

BGE, Inc.
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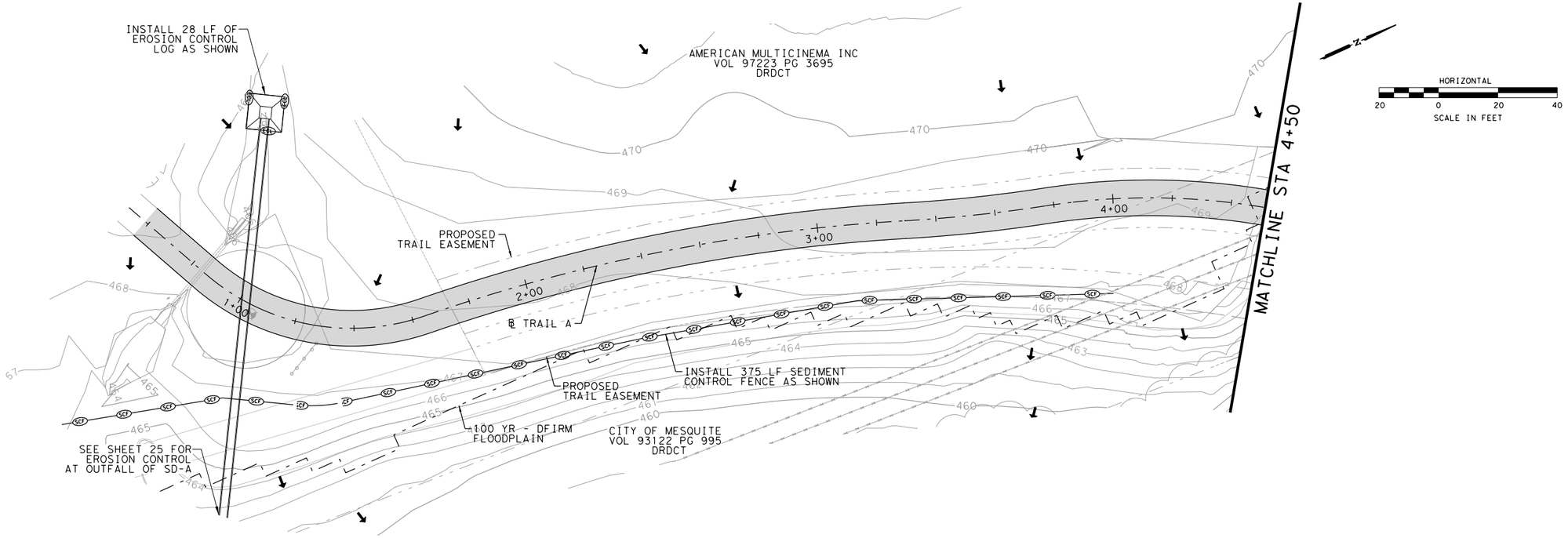
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 19



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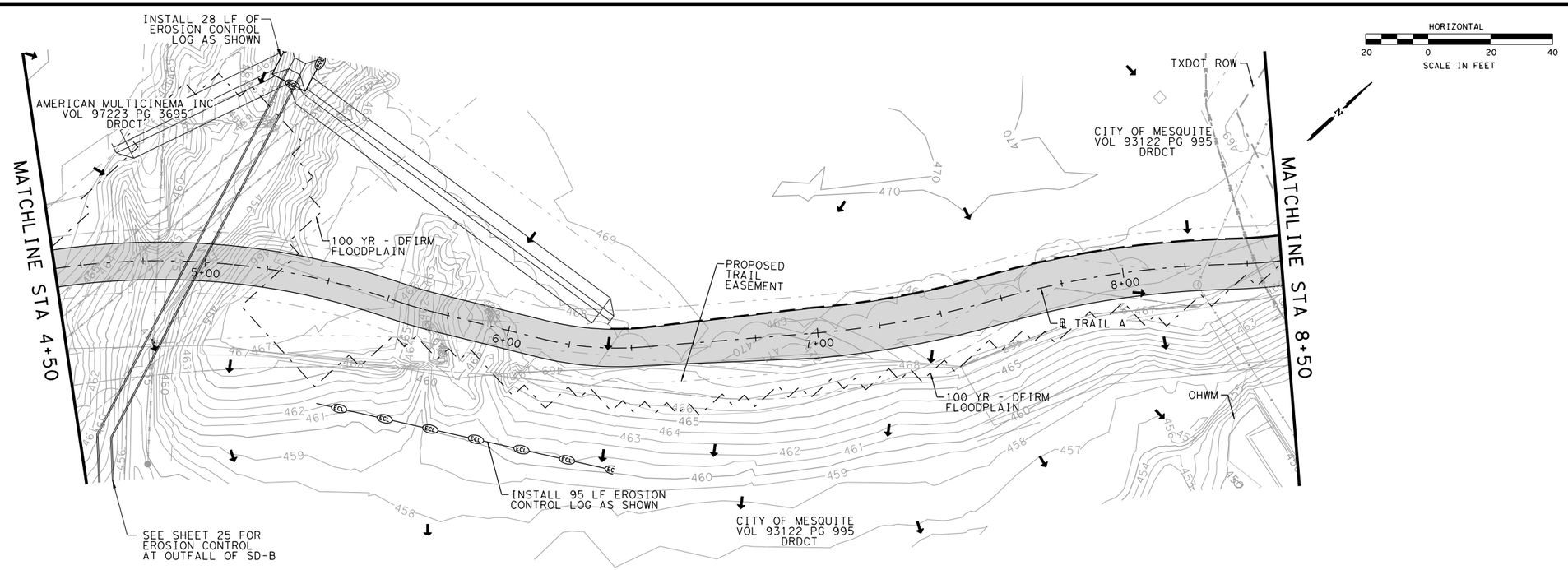

LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOGS

NOTES

1. SEE TXDOT TEMORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DETAILS FOR GUIDELINES AND ADDITIONAL NOTES ON APPLICATIONS.

2. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL ILLUMINATION, SURVEILLANCE AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

3. THE EROSION CONTROL SHOWN IS MINIMUM REQUIRED. ANY ADDITIONAL EROSION CONTROL REQUIRED WILL BE SUBSIDIARY TO OTHER PROJECT BID ITEMS AND PART OF CONTRACTOR'S SWPPP TO BE IN COMPLIANCE WITH CITY'S MS4 AND STATES' TCEQ REGULATIONS FOR THE DURATION OF THE PROJECT.

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A EROSION CONTROL

SCALE: 1" = 40' SHEET 1 OF 6

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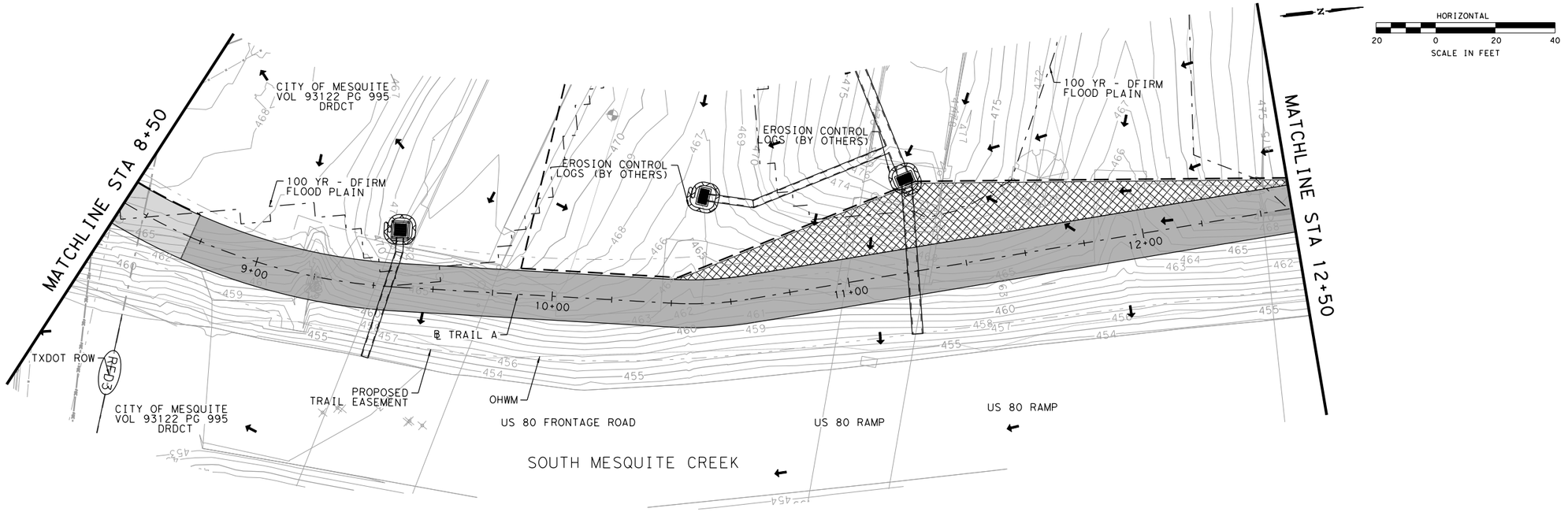
CONTRACT NO. 2024-014 SHEET NO. 20

2163-01-TA-ECP01.dgn



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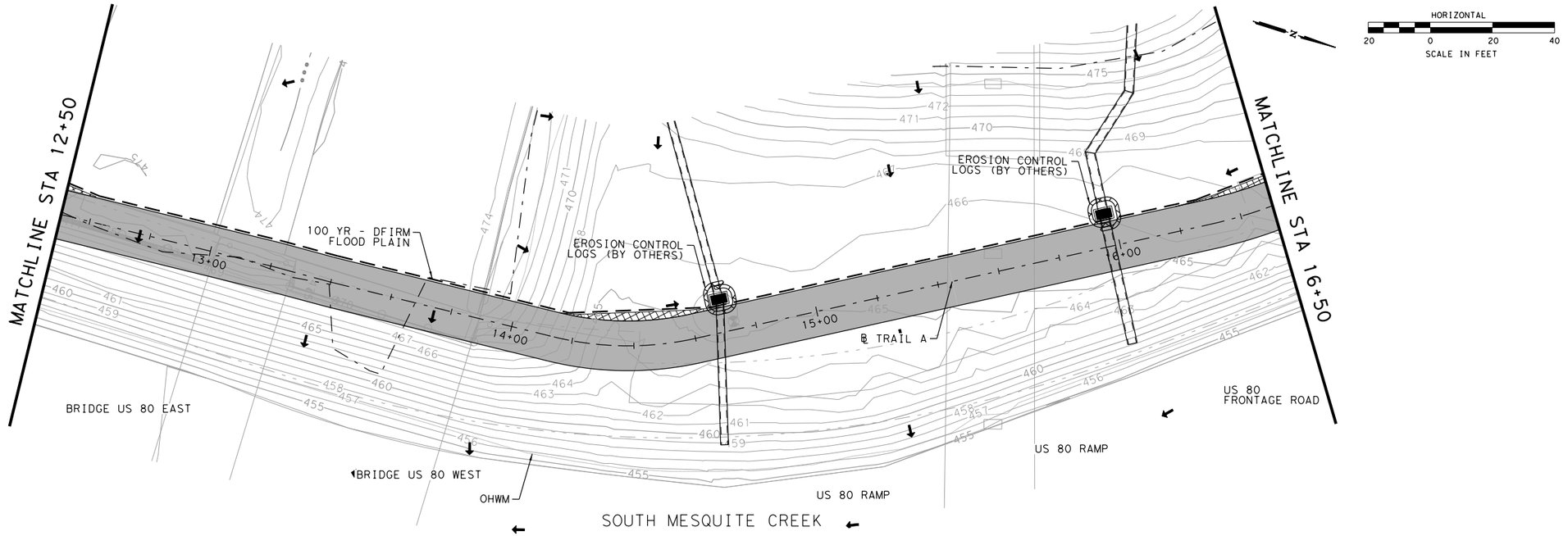

LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
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STATE OF TEXAS
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DATE	BY	REV	REVISION

MESQUITE
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A EROSION CONTROL

SCALE: 1" = 40' SHEET 2 OF 6

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TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 21

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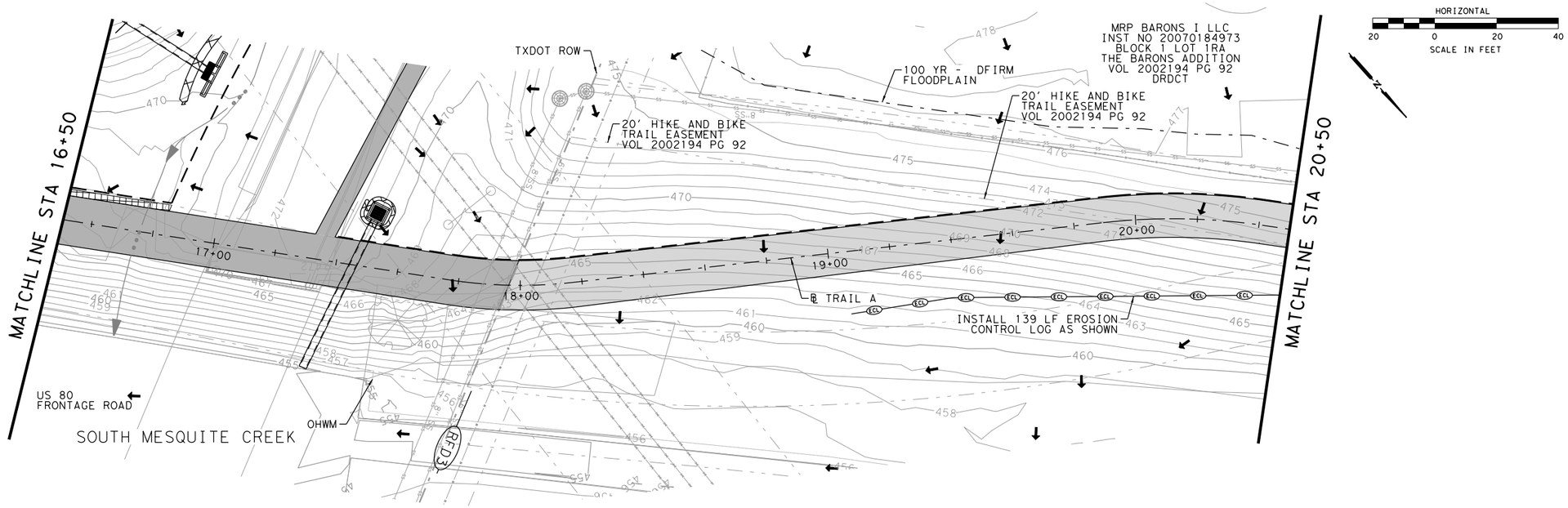

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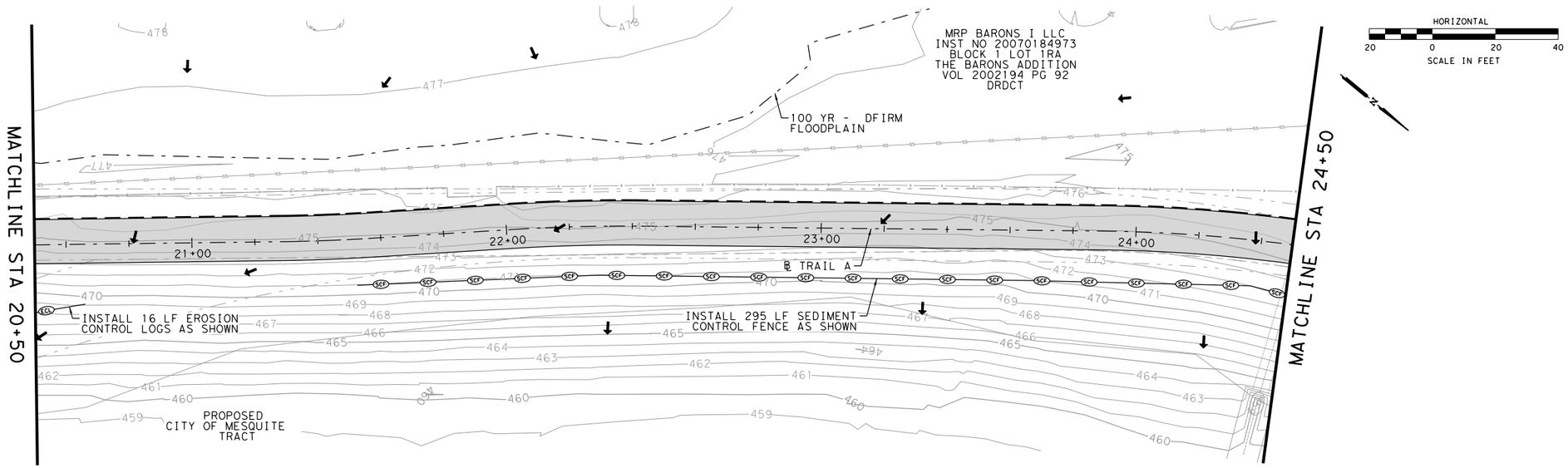
SCALE IN FEET

TRAIL A



HORIZONTAL
20 0 20 40
SCALE IN FEET

LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOGS

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STATE OF TEXAS
BRENNAN P FANNING
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LICENSED PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A EROSION CONTROL

SCALE: 1" = 40' SHEET 3 OF 6

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CONTRACT NO. 2024-014 SHEET NO. 22

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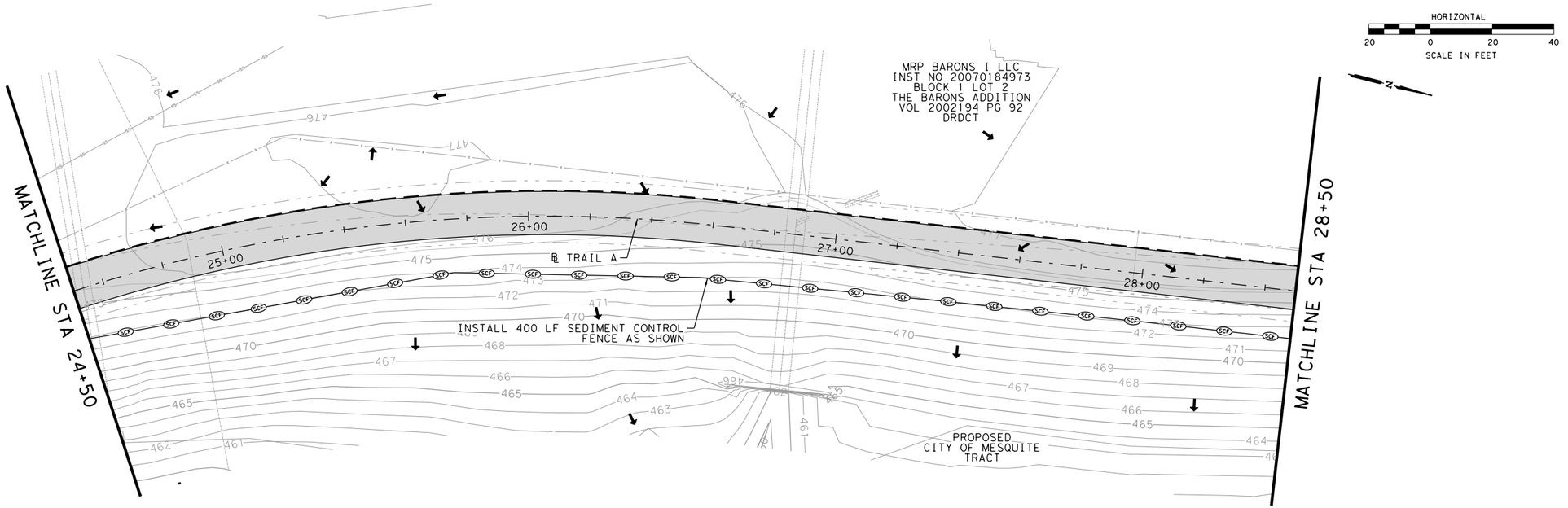

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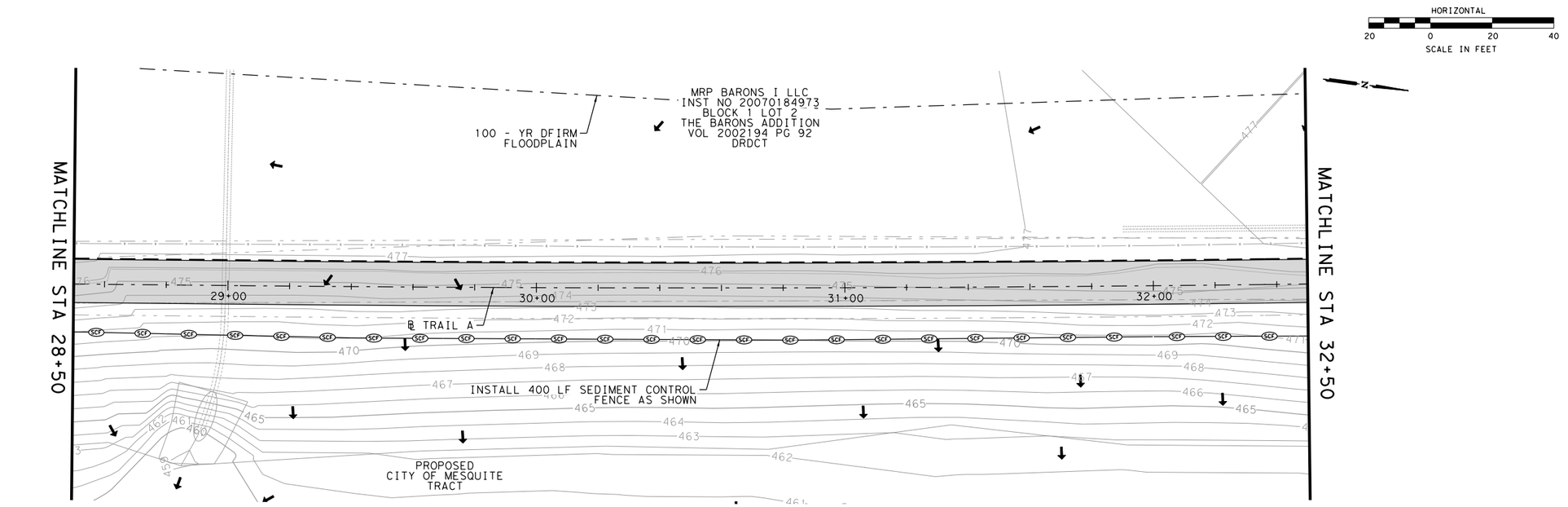

LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOGS

NOTES

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STATE OF TEXAS
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DATE	BY	REV	REVISION

MESQUITE
TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A EROSION CONTROL

SCALE: 1" = 40'

SHEET 4 OF 6

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CONTRACT NO. 2024-014

SHEET NO. 23

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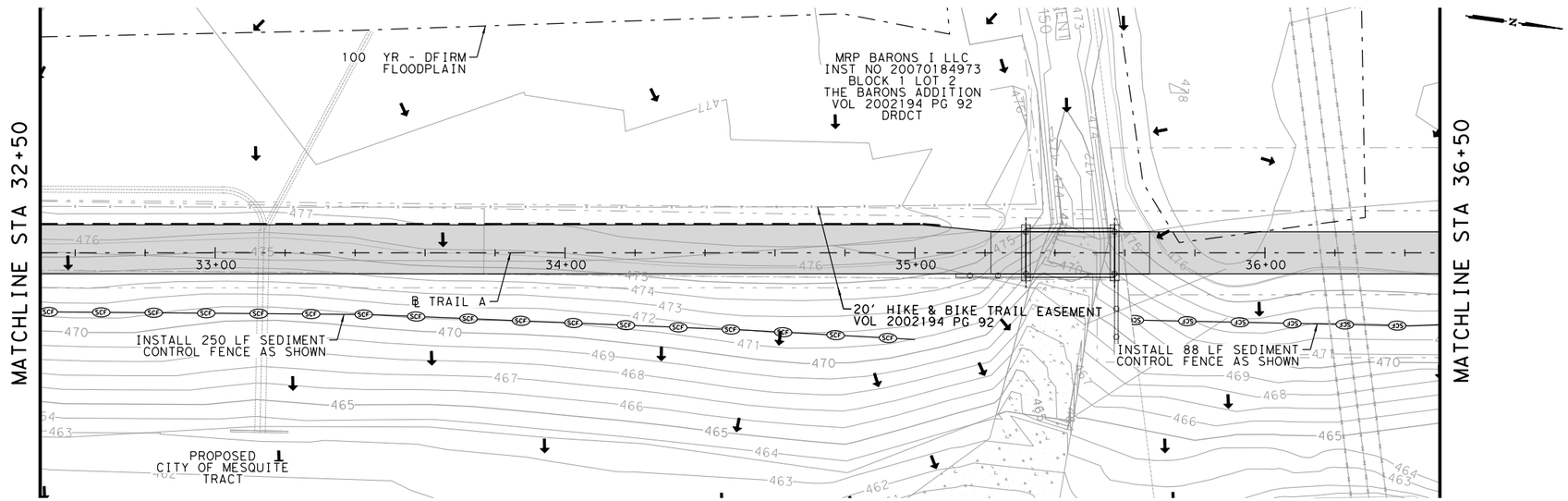

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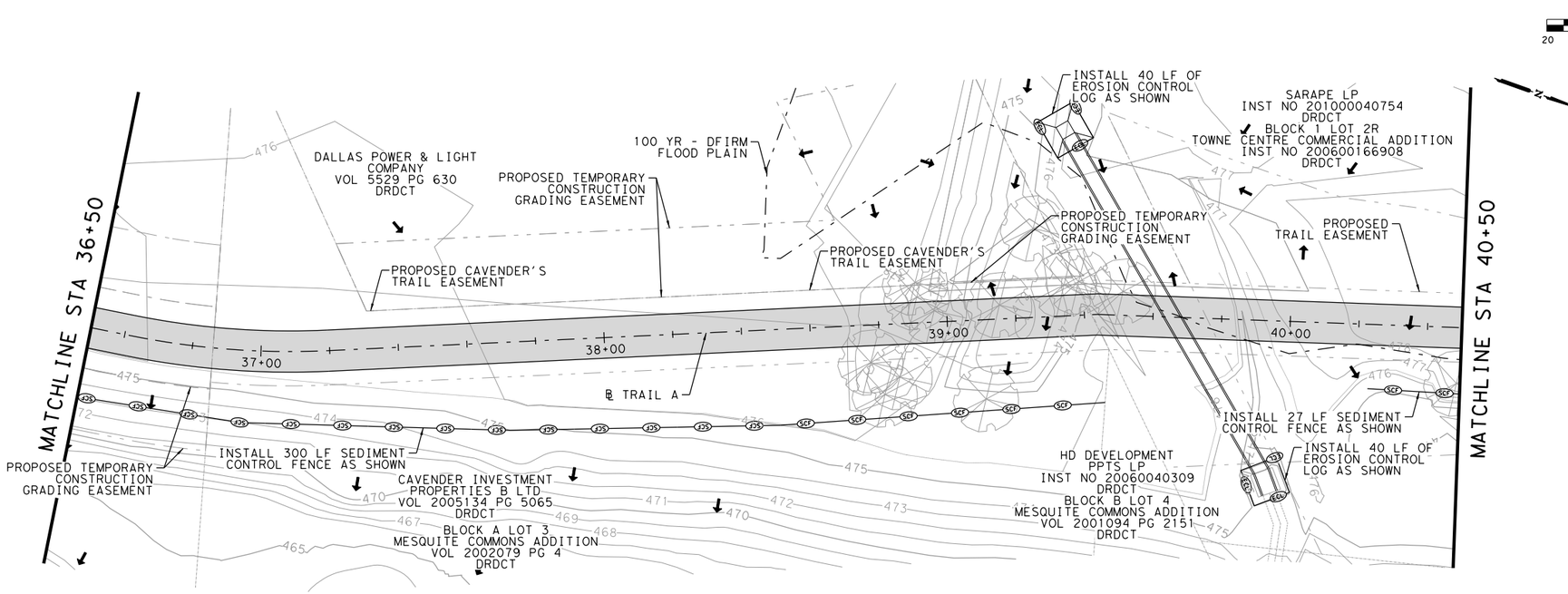

LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOGS

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STATE OF TEXAS
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11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A EROSION CONTROL

SCALE: 1" = 40' SHEET 5 OF 6

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TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 24

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HORIZONTAL
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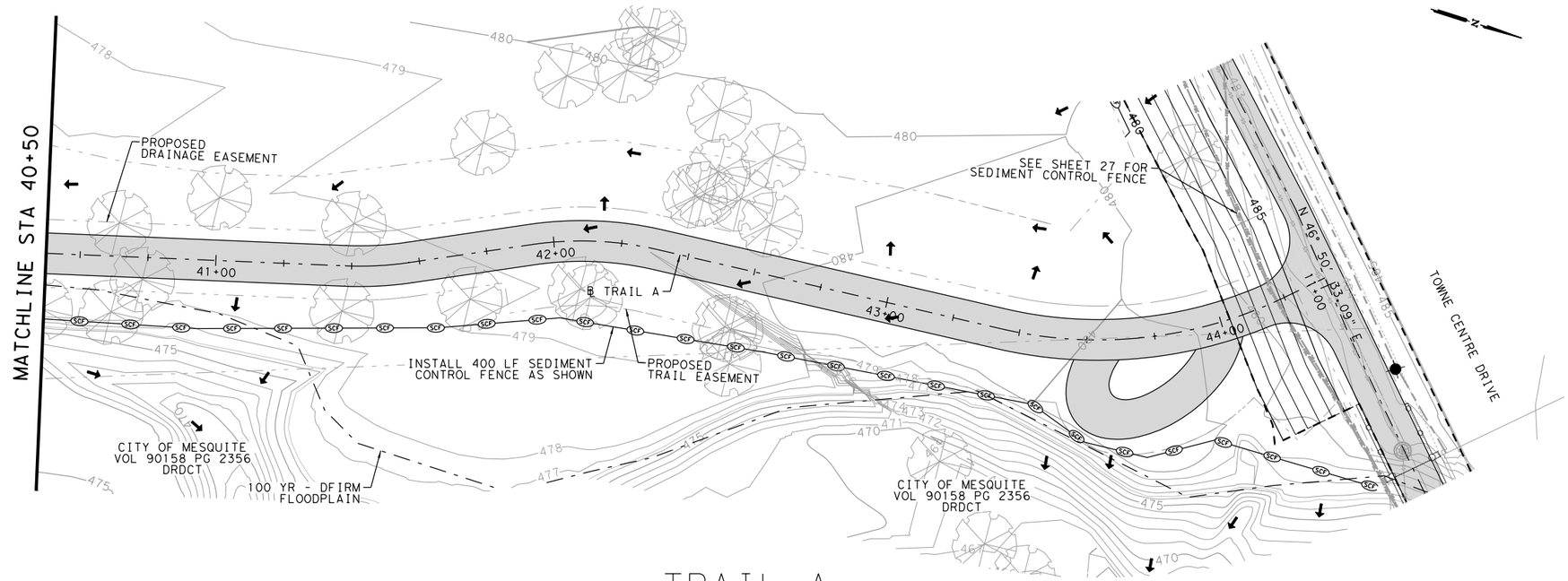
SCALE IN FEET



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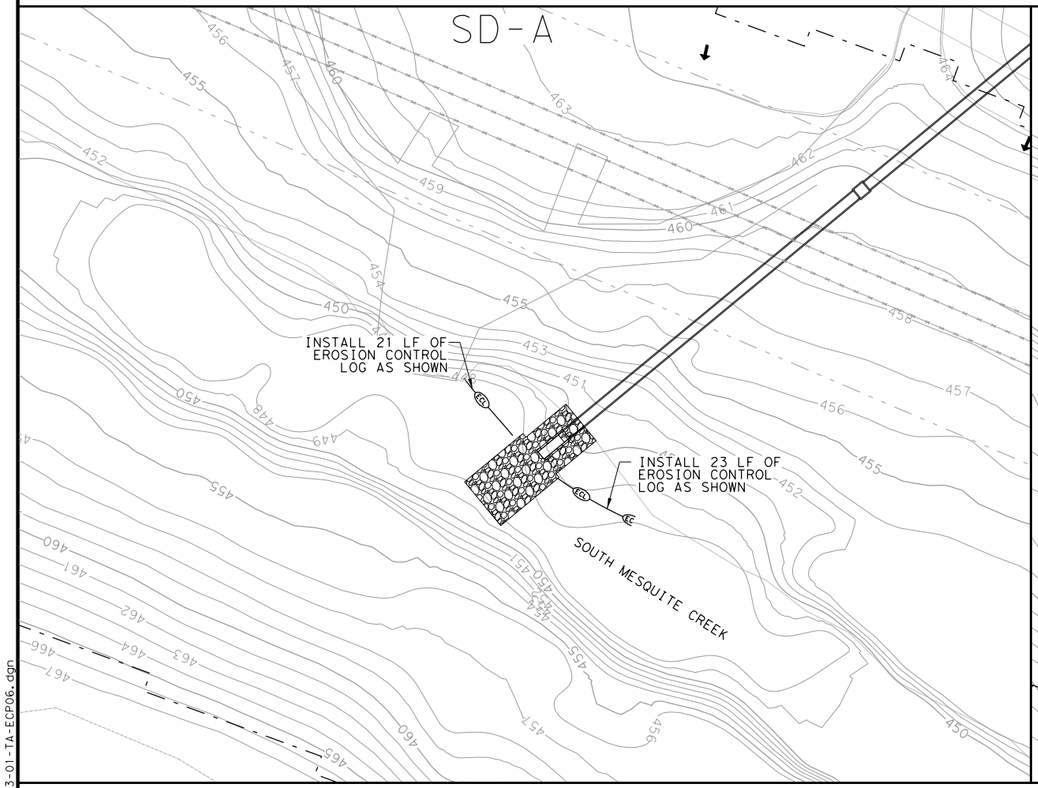

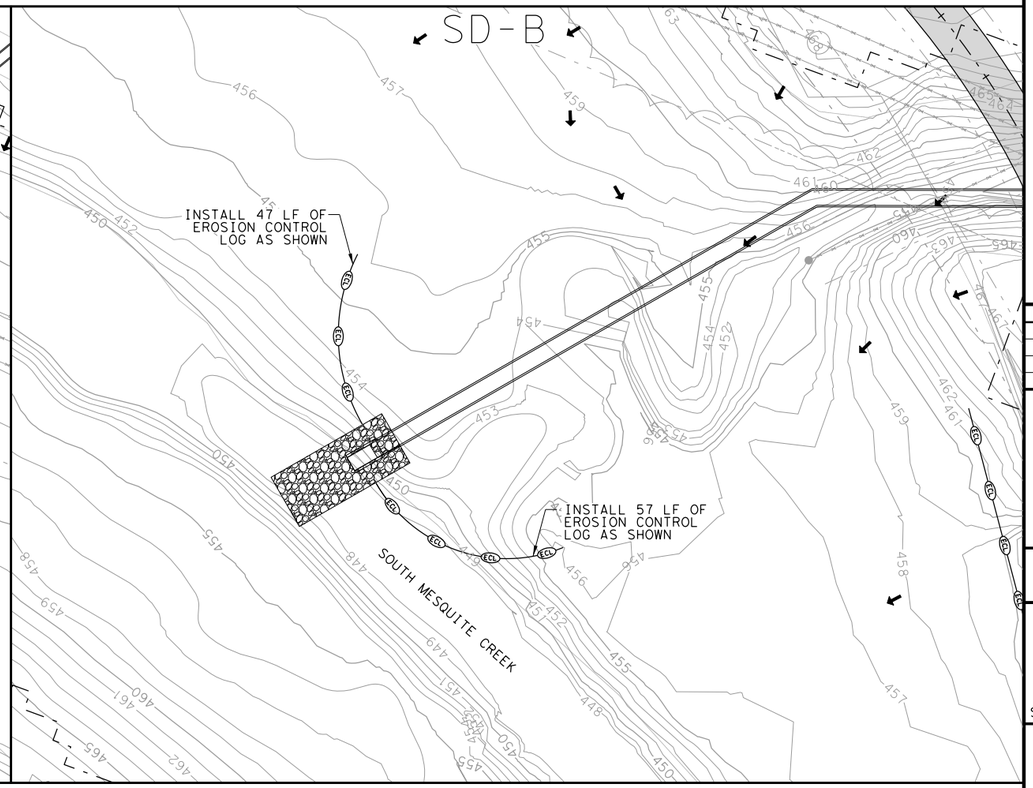

LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOGS

NOTES

1. SEE TXDOT TEMORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DETAILS FOR GUIDELINES AND ADDITIONAL NOTES ON APPLICATIONS.

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3. THE EROSION CONTROL SHOWN IS MINIMUM REQUIRED. ANY ADDITIONAL EROSION CONTROL REQUIRED WILL BE SUBSIDIARY TO OTHER PROJECT BID ITEMS AND PART OF CONTRACTOR'S SWPPP TO BE IN COMPLIANCE WITH CITY'S MS4 AND STATES' TCEQ REGULATIONS FOR THE DURATION OF THE PROJECT.

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

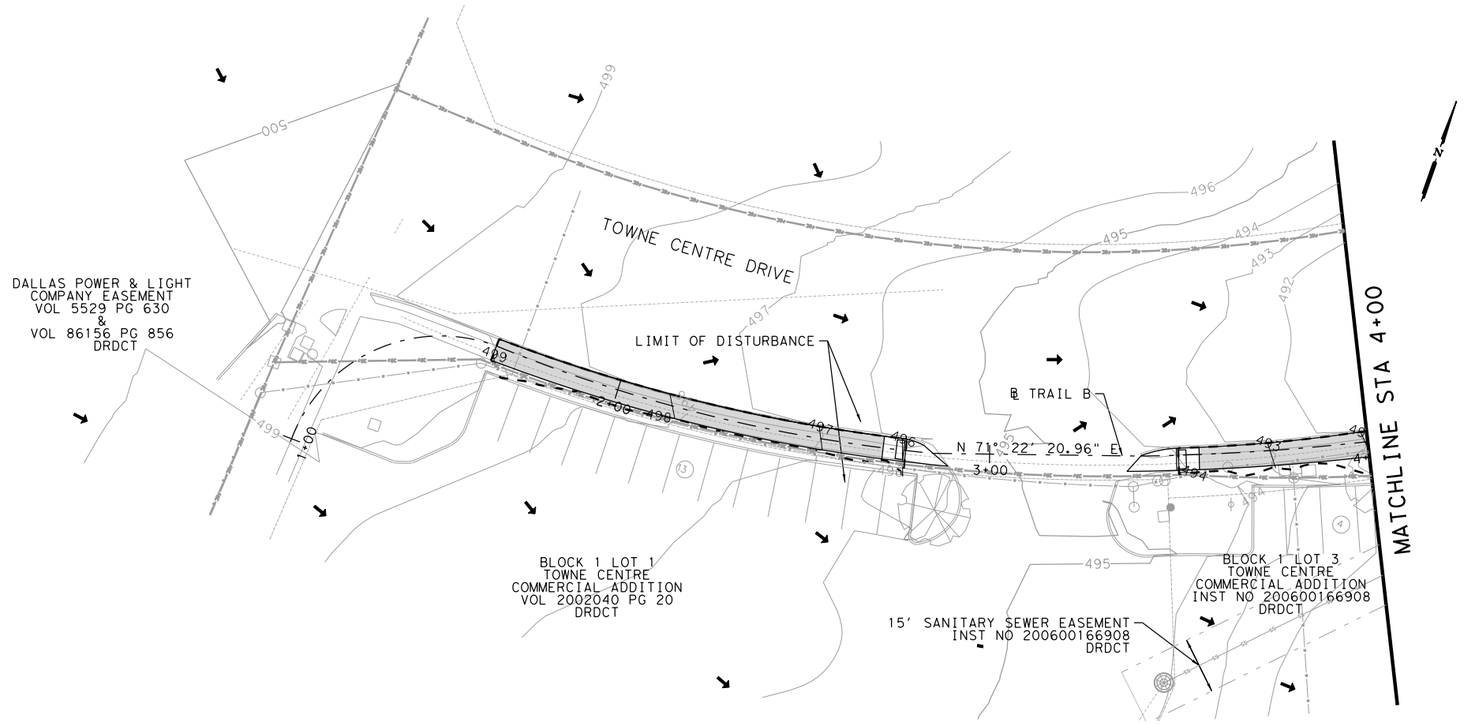
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A EROSION CONTROL

SCALE: 1" = 40' SHEET 6 OF 6

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 25



LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE

NOTES

1. SEE TXDOT TEMORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DETAILS FOR GUIDELINES AND ADDITIONAL NOTES ON APPLICATIONS.

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STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
EROSION CONTROL PLAN
BEGIN TO STA 8+00

SCALE: 1" = 40' SHEET 1 OF 3

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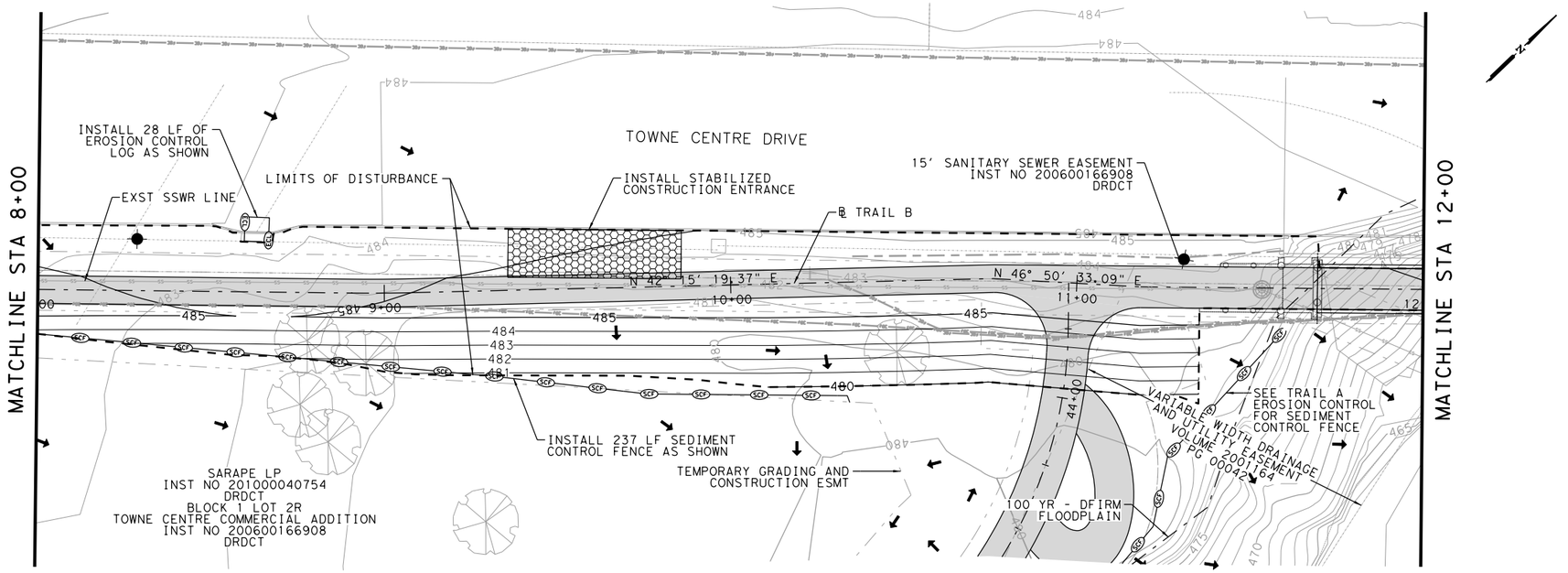
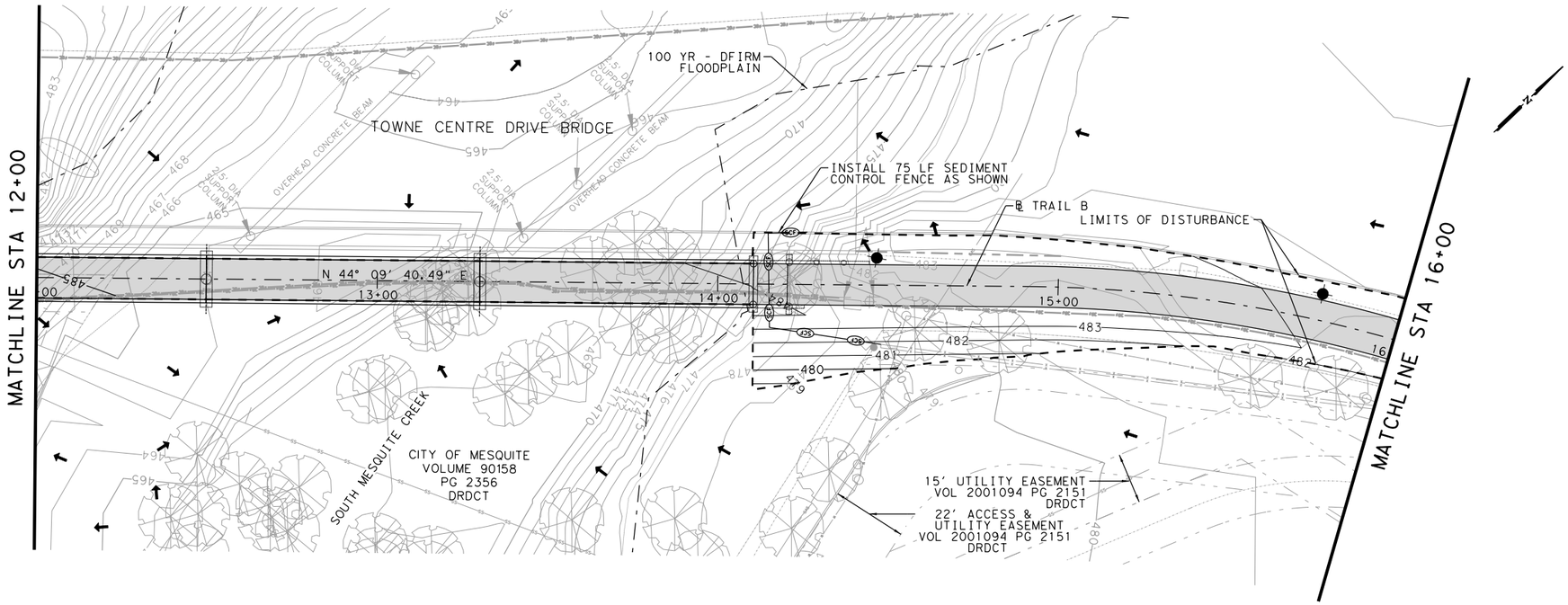
CONTRACT NO. 2024-014 SHEET NO. 26





LEGEND

- FLOW ARROWS
- (SCF) SEDIMENT CONTROL FENCE
- (ECL) EROSION CONTROL LOGS

NOTES

1. SEE TXDOT TEMORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DETAILS FOR GUIDELINES AND ADDITIONAL NOTES ON APPLICATIONS.

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STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
EROSION CONTROL PLAN
STA 8+00 TO STA 16+00

SCALE: 1" = 40' SHEET 2 OF 3

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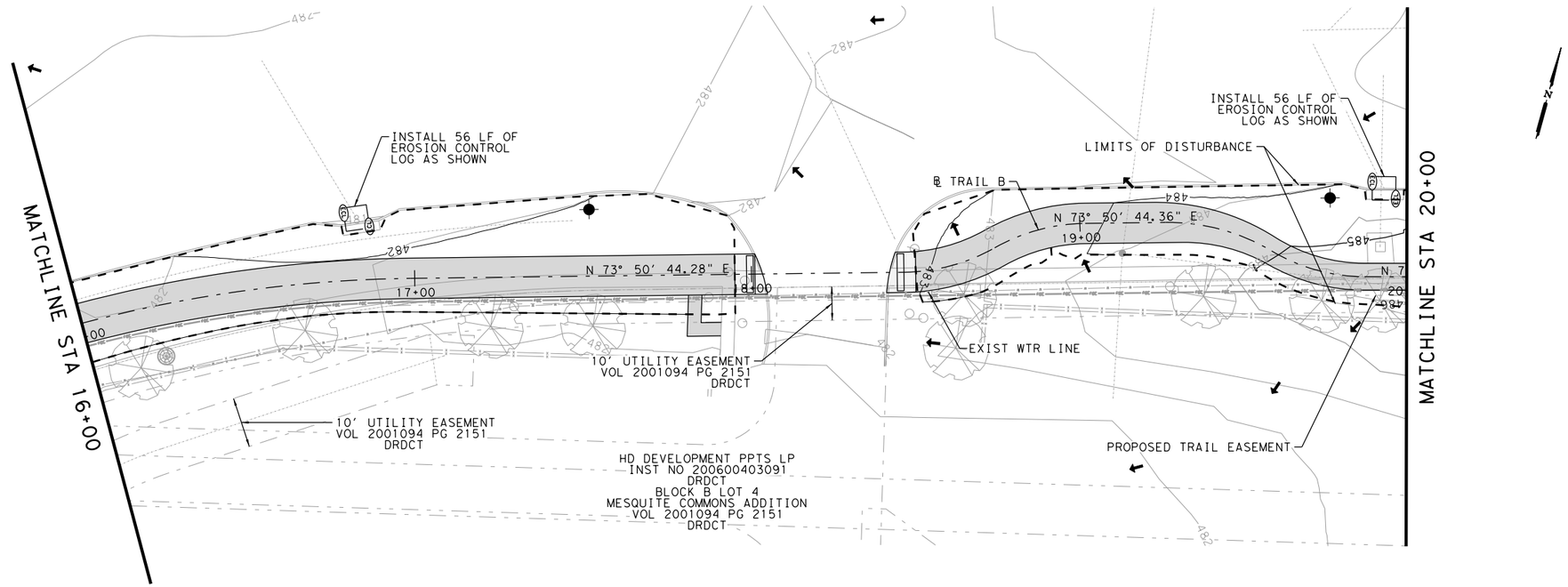
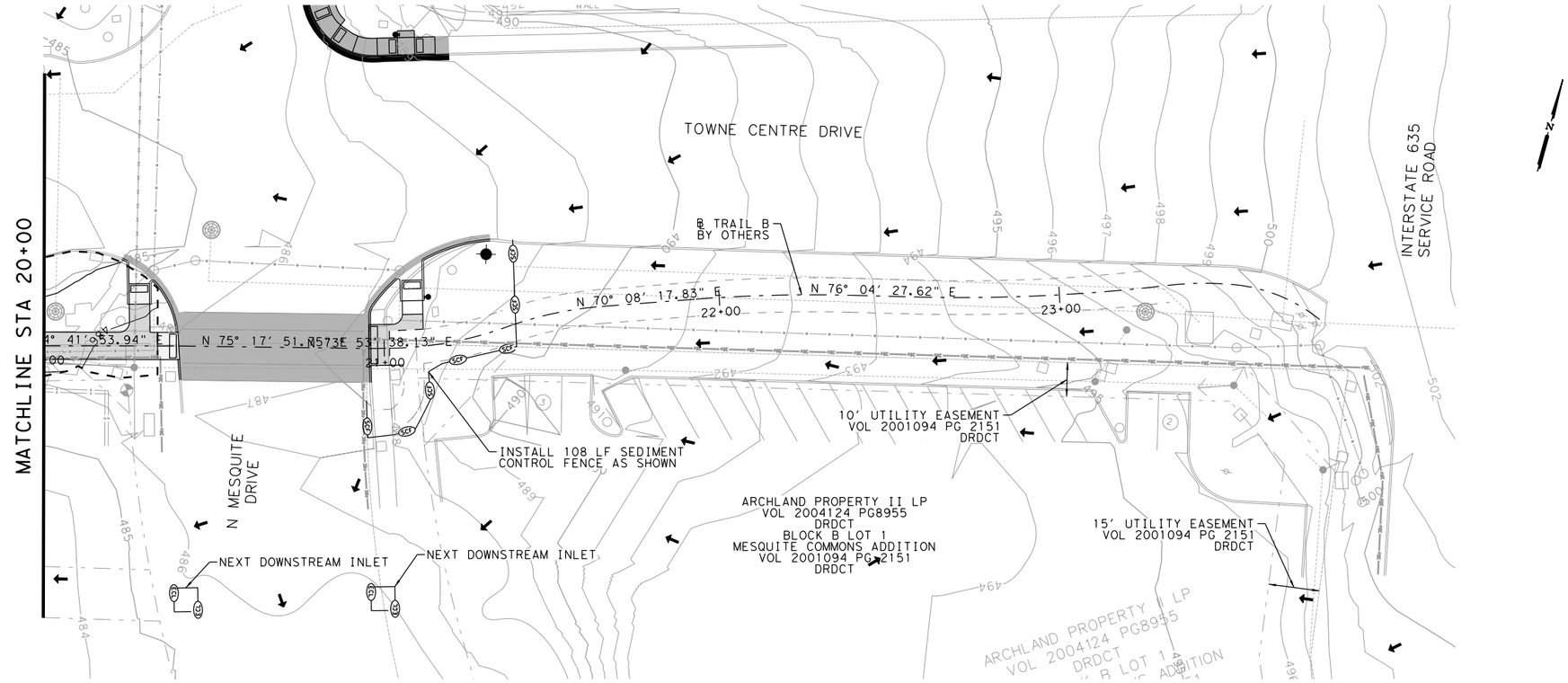
CONTRACT NO. 2024-014 SHEET NO. 27





LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOGS

NOTES

1. SEE TXDOT TEMORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DETAILS FOR GUIDELINES AND ADDITIONAL NOTES ON APPLICATIONS.

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STATE OF TEXAS
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11/22/2023

DATE	BY	REV	REVISION

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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
EROSION CONTROL PLAN
STA 16+00 TO END

SCALE: 1" = 40' SHEET 3 OF 3

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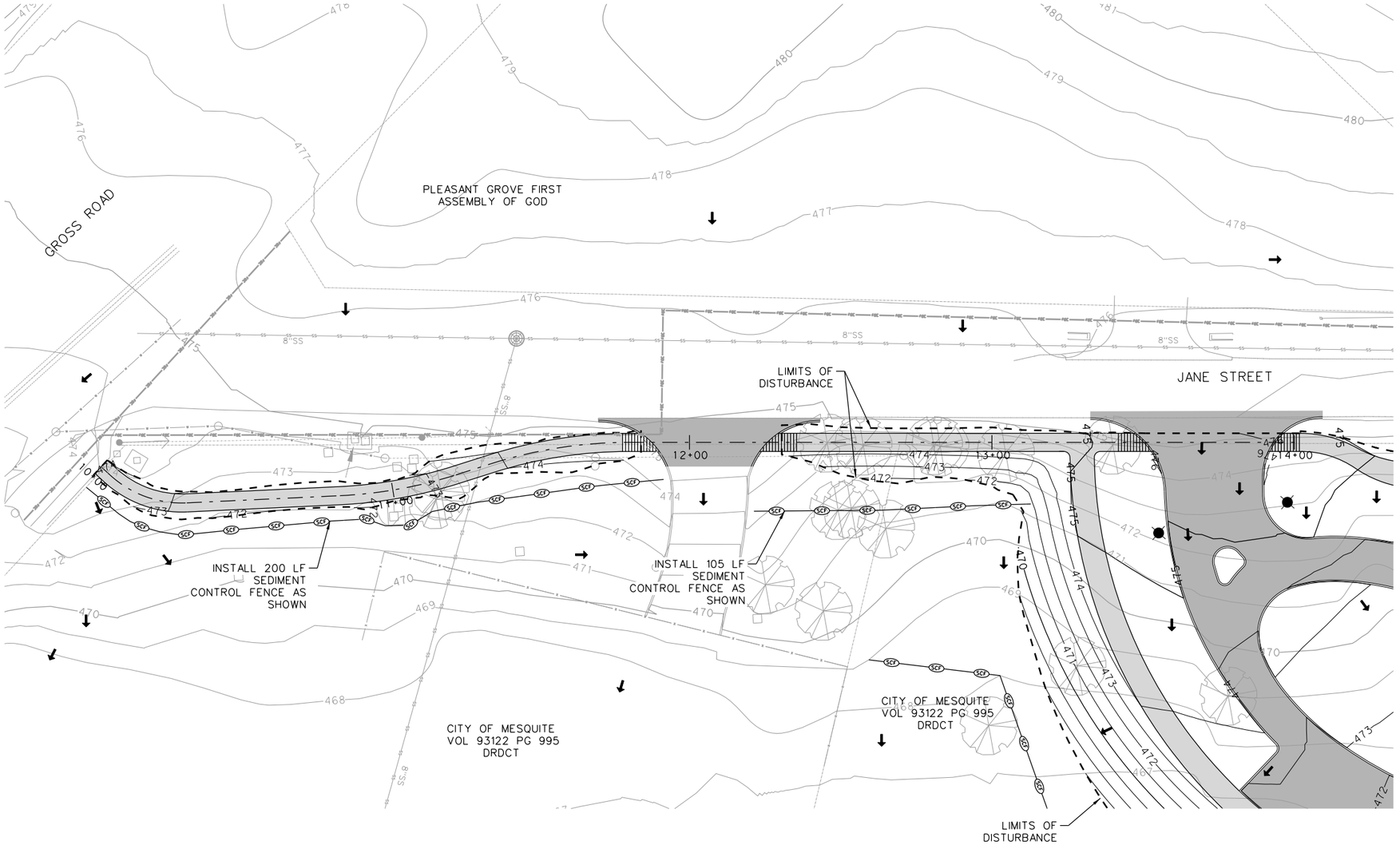
CONTRACT NO. 2024-014 SHEET NO. 28



LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE

NOTES

1. SEE TXDOT TEMORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DETAILS FOR GUIDELINES AND ADDITIONAL NOTES ON APPLICATIONS.

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL C
EROSION CONTROL PLAN
ALTERNATE 3

SCALE: 1" = 40'

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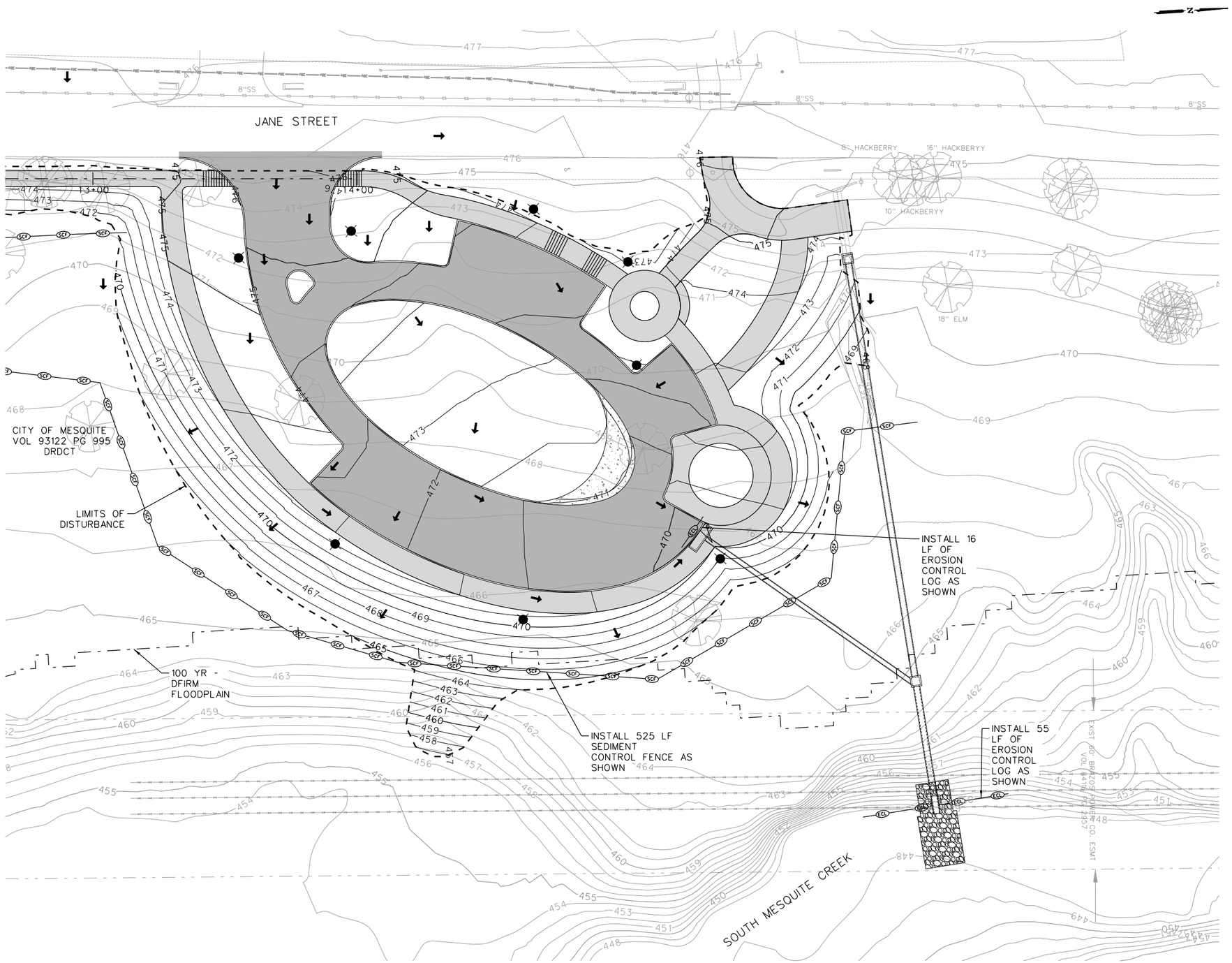
CONTRACT NO. 2024-014 SHEET NO. 29



LEGEND

- FLOW ARROWS
- SCF — SEDIMENT CONTROL FENCE
- ECL — EROSION CONTROL LOGS

NOTES

1. SEE TXDOT TEMORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DETAILS FOR GUIDELINES AND ADDITIONAL NOTES ON APPLICATIONS.

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

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MESQUITE HERITAGE TRAIL, PHASE II

PARKING AREA EROSION CONTROL PLAN

ALTERNATE 1

SCALE: 1" = 40'

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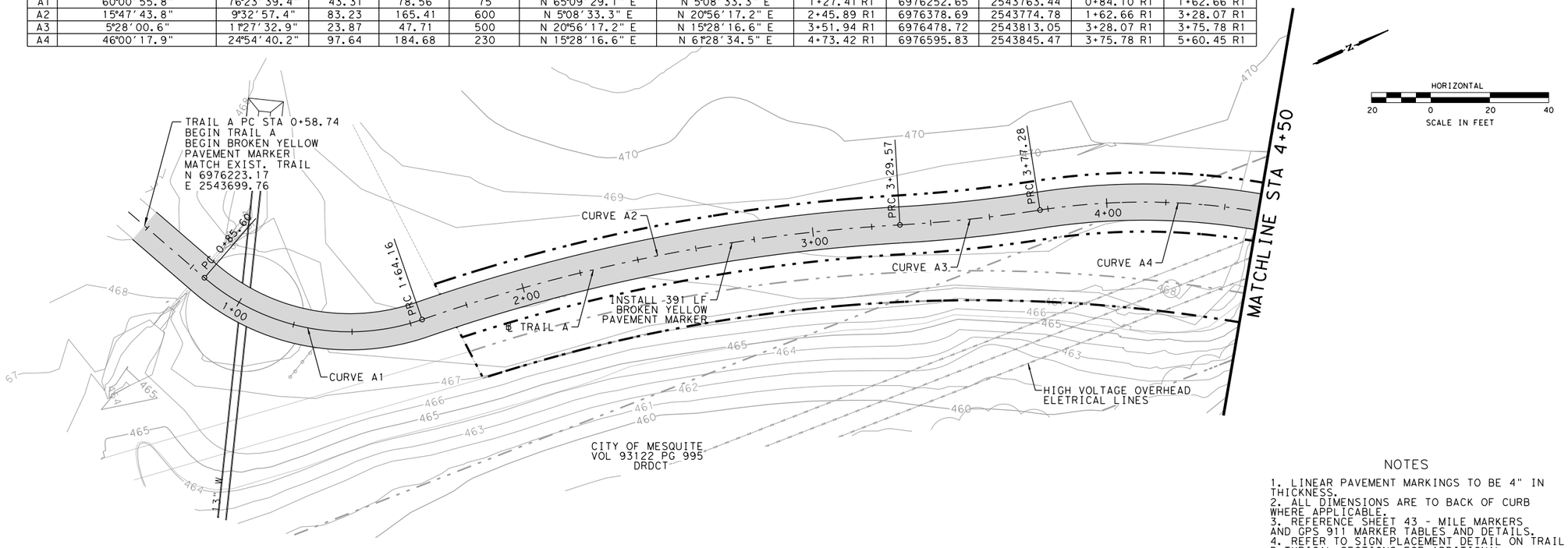
CONTRACT NO. 2024-014 SHEET NO. 30

2163-01-TC-ECP02.dgn

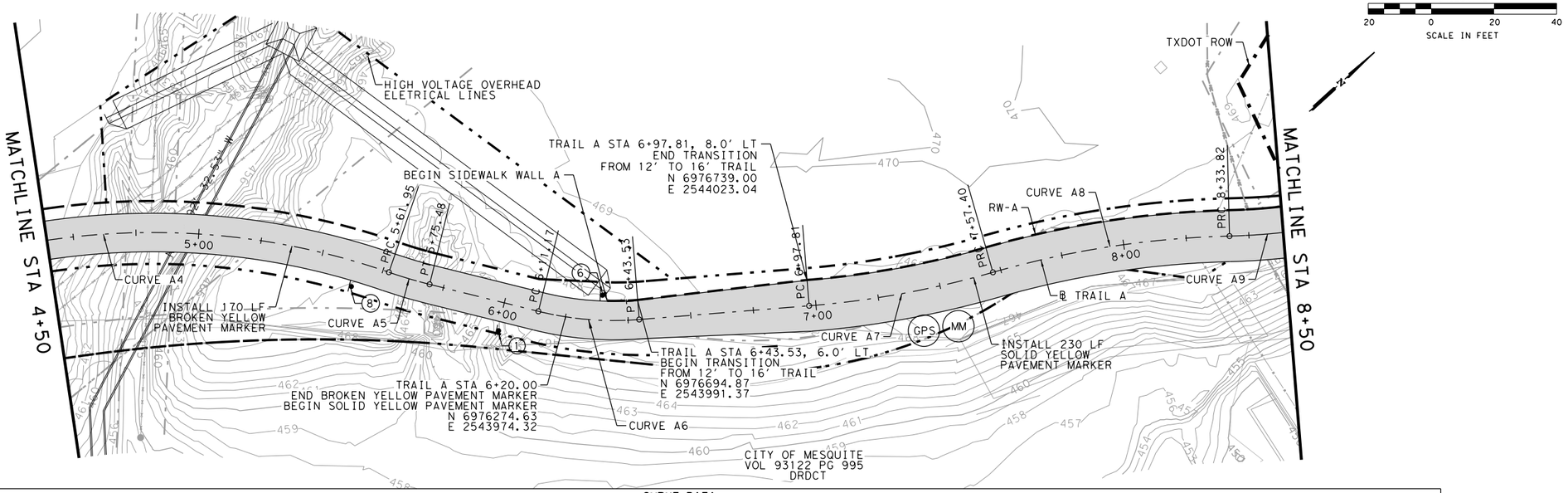
CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A1	60°00'55.8"	76°23'39.4"	43.31	78.56	75	N 65°09'29.1" E	N 5°08'33.3" E	1+27.41 R1	6976252.65	2543763.44	0+84.10 R1	1+62.66 R1
A2	15°47'43.8"	9°32'57.4"	83.23	165.41	600	N 5°08'33.3" E	N 20°56'17.2" E	2+45.89 R1	6976378.69	2543774.78	1+62.66 R1	3+28.07 R1
A3	5°28'00.6"	1°27'32.9"	23.87	47.71	500	N 20°56'17.2" E	N 15°28'16.6" E	3+51.94 R1	6976478.72	2543813.05	3+28.07 R1	3+75.78 R1
A4	46°00'17.9"	24°54'40.2"	97.64	184.68	230	N 15°28'16.6" E	N 61°28'34.5" E	4+73.42 R1	6976595.83	2543845.47	3+75.78 R1	5+60.45 R1



TRAIL A

NOTES

1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.
5. ALL SIGNS PER LATEST EDITION OF TMUTCD



CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT DIRECTION	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A5	5°09'58.7"	38°11'49.7"	6.77	13.53	150	N 61°28'34.5" E	N 56°18'35.8" E	5+67.22 R1	6976645.69	2543937.2	5+60.45 R1	5+73.98 R1
A6	18°32'18.7"	38°11'49.7"	24.48	48.53	150	N 56°18'35.8" E	N 37°46'17.1" E	6+32.28 R1	6976681.78	2543991.35	6+07.80 R1	6+56.34 R1
A7	11°22'40.5"	19°05'54.8"	29.89	59.57	300	N 37°46'17.1" E	N 26°23'36.6" E	7+26.58 R1	6976756.66	2544049.37	6+96.70 R1	7+56.27 R1
A8	14°44'15.7"	19°05'54.8"	38.8	77.17	300	N 26°23'36.6" E	N 4°07'52.3" E	7+95.07 R1	6976818.18	2544079.9	7+56.27 R1	8+33.44 R1
A9	32°51'52.6"	38°11'49.9"	44.24	86.04	150	N 4°07'52.3" E	N 8°15'59.7" E	8+85.56 R1	6976886.67	2544139.71	8+41.32 R1	9+27.36 R1

LEGEND

- GPS — GPS/911 EMERGENCY MARKER SIGN
- MM — MILE MARKER SIGN/MONUMENT
- 1 — W7-5, 18 x 18
- 2 — R5-3, 24 x 24 — NO MOTOR VEHICLES
- 3 — R1-1, 18 x 18 — STOP
- 4 — W5-4a, 18 x 18 — PATH NARROWS
- 5 — W11-2, 36 x 36; W16-9P, 24 x 12 — AHEAD
- 6 — OM3-L, 6 x 18
- 7 — OM3-R, 6 x 18
- 8 — W8-18bT, 18 x 18 — WHEN FLOODED TURN AROUND DON'T DROWN
- 9 — W2-2, 18 x 18
- EXISTING STREET SIGN
- PROPOSED STREET SIGN
- BOLLARD
- STOP — "STOP" PAVEMENT MARKING
- STOP AHEAD — "STOP AHEAD" PAVEMENT MARKING

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40' SHEET 1 OF 6

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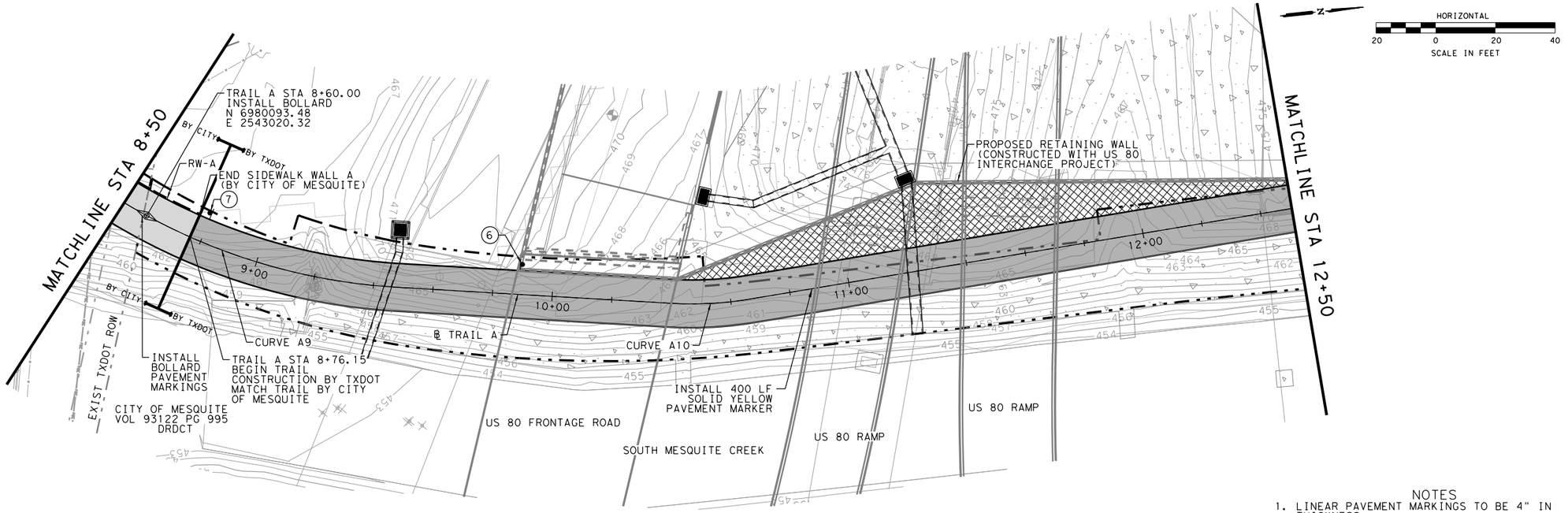
CONTRACT NO. 2024-014 SHEET NO. 31



CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A9	32°51′52.6"	38°11′49.9"	44.24	86.04	150	N 41°07′52.3" E	N 8°15′59.7" E	8+85.56 R1	6976886.67	2544139.71	8+41.32 R1	9+27.36 R1
A10	12°56′25.1"	28°38′52.4"	22.68	45.17	200	N 8°15′59.7" E	N 4°40′25.4" W	10+60.64 R1	6977062.34	2544165.23	10+37.95 R1	10+83.12 R1

TRAIL A

NOTES
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2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
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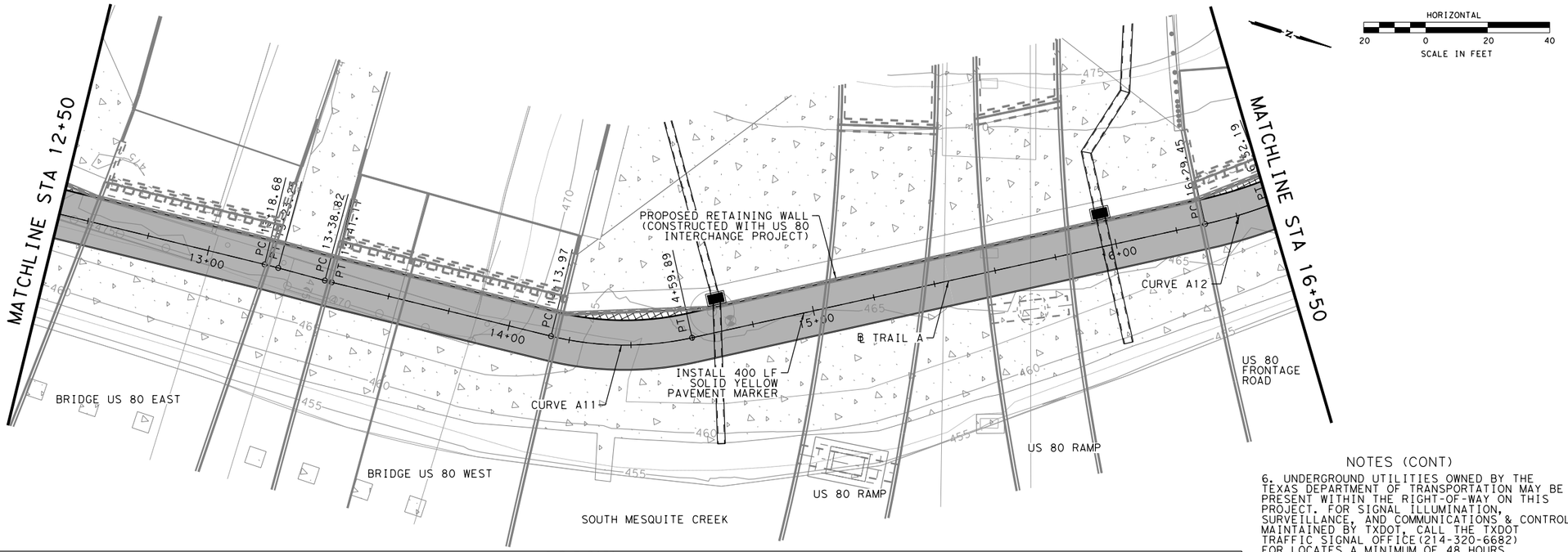
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.
5. ALL SIGNS PER LATEST EDITION OF TMUTCD



CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A11	25°36′03.1"	45°50′11.8"	28.4	55.85	125	N 4°40′25.4" W	N 30°16′28.5" W	14+37.34 R1	6977437.98	2544134.52	14+08.94 R1	14+64.79 R1
A12	9°45′09.8"	45°50′11.8"	10.66	21.28	125	N 30°16′28.5" W	N 40°01′38.3" W	16+51.26 R1	6977623.54	2544026.2	16+40.59 R1	16+61.87 R1

NOTES (CONT)
6. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION

LEGEND

GPS	GPS/911 EMERGENCY MARKER SIGN	
MM	MILE MARKER SIGN/MONUMENT	
1	W7-5 18 x 18	
2	R5-3 24 x 24	NO MOTOR VEHICLES
3	R1-1 18 x 18	STOP
4	W5-4a 18 x 18	PATH NARROWS
5	W11-2 36 x 36	
	W16-9P 24 x 12	AHEAD
6	OM3-L 6 x 18	(INSTALLED BY CITY OF MESQUITE)
7	OM3-R 6 x 18	(INSTALLED BY CITY OF MESQUITE)
8	W8-18bT 18 x 18	
9	W2-2 18 x 18	
		EXISTING STREET SIGN
		PROPOSED STREET SIGN
		BOLLARD
STOP		"STOP" PAVEMENT MARKING
STOP AHEAD		"STOP AHEAD" PAVEMENT MARKING

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40′ SHEET 2 OF 6

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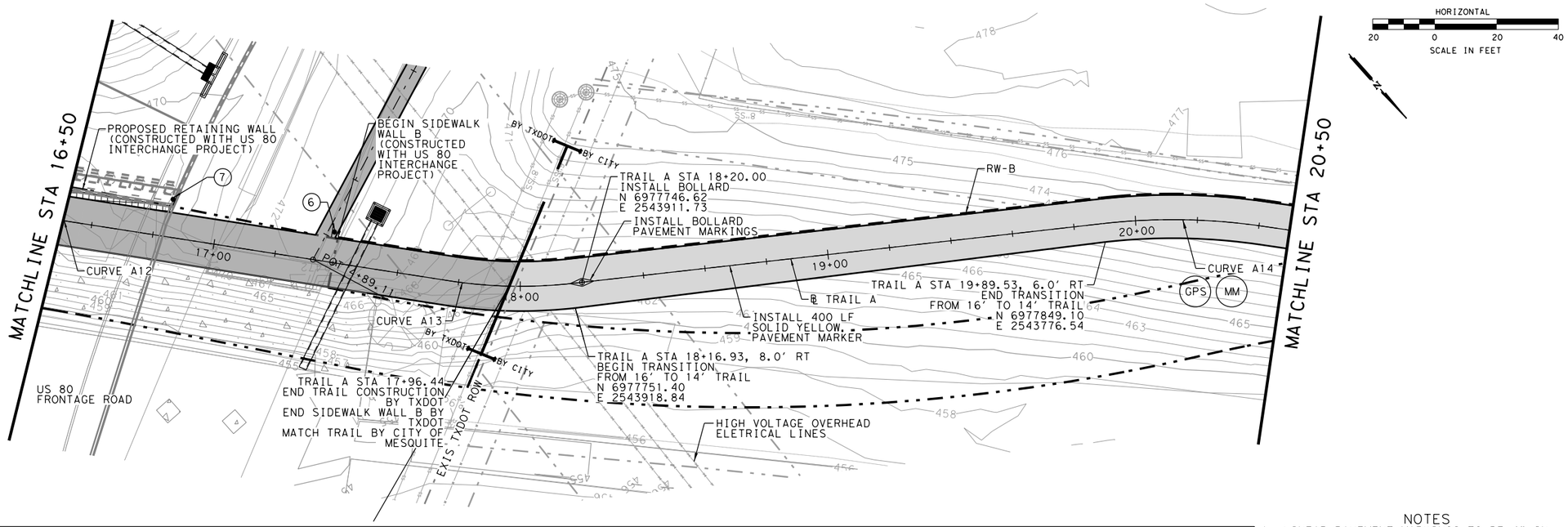
CONTRACT NO. 2024-014 SHEET NO. 32

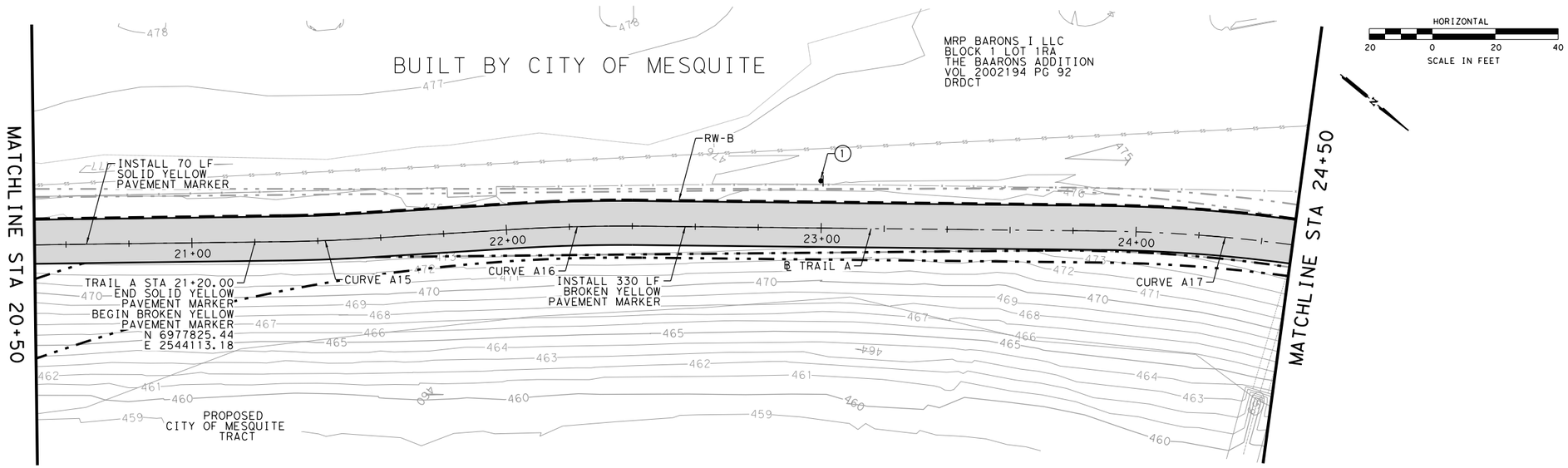
2163-01-TAPSD02.dgn



TRAIL A

CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A12	9°45'09.8"	45°50'11.8"	10.66	21.28	125	N 30°16'28.5" W	N 40°01'38.3" W	16+51.26 R1	6977623.54	2544026.2	16+40.59 R1	16+61.87 R1
A13	14°50'07.2"	45°50'11.8"	16.27	32.37	125	N 40°01'38.3" W	N 54°51'45.5" W	17+87.02 R1	6977727.54	2543938.85	17+70.74 R1	18+03.11 R1
A14	14°45'25.1"	28°38'52.4"	25.9	51.51	200	N 54°51'45.5" W	N 40°06'20.5" W	20+15.43 R1	6977859.1	2543751.91	19+89.53 R1	20+41.04 R1

NOTES
1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.
5. ALL SIGNS PER LATEST EDITION OF TMUTCD



CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A15	2°48'16.9"	10°13'53.0"	13.71	27.41	560	N 40°06'20.5" W	N 42°54'37.3" W	21+42.35 R1	6977956.4	2543669.96	21+28.64 R1	21+56.05 R1
A16	4°09'24.1"	10°13'53.0"	20.32	40.63	560	N 42°54'37.3" W	N 38°45'13.3" W	22+22.55 R1	6978015.14	2543615.36	22+02.22 R1	22+42.85 R1
A17	31°32'26.4"	11°33'05.6"	140.08	273.04	496	N 38°45'13.3" W	N 7°12'46.9" W	25+28.93 R1	6978254.08	2543423.56	23+88.85 R1	26+61.89 R1

NOTES (CONT)
6. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION

LEGEND

- GPS — GPS/911 EMERGENCY MARKER SIGN
- MM — MILE MARKER SIGN/MONUMENT
- 1 — W7-5, 18 x 18
- 2 — R5-3, 24 x 24, NO MOTOR VEHICLES
- 3 — R1-1, 18 x 18, STOP
- 4 — W5-4a, 18 x 18, PATH NARROWS
- 5 — W11-2, 36 x 36; W16-9P, 24 x 12, AHEAD
- 6 — OM3-L, 6 x 18 (INSTALLED BY CITY OF MESQUITE)
- 7 — OM3-R, 6 x 18 (INSTALLED BY CITY OF MESQUITE)
- 8 — W8-18bT, 18 x 18, ONE WAY TRAFFIC TURN AROUND DON'T DROWN
- 9 — W2-2, 18 x 18
- EXISTING STREET SIGN
- PROPOSED STREET SIGN
- BOLLARD
- STOP — "STOP" PAVEMENT MARKING
- STOP AHEAD — "STOP AHEAD" PAVEMENT MARKING

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40' SHEET 3 OF 6

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CONTRACT NO. 2024-014 SHEET NO. 33

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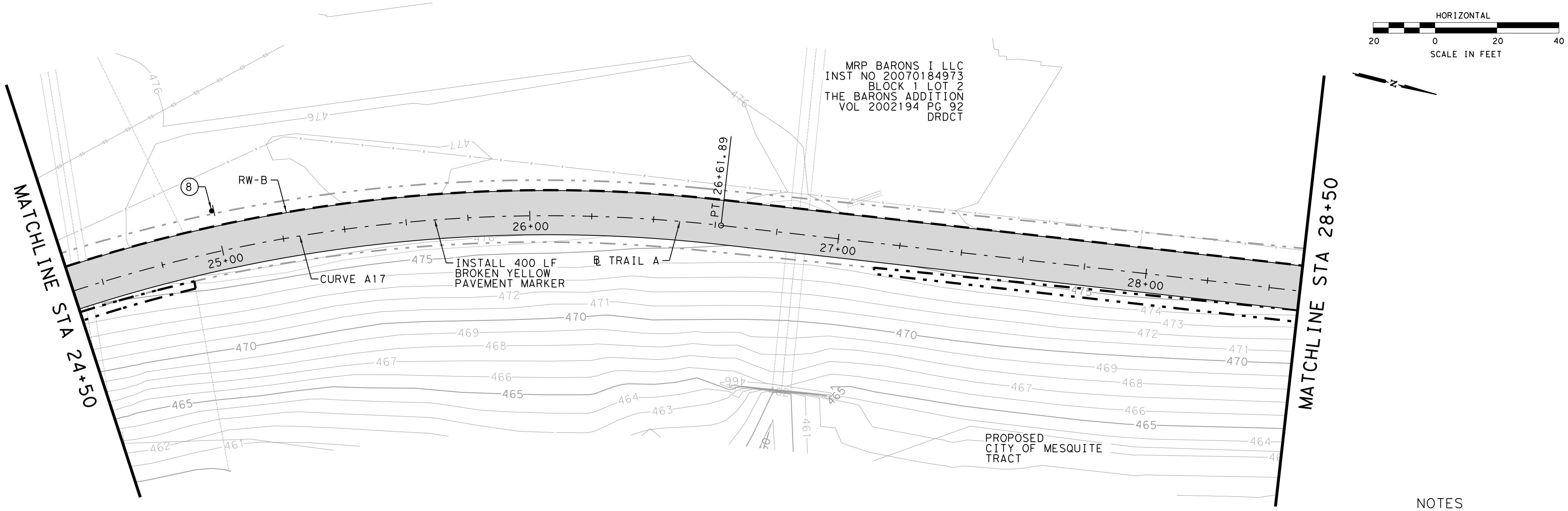
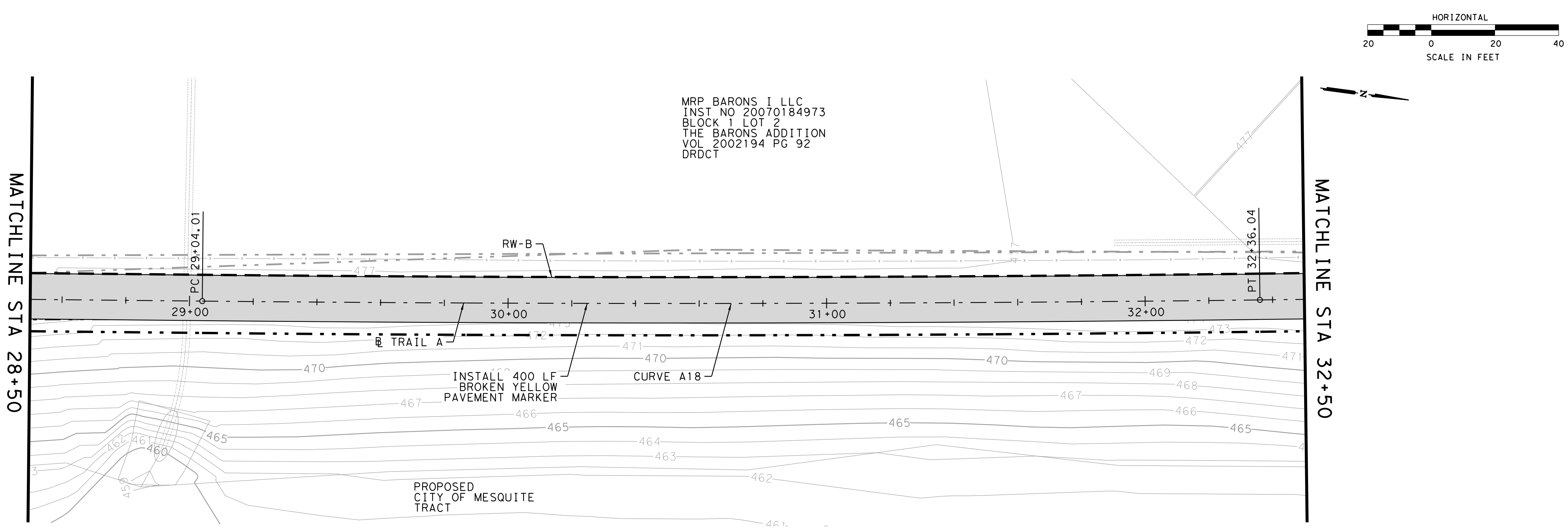


CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A17	31°32′26.4"	11°33′05.6"	140.08	273.04	496	N 38°45′13.3" W	N 7°12′46.9" W	25+28.93 R1	6978254.08	2543423.56	23+88.85 R1	26+61.89 R1

TRAIL A

NOTES

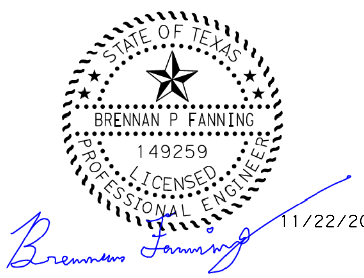
1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.
5. ALL SIGNS PER LATEST EDITION OF TMUTCD



CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A18	1°16′05.6"	0°22′55.1"	166.02	332.02	15000.02	N 7°12′46.9" W	N 8°28′52.5" W	30+70.03 R1	6978797.96	2543354.73	29+04.02 R1	32+36.04 R1

LEGEND

- GPS — GPS/911 EMERGENCY MARKER SIGN
- MM — MILE MARKER SIGN/MONUMENT
- 1 — W7-5 18 x 18
- 2 — R5-3 24 x 24 (NO MOTOR VEHICLES)
- 3 — R1-1 18 x 18 (STOP)
- 4 — W5-4a 18 x 18 (PATH NARROWS)
- 5 — W11-2 36 x 36; W16-9P 24 x 12 (AHEAD)
- 6 — OM3-L 6 x 18
- 7 — OM3-R 6 x 18
- 8 — W8-18bT 18 x 18
- 9 — W2-2 18 x 18
- EXISTING STREET SIGN
- PROPOSED STREET SIGN
- BOLLARD
- STOP — "STOP" PAVEMENT MARKING
- STOP AHEAD — "STOP AHEAD" PAVEMENT MARKING



11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40′ SHEET 4 OF 6

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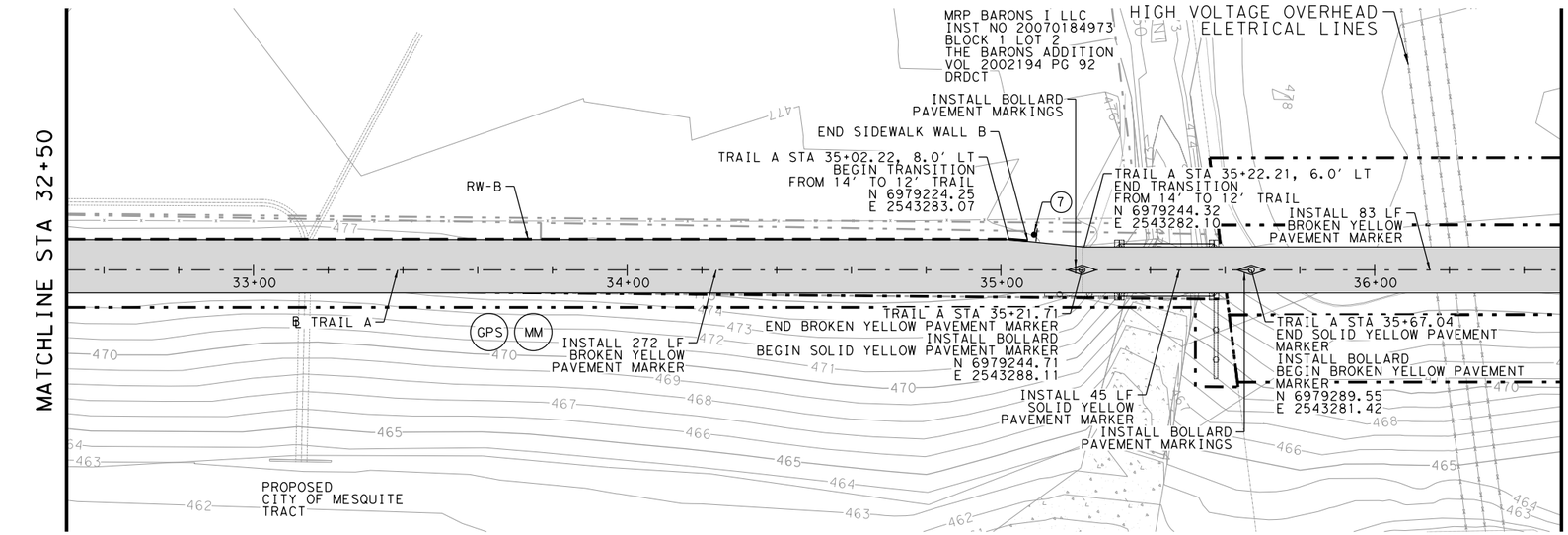
TBPE Registration No. F-1246

CONTRACT NO. 2024-014 SHEET NO. 34



TRAIL A

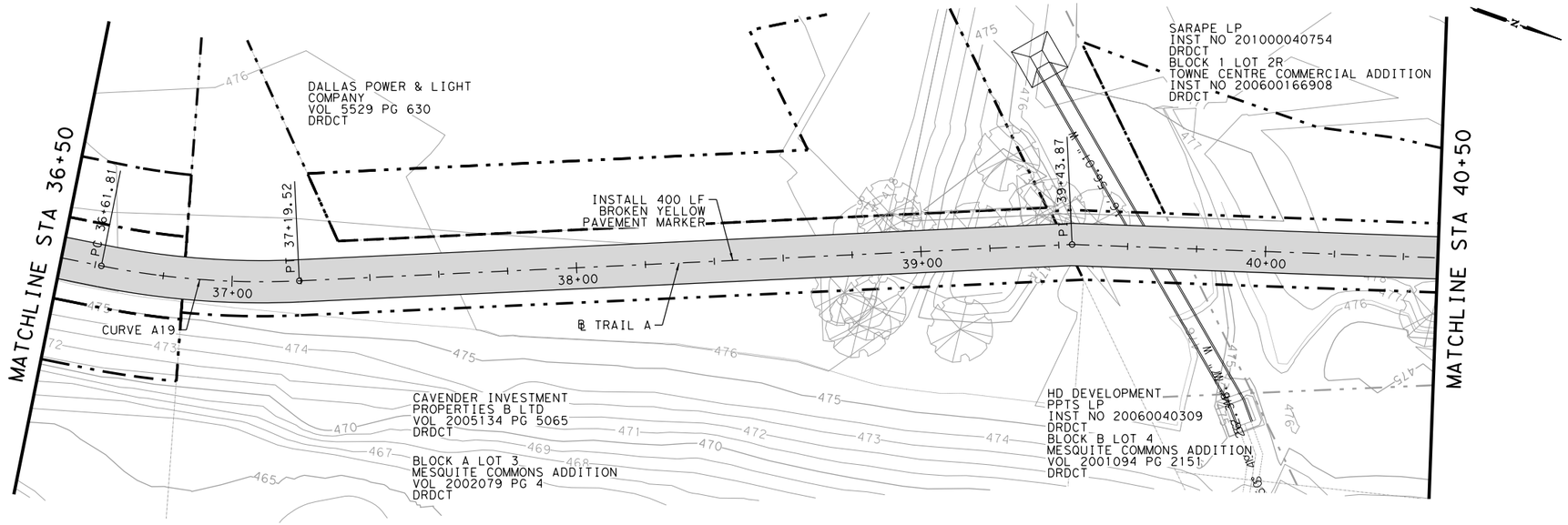
HORIZONTAL
20 0 20 40
SCALE IN FEET

NOTES

1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.
5. ALL SIGNS PER LATEST EDITION OF TMUTCD

LEGEND

GPS	GPS/911 EMERGENCY MARKER SIGN
MM	MILE MARKER SIGN/MONUMENT
1	W7-5 18 x 18
2	R5-3 24 x 24 — NO MOTOR VEHICLES
3	R1-1 18 x 18 — STOP
4	W5-4a 18 x 18 — PATH NARROWS
5	W11-2 36 x 36 / W16-9P 24 x 12 — AHEAD
6	OM3-L 6 x 18
7	OM3-R 6 x 18
8	W8-18bT 18 x 18 — FUTURE TURN AROUND DON'T CROSS
9	W2-2 18 x 18
	EXISTING STREET SIGN
	PROPOSED STREET SIGN
	BOLLARD
STOP	"STOP" PAVEMENT MARKING
STOP AHEAD	"STOP AHEAD" PAVEMENT MARKING



HORIZONTAL
20 0 20 40
SCALE IN FEET

CURVE DATA

NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A19	14°04'12.4"	24°22'52.1"	29	57.71	235	N 8°28'52.5" W	N 22°33'04.9" W	36+90.81 R1	6979411.96	2543263.17	36+61.81 R1	37+19.52 R1

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40' SHEET 5 OF 6

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CONTRACT NO. 2024-014 SHEET NO. 35

2163-01-TAPS005.dgn

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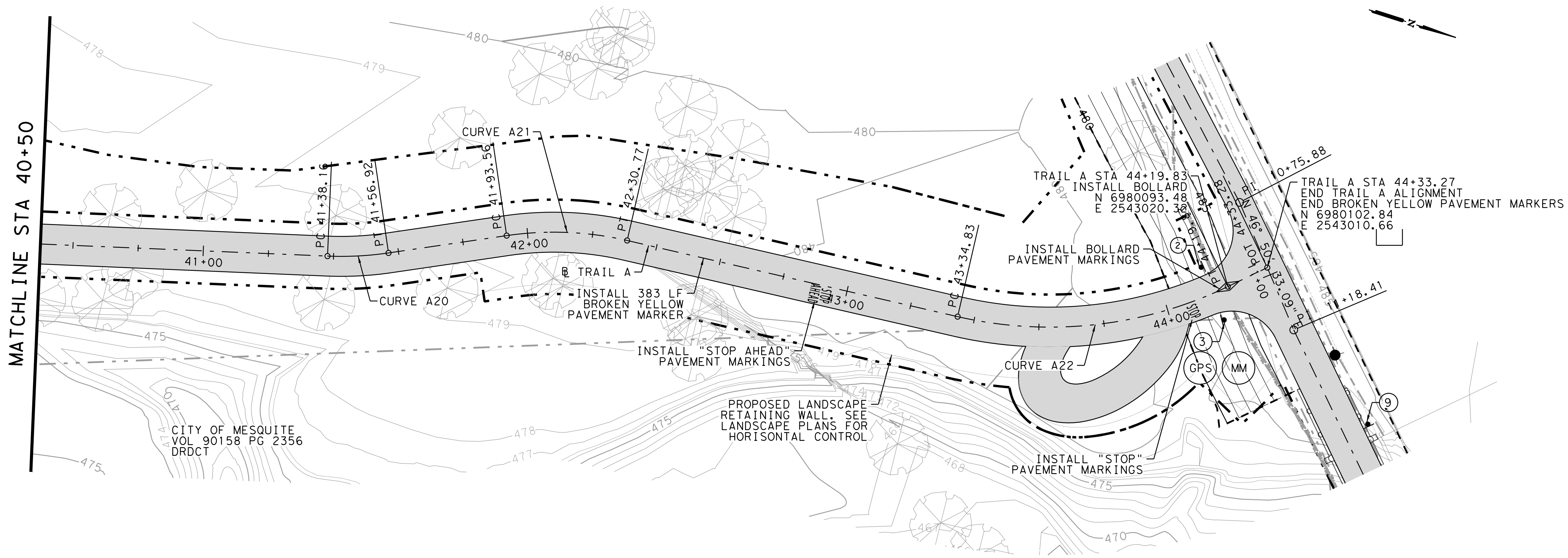
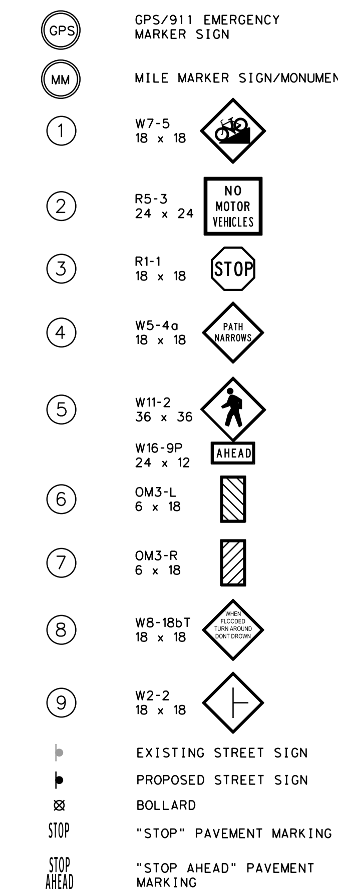
CURVE DATA											
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
A20	10°45′08.3"	57°17′44.5"	9.41	18.77	100	N 17°45′25.6" W	N 28°30′33.9" W	41+47.57 R1	6979839.93	2543103.88	41+38.16 R1	41+56.92 R1
A21	21°19′22.5"	57°17′44.5"	18.83	37.22	100	N 28°30′33.9" W	N 7°11′11.4" W	42+12.38 R1	6979896.94	2543072.92	41+93.56 R1	42+30.77 R1
A22	38°39′08.1"	45°28′22.0"	44.19	85	126	N 7°11′11.4" W	N 45°50′19.5" W	43+79.02 R1	6980062.69	2543052.02	43+34.83 R1	44+19.83 R1

HORIZONTAL
20 0 20 40
SCALE IN FEET



TRAIL A

LEGEND



STATE OF TEXAS
BRENNAN P FANNING
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LICENSED PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40′ SHEET 6 OF 6

NOTES

1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.
5. ALL SIGNS PER LATEST EDITION OF TMUTCD

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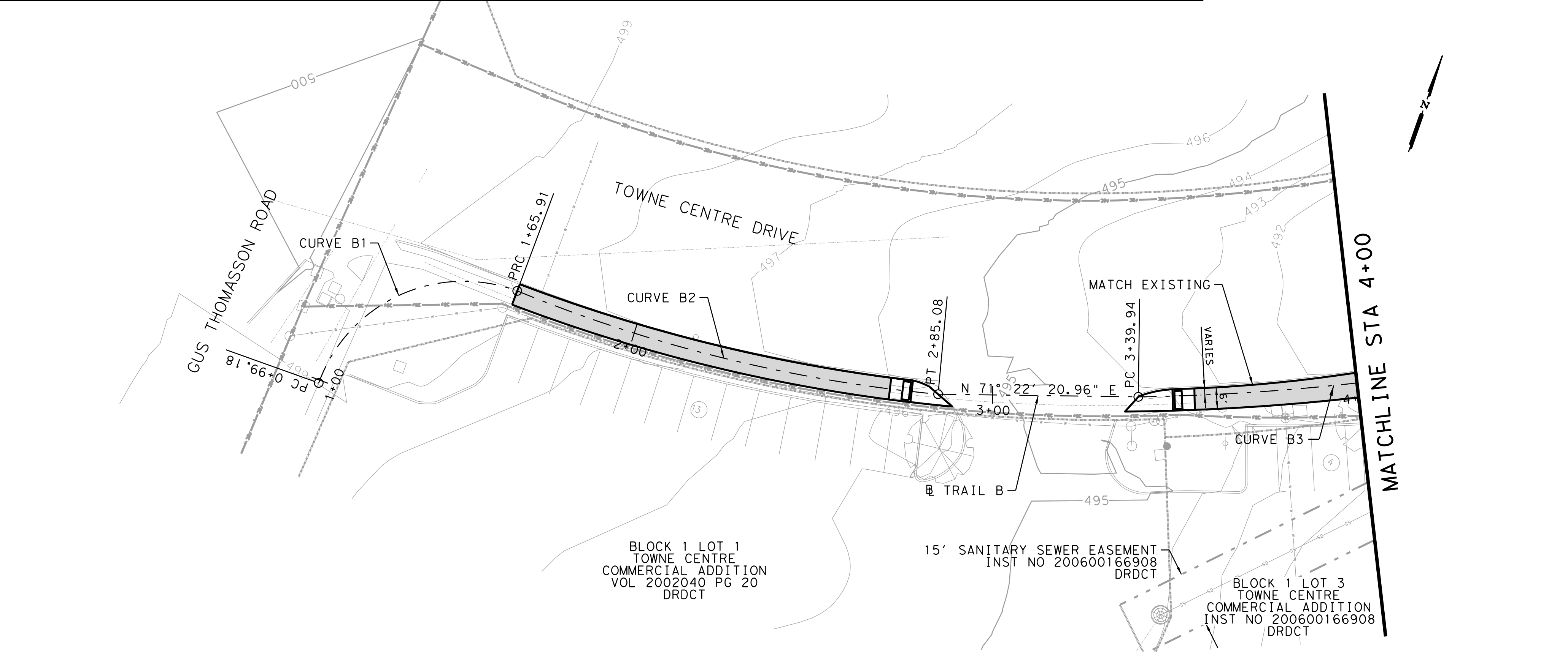
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 36

11/22/2023 5:07:36 PM

CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
B1	90°44′24.8"	135°59′18.9"	42.68	66.73	42.13	N 0°20′26.1" E	S 88°55′09.0" E	1+41.86 R1	6979576.9	2542235.97	0+99.18 R1	1+65.91 R1
B2	16°59′27.6"	14°15′26.9"	60.03	119.17	401.86	S 87°04′24.9" E	N 75°56′07.5" E	2+25.93 R1	6979573.03	2542338.59	1+65.91 R1	2+85.08 R1
B3	25°28′44.8"	9°18′04.5"	139.27	273.93	616	N 69°46′19.8" E	N 44°17′35.0" E	4+79.21 R1	6979653.29	2542579.48	3+39.94 R1	6+13.88 R1



NOTES

1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
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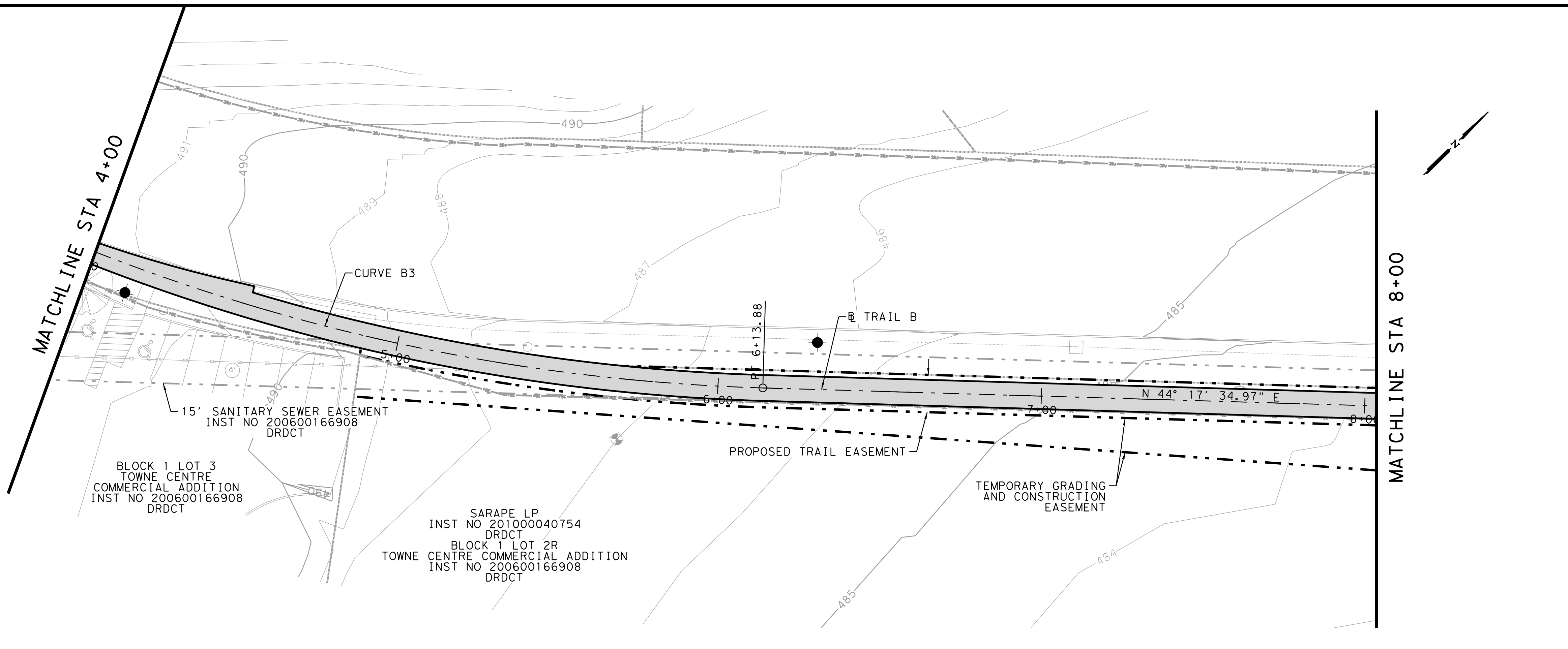
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.



LEGEND

GPS	GPS/911 EMERGENCY MARKER SIGN
MM	MILE MARKER SIGN/MONUMENT
1	W7-5 18 x 18
2	R5-3 24 x 24 (NO MOTOR VEHICLES)
3	R1-1 18 x 18 (STOP)
4	W5-4a 18 x 18 (PATH NARROWS)
5	W11-2 36 x 36; W16-9P 24 x 12 (AHEAD)
6	OM3-L 6 x 18
7	OM3-R 6 x 18
8	W8-18bT 18 x 18
9	W2-2 18 x 18
	EXISTING STREET SIGN
	PROPOSED STREET SIGN
	BOLLARD
STOP	"STOP" PAVEMENT MARKING
STOP AHEAD	"STOP AHEAD" PAVEMENT MARKING

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40′ SHEET 1 OF 3

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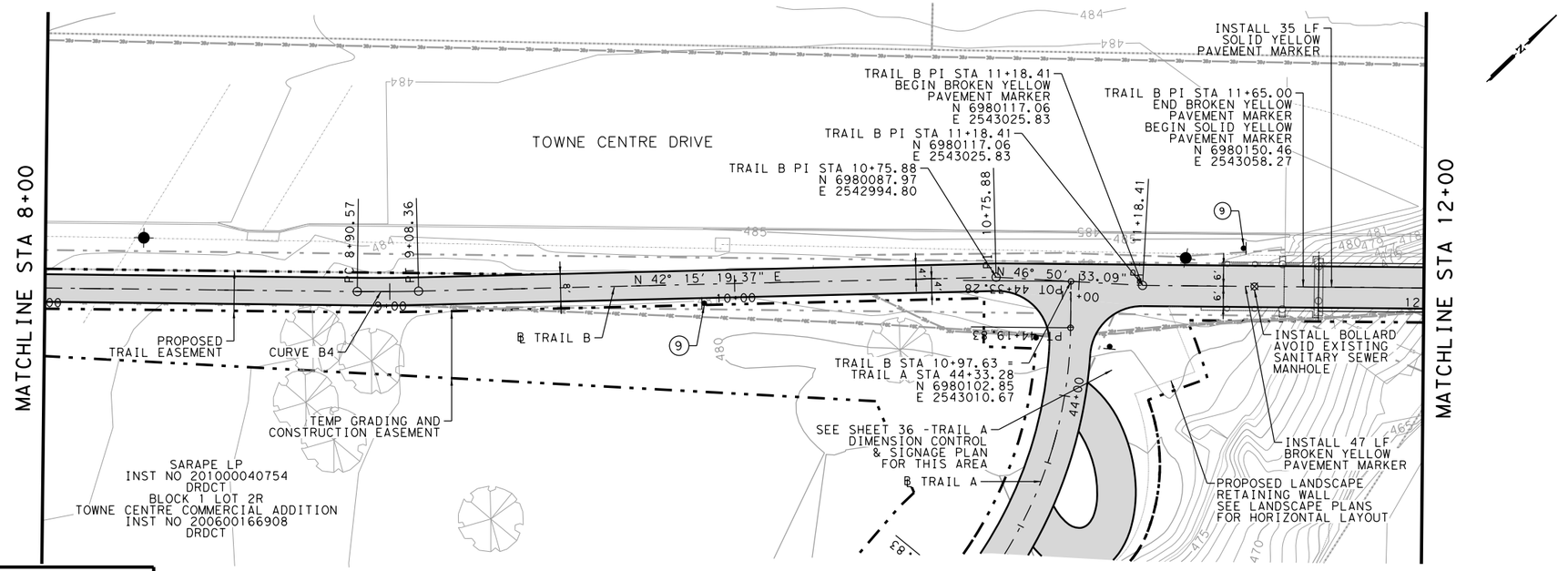
CONTRACT NO. 2024-014 SHEET NO. 37

CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
B4	2°02'15.6"	1°27'32.9"	8.89	17.78	500	N 44°17'35.0" E	N 42°15'19.4" E	8+99.47 R1	6979957.39	2542876.17	8+90.57 R1	9+08.36 R1



NOTES

1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
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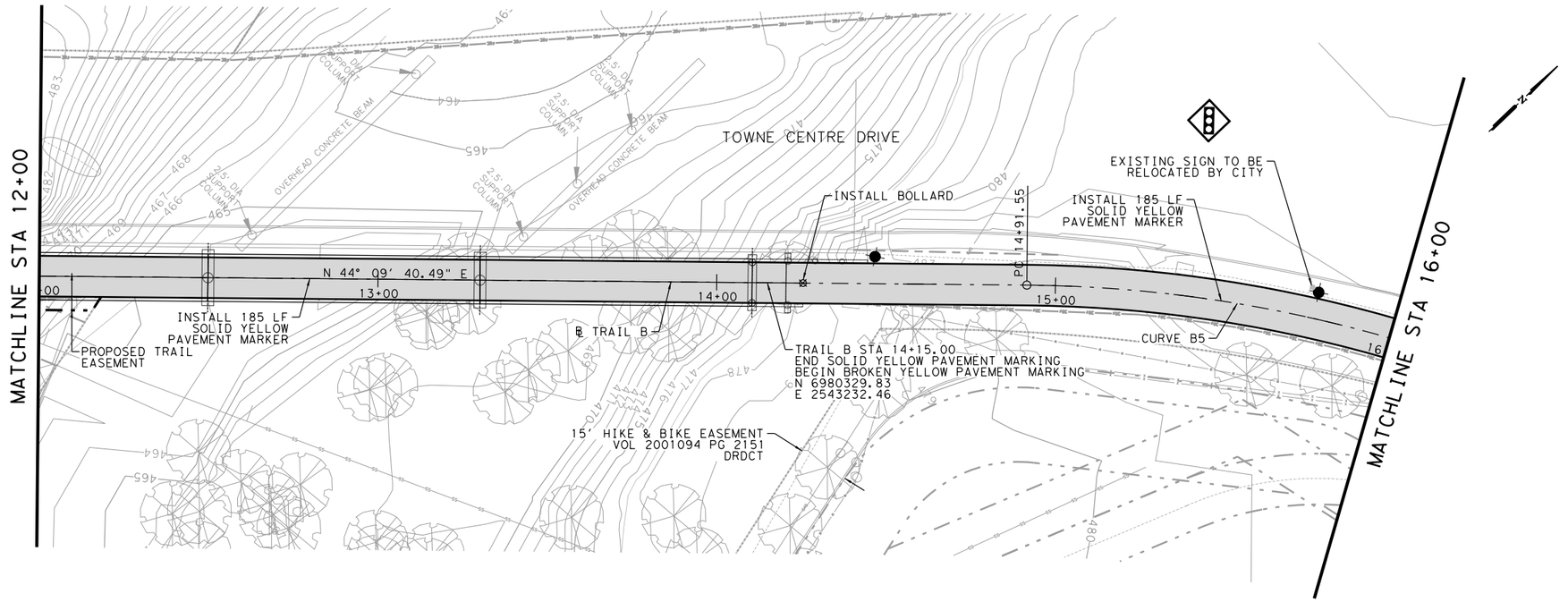
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.

CURVE DATA												
NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
B5	29°41'03.8"	14°19'26.1"	106	207.24	400	N 44°09'40.5" E	N 73°50'44.3" E	15+97.55 R1	6980460.79	2543359.64	14+91.55 R1	16+98.79 R1



LEGEND

- GPS — GPS/911 EMERGENCY MARKER SIGN
- MM — MILE MARKER SIGN/MONUMENT
- 1 — W7-5, 18 x 18
- 2 — R5-3, 24 x 24 — NO MOTOR VEHICLES
- 3 — R1-1, 18 x 18 — STOP
- 4 — W5-4a, 18 x 18 — PATH NARROWS
- 5 — W11-2, 36 x 36; W16-9P, 24 x 12 — AHEAD
- 6 — OM3-L, 6 x 18
- 7 — OM3-R, 6 x 18
- 8 — W8-18bT, 18 x 18 — NO MOTOR VEHICLES TURN AROUND DON'T DROWN
- 9 — W2-2, 18 x 18
- EXISTING STREET SIGN
- PROPOSED STREET SIGN
- BOLLARD
- STOP — "STOP" PAVEMENT MARKING
- STOP AHEAD — "STOP AHEAD" PAVEMENT MARKING

STATE OF TEXAS
BRENNAN P. FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40'

SHEET 2 OF 3

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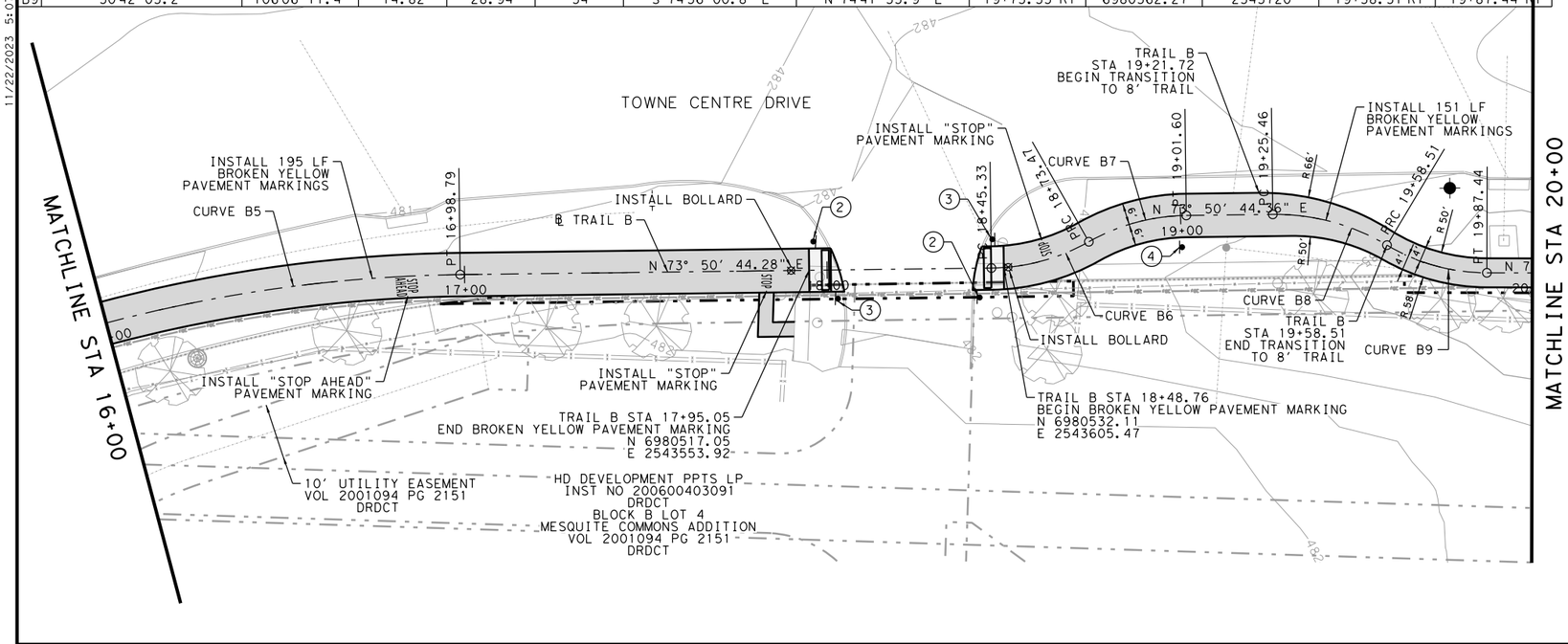
CONTRACT NO. 2024-014

SHEET NO. 38

CURVE DATA

NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
B5	29°41'03.8"	14°19'26.1"	106	207.24	400	N 44°09'40.5" E	N 73°50'44.3" E	15+97.55 R1	6980460.79	2543359.64	14+91.55 R1	16+98.79 R1
B6	28°47'04.8"	102°18'49.5"	14.37	28.13	56	N 73°50'44.3" E	N 45°03'39.5" E	18+59.70 R1	6980535.05	2543616.01	18+45.33 R1	18+73.47 R1
B7	28°47'04.9"	102°18'50.4"	14.37	28.13	56	N 45°03'39.5" E	N 73°50'44.4" E	18+87.84 R1	6980555.35	2543636.36	18+73.47 R1	19+01.60 R1
B8	31°33'14.8"	95°29'34.2"	16.95	33.04	60	N 73°50'44.4" E	S 74°36'00.8" E	19+42.42 R1	6980570.71	2543689.36	19+25.46 R1	19+58.51 R1
B9	30°42'05.2"	106°06'11.4"	14.82	28.94	54	S 74°36'00.8" E	N 74°41'53.9" E	19+73.33 R1	6980562.27	2543720	19+58.51 R1	19+87.44 R1

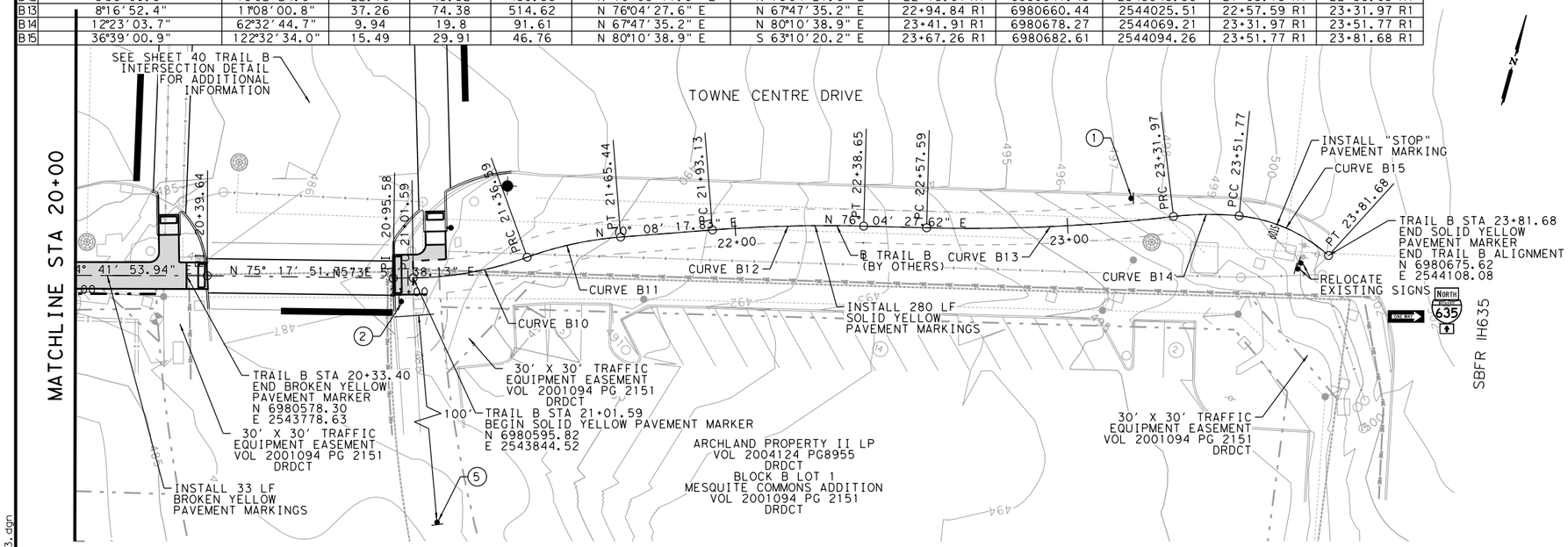


NOTES

1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.
5. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.
6. CONTRACTOR MAY ONLY CLOSE ONE LANE AT A TIME CONSTRUCTING THE CROSSING OF TRAIL B AND NORTH MESQUITE DRIVE.
7. USE HIGH EARLY STRENGTH (HES) CONCRETE PER BID ITEM.
8. NO CONSTRUCTION IN STREET FROM THANKSGIVING TO JANUARY 3RD OR BACK TO SCHOOL TAX-FREE WEEKEND. CONTRACTOR SHALL COORDINATE WITH CITY OF MESQUITE ON EXACT DATES.

CURVE DATA

NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
B10	19°16'07.4"	55°02'33.5"	17.67	35.01	104.09	N 73°53'38.1" E	N 54°37'30.7" E	21+19.26 R1	6980600.72	2543861.5	21+01.59 R1	21+36.59 R1
B11	15°30'47.1"	53°46'49.1"	14.51	28.85	106.54	N 54°37'30.7" E	N 70°08'17.8" E	21+51.10 R1	6980619.35	2543887.74	21+36.59 R1	21+65.44 R1
B12	5°56'09.8"	13°02'24.9"	22.78	45.52	439.38	N 70°08'17.8" E	N 76°04'27.6" E	22+15.91 R1	6980641.43	2543948.86	21+93.13 R1	22+38.65 R1
B13	8°16'52.4"	1°08'00.8"	37.26	74.38	514.62	N 76°04'27.6" E	N 67°47'35.2" E	22+94.84 R1	6980660.44	2544025.51	22+57.59 R1	23+31.97 R1
B14	12°23'03.7"	62°32'44.7"	9.94	19.8	91.61	N 67°47'35.2" E	N 80°10'38.9" E	23+41.91 R1	6980678.27	2544069.21	23+31.97 R1	23+51.77 R1
B15	36°39'00.9"	122°32'34.0"	15.49	29.91	46.76	N 80°10'38.9" E	S 63°10'20.2" E	23+67.26 R1	6980682.61	2544094.26	23+51.77 R1	23+81.68 R1



LEGEND

GPS	GPS/911 EMERGENCY MARKER SIGN
MM	MILE MARKER SIGN/MONUMENT
1	W7-5 18 x 18
2	R5-3 24 x 24 — NO MOTOR VEHICLES
3	R1-1 18 x 18 — STOP
4	W5-4a 18 x 18 — PATH NARROWS
5	W11-2 36 x 36 / W16-9P 24 x 12 — AHEAD
6	OM3-L 6 x 18
7	OM3-R 6 x 18
8	W8-18bT 18 x 18 — NO OUTSIDE TURN AROUND DON'T DRIVE
9	W2-2 18 x 18
	EXISTING STREET SIGN
	PROPOSED STREET SIGN
	BOLLARD
STOP	"STOP" PAVEMENT MARKING
STOP AHEAD	"STOP AHEAD" PAVEMENT MARKING

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B SIGNING & DIMENSION LAYOUT

SCALE: 1" = 40'

SHEET 3 OF 3

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CONTRACT NO. 2024-014

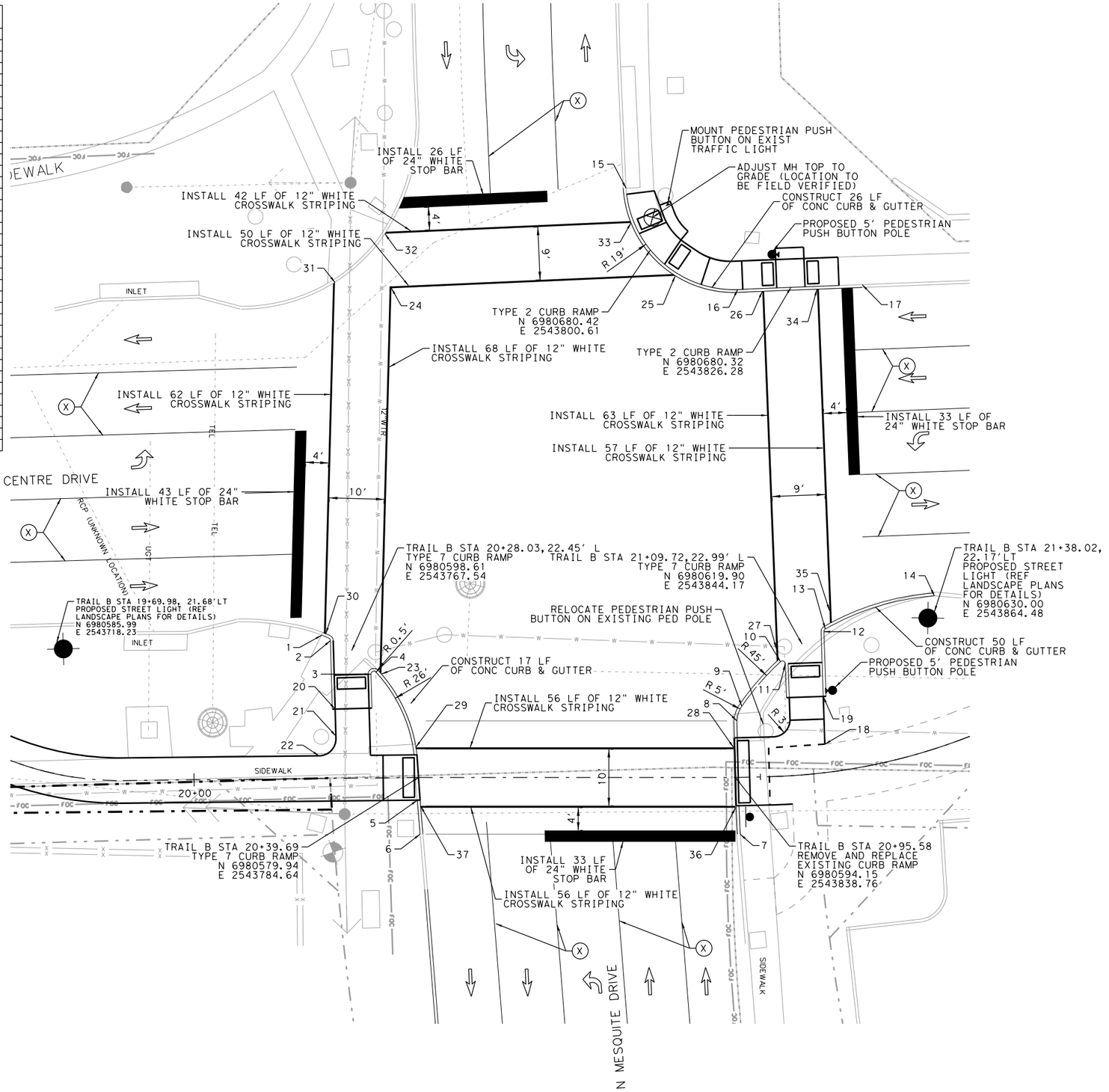
SHEET NO. 39

DIMENSION CONTROL POINT TABLE

POINT NUMBER	NORTHING	EASTING	DESCRIPTION
1	6980599.88	2543761.71	PCC/BEGIN CONC CURB, MATCH EXISTING
2	6980599.36	2543763.46	PT CONC CURB
3	6980595.46	2543771.89	PC CONC CURB
4	6980596.02	2543772.64	PCC CONC CURB
5	6980576.01	2543785.44	PT CONC CURB
6	6980570.34	2543787.44	END CONC CURB, MATCH EXISTING
7	6980584.68	2543842.12	BEGIN CONC CURB, MATCH EXISTING
8	6980603.88	2543836.48	PC CONC CURB
9	6980606.59	2543836.66	PCC CONC CURB
10	6980615.93	2543841.28	PCC CONC CURB
11	6980615.80	2543842.18	PT CONC CURB
12	6980623.01	2543847.33	PC CONC CURB
13	6980623.51	2543847.46	PCC CONC CURB
14	6980634.07	2543864.60	PT/END CONC CURB, MATCH EXISTING
15	6980689.85	2543793.68	PC/BEGIN CONC CURB, MATCH EXISTING
16	6980677.56	2543817.28	PT CONC CURB
17	6980683.97	2543838.33	END CONC CURB, MATCH EXISTING
18	6980603.84	2543852.53	PI 6' CONC SIDEWALK, MATCH TRAIL B
19	6980611.91	2543850.12	END 6' CONC SIDEWALK
20	6980587.88	2543767.34	BEGIN 6' CONC SIDEWALK
21	6980583.33	2543768.67	PC EDGE OF 6' CONC SIDEWALK
22	6980579.19	2543766.69	PT EDGE OF 6' CONC SIDEWALK
23	6980595.95	2543773.67	BEGIN 12" WHITE STRIPE
24	6980662.26	2543758.10	PI 12" WHITE STRIPE
25	6980677.10	2543806.00	END 12" WHITE STRIPE
26	6980678.34	2543821.57	BEGIN 12" WHITE STRIPE
27	6980618.00	2543839.94	END 12" WHITE STRIPE
28	6980599.21	2543837.07	BEGIN 12" WHITE STRIPE
29	6980584.97	2543782.81	END 12" WHITE STRIPE
30	6980600.33	2543762.37	BEGIN 12" WHITE STRIPE
31	6980660.73	2543748.19	END 12" WHITE STRIPE
32	6980671.28	2543754.55	BEGIN 12" WHITE STRIPE
33	6980684.15	2543796.07	END 12" WHITE STRIPE
34	6980681.16	2543830.81	BEGIN 12" WHITE STRIPE
35	6980626.85	2543847.35	END 12" WHITE STRIPE
36	6980588.98	2543840.12	BEGIN 12" WHITE STRIPE
37	6980575.20	2543786.26	END 12" WHITE STRIPE

NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
2. REFER TO SIGNAL LAYOUT SHEET FOR PEDESTRIAN POLE DETAILS.
3. COORDINATE WITH CITY OF MESQUITE TRAFFIC ENGINEERING DIVISION (972)216-6955 WHEN REMOVING/INSTALLING TRAFFIC SIGNAL COMPONENTS.
4. REFER TO SIGNAL LAYOUT SHEET FOR PEDESTRIAN POLE DETAILS.
5. SEE TRAIL B TYPICAL SECTION FOR NORTH MESQUITE DRIVE PAVEMENT REPLACEMENT.
6. SEE LIGHTING PLAN FOR STREET LIGHT ELECTRICAL.
7. SEE SIGNAL PLAN FOR PROPOSED SIGNAL.
8. CONTRACTOR TO INSTALL APPROPRIATE ADVANCE WARNING SIGNAGE IN ACCORDANCE WITH TEXAS MUTCD.
9. CLOSE ONLY ONE LANE AT A TIME.
10. USE HIGH EARLY STRENGTH CONCRETE.
11. COMPLETE CURB RAMPS & CROSSINGS.
12. REMOVE CHANNELIZING DEVICES & WARNING SIGNS.
13. SEE TXDOT STANDARD DETAIL PED-12A FOR CURB RAMPS.
14. USE CAUTION TO PROTECT EXISTING SIGNAL EQUIPMENT (LOOP DETECTOR RUNS, CONDUIT, GROUND BOXES, SIGNAL CABINETS AND SIGNAL POLES) AT SIGNALIZED INTERSECTIONS. REPAIR ANY DAMAGE CAUSED DURING DEMOLITION.
15. CONTRACTOR MAY CLOSE ONLY ONE LANE AT A TIME CONSTRUCTING THE CROSSING OF TRAIL B AND NORTH MESQUITE DR.
16. USE HIGH EARLY STRENGTH (HES) CONCRETE PER BID ITEM.
17. NO CONSTRUCTION IN STREET FROM THANKSGIVING TO JANUARY 3RD OR BACK-TO-SCHOOL TAX-FREE WEEKEND. CONTRACTOR SHALL COORDINATE WITH CITY OF MESQUITE ON EXACT DATES.
18. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO CITY AND COUNTY SEVEN (7) DAYS IN ADVANCE. NO WORK SHALL BEGIN PRIOR TO APPROVAL OF TRAFFIC CONTROL PLAN.



LEGEND

- (X) EXISTING STRIPING
- DIRECTION OF TRAVEL

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B INTERSECTION LAYOUT

SCALE: 1" = 20'

BGE, Inc.
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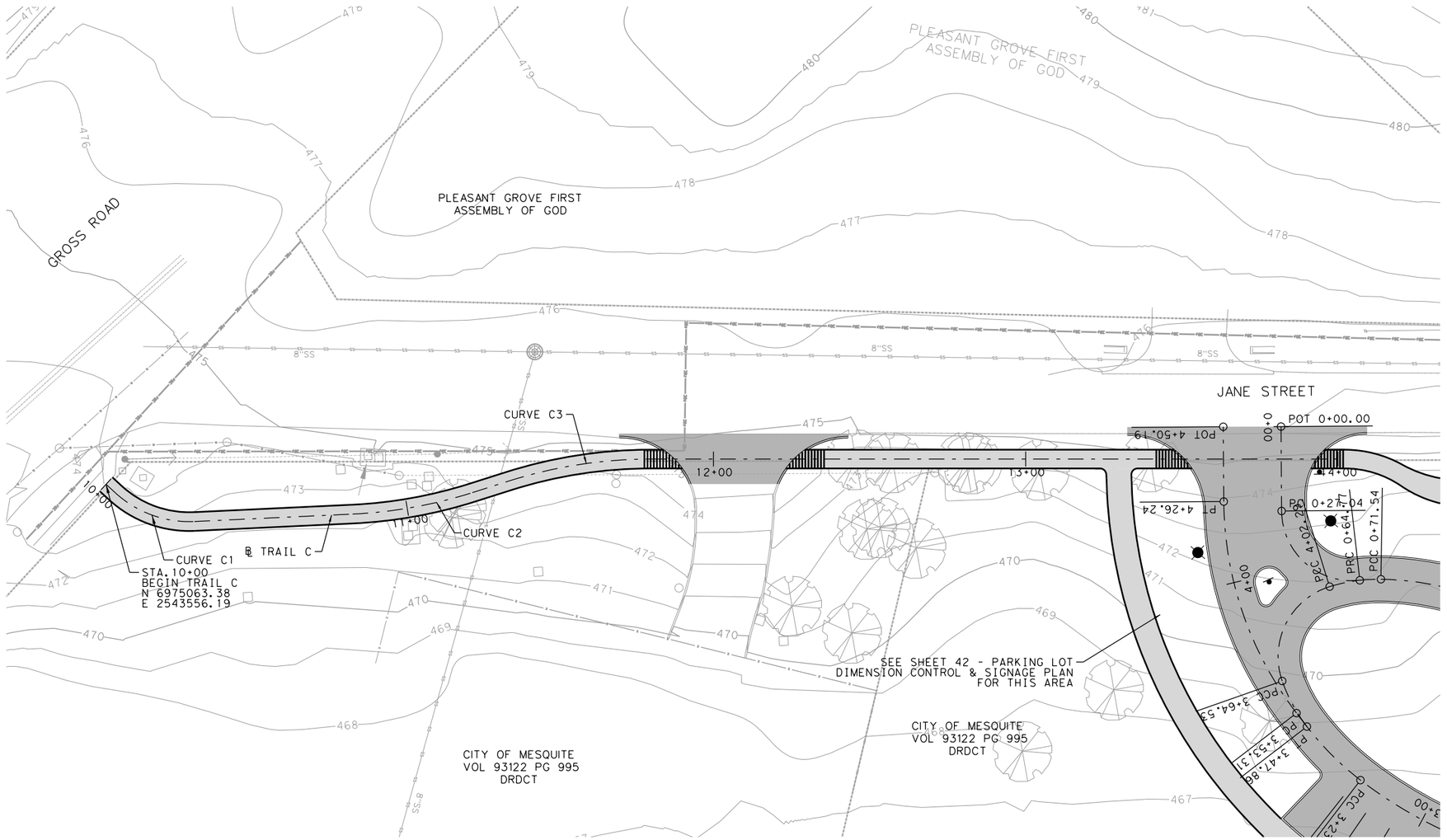
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 40

NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
C1	45°18′24.7"	163°42′05.1"	14.61	27.68	35	N 46°06′20.7" E	N 0°47′56.0" E	10+18.62 R1	6975076.29	2543569.61	10+04.02 R1	10+31.69 R1
C2	14°55′57.6"	38°11′49.7"	19.66	39.09	150	N 0°47′56.0" E	N 14°08′01.6" W	11+02.05 R1	6975161.25	2543570.8	10+82.39 R1	11+21.48 R1
C3	17°37′34.0"	38°11′49.7"	23.26	46.15	150	N 14°08′01.6" W	N 3°29′32.5" E	11+56.98 R1	6975214.73	2543557.33	11+33.72 R1	11+79.87 R1



NOTES

1. LINEAR PAVEMENT MARKINGS TO BE 4" IN THICKNESS.
2. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
3. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES AND DETAILS.
4. REFER TO SIGN PLACEMENT DETAIL ON TRAIL B TYPICAL SECTIONS FOR ADDITIONAL INFORMATION ON SIGN PLACEMENT.

LEGEND

- GPS — GPS/911 EMERGENCY MARKER SIGN
- MM — MILE MARKER SIGN/MONUMENT
- (1) W7-5, 18 x 18
- (2) R5-3, 24 x 24 — NO MOTOR VEHICLES
- (3) R1-1, 18 x 18 — STOP
- (4) W5-4a, 18 x 18 — PATH NARROWS
- (5) W11-2, 36 x 36; W16-9P, 24 x 12 — AHEAD
- (6) OM3-L, 6 x 18
- (7) OM3-R, 6 x 18
- (8) W8-18bT, 18 x 18 — TURN AROUND DON'T DROWN
- (9) W2-2, 18 x 18
- EXISTING STREET SIGN
- PROPOSED STREET SIGN
- BOLLARD
- STOP — "STOP" PAVEMENT MARKING
- STOP AHEAD — "STOP AHEAD" PAVEMENT MARKING

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL C SIGNING & DIMENSION LAYOUT

ALTERNATE 3

SCALE: 1" = 40′

BGE, Inc.
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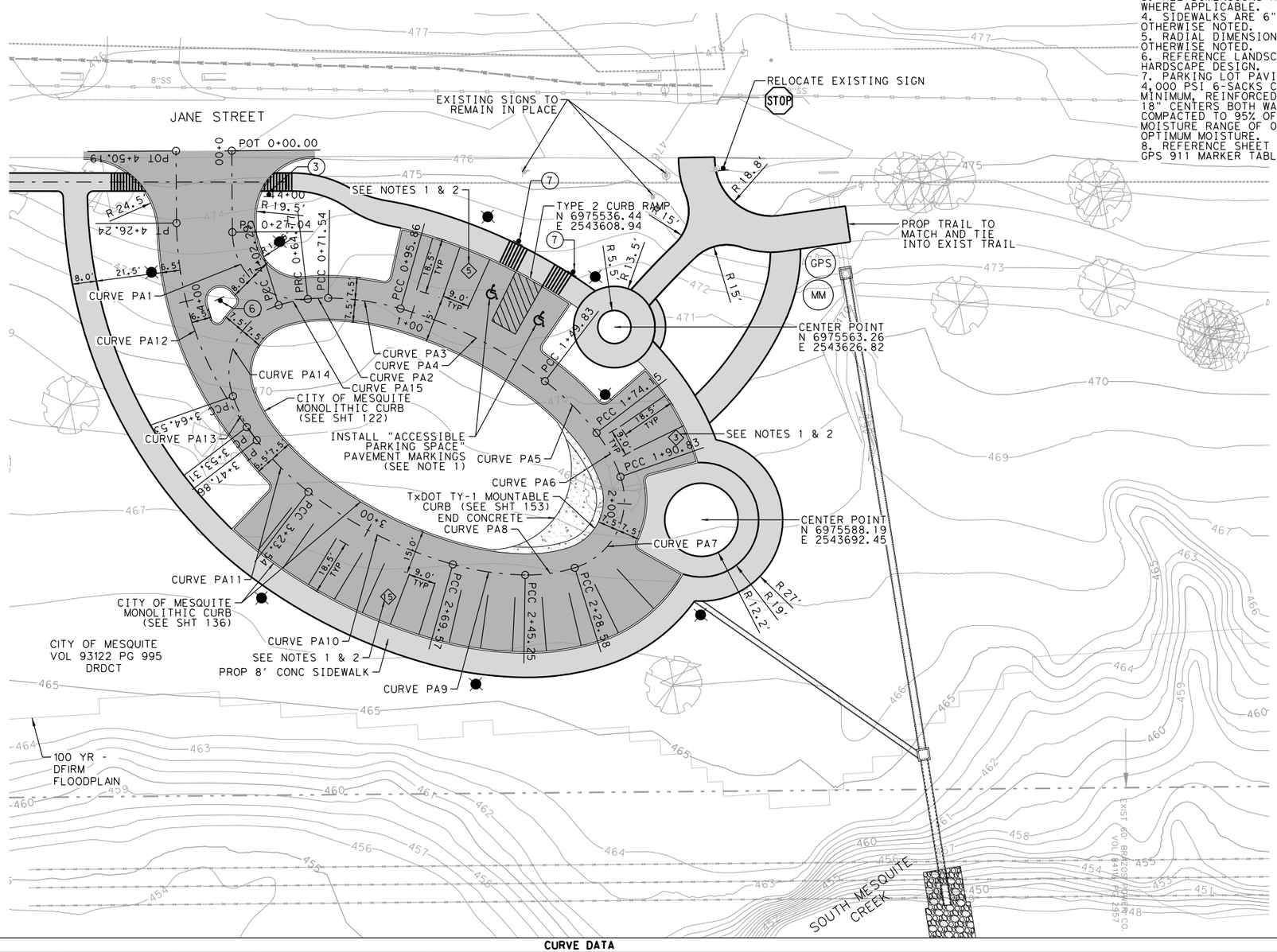
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 41



NOTES

1. ALL PARKING LOT PAVEMENT MARKINGS TO BE THERMOPLASTIC.
2. LINEAR PAVEMENT MARKINGS TO BE 4" SOLID WHITE.
3. ALL DIMENSIONS ARE TO BACK OF CURB WHERE APPLICABLE.
4. SIDEWALKS ARE 6" THICK UNLESS OTHERWISE NOTED.
5. RADIAL DIMENSIONS ARE 2' UNLESS OTHERWISE NOTED.
6. REFERENCE LANDSCAPE PLANS FOR HARDSCAPE DESIGN.
7. PARKING LOT PAVING SHALL BE 8" THICK, 4,000 PSI 6-SACKS CONCRETE PER CUBIC YARD MINIMUM, REINFORCED WITH #4 STEEL BARS ON 18" CENTERS BOTH WAYS ATOP A SUBGRADE COMPACTED TO 95% OF STANDARD PROCTOR AT A MOISTURE RANGE OF 0% TO PLUS 6% OF OPTIMUM MOISTURE.
8. REFERENCE SHEET 43 - MILE MARKERS AND GPS 911 MARKER TABLES

LEGEND

- PROPOSED SIDEWALK AND TRAIL
- PROPOSED PARKING LOT
- PROPOSED MOUNTABLE CURB AND APRON
- PROPOSED STREETLIGHT REFERENCE LANDSCAPE PLANS FOR DETAILS (TYP)
- GPS — GPS/911 EMERGENCY MARKER SIGN
- MM — MILE MARKER SIGN/MONUMENT
- (3) — R1-1, 18 x 18 — STOP
- (6) — R4-7b, 12X24 — KEEP RIGHT
- (7) — R7-8T, 12x18 — RESERVED PARKING
- # — NUMBER OF PARKING SPOTS TO BE DELINEATED AT TYPICAL DIMENSIONS
- EXISTING STREET SIGN
- PROPOSED STREET SIGN

CURVE DATA

NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT DIRECTION	AHEAD TANGENT DIRECTION	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
PA1	96°05'33.4"	254°38'51.2"	25.03	37.74	22.5	S 86°54'57.0" E	N 3°00'30.4" W	0+52.07 R1	6975437.29	2543612.65	0+27.04 R1	0+64.77 R1
PA2	7°23'23.0"	109°08'04.9"	3.39	6.77	52.5	N 3°00'30.4" W	N 4°22'52.6" E	0+68.16 R1	6975465.67	2543611.16	0+64.77 R1	0+71.54 R1
PA3	14°54'08.3"	61°16'43.8"	12.23	24.32	93.5	N 4°22'52.6" E	N 19°17'00.9" E	0+83.77 R1	6975481.24	2543612.35	0+71.54 R1	0+95.86 R1
PA4	21°32'57.8"	39°55'38.4"	27.31	53.97	143.5	N 19°23'12.3" E	N 40°56'10.1" E	1+23.17 R1	6975518.55	2543625.46	0+95.86 R1	1+49.83 R1
PA5	14°54'08.3"	61°16'43.8"	12.23	24.32	93.5	N 4°02'21.6" E	N 55°56'29.9" E	1+62.06 R1	6975548.4	2543651.38	1+49.83 R1	1+74.15 R1
PA6	18°11'42.0"	109°08'04.8"	8.41	16.67	52.5	N 55°56'29.9" E	N 74°08'11.8" E	1+82.56 R1	6975559.96	2543668.47	1+74.15 R1	1+90.83 R1
PA7	92°02'58.8"	243°48'41.4"	24.36	37.75	23.5	N 74°08'11.8" E	S 13°48'49.4" E	2+15.18 R1	6975568.91	2543699.99	1+90.83 R1	2+28.58 R1
PA8	18°11'42.0"	109°08'04.8"	8.41	16.67	52.5	S 13°48'49.4" E	S 4°22'52.6" W	2+36.99 R1	6975537.1	2543707.81	2+28.58 R1	2+45.25 R1
PA9	14°54'08.3"	61°16'43.8"	12.23	24.32	93.5	S 4°22'52.6" W	S 19°17'00.9" W	2+57.48 R1	6975516.52	2543706.23	2+45.25 R1	2+69.57 R1
PA10	21°32'57.8"	39°55'38.4"	27.31	53.97	143.5	S 19°23'12.3" W	S 40°56'10.1" W	2+96.88 R1	6975479.22	2543693.13	2+69.57 R1	3+23.54 R1
PA11	14°54'08.1"	61°16'43.8"	12.23	24.32	93.5	S 4°02'21.6" W	S 55°56'29.7" W	3+35.77 R1	6975449.37	2543667.21	3+23.54 R1	3+47.86 R1
PA12	37°08'33.3"	50°55'46.3"	37.8	72.93	112.5	S 55°56'29.7" W	N 86°54'57.0" W	3+91.10 R1	6975418.3	2543621.25	3+53.31 R1	4+26.24 R1
PA13	18°11'42.7"	109°08'05.3"	8.41	16.67	52.5	S 55°56'29.7" W	S 74°08'12.4" W	3+56.27 R1	6975437.81	2543650.11	3+47.86 R1	3+64.53 R1
PA14	92°02'58.0"	243°48'42.6"	24.36	37.75	23.5	S 74°08'12.4" W	N 13°48'49.6" W	3+88.89 R1	6975428.85	2543618.6	3+64.53 R1	4+02.29 R1
PA15	10°48'19.2"	109°08'05.4"	4.97	9.9	52.5	N 13°48'49.6" W	N 3°00'30.4" W	4+07.25 R1	6975457.33	2543611.6	4+02.29 R1	4+12.19 R1

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

PARKING AREA SIGNING & DIMENSION LAYOUT

ALTERNATE 1

SCALE: 1" = 40'

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Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 42

MILE MARKER LOCATION TABLE

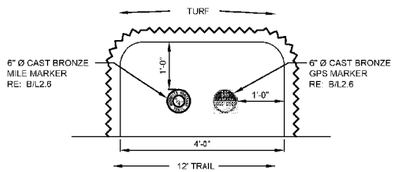
Mile Marker Identification Number	Trail Segment	Station	Latittude[1]	Longitude[1]	Northing[1][2]	Easting[1][2]
0	PARKING LOT	N/A	32°47'16.3492"N	96°37'46.4480"W	6,974,691.26	2,543,253.29
1/4	A	7+28.56	32°47'27.4978"N	96°37'40.7954"W	6,975,826.31	2,543,715.65
1/2	A	20+48.56	32°47'38.6867"N	96°37'44.2167"W	6,976,951.64	2,543,403.52
3/4	A	33+68.56	32°47'50.5387"N	96°37'49.0868"W	6,978,141.78	2,542,966.58
1	A	44+33.27	32°48'00.5805"N	96°37'52.3910"W	6,979,151.39	2,542,666.56
(1) Note that the Lattitude, Longitude, Northing, and Eastings are to the centerline of the trail **NOT** the Mile Marker placement relative to the trail.						
(2) All Northing and Easting coordinates are Texas State Plane Coordinates North Central Zone (4202) NAD 83 at surface factor of 1.000136506						

GPS/911 EMERGERGENCY MARKER LOCATION TABLE

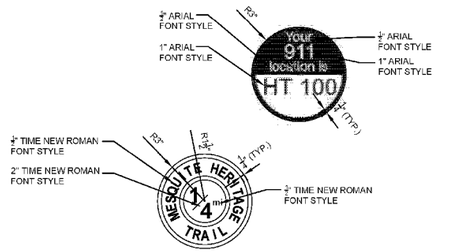
Mile Marker Identification Number	Trail Segment	Station	Latittude[1]	Longitude[1]	Northing[1][2]	Easting[1][2]	Closest Access Point
0	PARKING LOT	N/A	32°47'16.3492"N	96°37'46.4480"W	6,974,691.26	2,543,253.29	Parking Lot at Jane Street
1/4	A	7+28.56	32°47'27.4978"N	96°37'40.7954"W	6,975,826.31	2,543,715.65	Parking Lot at Jane Street
1/2	A	20+48.56	32°47'38.6867"N	96°37'44.2167"W	6,976,951.64	2,543,403.52	Parking Lot at Jane Street
3/4	A	33+68.56	32°47'50.5387"N	96°37'49.0868"W	6,978,141.78	2,542,966.58	Town Center Drive and Home Depot Driveway
1	A	44+33.27	32°48'00.5805"N	96°37'52.3910"W	6,979,151.39	2,542,666.56	Town Center Drive and Home Depot Driveway
(1) Note that the Lattitude, Longitude, Northing, and Eastings are to the centerline of the trail **NOT** the Mile Marker placement relative to the trail.							
(2) All Northing and Easting coordinates are Texas State Plane Coordinates North Central Zone (4202) NAD 83 at surface factor of 1.000136506							

MILE MARKER NOTES:
1. MILE MARKERS TO BE CAST BRONZE / FINISH WITH PATINA BRONZE PROVIDE ARTWORK FOR APPROVAL PRIOR TO FABRICATION.
2. PROVIDE MINIMUM TWO (2) STUDS (MOUNTING LUGS) PER PLAQUE FOR MOUNTING. IN ADDITION, PLAQUES ARE TO BE EPOXIED TO BACKGROUND SURFACE.
3. POSSIBLE SOURCES: PINEAPPLE GROVE DESIGNS (CONTACT: TOM DELIS AT 800-771-4595, QUOTE # 18749) OR APPROVED EQUAL.
4. REFERENCE DIMENSION CONTROL AND SIGNAGE PLAN FOR LOCATION OF MARKERS ALONG THE TRAIL.

GPS MARKER NOTES:
1. GPS EMERGENCY MARKERS TO BE CAST BRONZE / FINISH WITH PATINA BRONZE PROVIDE ARTWORK FOR APPROVAL PRIOR TO FABRICATION.
2. PROVIDE MINIMUM TWO (2) STUDS (MOUNTING LUGS) PER PLAQUE FOR MOUNTING. IN ADDITION, PLAQUES ARE TO BE EPOXIED TO BACKGROUND SURFACE.
3. POSSIBLE SOURCES: PINEAPPLE GROVE DESIGNS (CONTACT: TOM DELIS AT 800-771-4595, QUOTE # 18750) OR APPROVED EQUAL.
4. REFERENCE CIVIL PLANS C3.01 THRU C3.14 FOR LOCATION OF MARKERS ALONG THE TRAIL



C **MILE MARKER & GPS MARKER LAYOUT**
PLAN VIEW



B **MILE MARKER & GPS MARKER**
SCALE: N.T.S.
PLAN VIEW

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

MILE MARKER & GPS 911 MARKER TABLES

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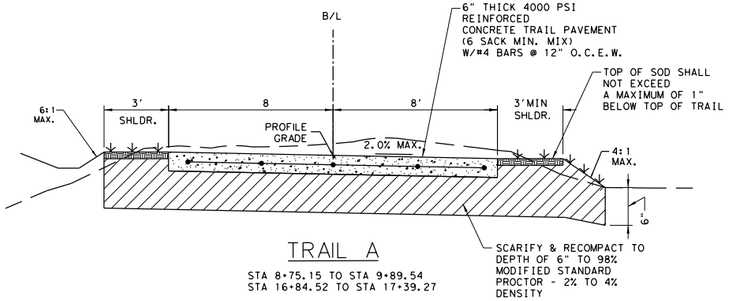
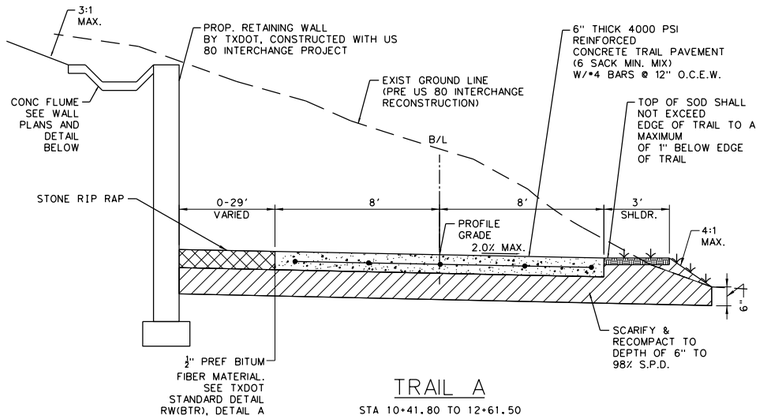
CONTRACT NO. 2024-014 SHEET NO. 43



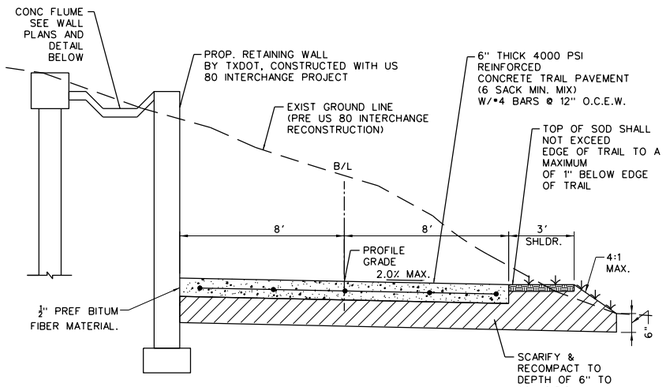
TRAIL A

STA 8+75.15 TO STA 9+89.54
STA 16+84.52 TO STA 17+39.27



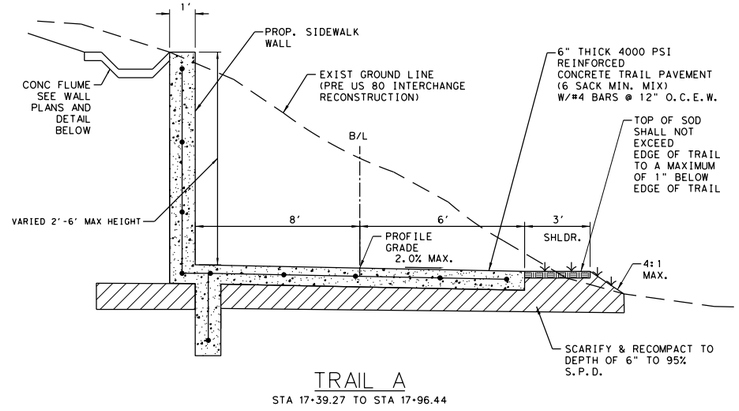
TRAIL A

STA 10+41.80 TO 12+61.50



TRAIL A

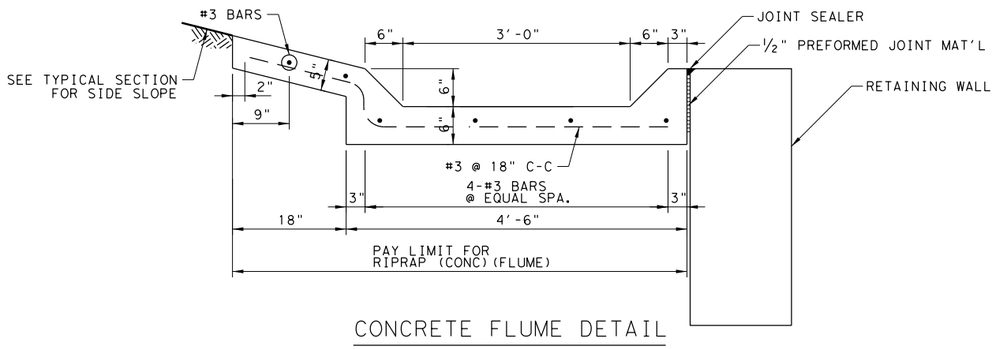
STA 9+87.97 TO STA 10+41.80
STA 12+61.50 TO STA 16+84.52



TRAIL A

STA 17+39.27 TO STA 17+96.44

NOTES:
1. RIPRAP (FLUME) IS CALCULATED USING AN APPROXIMATE FACTOR OF 0.098 CY/LF.
2. CONTRACTOR SHALL INSTALL A VERTICAL ¾" DEEP TOOLED, 3/16" TO 1/4" WIDE JOINT AT 30' CENTERS.



CONCRETE FLUME DETAIL

NOTES:

1. THE CENTERLINE OF THE TRAIL AS SHOWN IN THE TYPICAL SECTIONS SHALL BE THE PROFILE GRADE LINE OF THE TRAIL AS DEPICTED IN THE PLAN/PROFILE SHEETS.
2. THE CROSS-SLOPE OF THE TRAIL SHALL BE TYPICAL 1.5% (2% MAX. PER ADA) AND SHALL BE SLOPED IN THE SAME CROSS-SLOPE DIRECTION AS THE EXISTING GROUND IN ORDER TO MINIMIZE CUT AND FILL AND TO MAINTAIN DRAINAGE OFF TRAIL, UNLESS OTHERWISE NOTED ON PLANS. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
3. THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING AND SHALL STAKE THE CENTERLINE OF THE PATH IN THE FIELD FOR APPROVAL BY THE ENGINEER AND THE CITY PRIOR TO SETTING FORMWORK.
4. IT IS THE INTENT OF THE ALIGNMENT SHOWN TO MINIMIZE THE IMPACT ON EXISTING TREES. MINOR ADJUSTMENT TO THE HORIZONTAL AND/OR VERTICAL ALIGNMENT THAT WOULD REDUCE OR ELIMINATE THESE IMPACTS MAY BE PERMITTED SUBJECT TO CITY ENGINEER FOR APPROVAL.
5. ALL EMBANKMENT MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT 0% TO +6% OPTIMUM MOISTURE IN MAXIMUM 12" LOOSE LIFTS.
6. CENTERLINE STRIPE SHALL BE A 4" YELLOW PAINTED STRIPE THAT IS 3' IN LENGTH WITH A 9' SPACE BETWEEN STRIPES.
7. CROSS-SLOPE DIRECTION FOR SHOULDERS SHALL MATCH DIRECTION OF TRAIL.
8. LEVEL OF SOD SHALL NOT EXCEED TOP OF TRAIL. SOD SHALL NOT BE HIGHER THAN TRAIL, RESULTING IN TRAPPED WATER.
9. SCARIFICATION SHALL BE A MINIMUM OF 1.0' BEYOND EDGE OF PAVEMENT.
10. O.C.E.W. = ON CENTERS, EACH WAY

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A TYPICAL SECTIONS

SCALE: N/A SHEET 1 OF 2

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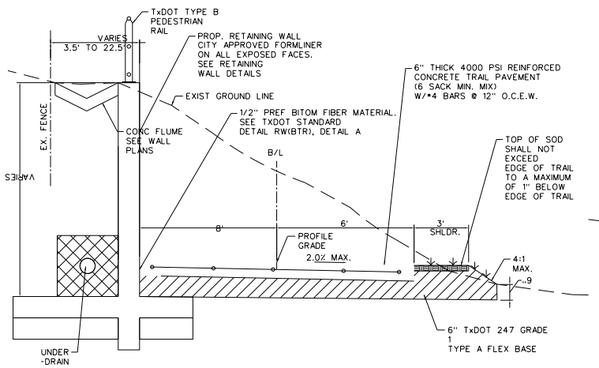
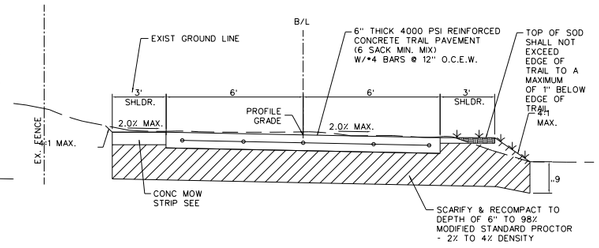
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 44



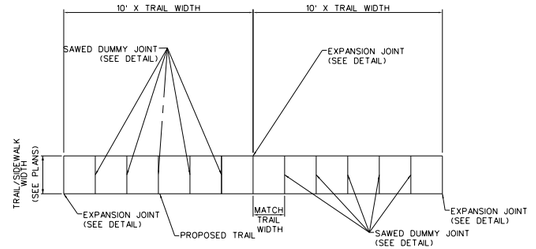
TRAIL A

STA 19+89.53 TO STA 35+02.22

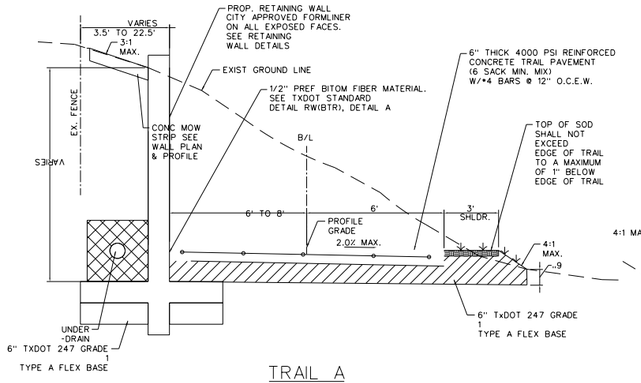


TRAIL A

STA 35+22.21 TO STA 41+64.15

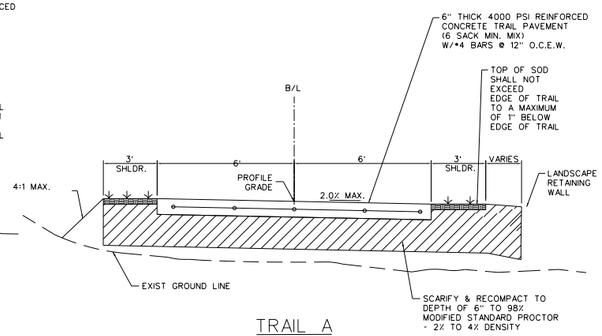


TRAIL/SIDEWALK TYPICAL JOINT DETIAL



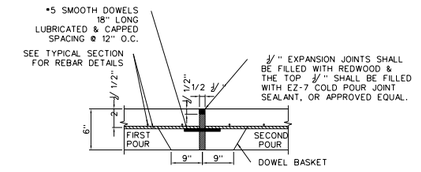
TRAIL A

STA 35+02.22 TO STA 35+07.20

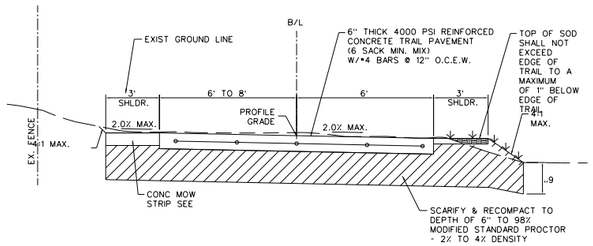


TRAIL A

STA 41+64.15 TO STA 44+33.27

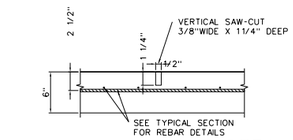


EXPANSION JOINT DETAIL



TRAIL A

STA 35+07.20 TO STA 35+22.21



SAWED DUMMY JOINT DETAIL

JOINT NOTES:

1. SEE PLAN SHEET 123 FOR JOINT SPACING DETAILS.
2. EXPANSION JOINT WIDTH = 1/2".
3. EXPANSION JOINT SHALL BE FILLED WITH REDWOOD & SEALANT FOLLOWING MANUFACTURER'S RECOMMENDATION.
4. MINIMUM 48 HOUR CURE TIME REQUIRED BEFORE OPENING TO TRAFFIC (ALL SEALED JOINTS).
5. JOINTS IN FACE OF CURB SHALL BE SEALED WITH EZ-7 JOINT SEALANT HIGH VISCOSITY, COLD POUR OR EQUAL.

NOTES:

1. THE CENTERLINE OF THE TRAIL AS SHOWN IN THE TYPICAL SECTIONS SHALL BE THE PROFILE GRADE LINE OF THE TRAIL AS DEPICTED IN THE PLAN/PROFILE SHEETS.
2. THE CROSS-SLOPE OF THE TRAIL SHALL BE TYPICAL 1.5% (2% MAX. PER ADA) AND SHALL BE SLOPED IN THE SAME CROSS-SLOPE DIRECTION AS THE EXISTING GROUND IN ORDER TO MINIMIZE CUT AND FILL AND TO MAINTAIN DRAINAGE OFF TRAIL, UNLESS OTHERWISE NOTED ON PLANS. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
3. THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING AND SHALL STAKE THE CENTERLINE OF THE PATH IN THE FIELD FOR APPROVAL BY THE ENGINEER AND THE CITY PRIOR TO SETTING FORMWORK.
4. IT IS THE INTENT OF THE ALIGNMENT SHOWN TO MINIMIZE THE IMPACT ON EXISTING TREES. MINOR ADJUSTMENT TO THE HORIZONTAL AND/OR VERTICAL ALIGNMENT THAT WOULD REDUCE OR ELIMINATE THESE IMPACTS MAY BE PERMITTED SUBJECT TO CITY ENGINEER FOR APPROVAL.
5. ALL EMBANKMENT MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT 0% TO +6% OPTIMUM MOISTURE IN MAXIMUM 12" LOOSE LIFTS.
6. CENTERLINE STRIPE SHALL BE A 4" YELLOW PAINTED STRIPE THAT IS 3' IN LENGTH WITH A 9' SPACE BETWEEN STRIPES.
7. CROSS-SLOPE DIRECTION FOR SHOULDERS SHALL MATCH DIRECTION OF TRAIL.
8. LEVEL OF SOD SHALL NOT EXCEED TOP OF TRAIL. SOD SHALL NOT BE HIGHER THAN TRAIL, RESULTING IN TRAPPED WATER.
9. SCARIFICATION SHALL BE A MINIMUM OF 1.0' BEYOND EDGE OF PAVEMENT.
10. O.C.E.W. = ON CENTERS, EACH WAY

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A TYPICAL SECTIONS

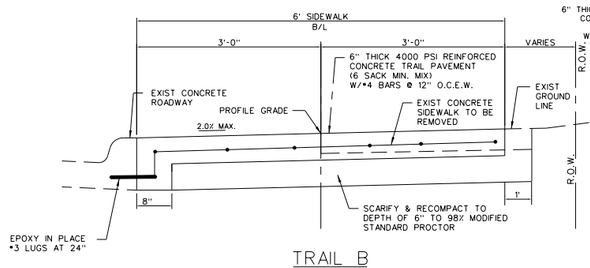
SCALE: N/A

SHEET 2 OF 2

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

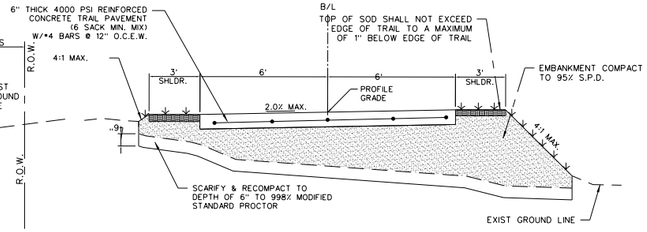
CONTRACT NO. 2024-014

SHEET NO. 45



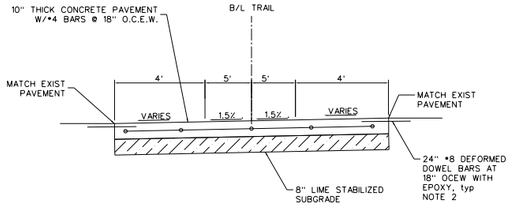
TRAIL B

STA 1+65.91 TO STA 2+71.81



TRAIL B

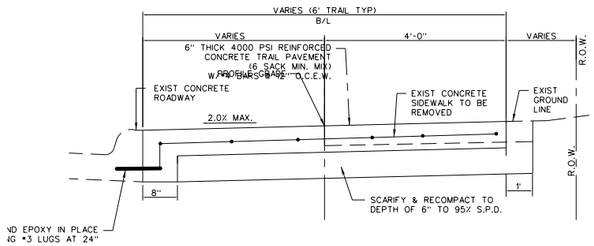
STA 10+97.63 TO STA 11+35.47
STA 14+38.47 TO STA 16+70



TRAIL B SECTION AT N. MESQUITE DRIVE

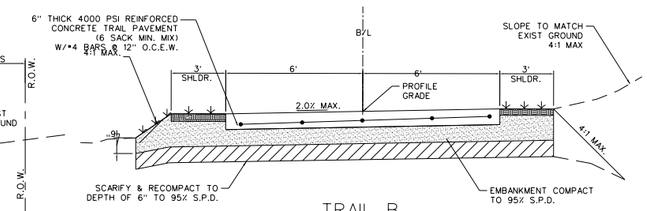
NOTES:

1 SEE CITY OF MESQUITE STANDARD PAVING DETAIL SHEET ONE, TYPICAL 4(5) LANE UNDIVIDED PAVEMENT SECTION FOR DETAIL.



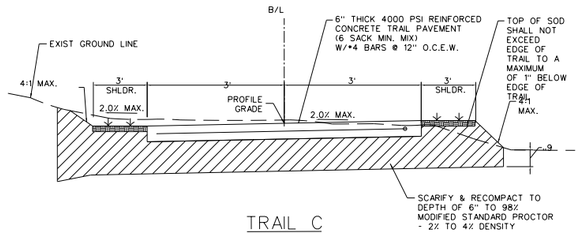
TRAIL B

STA 3+55.35 TO STA 4+52.46

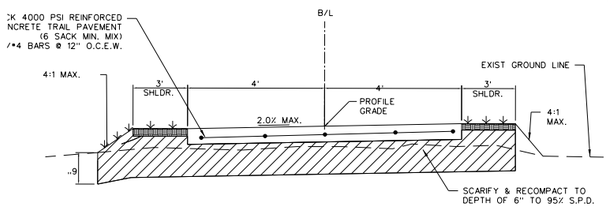


TRAIL B

STA 16+70 TO STA 19+25.46

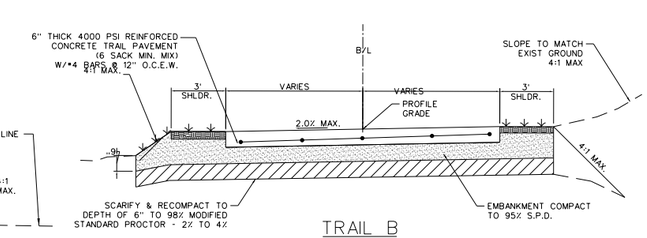


TRAIL C



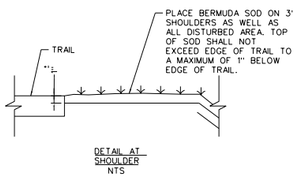
TRAIL B

STA 4+52.46 TO STA 4+97.70

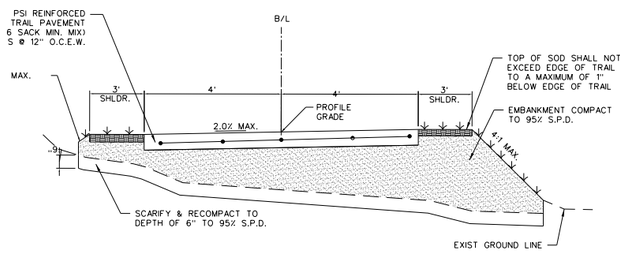


TRAIL B

STA 19+25.46 TO STA 20+33.40

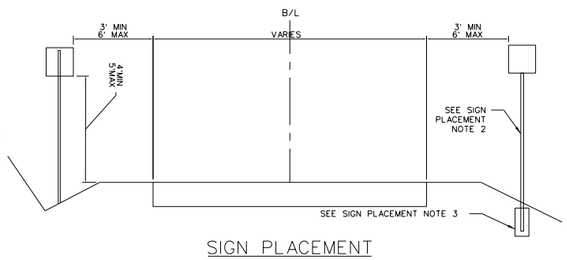


DETAIL AT SHOULDER
NTS



TRAIL B

STA 4+97.70 TO STA 10+97.63



SIGN PLACEMENT

SIGN PLACEMENT NOTES

1. ALL SIGNS ALONG THE TRAILS ARE TO BE PEDESTRIAN/BICYCLE SIZED SIGNS IN ACCORDANCE WITH M.U.T.C.D. UNLESS OTHERWISE NOTED.
2. SIGN POST SHALL BE PER CITY OF MESQUITE STANDARD SPECIFICATION FOR NEW DEVELOPMENT SIGNAGE, UNLESS OTHERWISE NOTED.
3. SIGN POST FOUNDATIONS SHALL BE A BREAKAWAY SIGN SUPPORT SYSTEM PER THE CITY OF MESQUITE STANDARD SPECIFICATION FOR NEW DEVELOPMENT SIGNAGE, UNLESS OTHERWISE NOTED.
4. ALL PARTS OF THE SIGN ASSEMBLY INCLUDING SIGN, POST, FOUNDATION, U-BOLTS BRACKETS, FRICTION CAPS, ETC. SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM.

JOINT NOTES:

1. SEE PLAN SHEET 123 FOR JOINT SPACING DETAILS.
2. EXPANSION JOINT WIDTH = 1/2".
3. EXPANSION JOINT SHALL BE FILLED WITH REDWOOD & SEALANT FOLLOWING MANUFACTURER'S RECOMMENDATION.
4. MINIMUM 48 HOUR CURE TIME REQUIRED BEFORE OPENING TO TRAFFIC (ALL SEALED JOINTS).
5. JOINTS IN FACE OF CURB SHALL BE SEALED WITH EZ-7 JOINT SEALANT HIGH VISCOSITY, COLD POUR OR EQUAL.

NOTES:

1. THE CENTERLINE OF THE TRAIL AS SHOWN IN THE TYPICAL SECTIONS SHALL BE THE PROFILE GRADE LINE OF THE TRAIL AS DEPICTED IN THE PLAN/PROFILE SHEETS.
2. THE CROSS-SLOPE OF THE TRAIL SHALL BE TYPICAL 1.5% (2% MAX. PER ADA) AND SHALL BE SLOPED IN THE SAME CROSS-SLOPE DIRECTION AS THE EXISTING GROUND IN ORDER TO MINIMIZE CUT AND FILL AND TO MAINTAIN DRAINAGE OFF TRAIL, UNLESS OTHERWISE NOTED ON PLANS. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
3. THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING AND SHALL STAKE THE CENTERLINE OF THE PATH IN THE FIELD FOR APPROVAL BY THE ENGINEER AND THE CITY PRIOR TO SETTING FORMWORK.
4. IT IS THE INTENT OF THE ALIGNMENT SHOWN TO MINIMIZE THE IMPACT ON EXISTING TREES. MINOR ADJUSTMENT TO THE HORIZONTAL AND/OR VERTICAL ALIGNMENT THAT WOULD REDUCE OR ELIMINATE THESE IMPACTS MAY BE PERMITTED SUBJECT TO CITY ENGINEER FOR APPROVAL.
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7. CROSS-SLOPE DIRECTION FOR SHOULDERS SHALL MATCH DIRECTION OF TRAIL.
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9. SCARIFICATION SHALL BE A MINIMUM OF 1.0' BEYOND EDGE OF PAVEMENT.
10. O.C.E.W. = ON CENTERS, EACH WAY

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B & C TYPICAL SECTIONS

SCALE: N/A

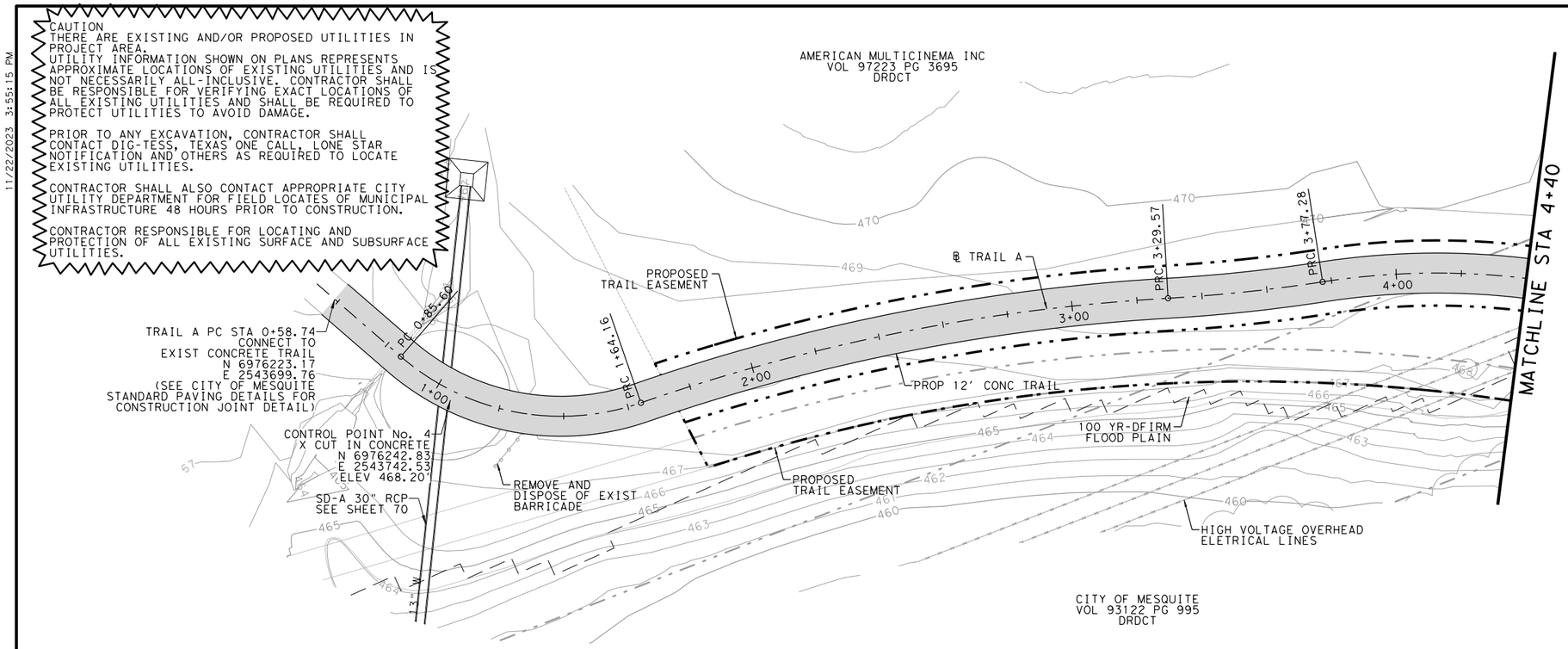
SHEET 1 OF 1

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

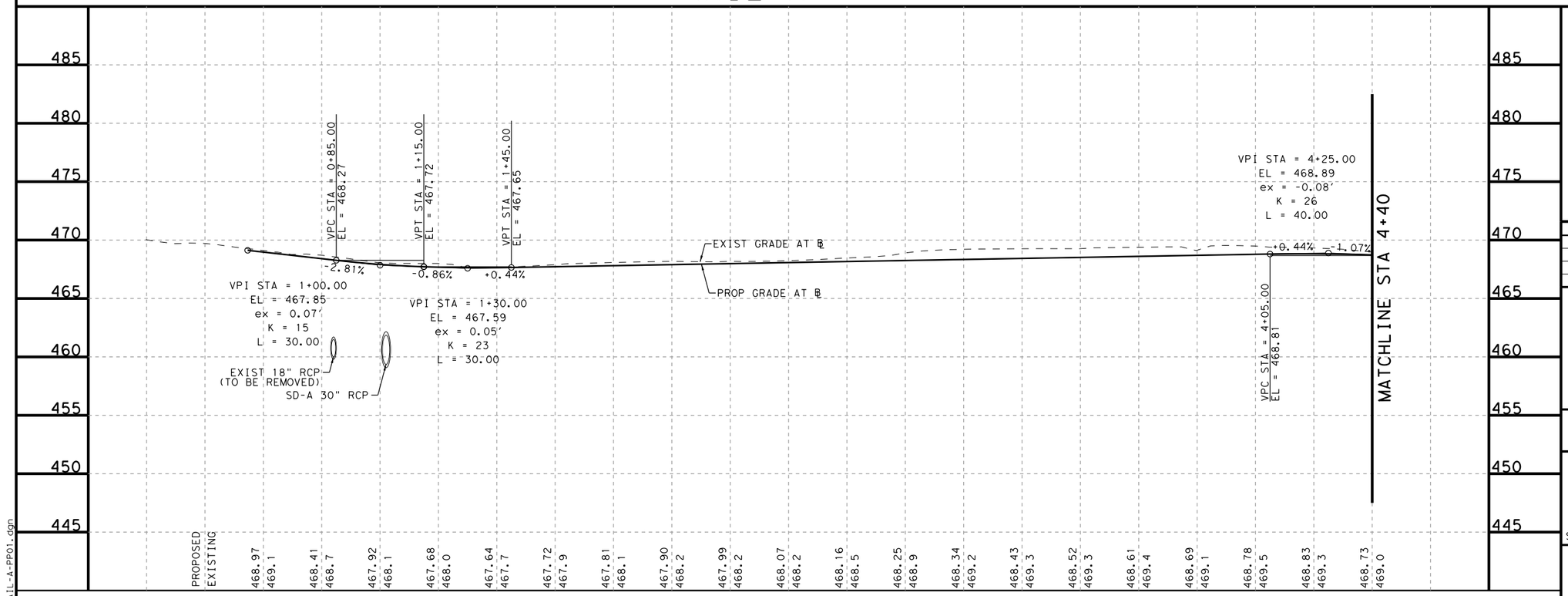
CONTRACT NO. 2024-014

SHEET NO. 46

11/22/2023 3:55:15 PM



TRAIL A



LEGEND

DIRECTIONAL ARROW

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.

4. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.

5. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

6. SEE SHEETS 105 THROUGH 115 FOR TRAIL CROSS SECTIONS.

7. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

8. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.

9. REQUIRED DE-ENERGIZING POWER LINES IN ORDER TO FACILITATE PROPOSED TRAIL AND BRIDGE CONSTRUCTION IS AN INCIDENTAL TO PERTINENT CONTRACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

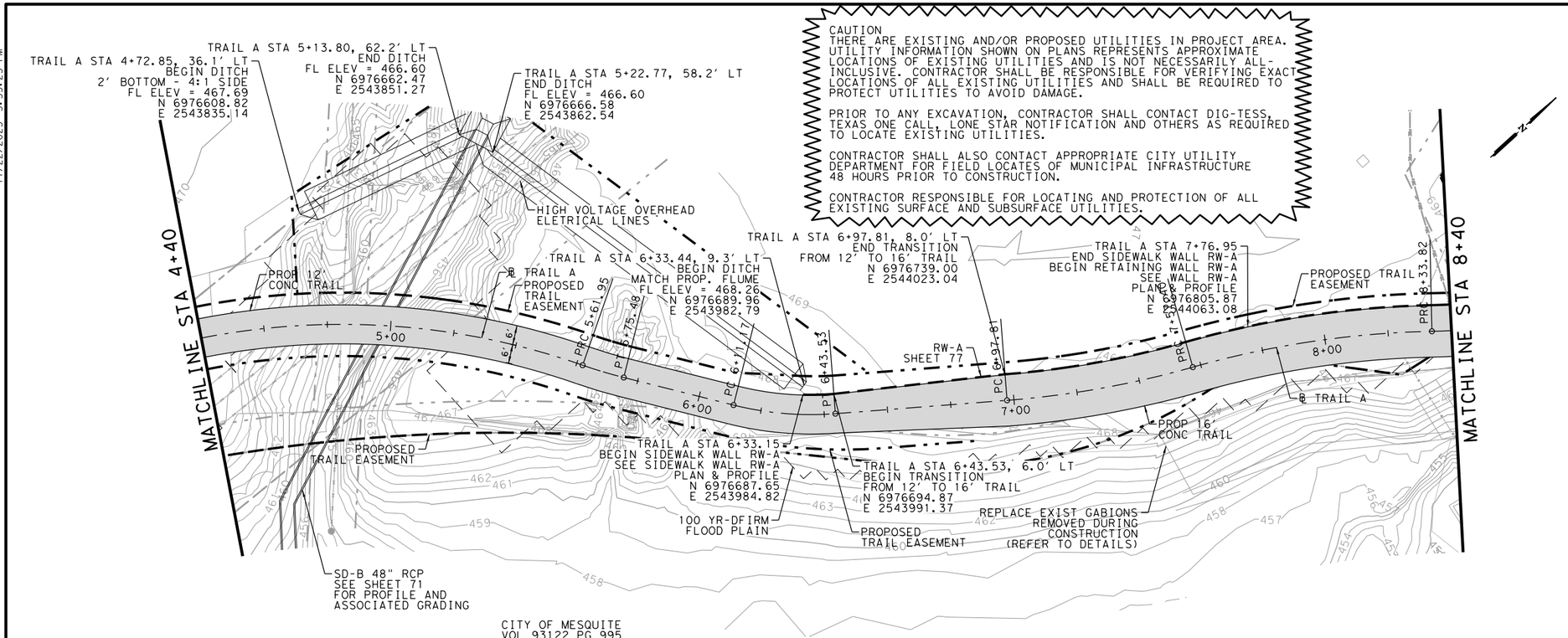
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
BEGIN PROJECT TO STA 4+40

SCALE: H:1"=40' V:1"=10' SHEET 1 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 47



CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

LEGEND

DIRECTIONAL ARROW

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS, TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.

4. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.

5. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

6. SEE SHEETS 105 THROUGH 115 FOR TRAIL CROSS SECTIONS.

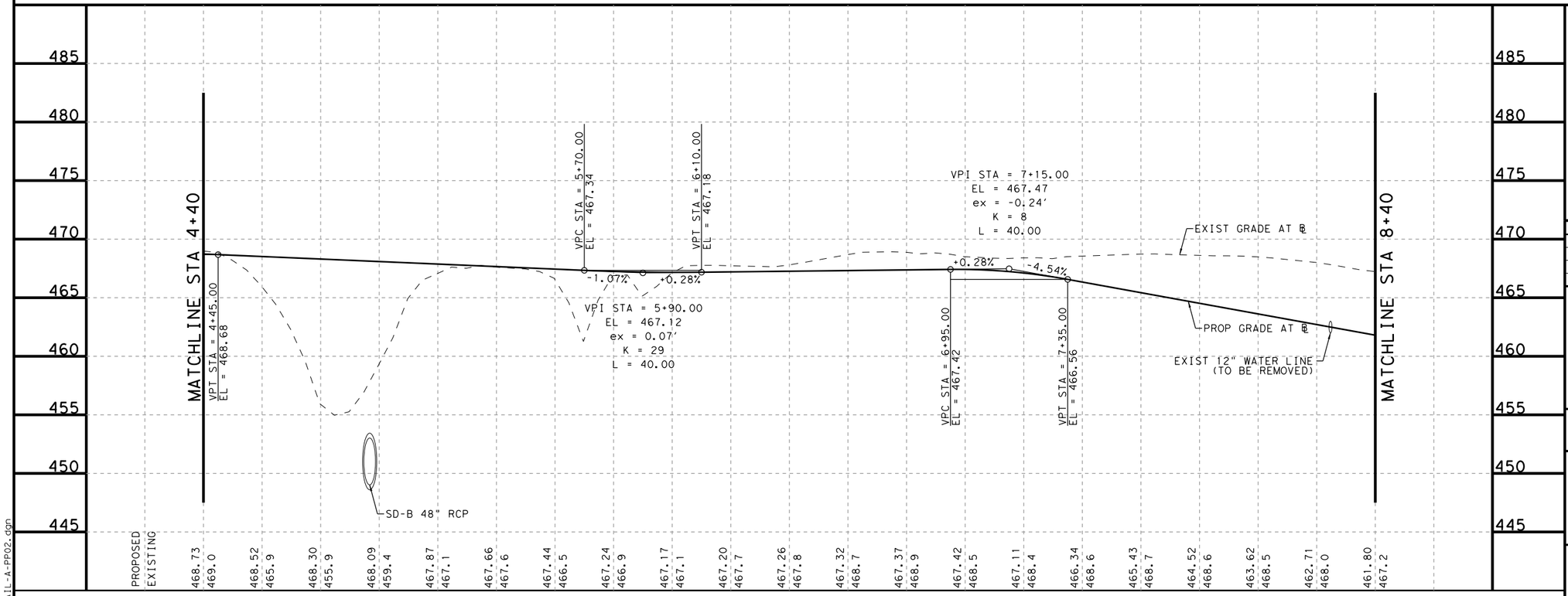
7. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

8. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.

9. REQUIRED DE-ENERGIZING POWER LINES IN ORDER TO FACILITATE PROPOSED TRAIL AND BRIDGE CONSTRUCTION IS AN INCIDENTAL TO PERTINENT CONTRACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.

10. FOR ALL RETAINING WALL DETAILS SEE SHEETS 99-100

TRAIL A



DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 4+40 TO STA 8+40

SCALE: H:1"=40' V:1"=10' SHEET 2 OF 11

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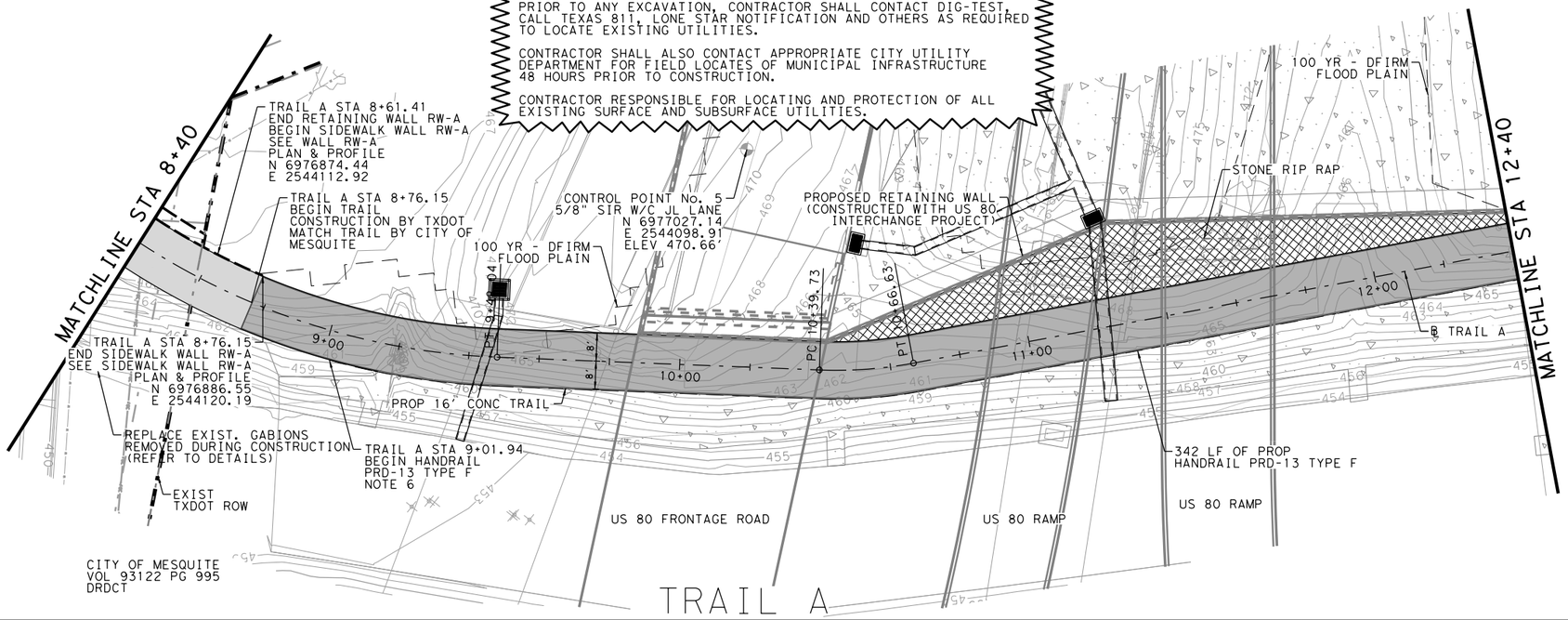
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 48

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

N



NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.

4. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.

5. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

6. SEE SHEETS 105 THROUGH 115 FOR TRAIL CROSS SECTIONS.

7. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

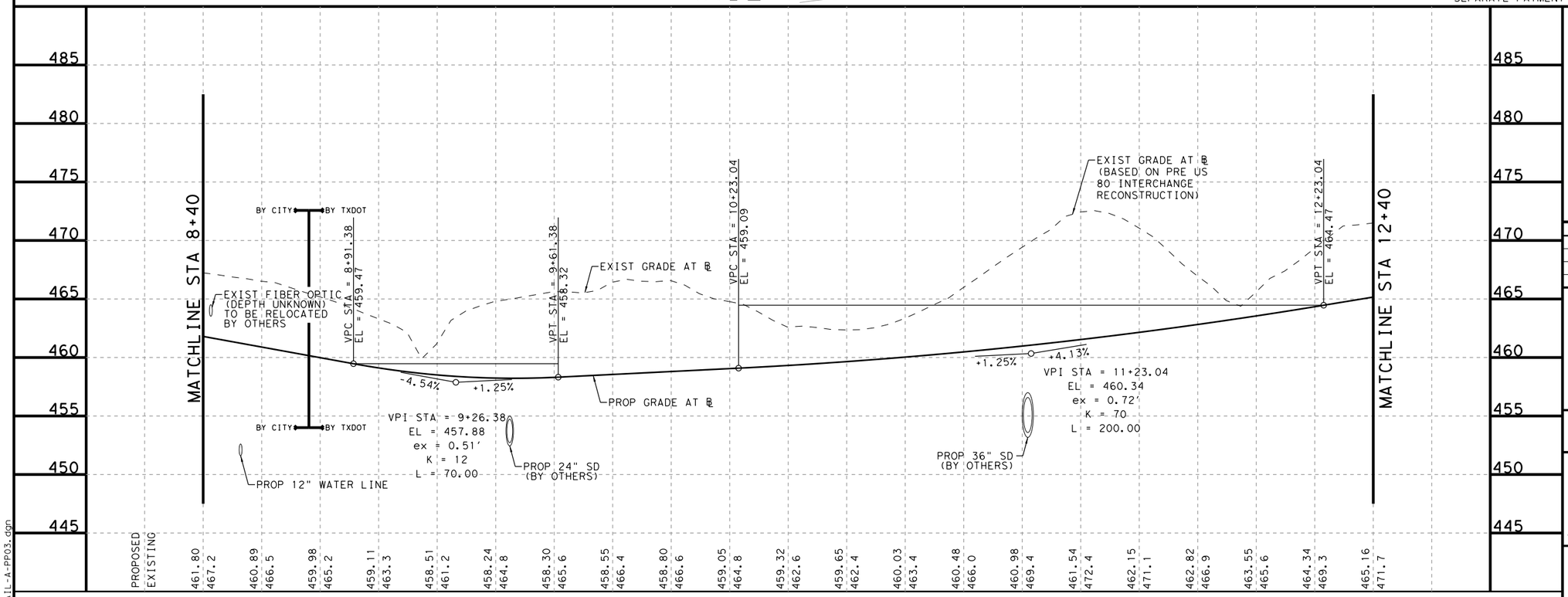
8. SEE TXDOT STD DETAIL ON SHEET 157 FOR PRD-13 TYPE F HANDRAIL.

9. FIBER OPTIC CABLE. PLEASE CONTACT AT&T BEFORE DIGGING. IF IT REMAINS IN PLACE, IT IS CONTRACTOR'S RESPONSIBILITY TO PROTECT THE LINE. ANY DAMAGE IS CONTRACTOR'S RESPONSIBILITY.

10. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

11. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.

12. REQUIRED DE-ENERGIZING POWER LINES IN ORDER TO FACILITATE PROPOSED TRAIL AND BRIDGE CONSTRUCTION IS AN INCIDENTAL TO PERTINENT CONTRACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.



STATE OF TEXAS
BRENNAN P. FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

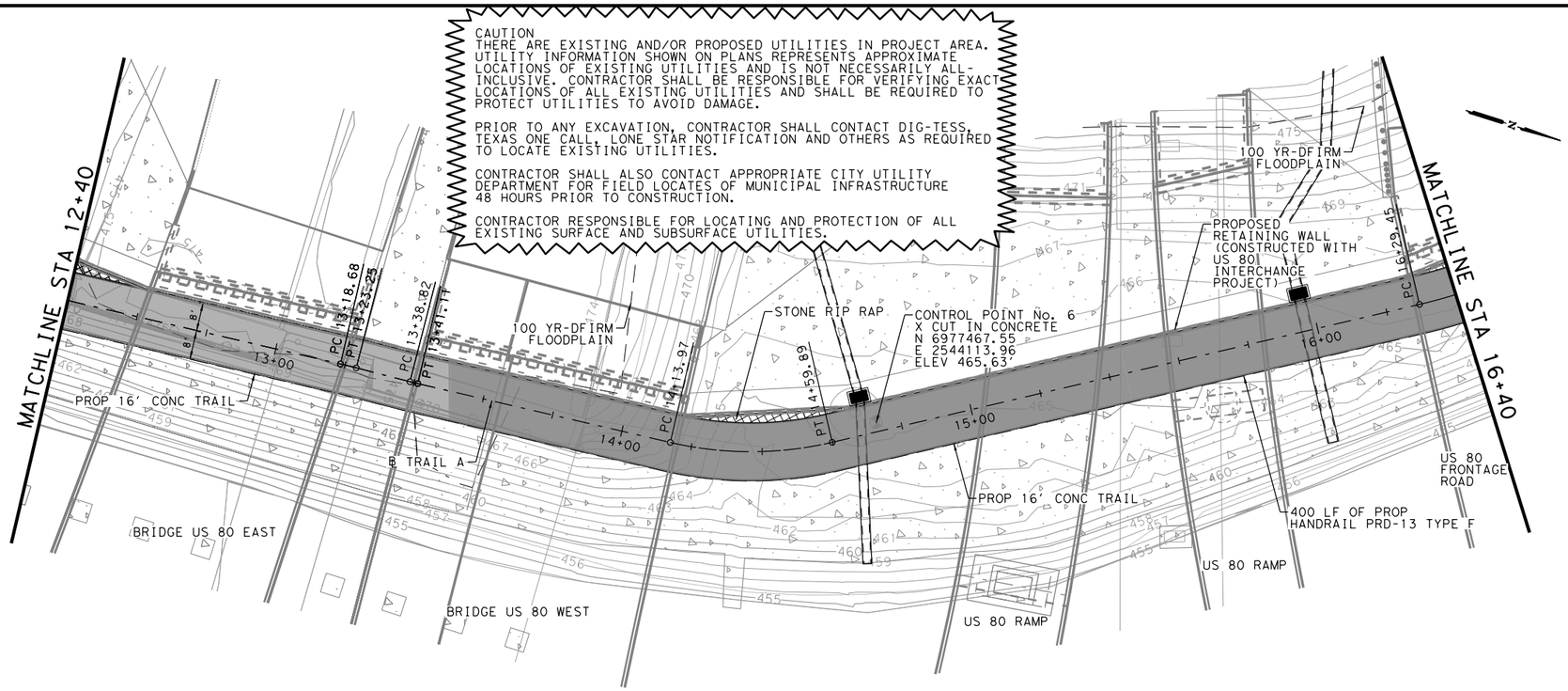
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 8+40 TO STA 12+40

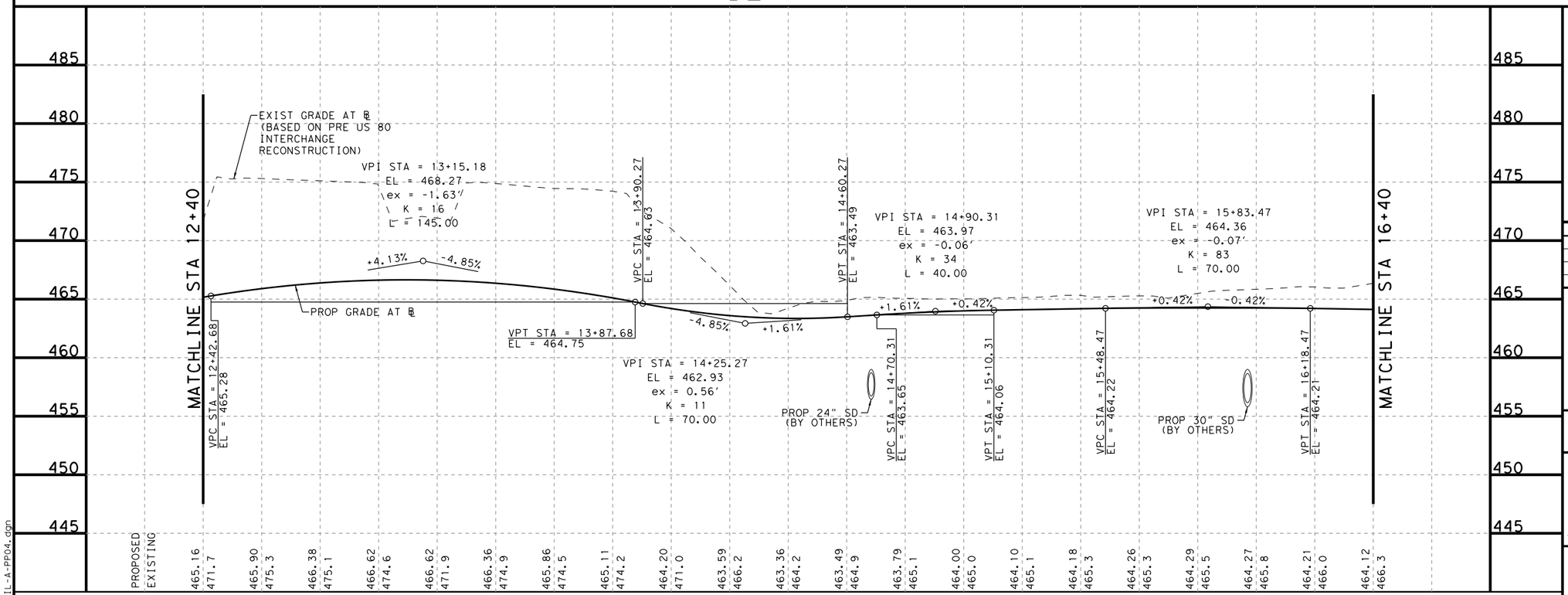
SCALE: H:1"=40' V:1"=10' SHEET 3 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 49



TRAIL A



HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

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3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.

4. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

5. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

6. SEE SHEETS 105 THROUGH 115 FOR TRAIL CROSS SECTIONS.

7. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

8. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.

9. REQUIRED DE-ENERGIZING POWER LINES IN ORDER TO FACILITATE PROPOSED TRAIL AND BRIDGE CONSTRUCTION IS AN INCIDENTAL TO PERTINENT CONTRACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

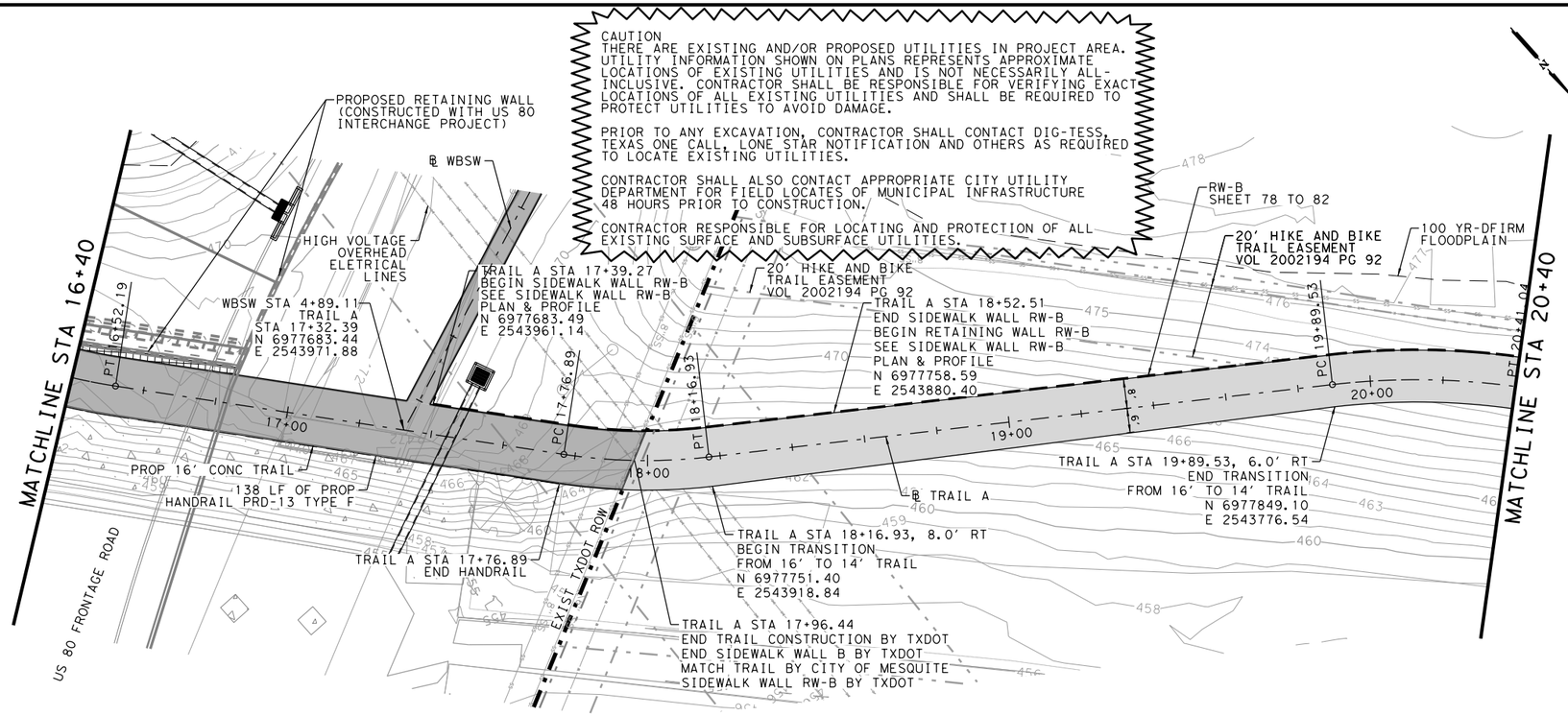
MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 12+40 TO STA 16+40

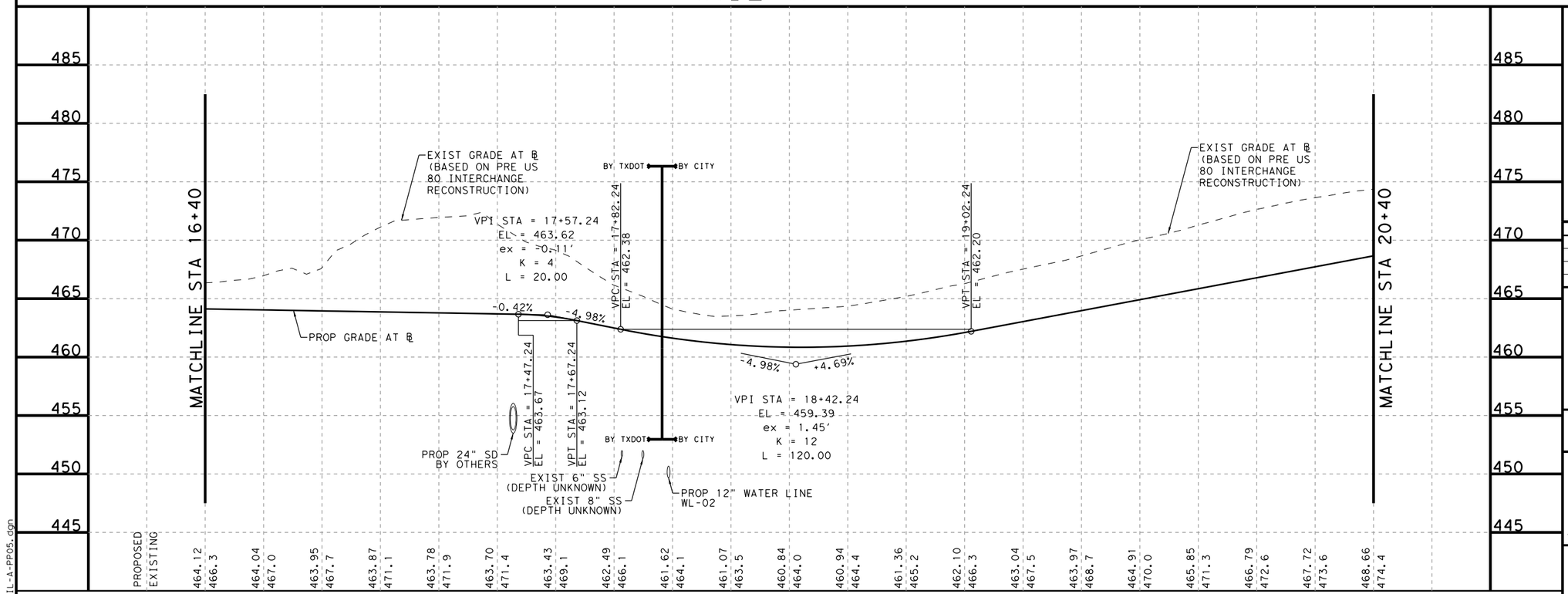
SCALE: H:1"=40' V:1"=10' SHEET 4 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 50



TRAIL A



HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

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3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.

4. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.

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6. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

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8. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

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STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 16+40 TO STA 20+40

SCALE: H:1"=40' V:1"=10' SHEET 5 OF 11

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CONTRACT NO. 2024-014 SHEET NO. 51

CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

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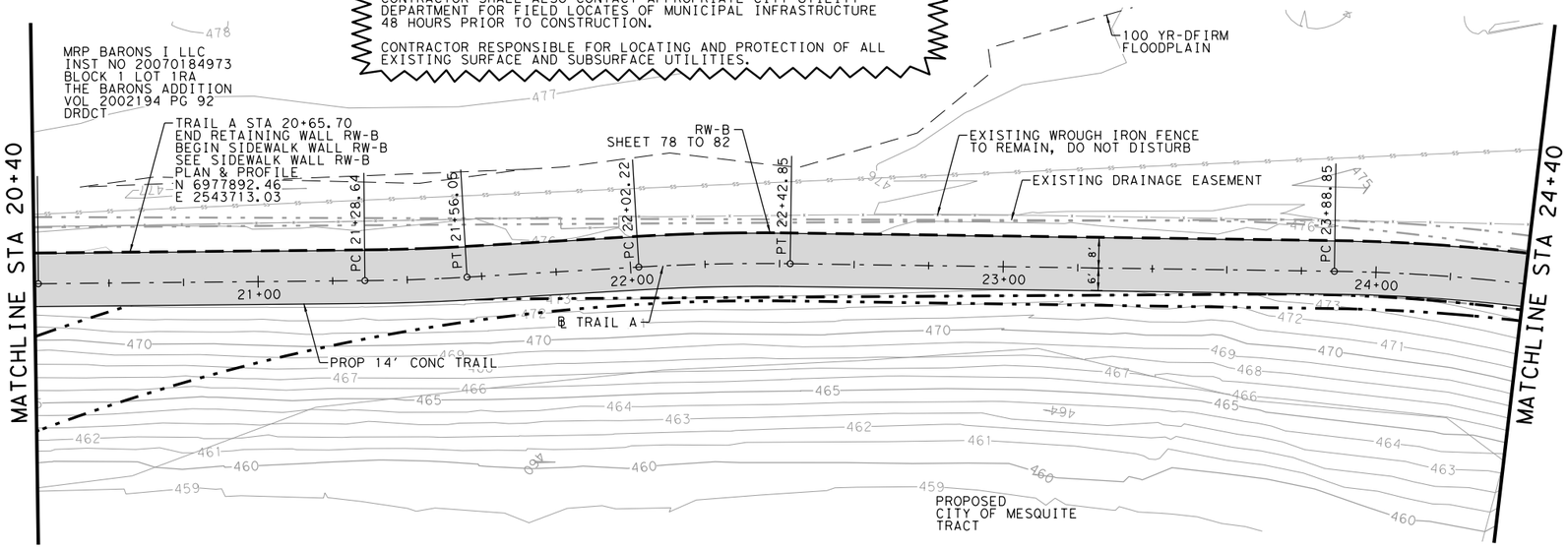
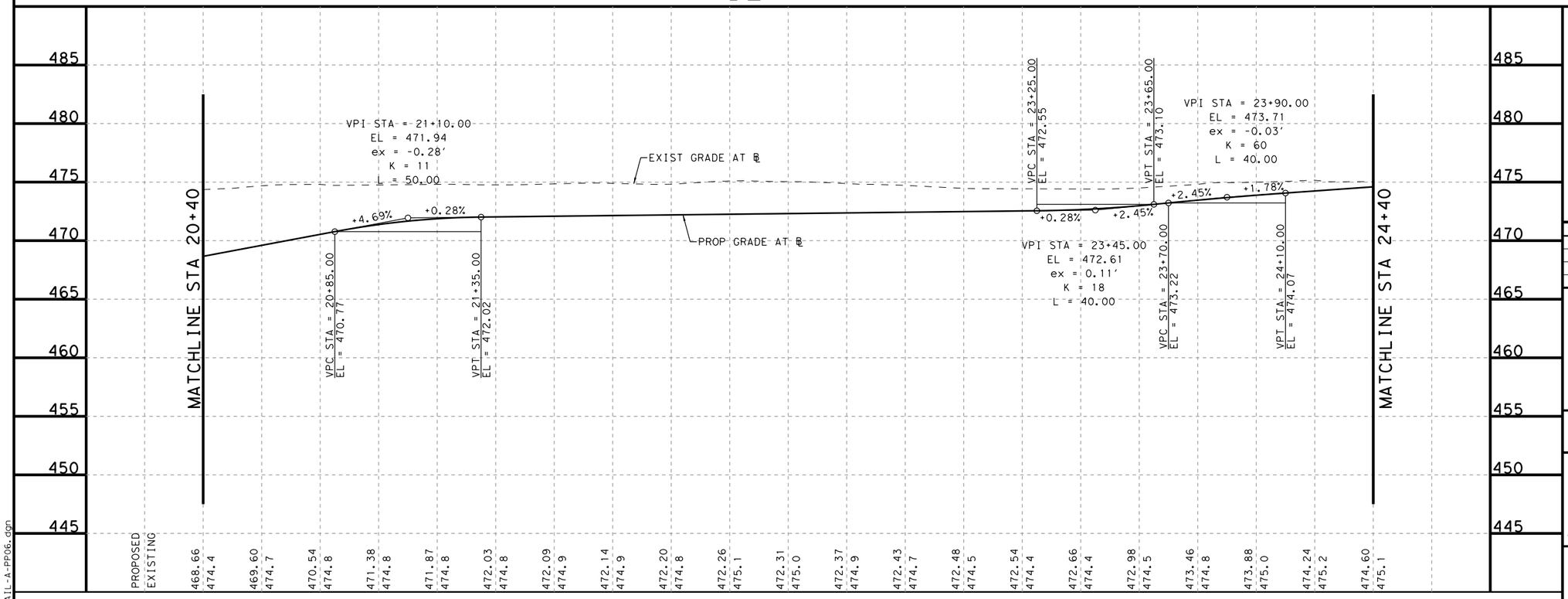
CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.



TRAIL A



LEGEND

DIRECTIONAL ARROW

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

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3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.

4. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.

5. SEE SHEET 101 FOR TRENCH DRAIN DETAIL ON MISCELLANEOUS STRUCTURAL DETAILS (SHEET 1 OF 2).

6. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

7. SEE SHEETS 105 THROUGH 115 FOR TRAIL CROSS SECTIONS.

8. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

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STATE OF TEXAS
BRENNAN P. FANNING
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LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 20+40 TO STA 24+40

SCALE: H:1"=40' V:1"=10' SHEET 6 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
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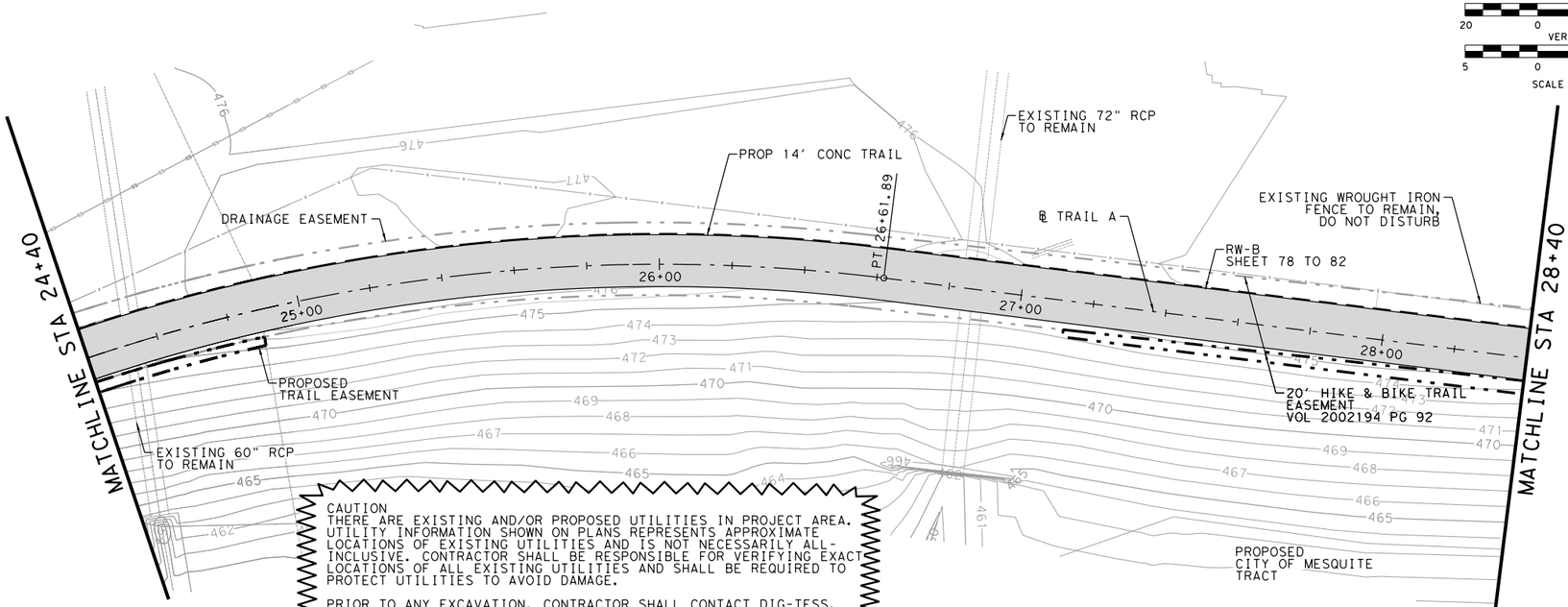
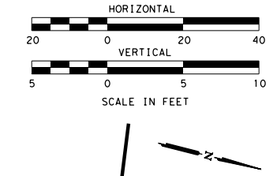
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 52





LEGEND

DIRECTIONAL ARROW

CAUTION
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NOTES

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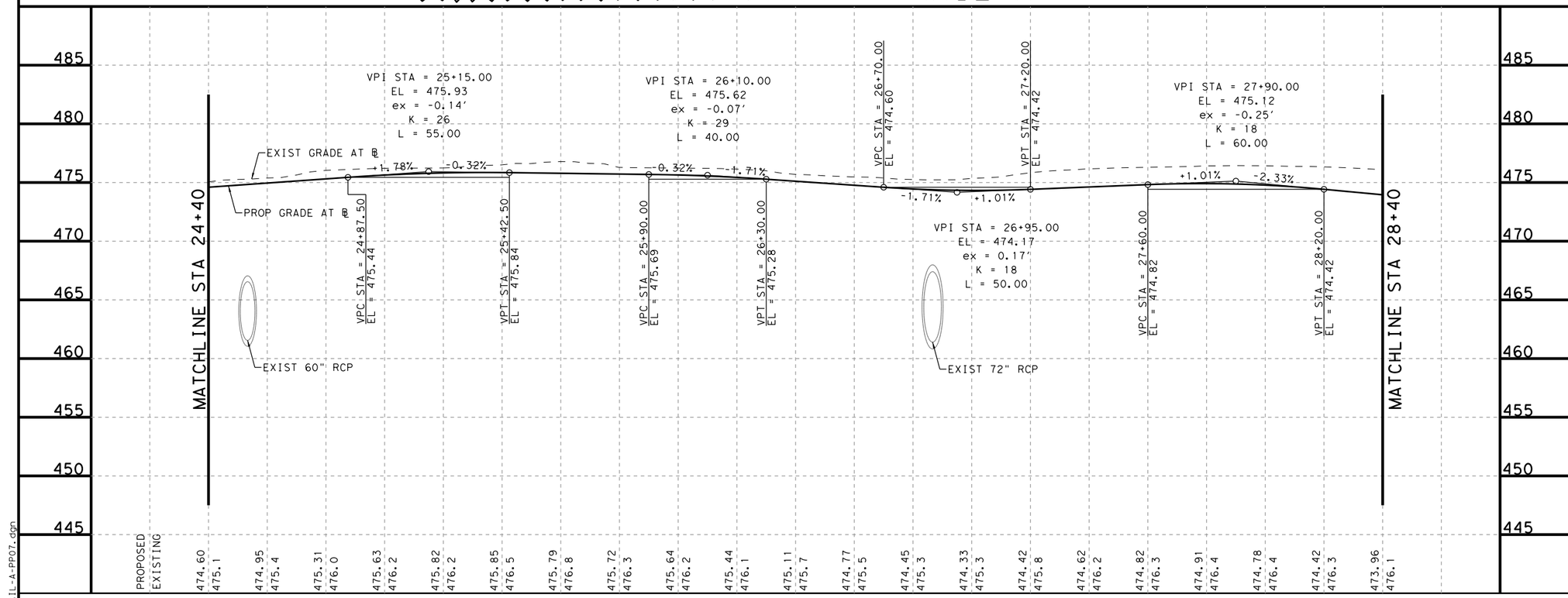
TRAIL A



STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 24+40 TO STA 28+40

SCALE: H:1"=40' V:1"=10' SHEET 7 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 53

11/22/2023 3:57:23 PM

CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

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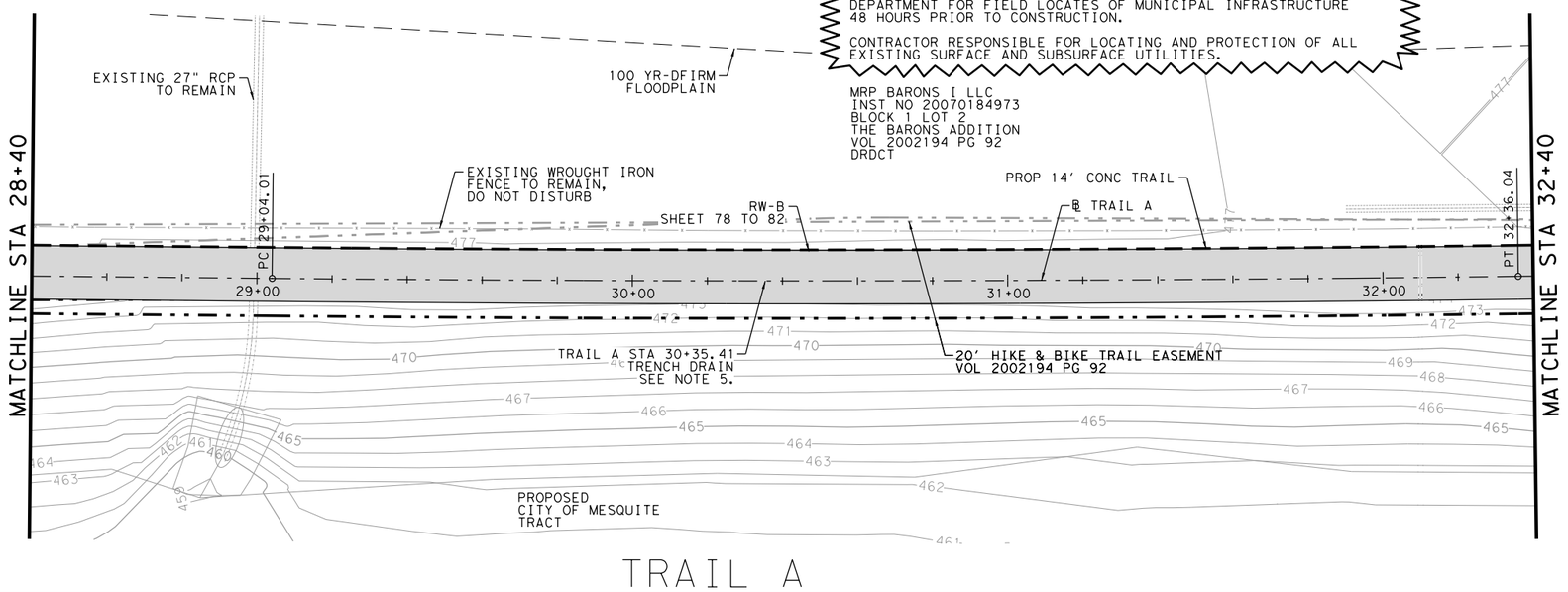
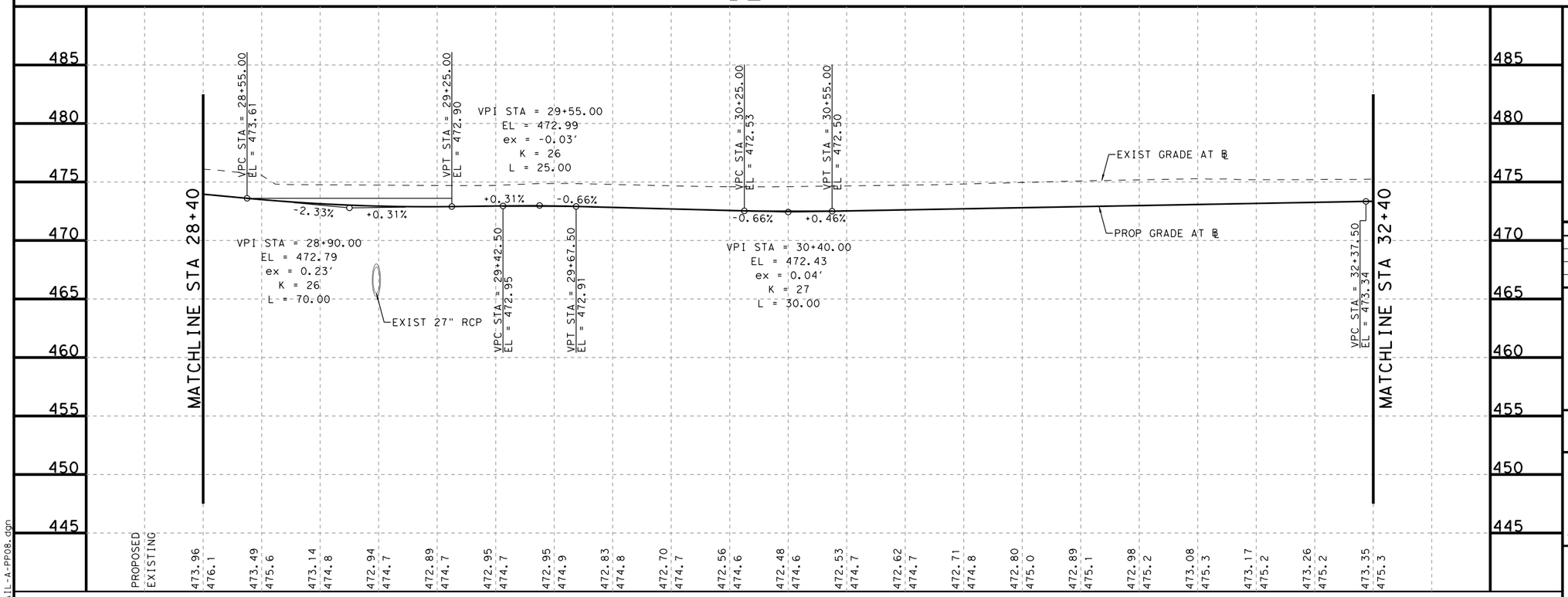
HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

LEGEND
DIRECTIONAL ARROW



TRAIL A



NOTES

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STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 28+40 TO STA 32+40

SCALE: H:1"=40' V:1"=10' SHEET 8 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
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TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 54

CAUTION
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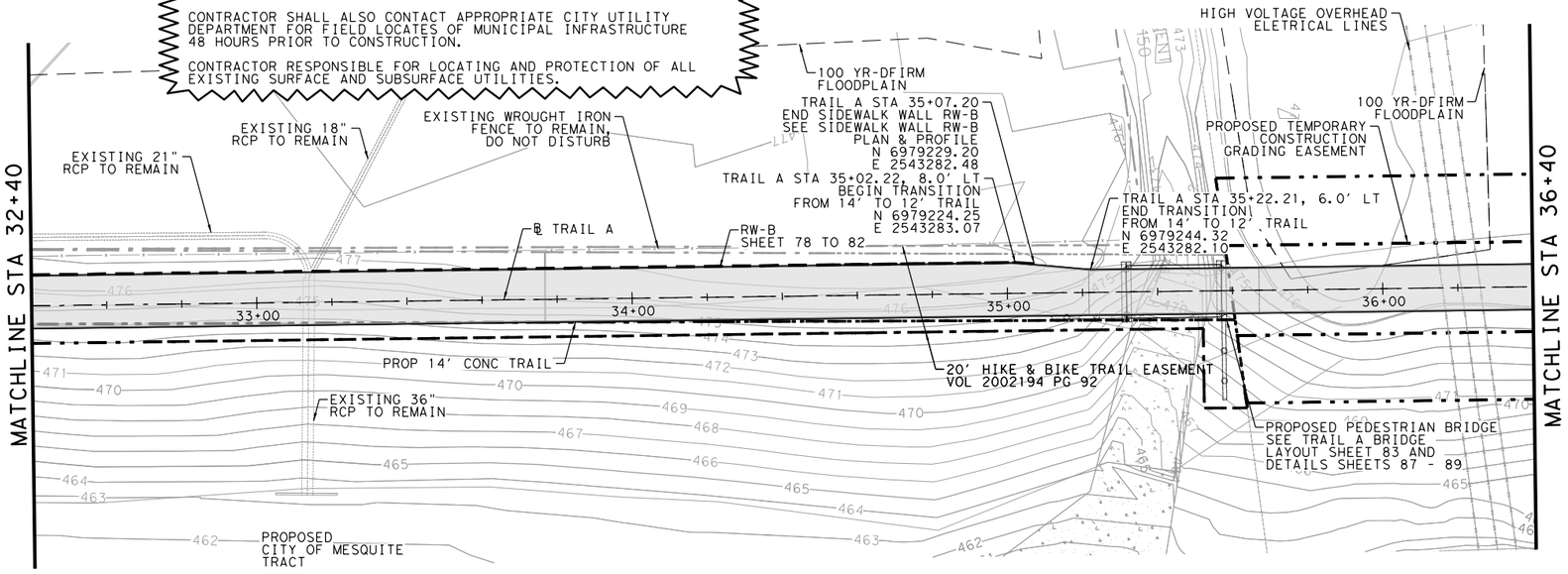
HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

LEGEND
DIRECTIONAL ARROW



NOTES

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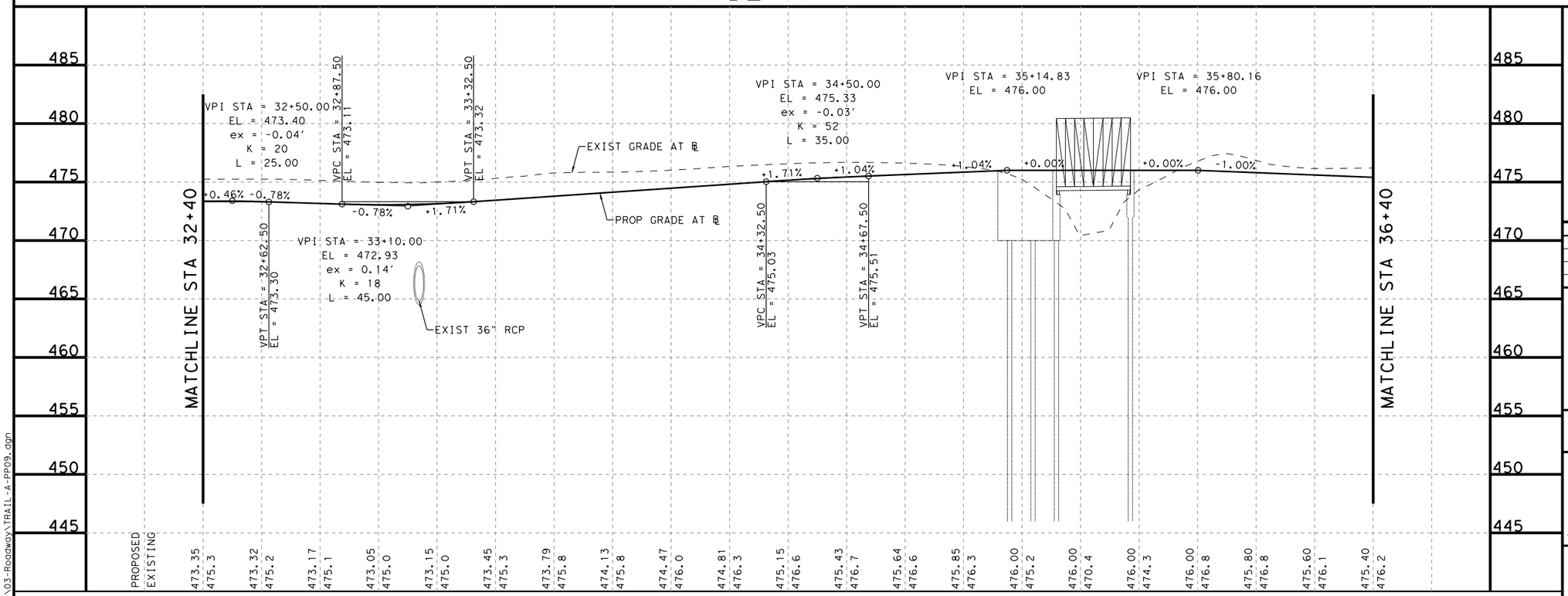
TRAIL A



STATE OF TEXAS
BRENNAN P. FANNING
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LICENSED
PROFESSIONAL ENGINEER
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DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 32+40 TO STA 36+40

SCALE: H:1"=40' V:1"=10' SHEET 9 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
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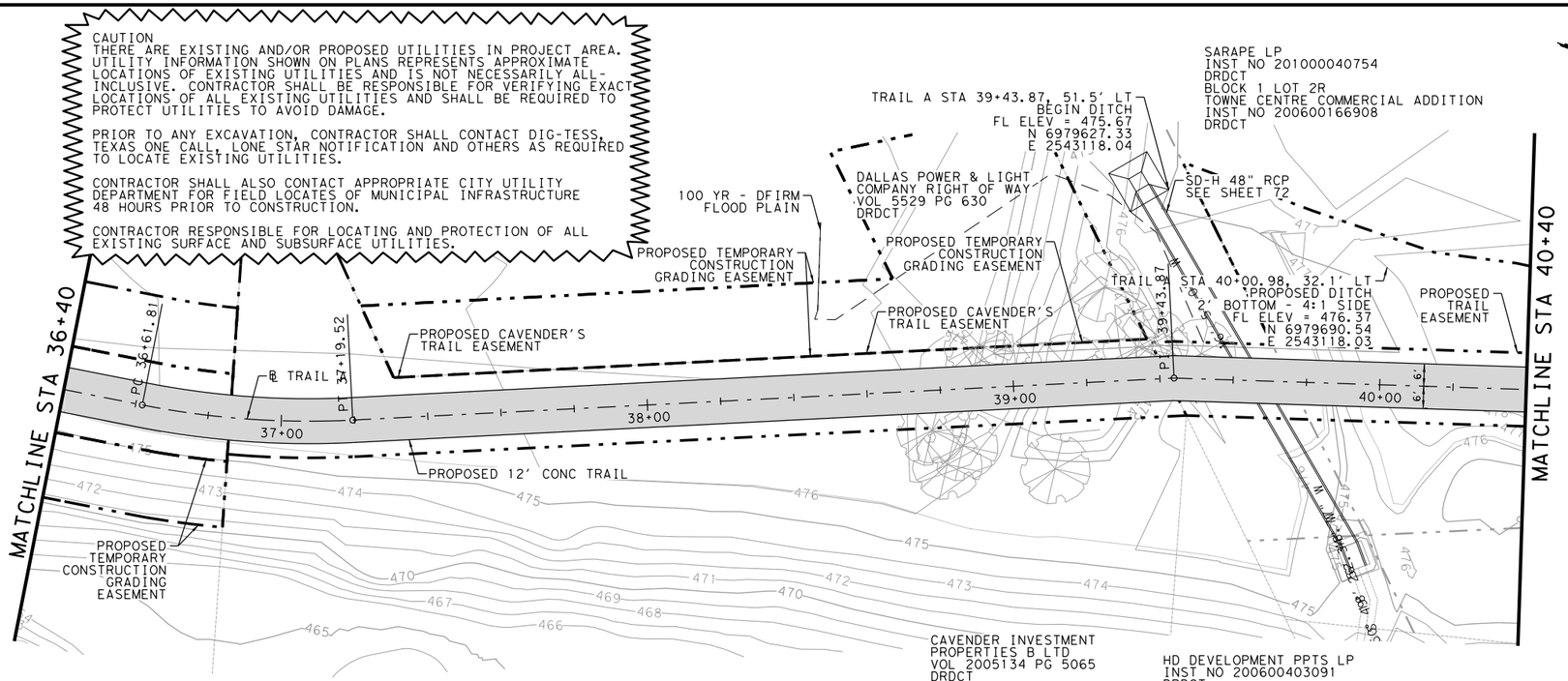
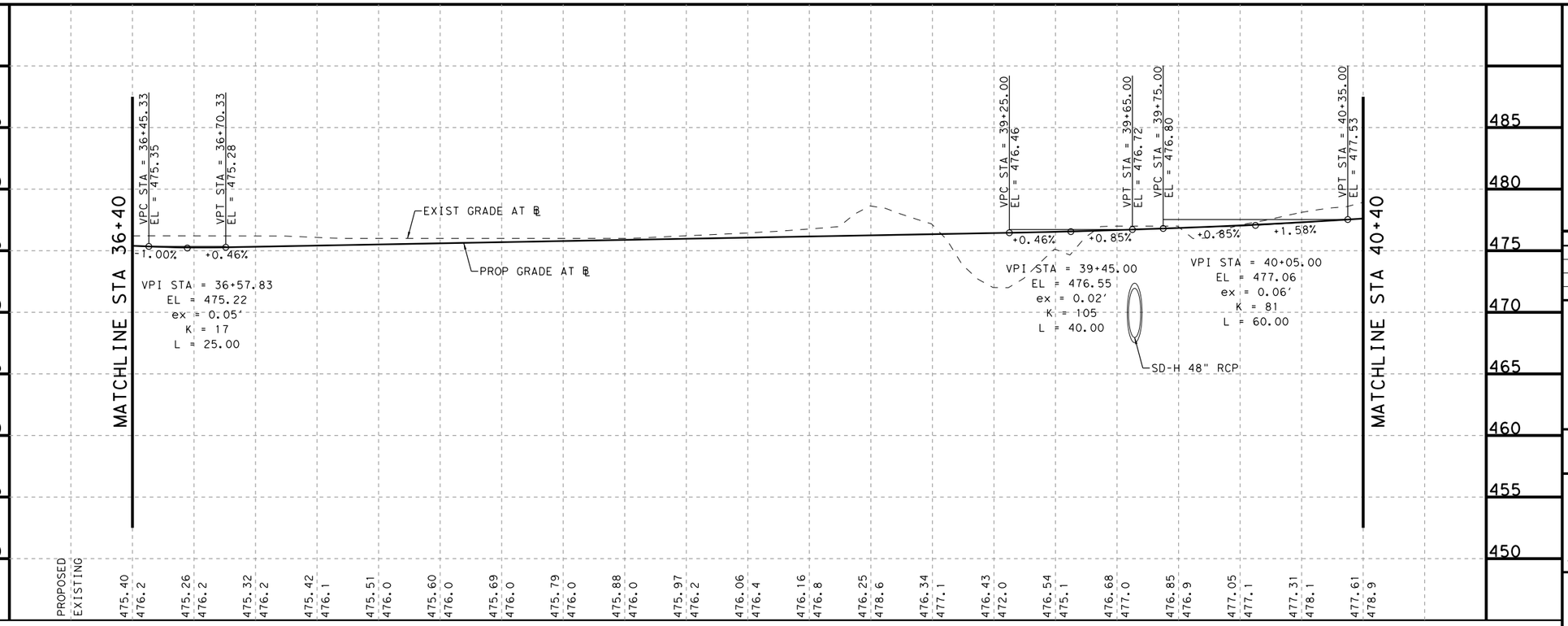
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 55



TRAIL A



LEGEND

DIRECTIONAL ARROW

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

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STATE OF TEXAS
BRENNAN P. FANNING
149259
LICENSED
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11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 36+40 TO STA 40+40

SCALE: H:1"=40' V:1"=10' SHEET 10 OF 11

BGE, Inc.
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CONTRACT NO. 2024-014 SHEET NO. 56

CAUTION
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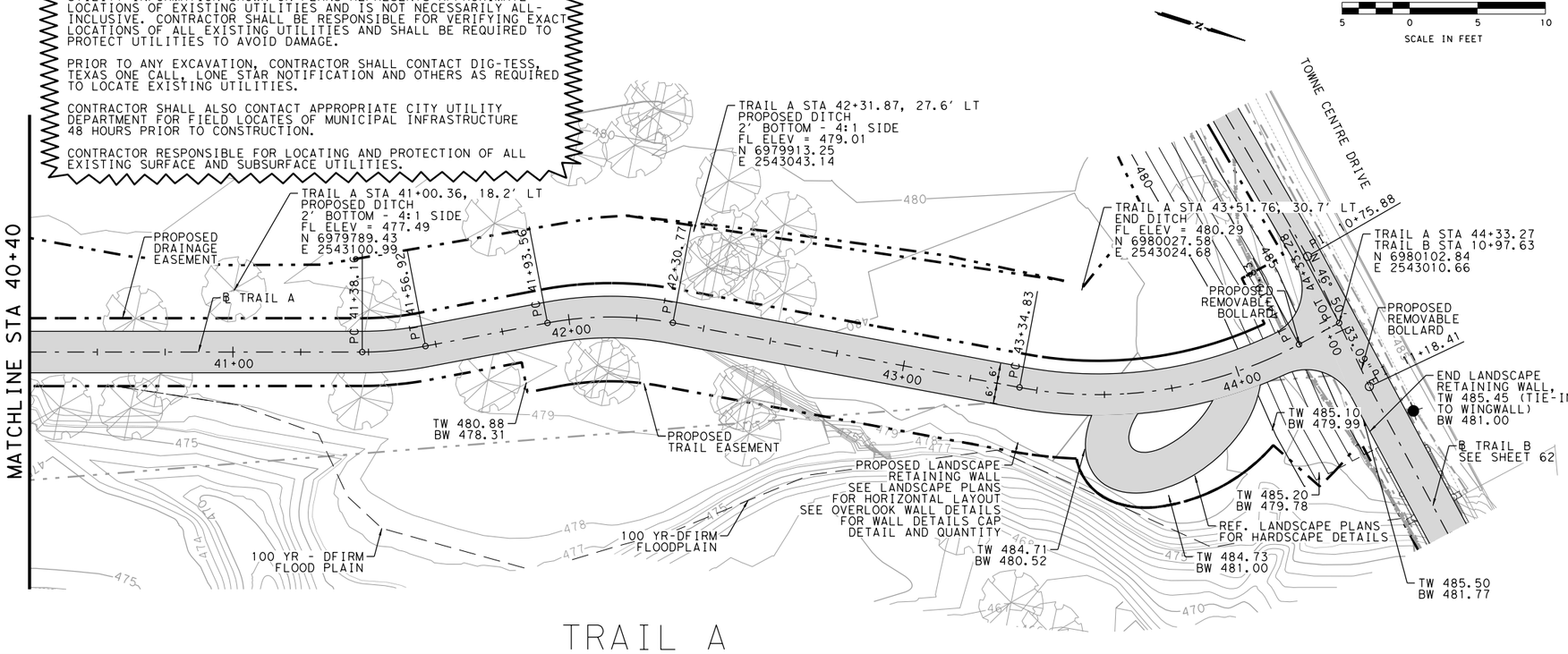
CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

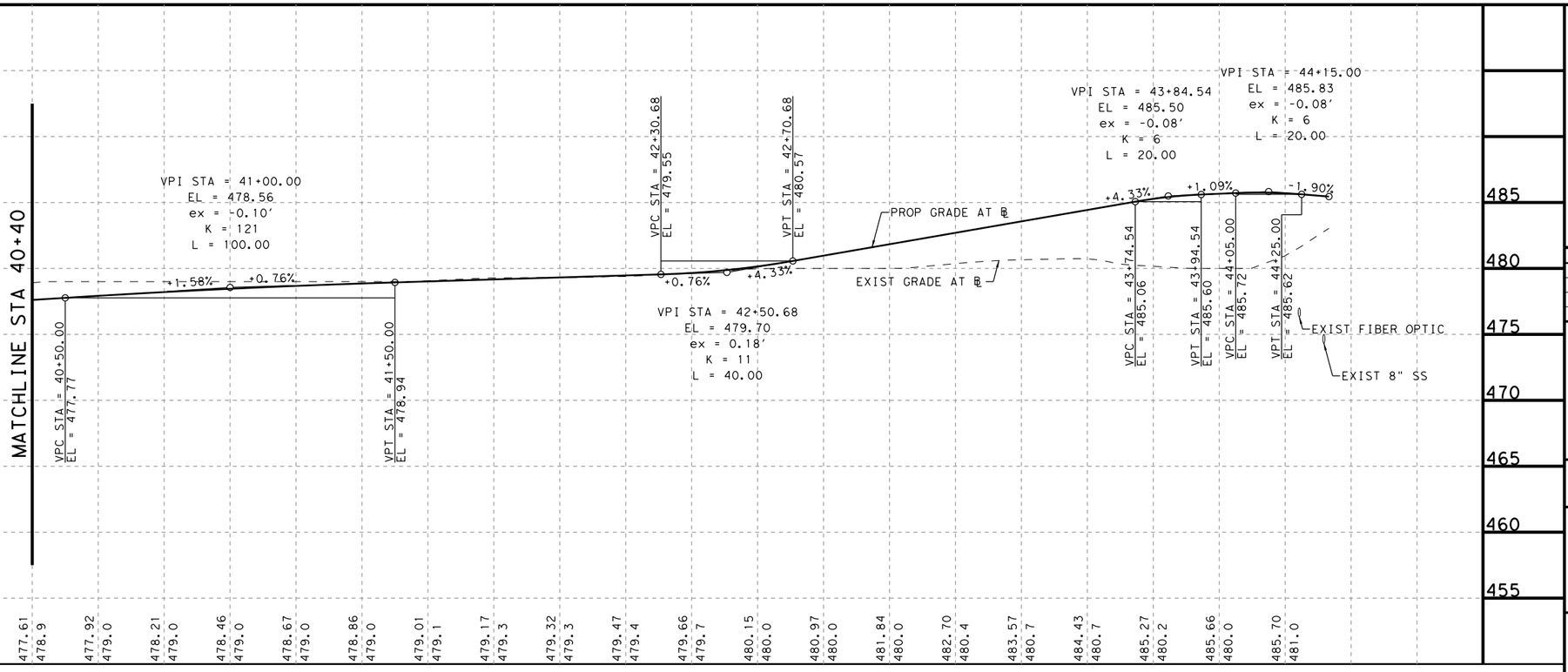
HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

LEGEND

DIRECTIONAL ARROW



TRAIL A



NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS, TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.

3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.

4. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.

5. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

6. SEE SHEETS 105 THROUGH 115 FOR TRAIL CROSS SECTIONS.

7. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

8. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.

9. REQUIRED DE-ENERGIZING POWER LINES IN ORDER TO FACILITATE PROPOSED TRAIL AND BRIDGE CONSTRUCTION IS AN INCIDENTAL TO PERTINENT CONTRACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
PLAN & PROFILE
STA 40+40 TO END PROJECT

SCALE: H:1"=40' V:1"=10' SHEET 11 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 57

CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

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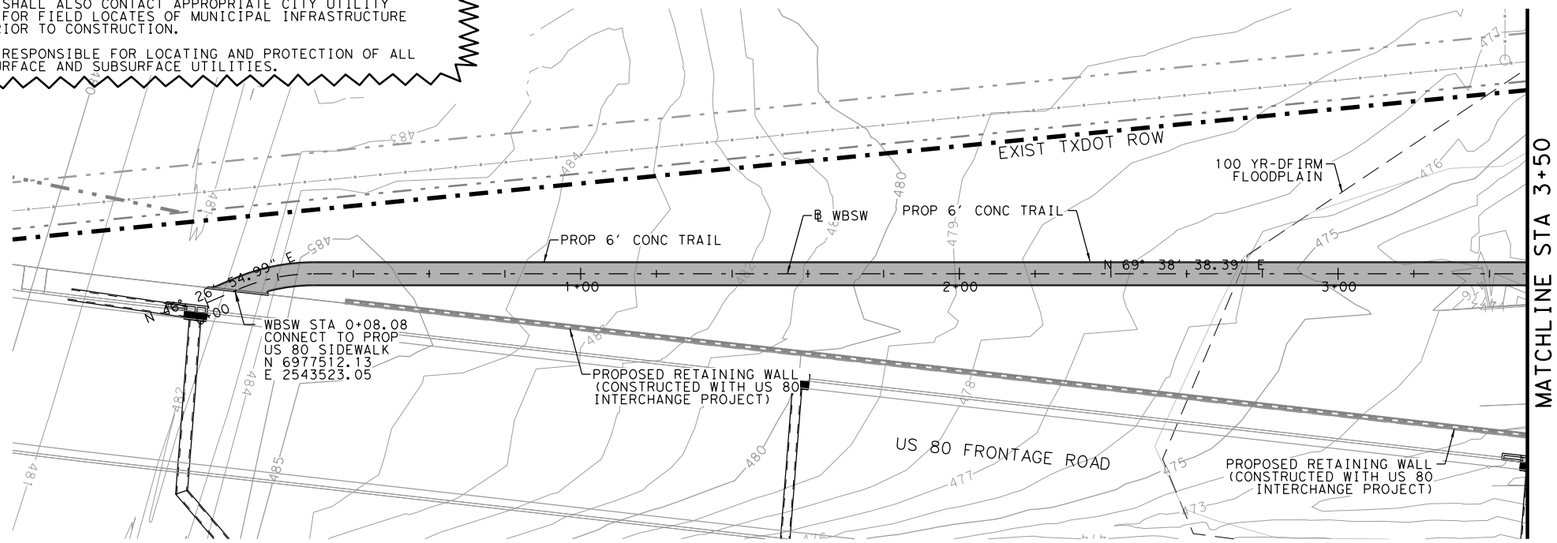

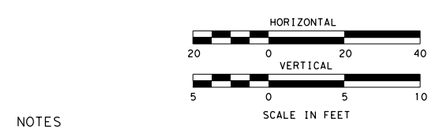

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4. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

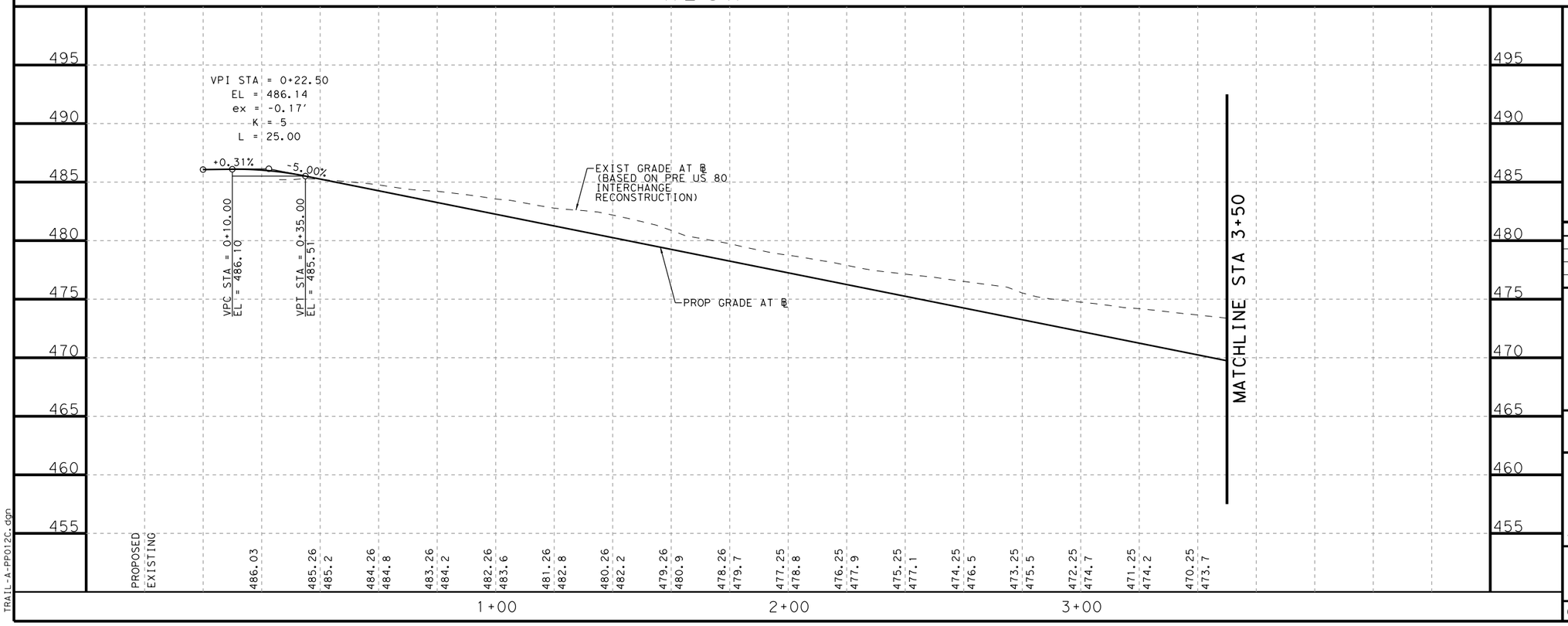
5. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

6. SEE SHEETS 105 THROUGH 115 FOR TRAIL CROSS SECTIONS.

7. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

8. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.

WBSW



STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

WBSW
PLAN & PROFILE
BEGIN TO STA 3+50

SCALE: H:1"=40' V:1"=10' SHEET 1 OF 2

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 58

CAUTION
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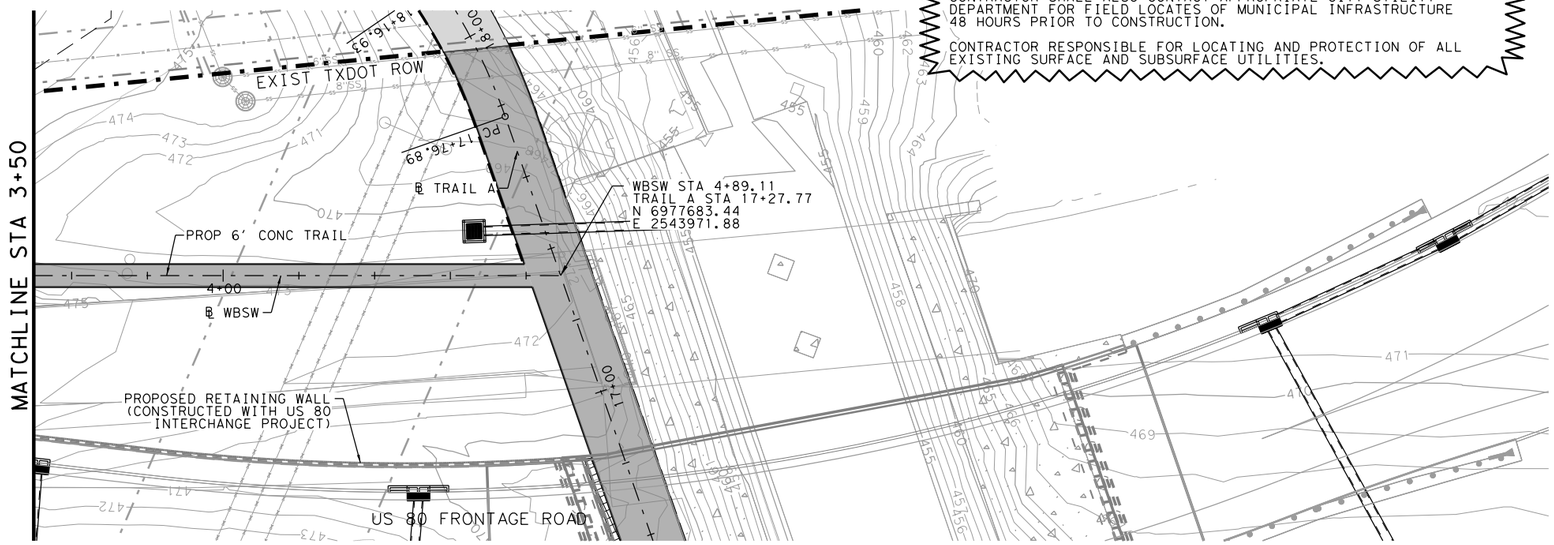
CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.



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5. SEE SHEETS 44 THROUGH 46 FOR TRAIL TYPICAL SECTIONS.

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7. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.

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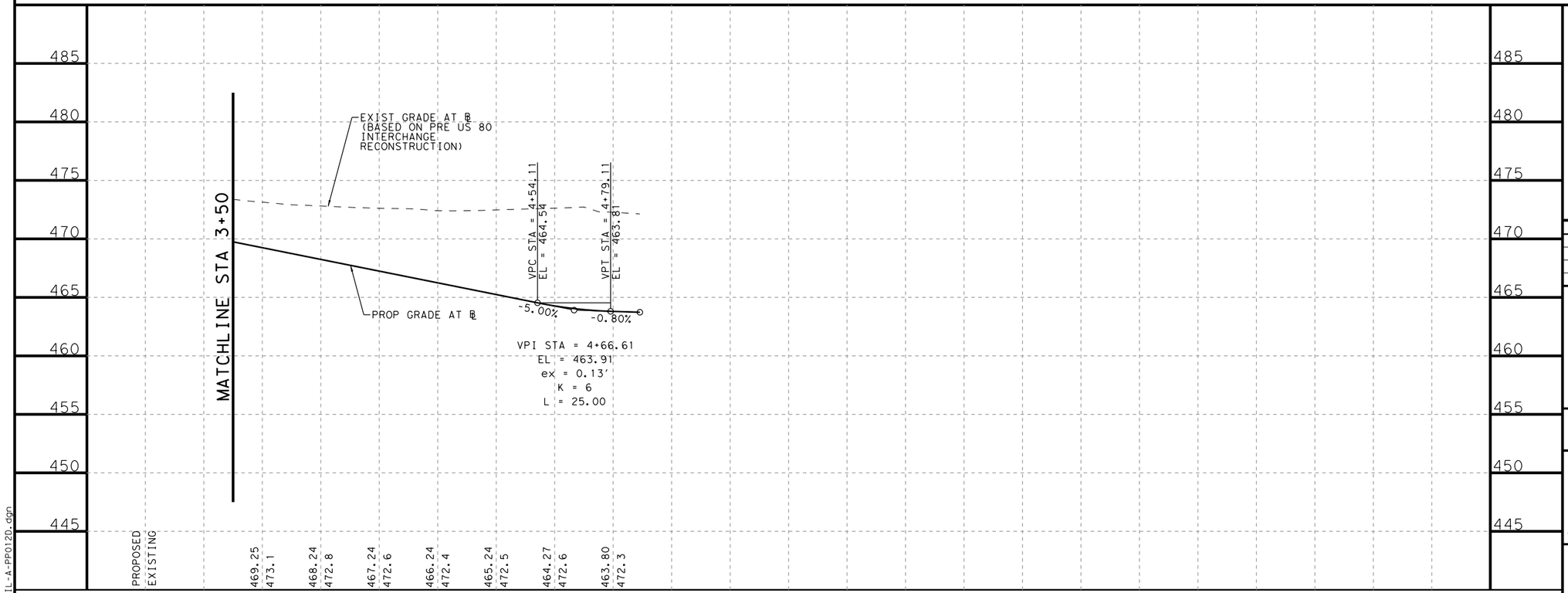
WBSW



STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

WBSW
PLAN & PROFILE
STA 3+50 TO END

SCALE: H:1"=40' V:1"=10' SHEET 2 OF 2

BGE, Inc.
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TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 59

CAUTION
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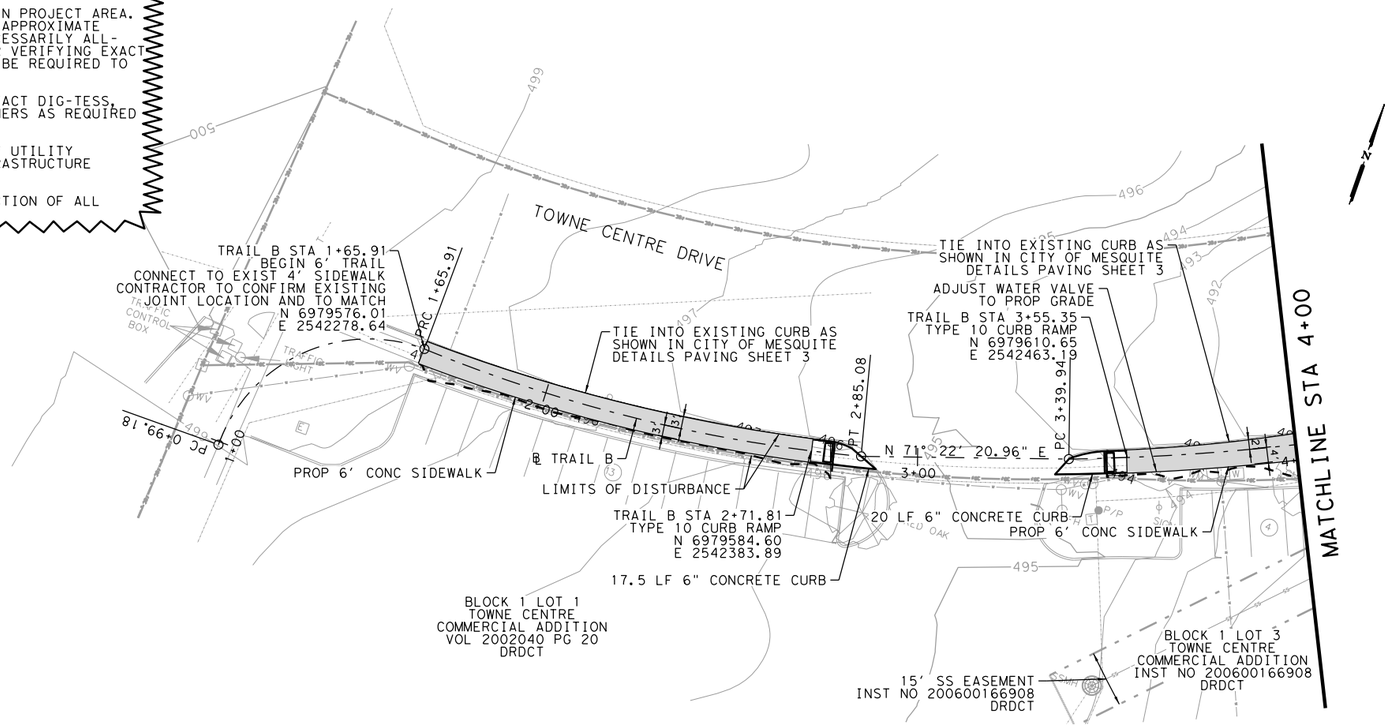

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.
2. SEE LIGHTING PLAN ON SHEETS 103 THROUGH 104 FOR STREET LIGHT ELECTRICAL.
3. SEE TXDOT STANDARD DETAIL PED-12A FOR TYPE 10 CURB RAMP.
4. SEE SHEET 46 FOR TRAIL TYPICAL SECTIONS.
5. SEE SHEETS 116 THROUGH 120 FOR TRAIL CROSS SECTIONS.
6. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
7. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.
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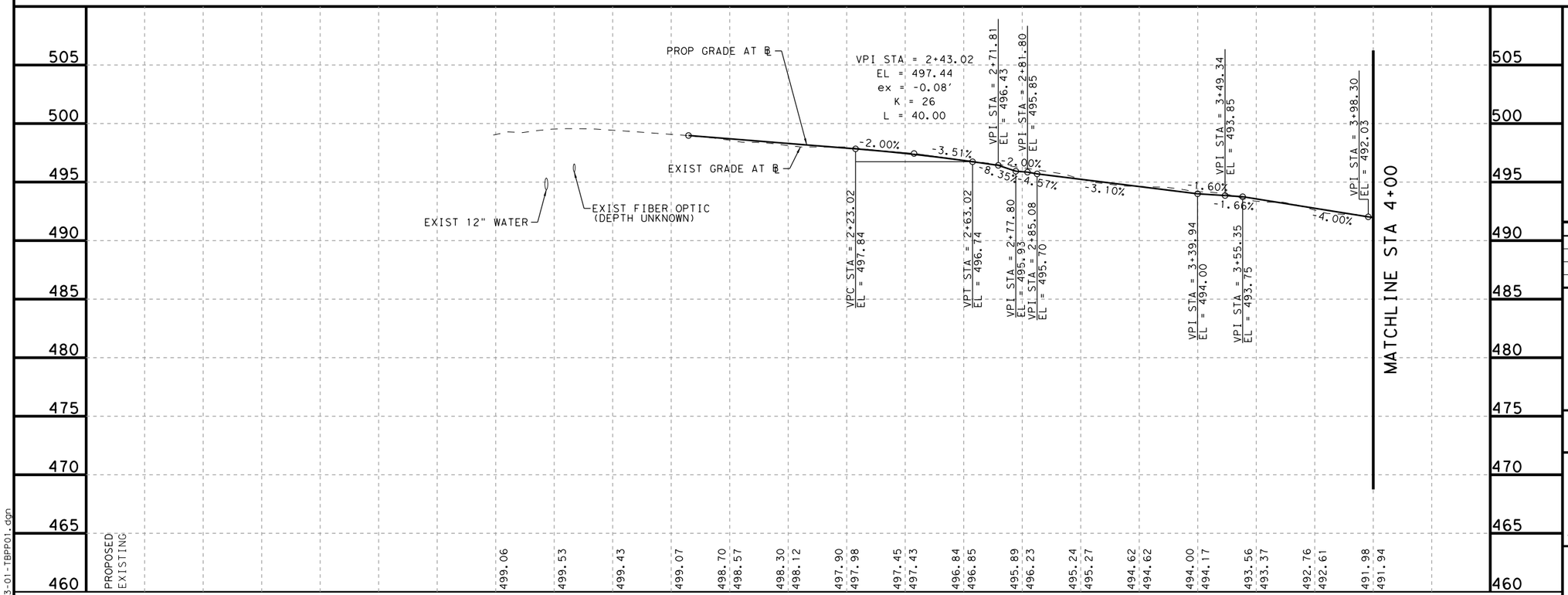

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
PLAN & PROFILE
STA 1+00 TO STA 4+00

SCALE: H:1"=40' V:1"=10' SHEET 1 OF 6

BGE, Inc.
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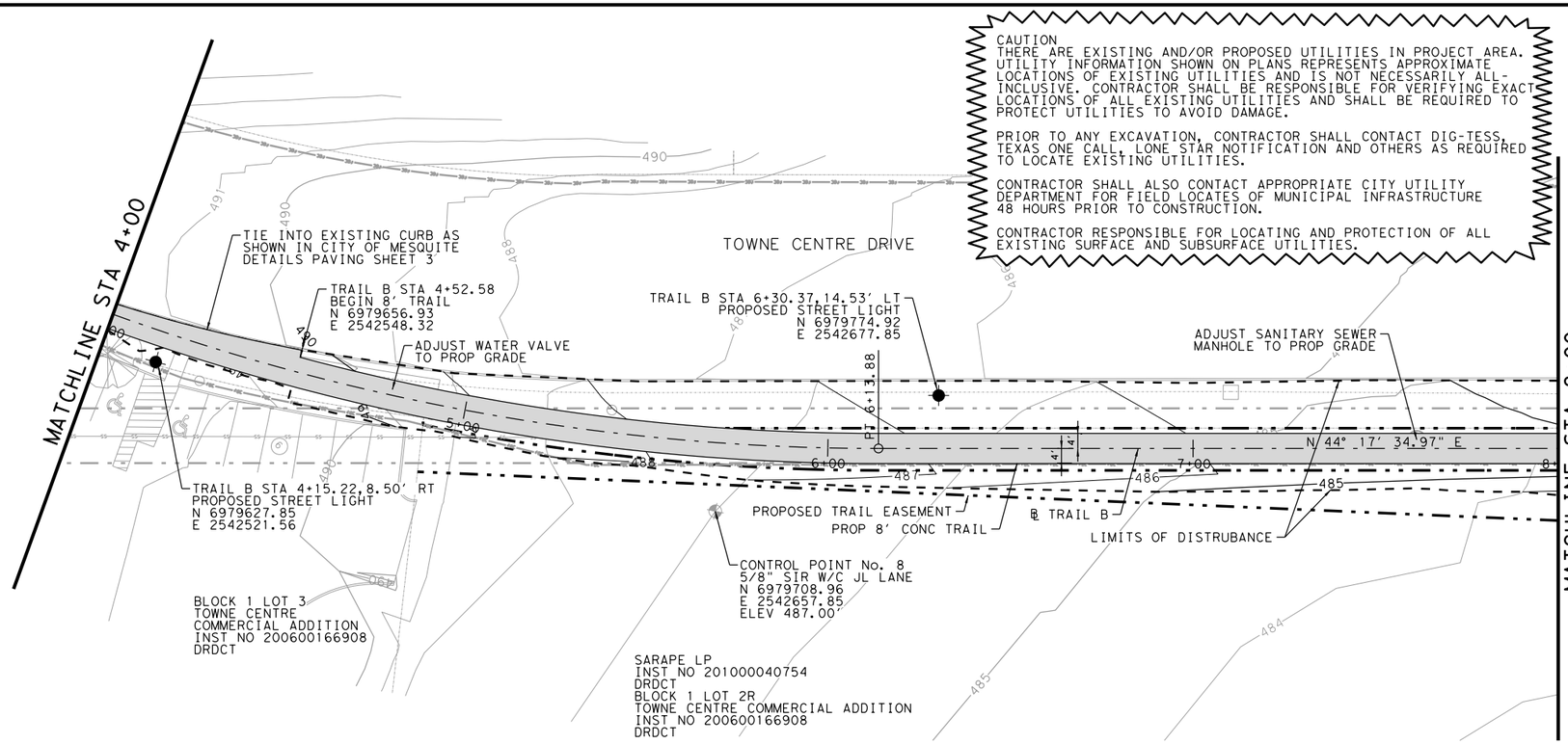
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 60



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HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.
2. SEE LIGHTING PLAN ON SHEETS 103 THROUGH 104 FOR STREET LIGHT ELECTRICAL.
3. SEE SHEET 46 FOR TRAIL TYPICAL SECTIONS.
4. SEE SHEETS 116 THROUGH 120 FOR TRAIL CROSS SECTIONS
5. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
6. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.
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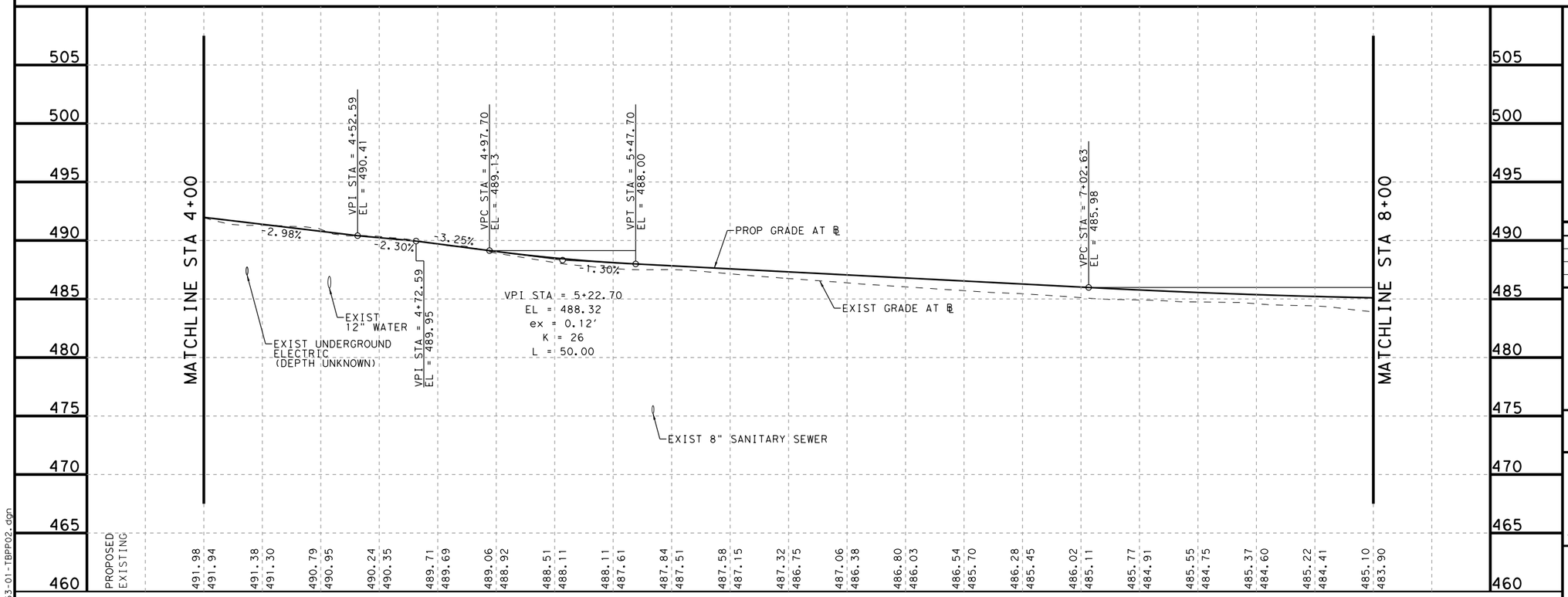

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
PLAN & PROFILE
STA 4+00 TO STA 8+00

SCALE: H:1"=40' V:1"=10' SHEET 2 OF 6

BGE, Inc.
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Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 61

2163-01-TBPP02.dgn

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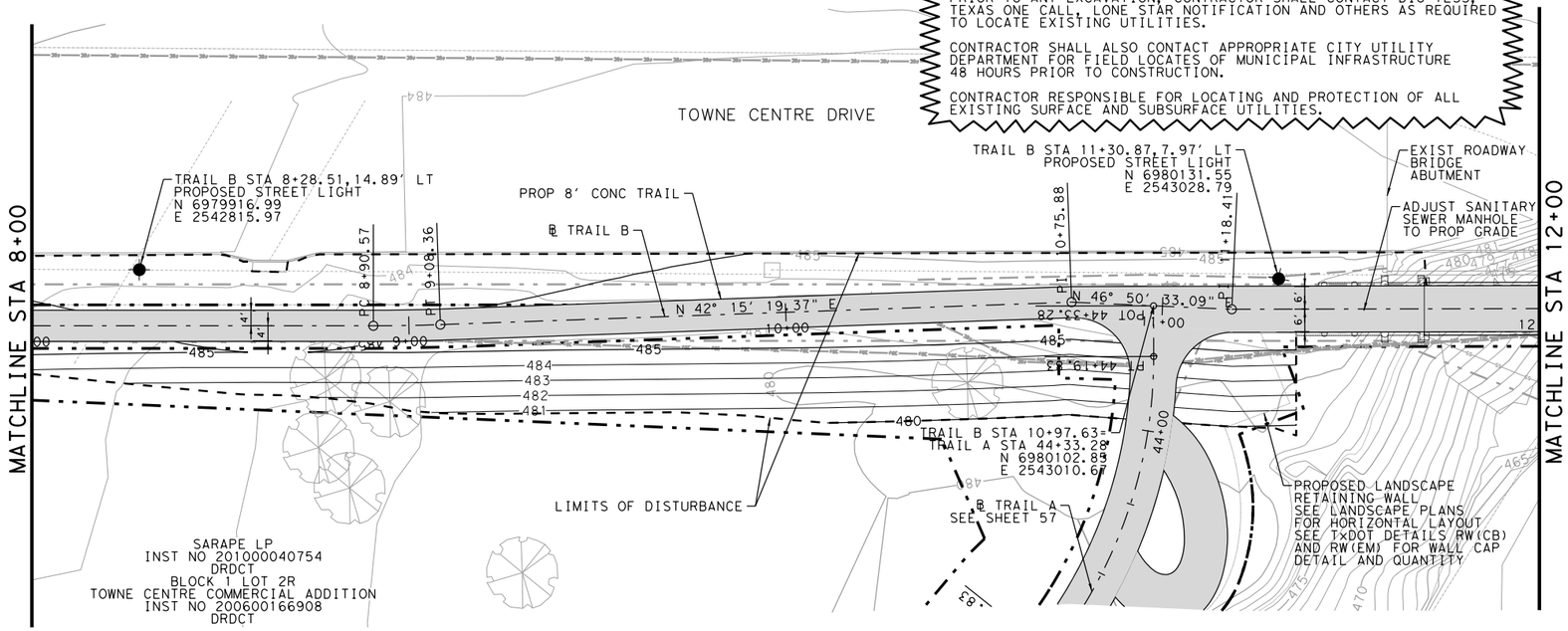

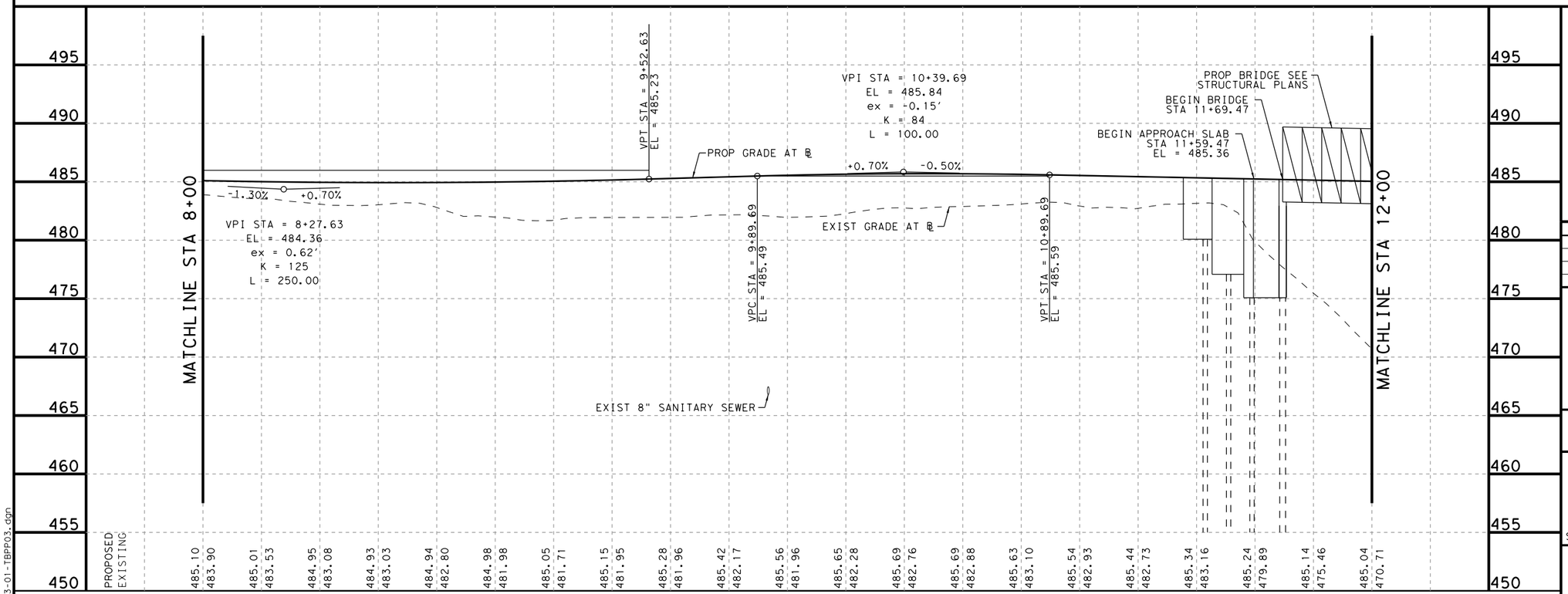

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

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5. SEE TRAIL B BRIDGE LAYOUT ON SHEET 84 FOR PROPOSED BRIDGE.
6. SEE SHEET 46 FOR TRAIL TYPICAL SECTIONS.
7. SEE SHEETS 116 THROUGH 120 FOR TRAIL CROSS SECTIONS
8. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO CITY AND COUNTY SEVEN (7) DAYS IN ADVANCE. NO WORK SHALL BEGIN PRIOR TO APPROVAL OF TRAFFIC CONTROL PLAN.
9. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
10. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.
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DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
PLAN & PROFILE
STA 8+00 TO STA 12+00

SCALE: H:1"=40' V:1"=10' SHEET 3 OF 6

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
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CONTRACT NO. 2024-014 SHEET NO. 62

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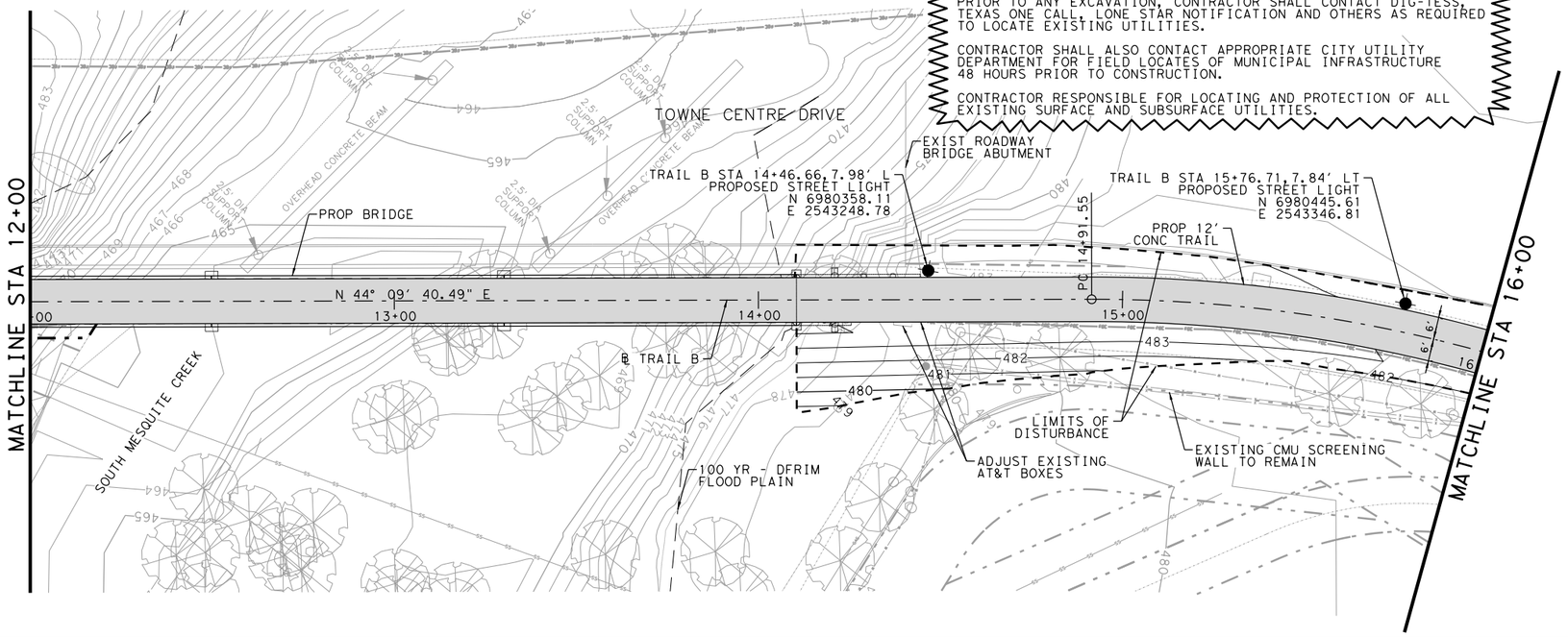

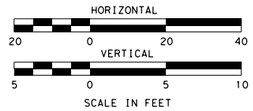

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5. SEE TRAIL B BRIDGE LAYOUT ON SHEET 84 FOR PROPOSED BRIDGE.
6. SEE SHEET 46 FOR TRAIL TYPICAL SECTIONS.
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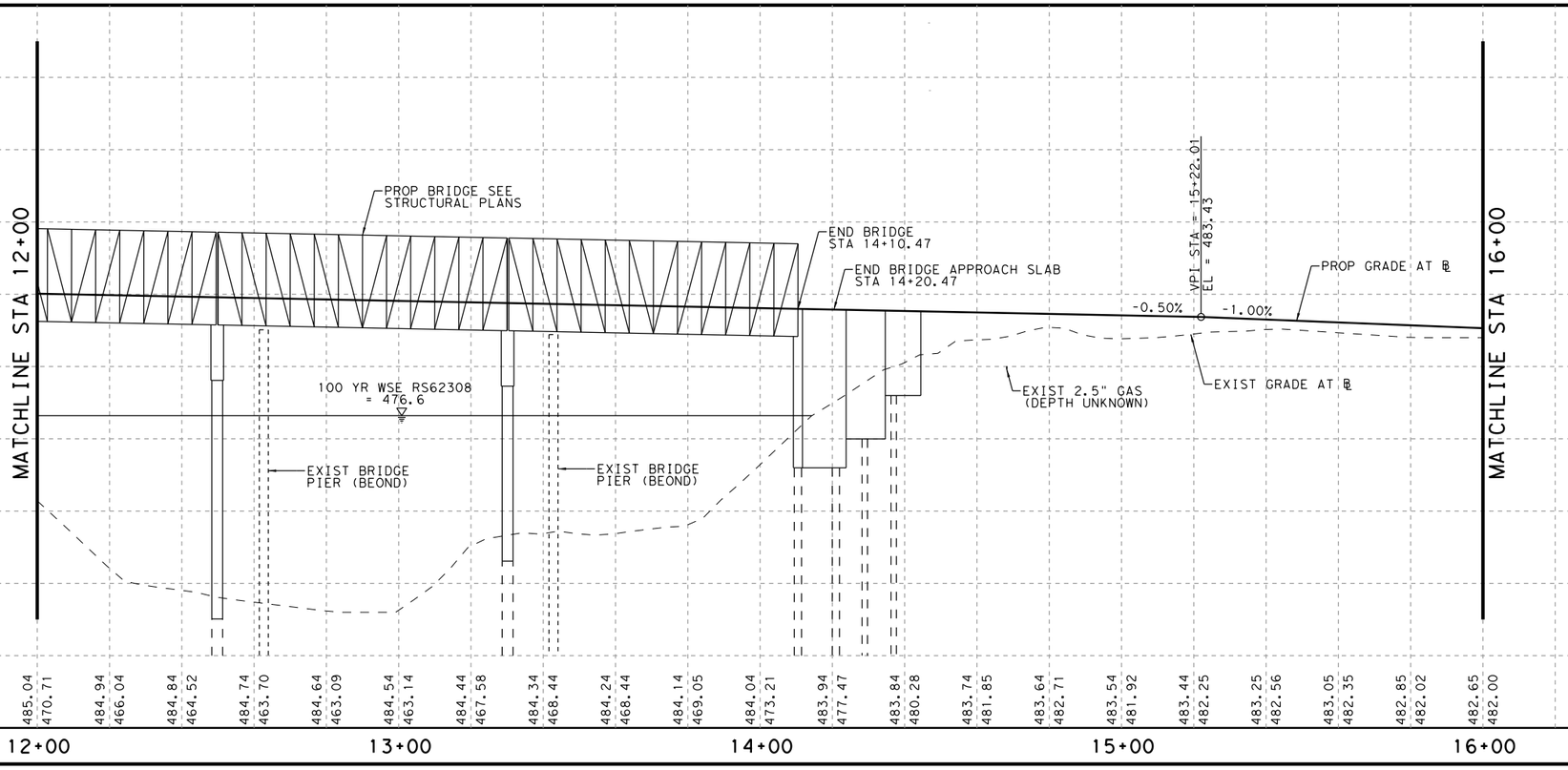

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
PLAN & PROFILE
STA 12+00 TO STA 16+00

SCALE: H:1"=40' V:1"=10' SHEET 4 OF 6

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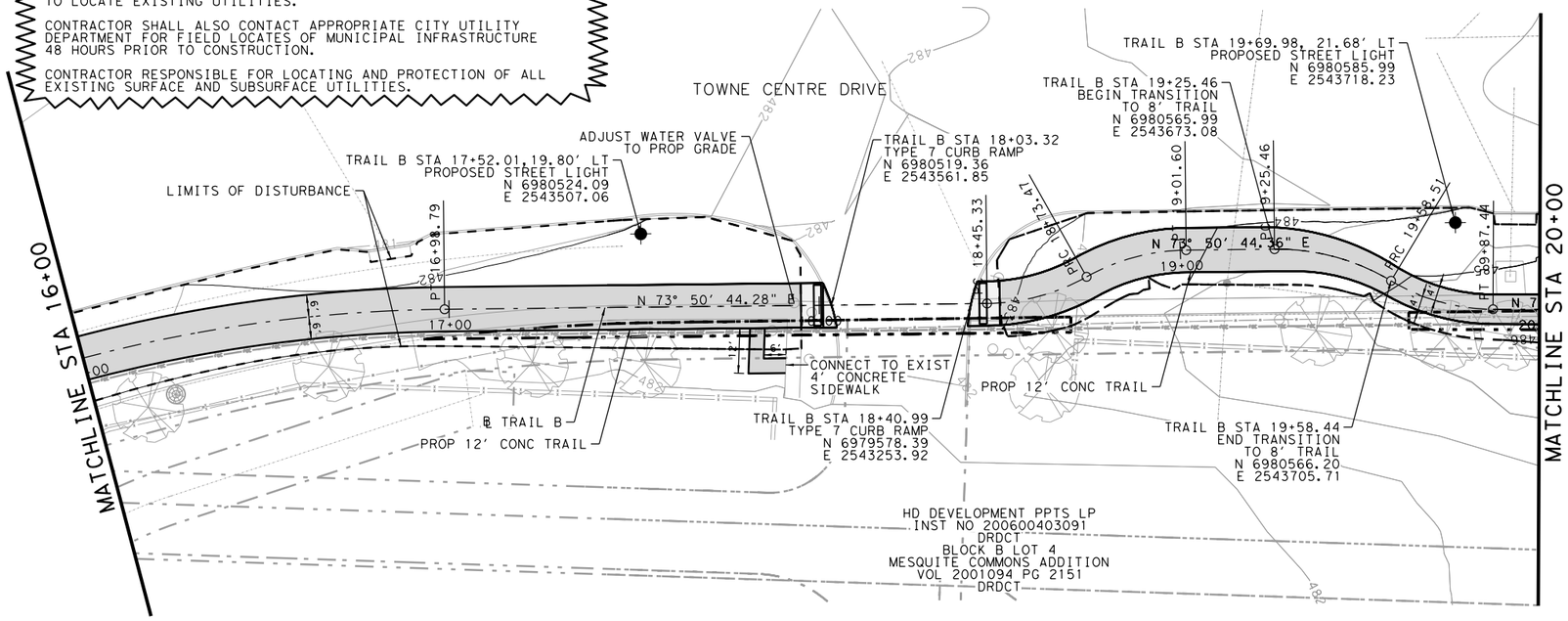
CONTRACT NO. 2024-014 SHEET NO. 63

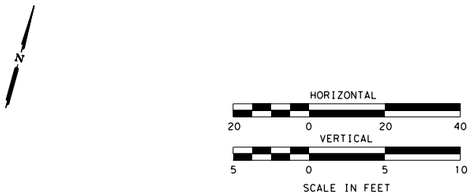
CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

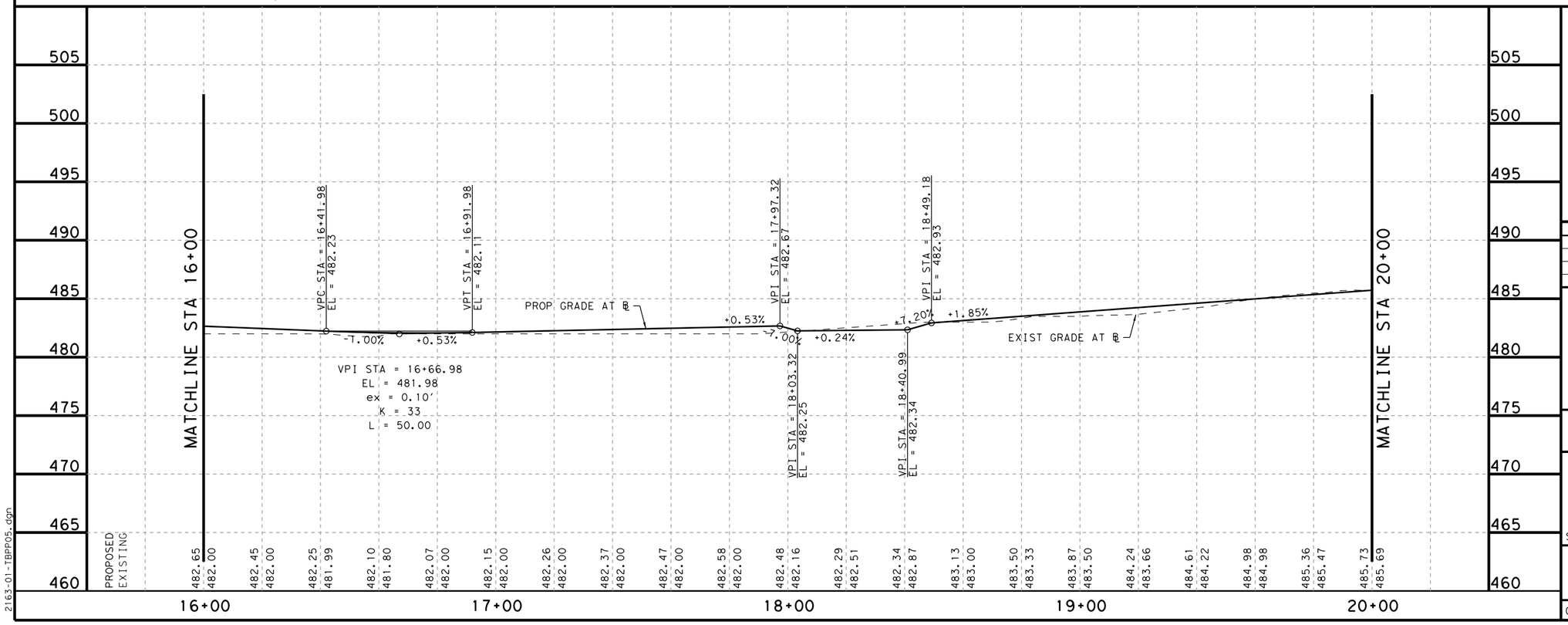
CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.





NOTES

1. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.
2. SEE LIGHTING PLAN ON SHEETS 103 THROUGH 104 FOR STREET LIGHT ELECTRICAL.
3. SEE TXDOT STANDARD DETAIL PED-12A FOR TYPE 7 CURB RAMP.
4. CONTRACTOR MAY CLOSE ONLY ONE LANE AT A TIME CONSTRUCTING THE CROSSING OF TRAIL B AND NORTH MESQUITE DR.
5. USE HIGH EARLY STRENGTH (HES) CONCRETE PER BID ITEM.
6. NO CONSTRUCTION IN STREET FROM THANKSGIVING TO JANUARY 3RD OR BACK-TO-SCHOOL TAX-FREE WEEKEND. CONTRACTOR SHALL COORDINATE WITH CITY OF MESQUITE ON EXACT DATES.
7. SEE SHEET 46 FOR TRAIL TYPICAL SECTIONS.
8. SEE SHEETS 116 THROUGH 120 FOR TRAIL CROSS SECTIONS
9. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
10. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.
11. REQUIRED DE-ENERGIZING POWER LINES IN ORDER TO FACILITATE PROPOSED TRAIL AND BRIDGE CONSTRUCTION IS AN INCIDENTAL TO PERTINENT CONTRACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.



DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
PLAN & PROFILE
STA 16+00 TO STA 20+00

SCALE: H:1"=40' V:1"=10' SHEET 5 OF 6

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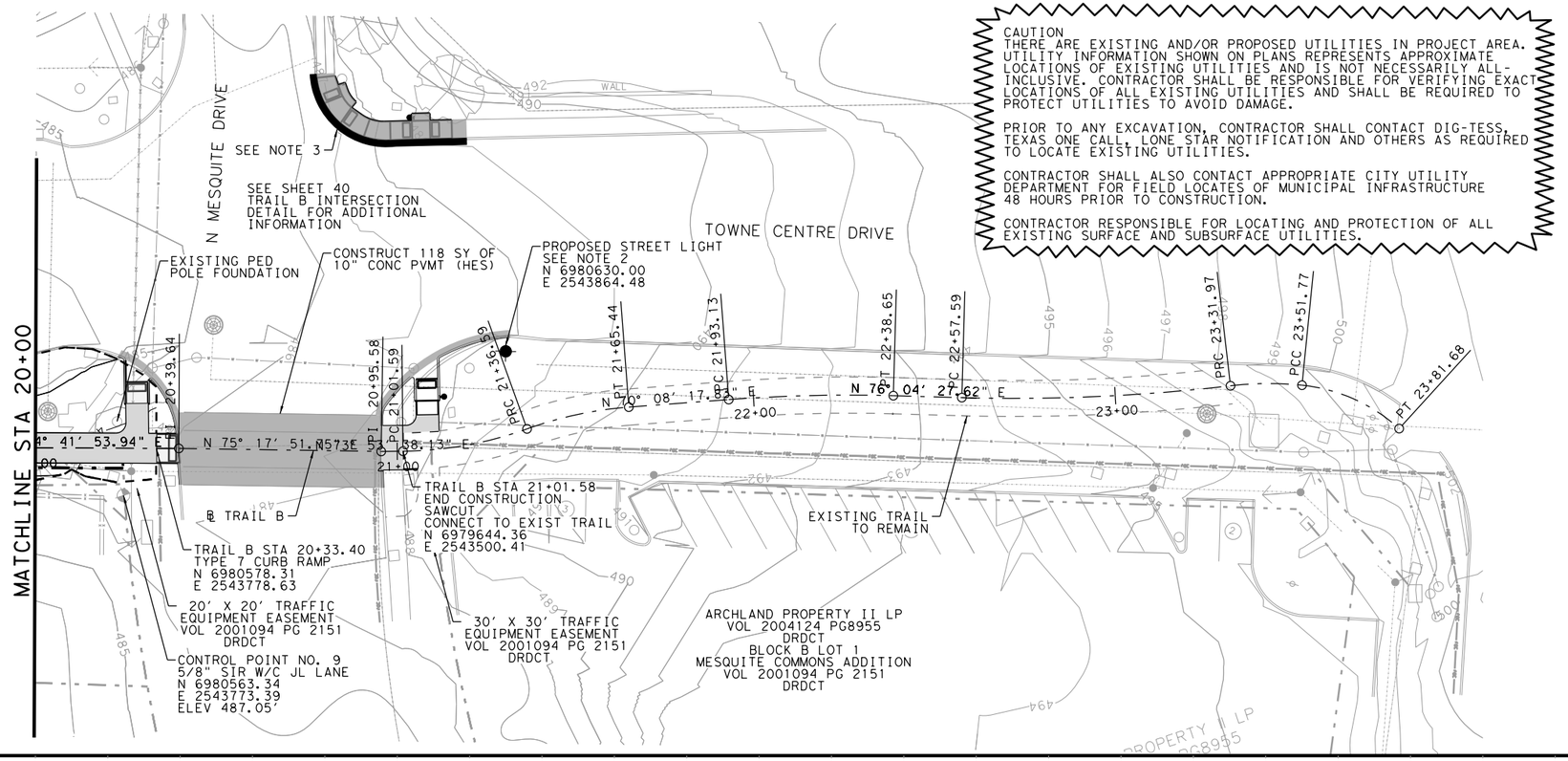
CONTRACT NO. 2024-014 SHEET NO. 64



CAUTION
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CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.
2. SEE LIGHTING PLAN ON SHEETS 103 THROUGH 104 FOR STREET LIGHT ELECTRICAL.
3. SEE TXDOT STANDARD DETAIL PED-12A FOR TYPE 7 CURB RAMP.
4. CONTRACTOR MAY CLOSE ONLY ONE LANE AT A TIME CONSTRUCTING THE CROSSING OF TRAIL B AND NORTH MESQUITE DR.
5. USE HIGH EARLY STRENGTH (HES) CONCRETE PER BID ITEM.
6. NO CONSTRUCTION IN STREET FROM THANKSGIVING TO JANUARY 3RD OR BACK-TO-SCHOOL TAX-FREE WEEKEND. CONTRACTOR SHALL COORDINATE WITH CITY OF MESQUITE ON EXACT DATES.
7. SEE SHEET 46 FOR TRAIL TYPICAL SECTIONS.
8. SEE SHEETS 116 THROUGH 120 FOR TRAIL CROSS SECTIONS
9. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
10. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.
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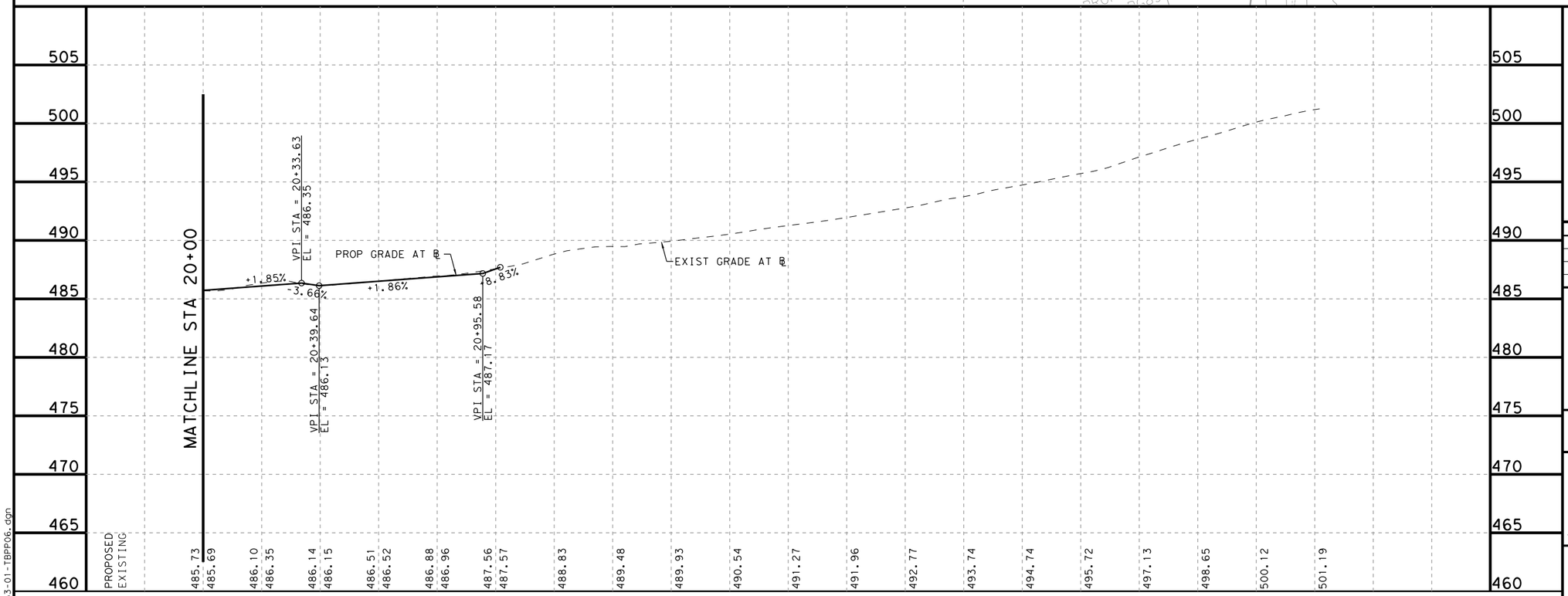

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
PLAN & PROFILE
STA 20+00 TO END PROJECT

SCALE: H:1"=40' V:1"=10' SHEET 6 OF 6

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CONTRACT NO. 2024-014 SHEET NO. 65

CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

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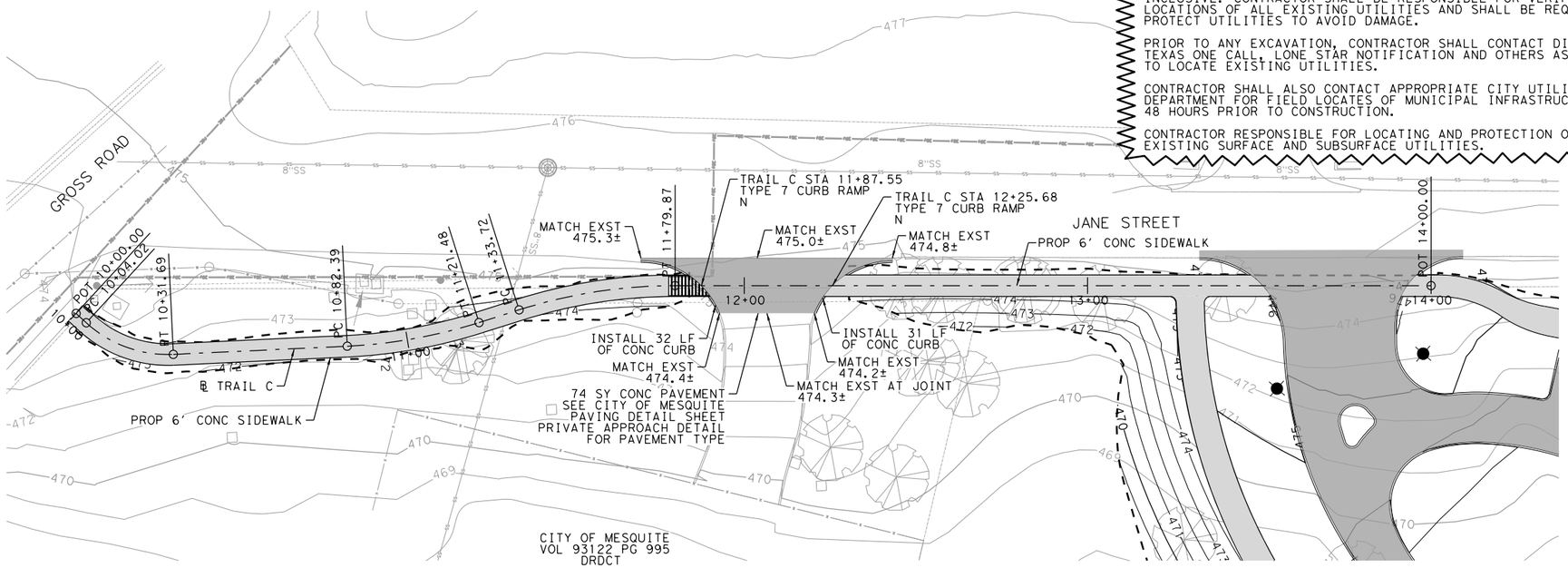
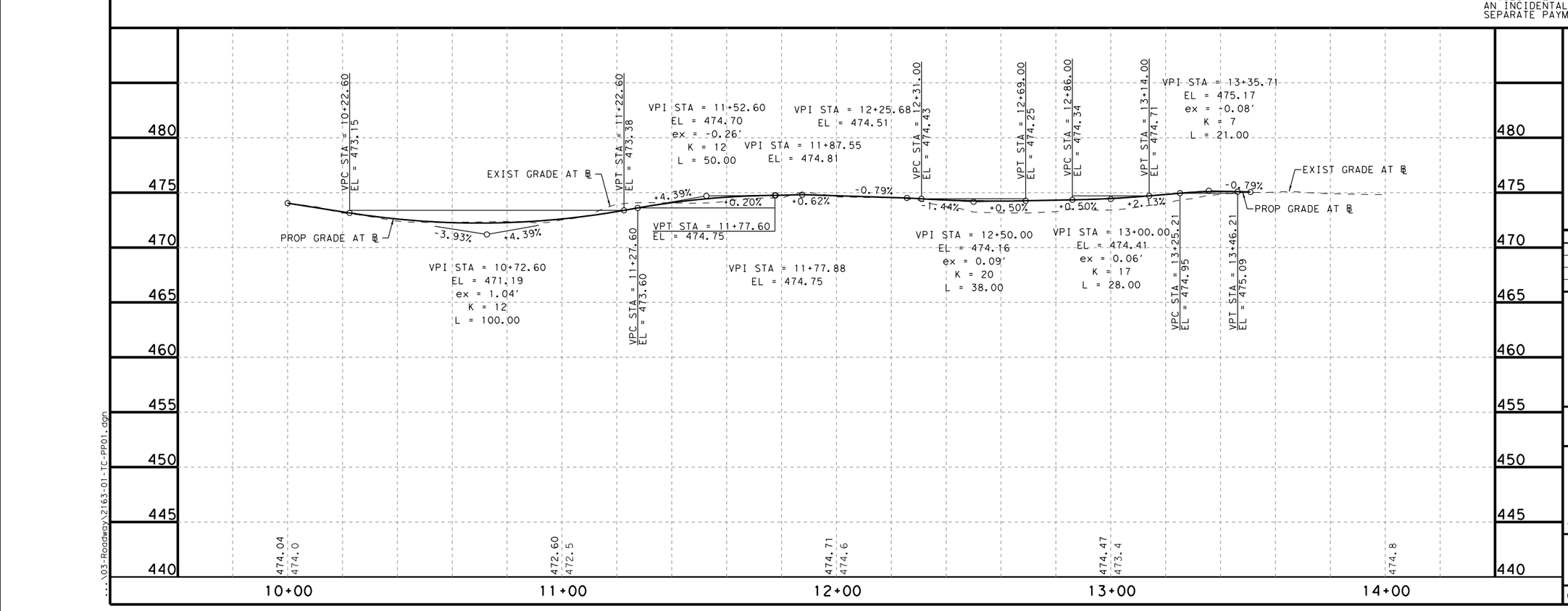


HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ANY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT OSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS, TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.
2. 100-YR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YR WSEL MAY VARY.
3. 100-YR WSELS IN PROFILE REFLECT ELEVATIONS IN THE EFFECTIVE HEC-RAS MODEL.
4. SEE DEMOLITION PLANS FOR TREES TO BE REMOVED.
5. SEE TXDOT STANDARD DETAIL PED-12A FOR TYPE 7 CURB RAMP.
6. SEE SHEET 46 FOR TRAIL TYPICAL SECTIONS.
7. SEE SHEETS 121 FOR TRAIL CROSS SECTIONS
8. MAXIMUM CROSS SLOPE IS 2% PER ADA. MAXIMUM RUNNING SLOPE IS 5% PER ADA.
9. CONTRACTOR SHALL FILL IN ANY LOW SPOTS ON UPHILL SIDE OF THE TRAIL WITH ON-SITE EXCAVATED SOILS. NO TRAPPED RUN-OFF IS ALLOWED. THIS WILL BE SUBSIDIARY TO OTHER PAY ITEMS.
10. REQUIRED DE-ENERGIZING POWER LINES IN ORDER TO FACILITATE PROPOSED TRAIL AND BRIDGE CONSTRUCTION IS AN INCIDENTAL TO PERTINENT CONTRACT ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.



STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL C
PLAN & PROFILE
ALTERNATE 3

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

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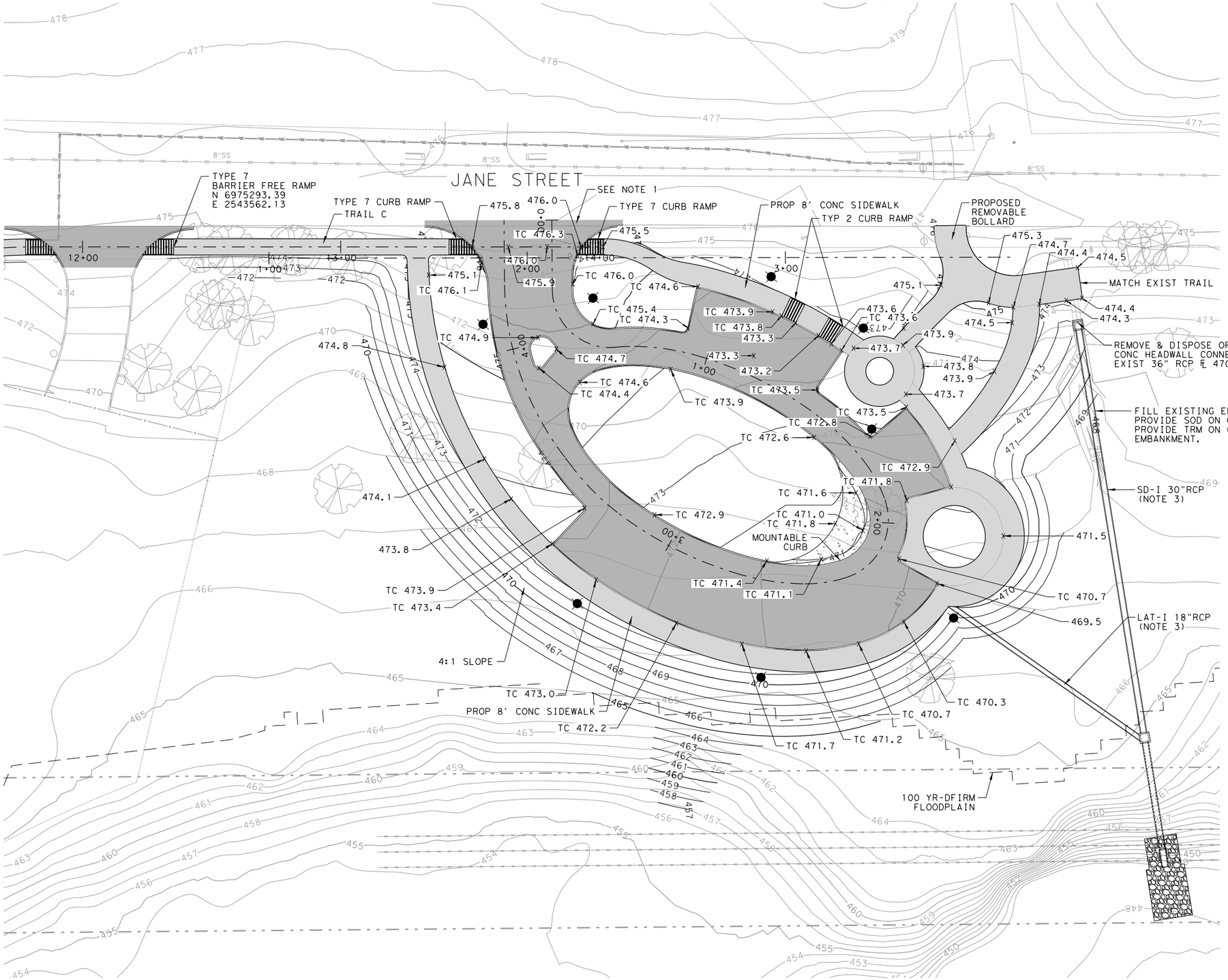
CONTRACT NO. 2024-014 SHEET NO. 66



NOTES

1. SEE SHEET 122 FOR CITY CONCRETE TO ASPHALT DETAIL.
2. PARKING LOT IS AN ADDITIVE ALTERNATE. A TRAIL CONNECTION AS INDICATED IS PART OF TRAIL C.
3. SEE SHEET 73 FOR SD-I AND LAT-1 PLAN AND PROFILE.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/27/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

PARKING LOT GRADING PLAN

ALTERNATE 1

SCALE: 1" = 40'

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CONTRACT NO. 2024-014 SHEET NO. 67

PHASE 1 - TRAIL A & B

1. ALL WORK IS PROPOSED BEHIND THE CURB. CONTRACTOR TO OPERATE WITH CAUTION AND IMPLEMENT ALL NECESSARY SIGNAGE AND BARRICADES FOUND IN THE TXDOT TCP 2-1 STANDARD DETAIL FOR WORK SPACE NEAR SHOULDER.

PHASE 2 - PARKING AREA

1. CONTRACTOR TO INSTALL APPROPRIATE ADVANCE WARNING SIGNAGE IN ACCORDANCE WITH TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
2. INSTALL CHANNELIZING DEVICES TO NARROW JANE STREET TO 2-10' LANES (ONE LANE IN EACH DIRECTION).
3. CONNECT PARKING LOT DRIVEWAY TO JANE STREET.
4. REMOVE CHANNELIZING DEVICES AND WARNING SIGNS.

NORTH MESQUITE DRIVE

1. CONTRACTOR MAY CLOSE ONLY ONE LANE AT A TIME CONSTRUCTING THE CROSSING OF TRAIL B AND NORTH MESQUITE DR.
2. USE HIGH EARLY STRENGTH (HES) CONCRETE PER BID ITEM.
3. NO CONSTRUCTION IN STREET FROM THANKSGIVING TO JANUARY 3RD OR BACK-TO-SCHOOL TAX-FREE WEEKEND. CONTRACTIOR SHALL COORDINATE WITH CITY OF MESQUITE ON EXACT DATES.

DATE:
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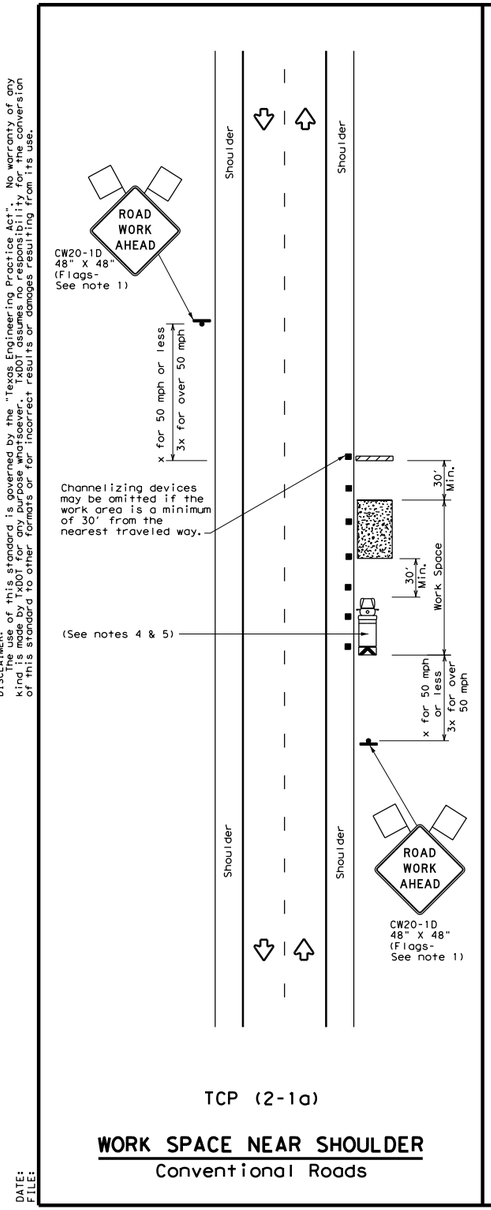
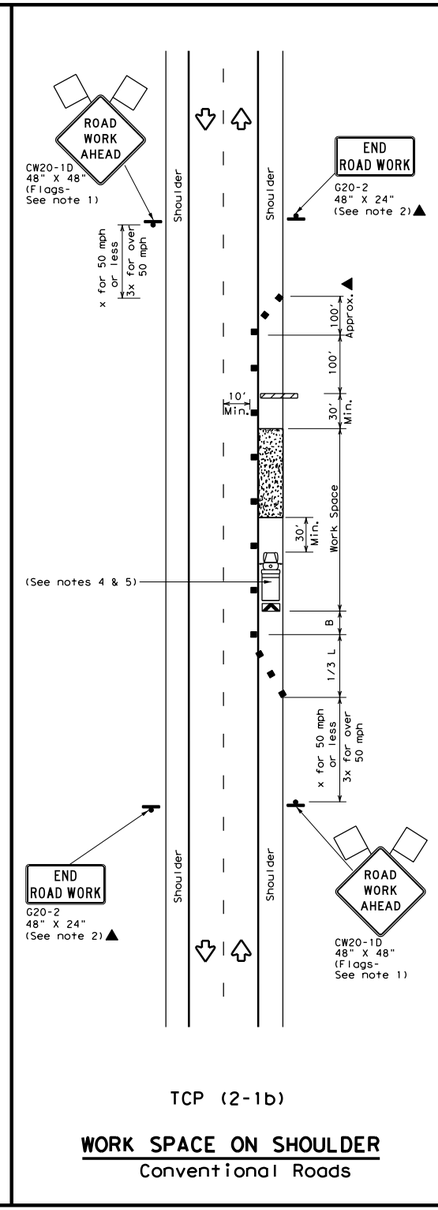


TCP (2-1a)

WORK SPACE NEAR SHOULDER

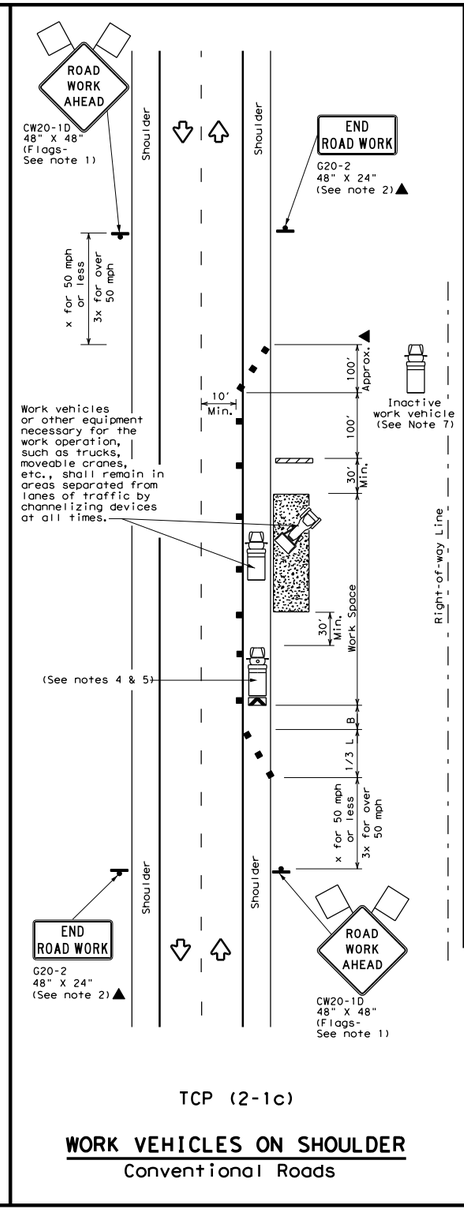
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER

Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER

Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

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

161

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAFFIC CONTROL PLAN NARRATIVE

SCALE: N/A SHEET 1 OF 1

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CONTRACT NO. 2024-014 SHEET NO. 68

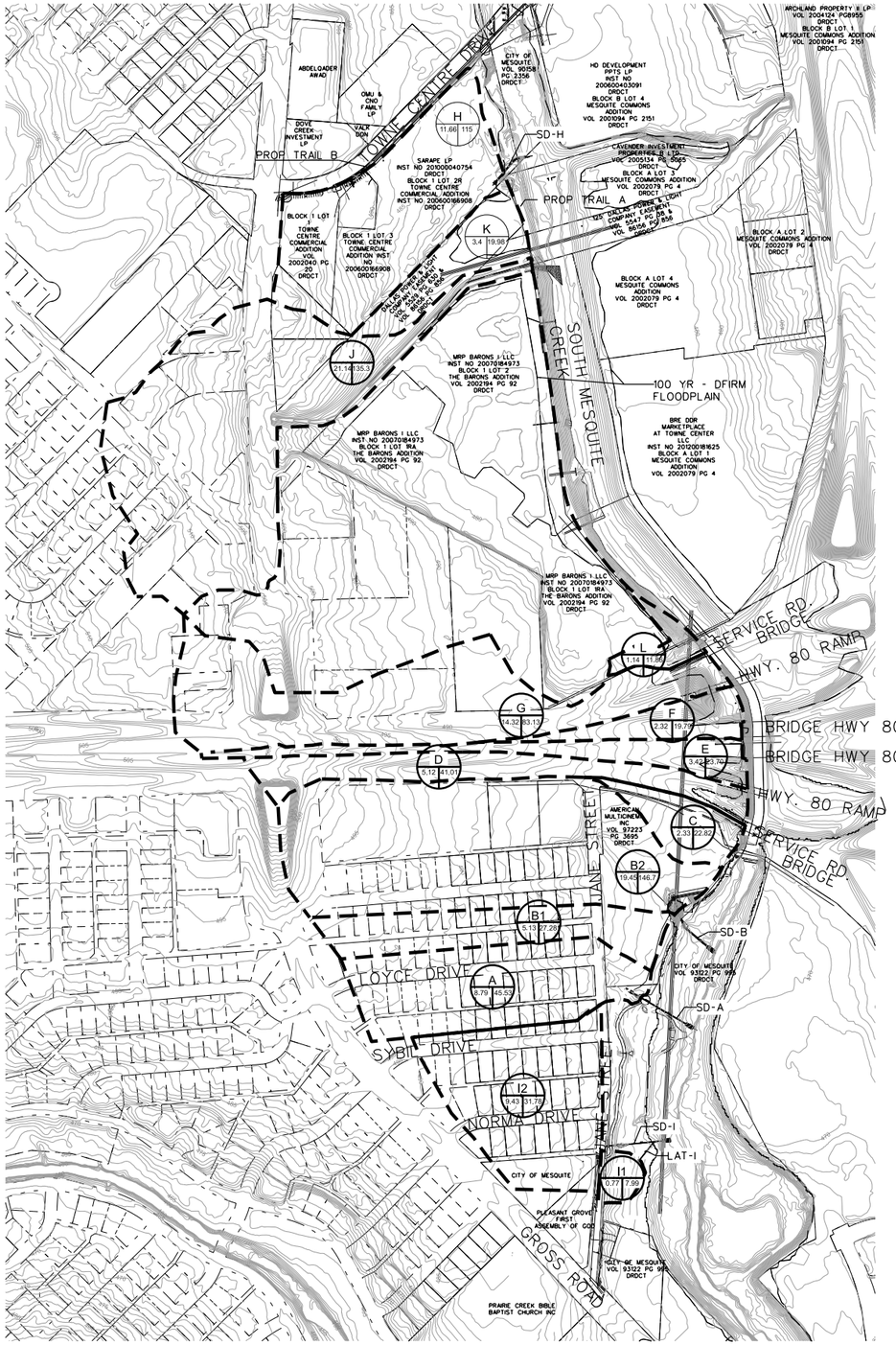

TABLE 1

Hydrological Data - Drainage Areas

Drainage Area ID	Area	C-value								Tc	Intensity (i)		Peak Discharge (Q)		Comments
		Single Family	TNMR	Commercial	Light Commercial	Multifamily	Road	General Retail	Composite		10-YR	100-YR	10-YR	100-YR	
	(ac)	*C=0.6*	*C=0.9*	*C=0.9*	*C=0.9*	*C=0.9*	*C=0.9*	*C=0.85*	*"C"*	*(mins)*	*(in/hr)*	*(in/hr)*	*(cfs)*	*(cfs)*	
A	8.79	8.05	0.74	0.00	0.00	0.00	0.00	0.00	0.63	22.96	5.47	7.92	30.04	43.53	To Inlet A
B1	5.13	4.08	1.05	0.00	0.00	0.00	0.00	0.00	0.66	23.34	5.42	8.04	18.37	27.28	Flows Across Trail
B2	19.45	5.89	1.87	8.20	1.67	0.00	1.82	0.00	0.81	16.58	6.42	9.32	101.04	146.68	To Inlet B
C	2.33	0.00	0.00	0.00	2.19	0.00	0.14	0.00	0.90	11.45	7.51	10.88	15.74	22.82	To Inlet C
D	5.12	0.00	0.00	0.00	0.00	0.00	5.12	0.00	0.90	18.32	6.14	8.90	28.29	41.01	To Inlet D
E	3.42	0.00	0.00	0.00	0.00	0.00	3.42	0.00	0.90	24.17	5.31	7.70	16.34	23.70	To Inlet E
F	2.32	0.00	0.00	0.00	0.00	0.00	2.32	0.00	0.90	15.97	6.54	9.48	13.66	19.79	To Inlet F
G	14.32	0.00	0.56	3.66	0.00	2.19	7.91	0.00	0.90	32.35	4.44	6.45	57.16	83.13	To Inlet G
H	11.66	0.00	0.00	8.40	0.45	0.03	0.00	2.78	0.89	10.93	7.66	11.11	79.32	115.04	To Inlet H
I1	0.77	0.00	0.67	0.00	0.00	0.00	0.10	0.00	0.90	10.00	7.97	11.56	5.51	7.99	To Inlet I
I2	9.43	7.22	0.00	0.00	0.00	0.00	2.21	0.00	0.67	47.33	3.43	5.03	21.67	31.78	To SD-I
J	21.14	6.64	0.19	4.00	2.54	3.71	0.42	3.64	0.80	22.42	5.54	8.03	93.36	135.32	To Exist Conc Flume
K	3.4	0.00	0.00	0.00	0.00	3.40	0.00	0.00	0.90	16.02	6.53	9.47	19.98	28.98	Flows Across Trail
L	1.14	0.00	0.00	0.00	0.00	0.73	0.41	0.00	0.90	10.00	7.97	11.56	8.18	11.86	Flows Across Trail

TABLE 2

Hydrological Data - Inlet Calculations

Inlet ID	Design For	Inlet Type	Profile Type	Trail Alignment	Station	Offset	LT/RT	Throat Elevation	Length	Area	H (Allow)	H (Calc)	Capacity	Q100
								(ft)	*(ft)*	*(sq ft)*	*(elev)*	*(elev)*	*(cfs)*	*(cfs)*
A	100-yr	PAZD-RC 3'X3'	Sag	Trail A	0+42.47	54.20	LT	465.55	12.00	6.00	467.65	467.62	43.88	43.53
B	100-yr	PAZD (MOD) 4'x4'	Sag	Trail A	4+96.95	65.80	LT	465.60	16.00	24.00	468.24	468.11	157.85	146.68
C	100-yr	PAZD-RC 3'X3'	Sag	Trail A	8+95.52	19.10	LT	463.18	12.00	6.00	464.20	464.06	28.43	22.82
D	100-yr	PAZD-RC 3'X3'	Sag	Trail A	10+25.41	20.00	LT	461.65	12.00	6.00	463.96	463.52	46.30	41.01
E	100-yr	PAZD-RC 3'X3'	Sag	Trail A	11+74.60	19.00	LT	463.10	12.00	6.00	464.60	464.00	50.70	23.70
F	100-yr	PAZD-RC 3'X3'	Sag	Trail A	14+19.54	19.00	LT	462.99	12.00	6.00	464.49	463.79	50.70	19.79
G	100-yr	PAZD-RC 6'X6'	Sag	Trail A	16+46.76	21.00	LT	463.70	24.00	12.00	465.62	465.61	83.38	83.13
H	100-yr	PAZD (MOD) 4'x4'	Sag	Trail A	39+36.99	54.00	LT	473.50	16.00	24.00	475.67	475.64	117.64	115.04
I	100-yr	10' CI	Sag	Parking Lot	-	-	-	467.95	10.00	8.30	468.45	468.44	8.13	7.99

LEGEND

1. DRAINAGE AREA NO.
2. AREA (ACRES)
3. 100 YR PEAK Q (cfs)

FLOW ARROWS

EXISTING DRAINAGE AREA BOUNDARIES

PARCELS

145 CONTOURS (5 FT)

100 YR - DFIRM FLOODPLAIN

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

DRAINAGE AREA MAP

SCALE: 1" = 600'

BGE, Inc.
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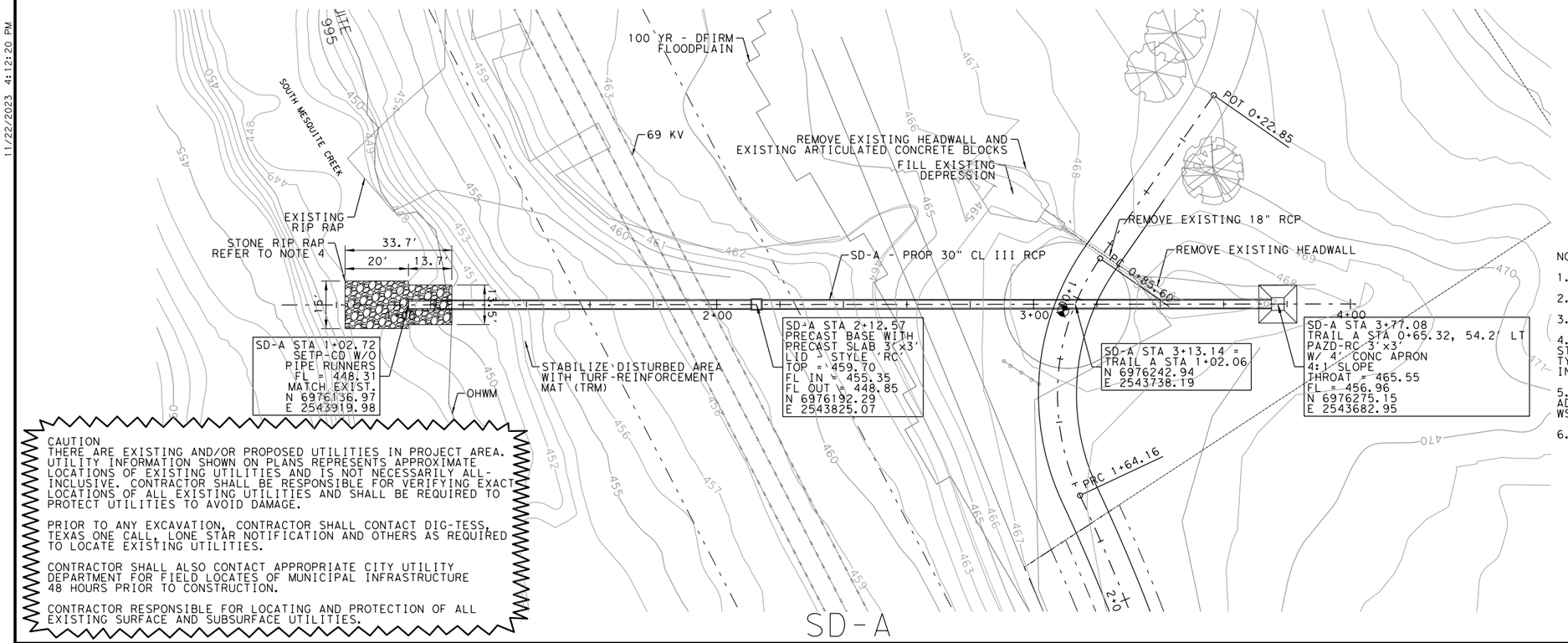
CONTRACT NO. 2024-014 SHEET NO. 69



HORIZONTAL
20 0 20 40

CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

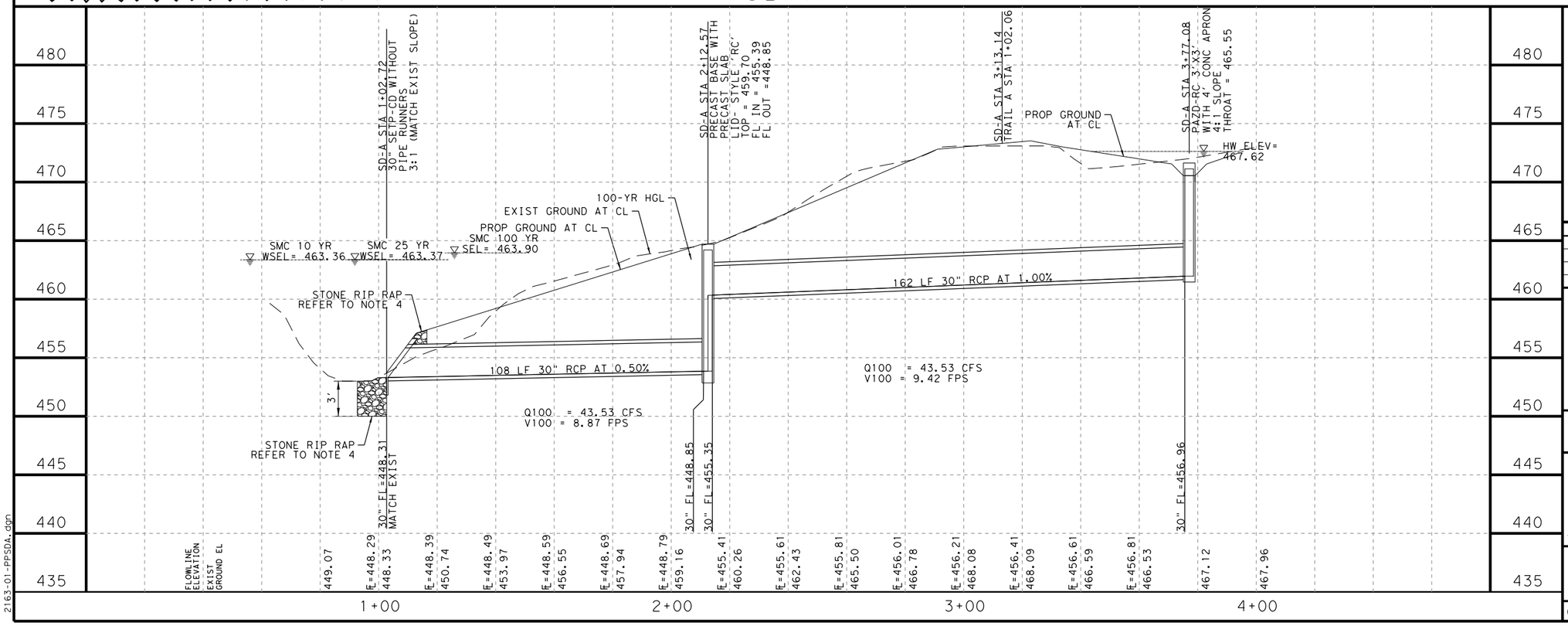
CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

NOTES

1. SEE TXDOT STANDARD DETAIL SETP-CD(MOD) FOR END TREATMENT.
2. SEE TXDOT STANDARD DETAILS FOR PAZD AND PB FOR INLET(S).
3. SEE TXDOT STANDARD DETIALS FOR MANHOLE(S).
4. SEE TXDOT STANDARD DETAIL SRR, FIGURE 5 - PROTECTION STONE RIPRAP FOR STONE RIP RAP. RIP RAP SHALL BE 3' DEEP TYPICAL. GRADATIONSHALL EB PER TABLE 1 AND 2, 18" SIZE IN THE STANDARD SPECIFICATION FOR ITEM 432 - RIP RAP.
5. 100-YEAR DFIRM FLOOP PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YEAR WSEL MAY VARY.
6. HYDRAULIC GRADE LINE SHOWN FOR PRESSURE FLOW ONLY.

SD-A



STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

STORM DRAIN SD-A PLAN AND PROFILE

SCALE: H:1"=40' V:1"=10' SHEET 1 OF 3

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 70

CAUTION
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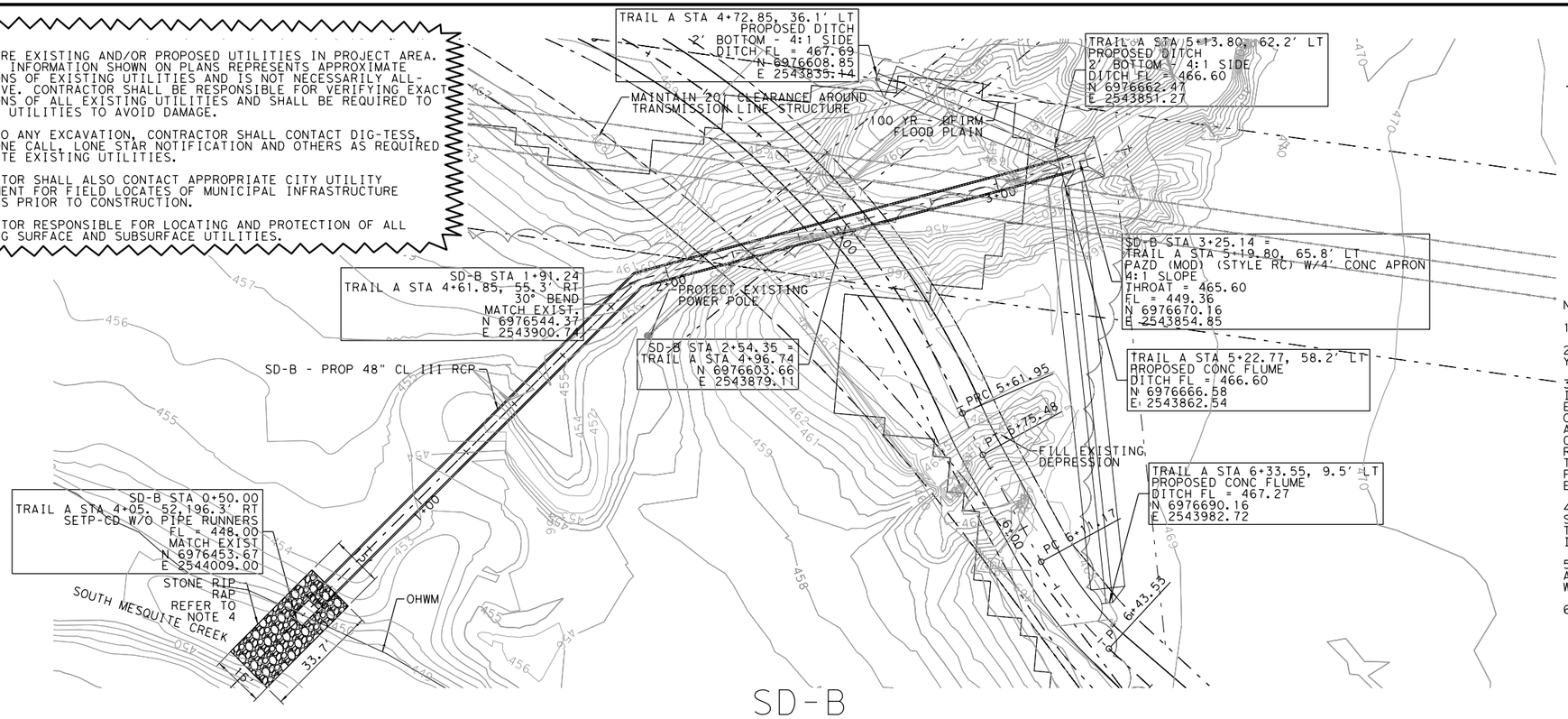


NOTES

1. SEE TXDOT STANDARD DETAIL SETP-CD(MOD) FOR END TREATMENT.

2. SEE TXDOT STANDARD DETAILS FOR PAZD(MOD) FOR MODIFIED Y-INLET.

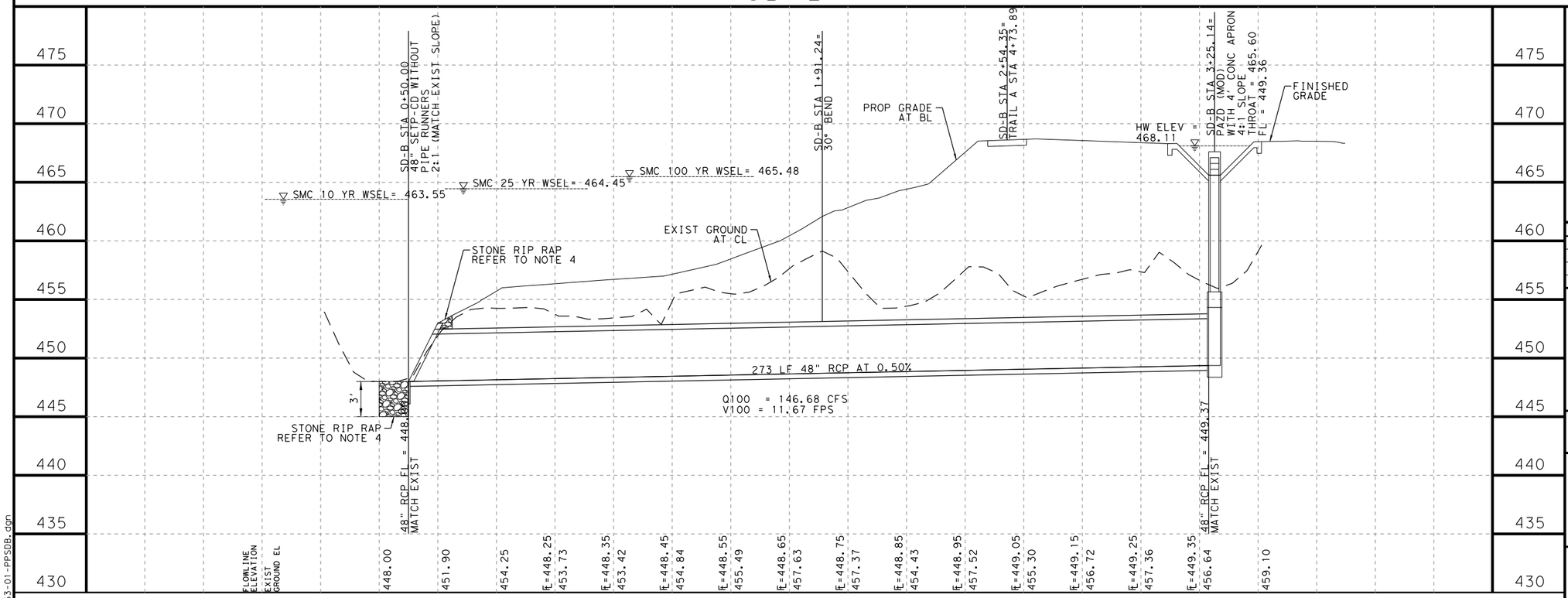
3. USE OF DRAGLINES, BACKHOES, OR OTHER BOOM-TYPE EQUIPMENT IN CONNECTION WITH ALY WORK TO BE PERFORMED ON THE BRAZOS ELECTRIC EASEMENT BY ANY EMPLOYEES, AGENTS, REPRESENTATIVES, OR CONTRACTORS MUST COMPLY WITH CHAPTER 752, TEXAS HEALTH AND SAFETY CODE, THE NATIONAL ELECTRICAL SAFETY CODE, CURRENTOSHA REQUIREMENTS, AND ANY OTHER CLEARANCE REQUIREMENTS. BRAZOS ELECTRIC'S DISPATCHER IN WACO, TEXAS. TELEPHONE NUMBER 254-750-6500 SHALL BE NOTIFIED AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE USE OF ANY BOOM-TYPE EQUIPMENT ON BRAZOS ELECTRIC'S EASEMENT.

4. SEE TXDOT STANDARD DETAIL SRR, FIGURE 5 - PROTECTION STONE RIPRAP FOR STONE RIP RAP. RIP RAP SHALL BE 3' DEEP TYPICAL. GRADATION SHALL EB PER TABLE 1 AND 2, 18" SIZE IN THE STANDARD SPECIFICATION FOR ITEM 432 - RIP RAP.

5. 100-YEAR DFIRM FLOOP PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YEAR WSEL MAY VARY.

6. HYDRAULIC GRADE LINE SHOWN FOR PRESSURE FLOW ONLY.

SD-B



STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

STORM DRAIN SD-B PLAN AND PROFILE

SCALE: H: 1"=40' V: 1"=10' SHEET 2 OF 3

BGE, Inc.
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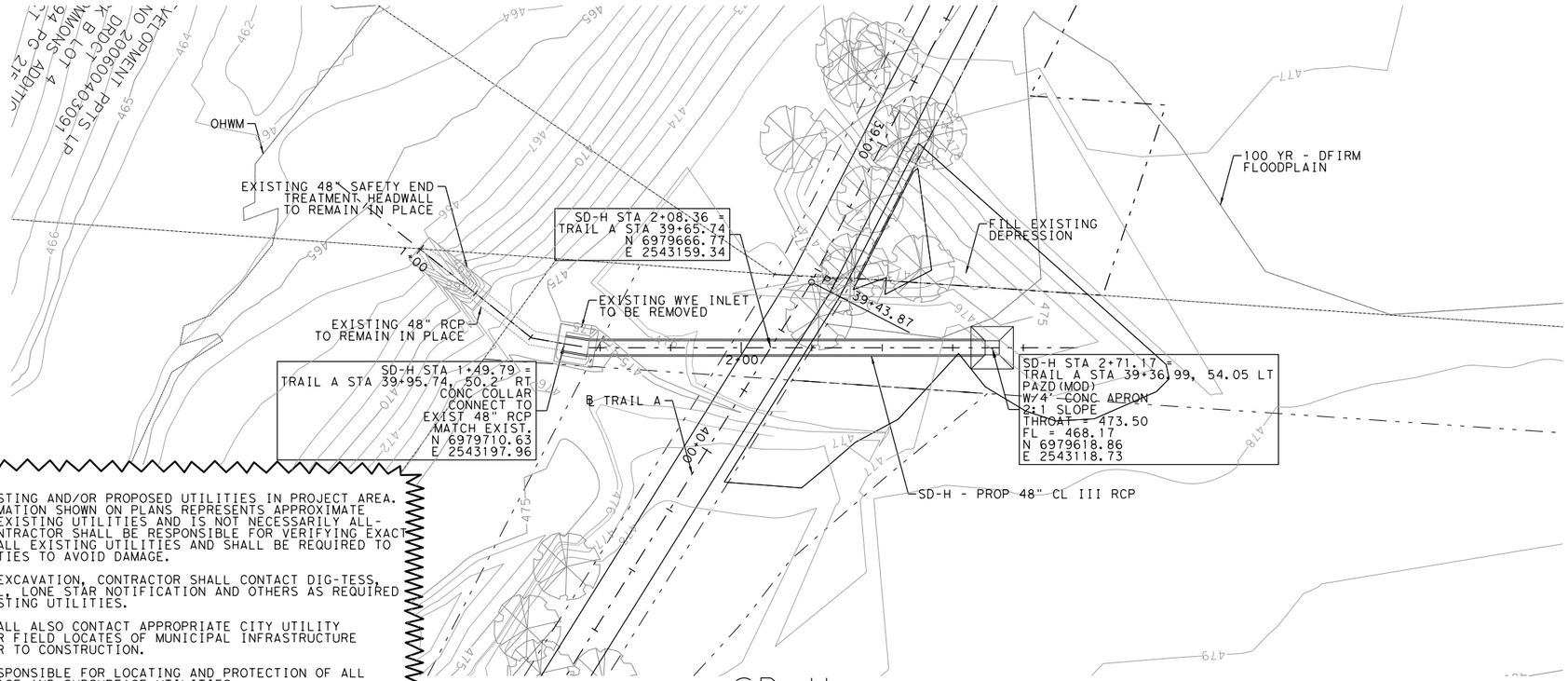
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 71



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CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

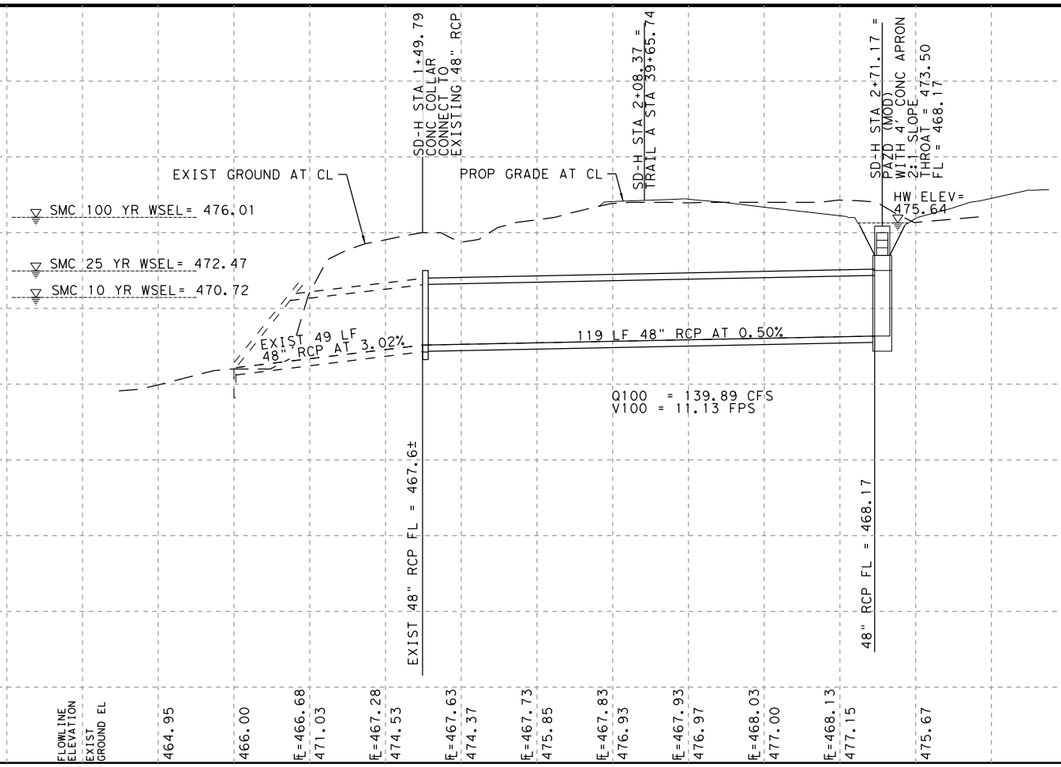
NOTES

1. SEE MODIFIED TXDOT STANDARD DETAILS PAZD(MOD) FOR MODIFIED Y-INLET.

2. 100-YEAR DFIRM FLOOP PLAIN LIMITS FROM FEMA WEBSITE, ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YEAR WSEL MAY VARY.

3. HYDRAULIC GRADE LINE SHOWN FOR PRESSURE FLOW ONLY.

SD-H



FLOWLINE ELEVATION											
EXIST GROUND EL	464.95	466.00	E=466.68 471.03	E=467.28 474.53	E=467.63 474.37	E=467.73 475.85	E=467.83 476.93	E=467.93 476.97	E=468.03 477.00	E=468.13 477.15	475.67

HOSSEIN M. HOSSEINY
118668
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

STORM DRAIN SD-H PLAN AND PROFILE

SCALE: H: 1"=40' V: 1"=10' SHEET 3 OF 3

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TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 72

11/22/2023 4:12:06 PM

CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA.
UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

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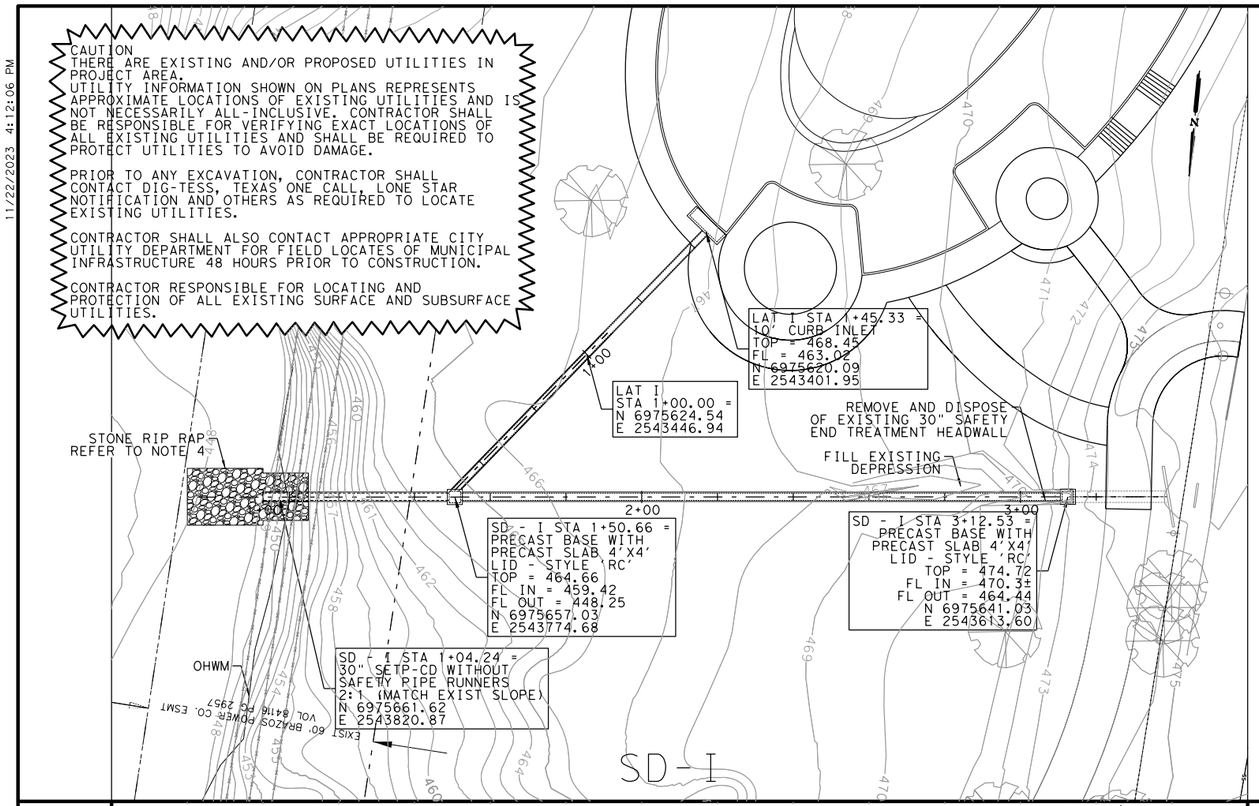

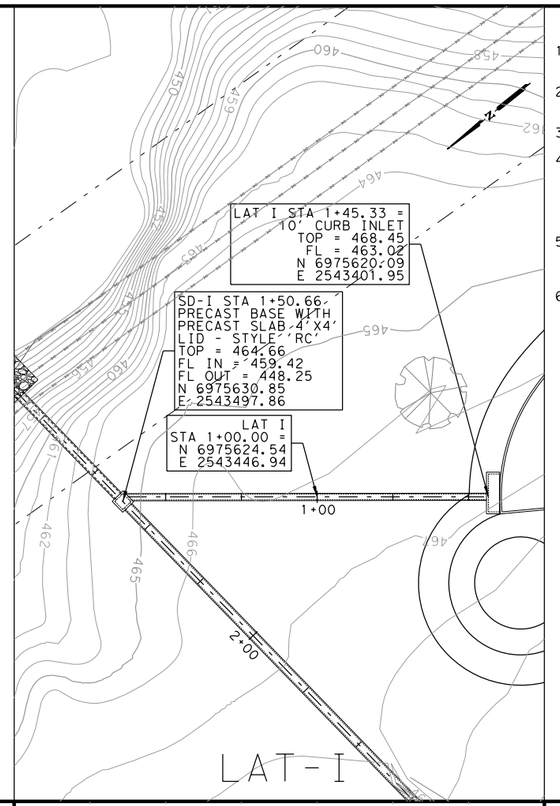

1. SEE TXDOT STANDARD DETAIL SETP-CD(MOD) FOR END TREATMENT.
2. SEE TXDOT STANDARD DETAILS FOR PAZD AND PB FOR INLET(S).
3. SEE TXDOT STANDARD DETAILS FOR MANHOLE(S).
4. SEE TXDOT STANDARD DETAIL SRR, FIGURE 5 - PROTECTION STONE RIP RAP FOR STONE RIP RAP. RIP RAP SHALL BE 3'DEEP TYPICAL. GRADATION SHALL BE PER TABLE 1 AND 2, 18" SIZE IN THE STANDARD SPECIFICATION FOR ITEM 432 - RIP RAP.
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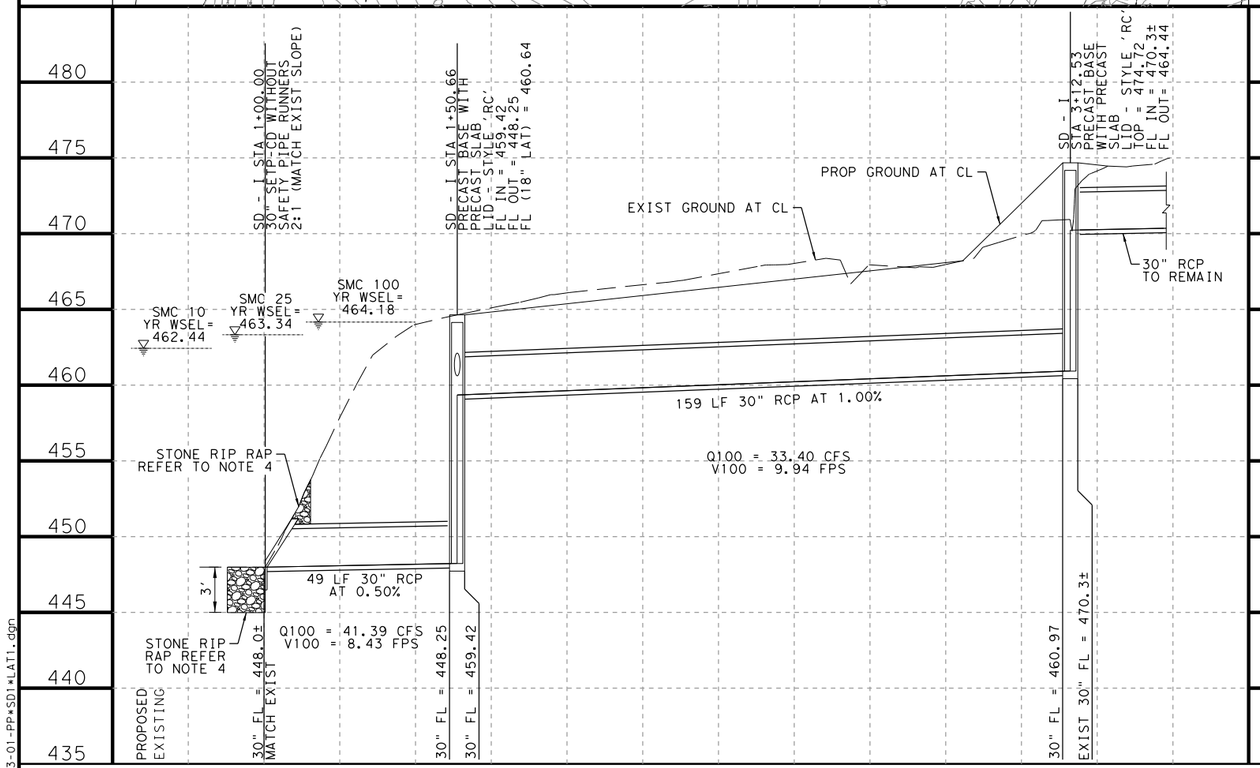

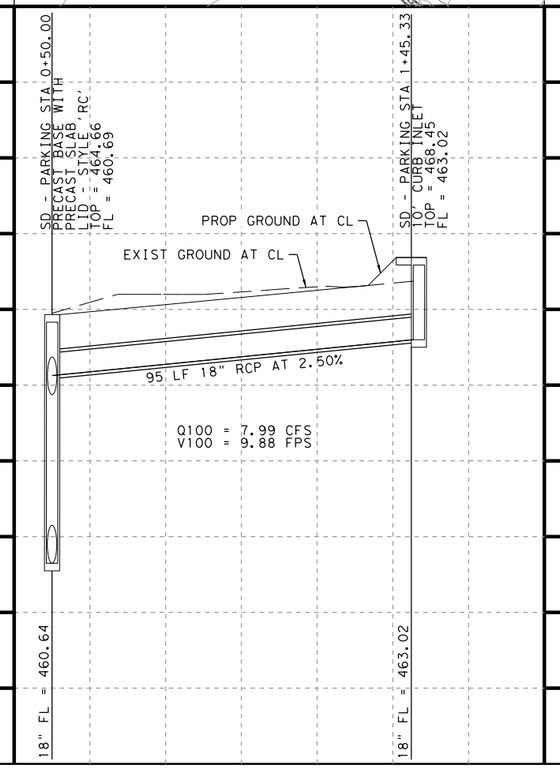

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

STORM DRAIN PLAN & PROFILE

SD-I & LAT-I

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 73

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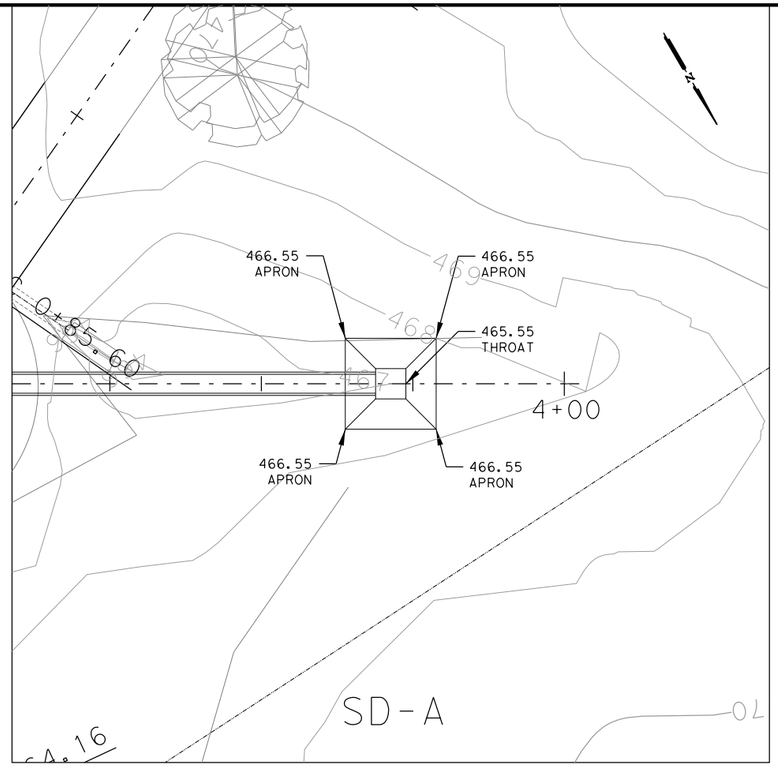

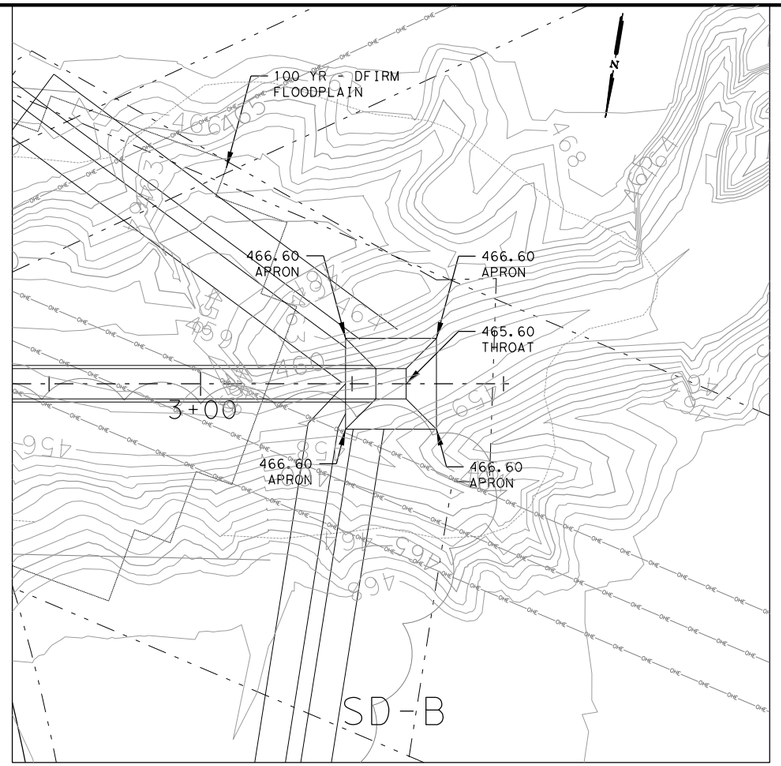

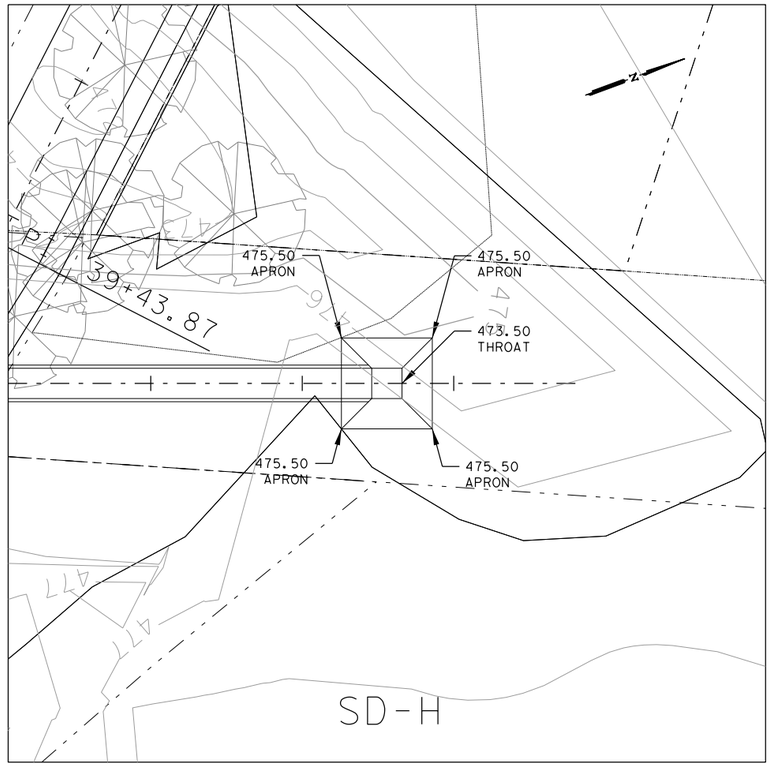

NOTES:

1. SEE TXDOT STANDARD DETAILS FOR PAZD AND PB FOR INLET(S).
2. 100-YEAR DFIRM FLOOD PLAIN LIMITS FROM FEMA WEBSITE ADOPTION DATE JULY 7, 2014. ACTUAL LIMITS OF 100-YEAR WSEL MAY VARY.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

INLET GRADING DETAIL

SCALE: 1" = 40' SHEET 1 OF 1

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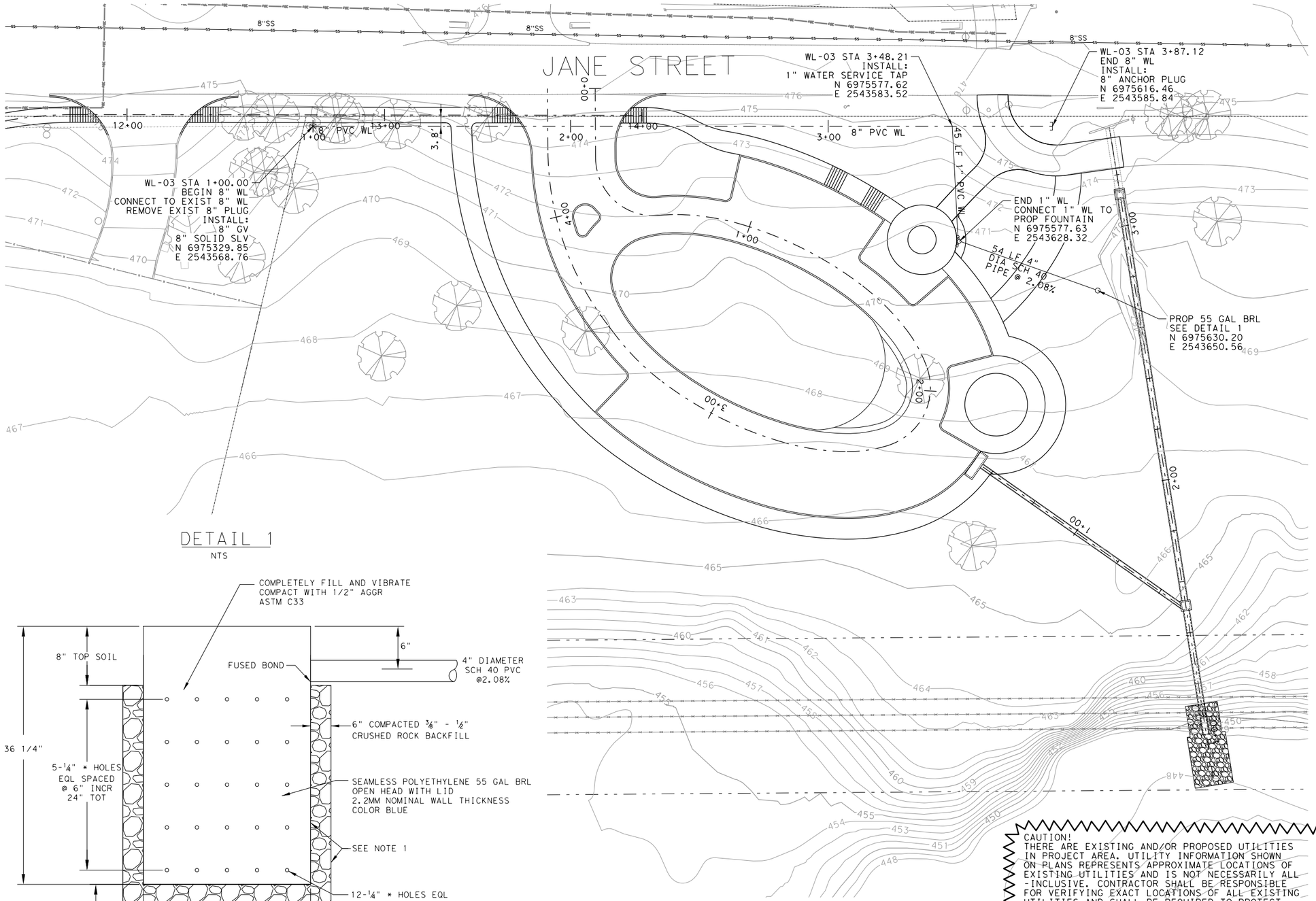
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 74



DETAIL 1

NTS

NOTES:

1. MIRAFI 180N OR APPRVD EQL ON EXTERIOR OF BRL AND @ EXTERIOR OF AGGR/SOIL INTERFACE
2. ¼" PER FOOT SLOPE FROM WATER FOUNTAIN TO BRL.

1. EXISTING WATER MAINS AND SERVICE LATERALS LOCATED WITHIN ANY PROPOSED UTILITY TRENCH SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR (NO SEPARATE PAY ITEM).
2. ALL EXISTING WATER MAINS AND SERVICE LATERALS SHALL REMAIN IN SERVICE UNTIL PROPOSED WATER SYSTEM IS TESTED AND ACCEPTED BY THE CITY OF MESQUITE. TEMPORARY CONNECTIONS AND SERVICES MAY BE NECESSARY TO MAINTAIN SERVICE TO CUSTOMERS AND SHALL BE INSTALLED, MAINTAINED, AND REMOVED AT THE EXPENSE OF THE CONTRACTOR (NO SEPARATE PAY ITEM).
3. THE LOCATION AND DIMENSIONS OF EXISTING WATERLINES SHOWN ON THE PLANS ARE APPROXIMATE AND WERE OBTAINED FROM THE CITY OF MESQUITE RECORD DRAWINGS. FOR SOURCE PLAN AND PROFILE OF THE EXISTING WATERLINE DRAWN ON THIS SHEET REFER TO: OAK BROOK - PHASE I WATER & SEWER PLANS, SHEETS 8 AND 9 OF 11, DATED MAY 1988 BY NDM.
4. THE CONTRACTOR SHALL UNCOVER ALL EXISTING CITY UTILITY LINES BEING TIED INTO TO VERIFY THEIR TYPE, CONDITION, LOCATION, INVERT, SLOPE, AND ANY OTHER INFORMATION NEEDED TO DETERMINE THAT THE UTILITY CONNECTION WILL FUNCTION AS DESIGNED. IF EXISTING CONDITIONS CONFLICT WITH THE RECORD DRAWINGS CITED IN NOTE 3, OR IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE DESIGN CIVIL ENGINEER PRIOR TO PROCEEDING.

CAUTION!
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CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

PARKING LOT WATER & SEWER CONNECTION

ALTERNATE 1

SCALE: H: 1"=40'

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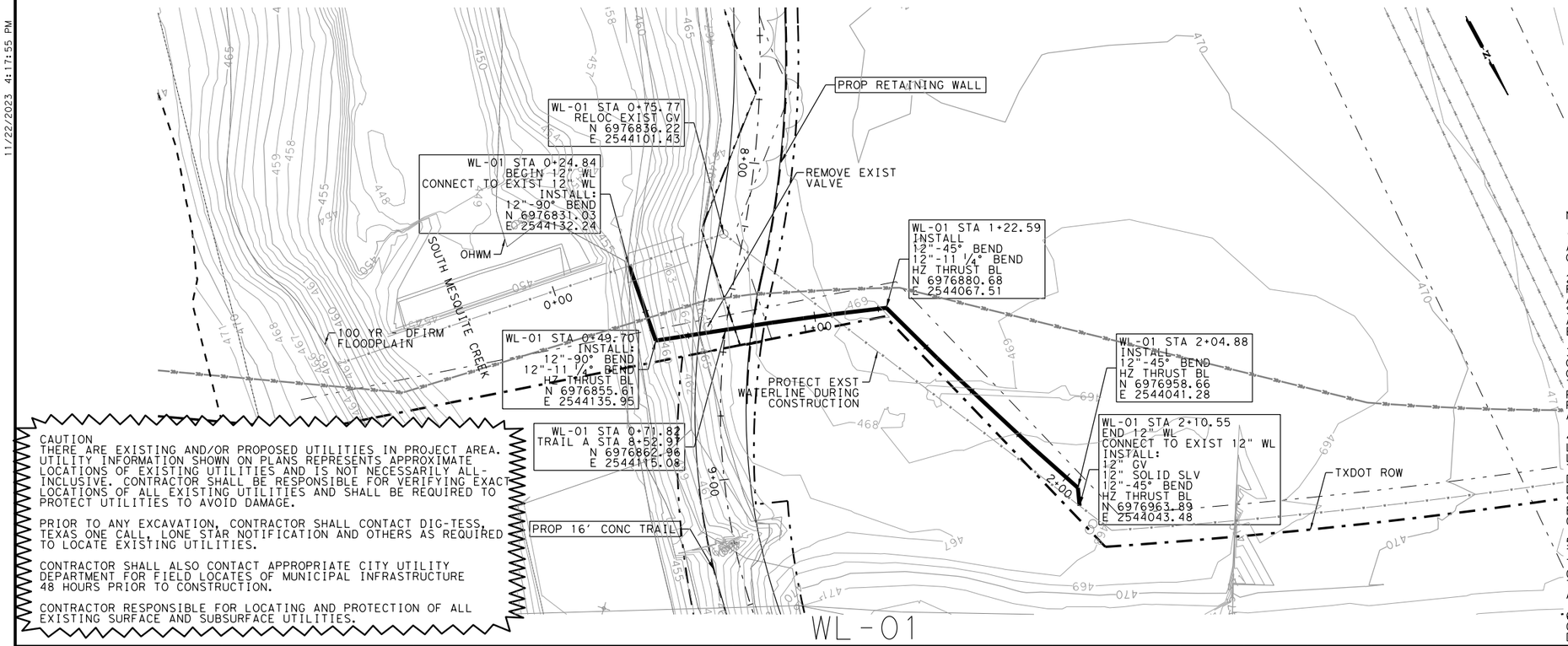
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 75

2163-01-PLWS-PLAN.dgn



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WL-01

LEGEND

DIRECTIONAL ARROW

HORIZONTAL
20 0 20 40

NOTES

1. ABANDONED WATER MAINS AND SERVICE LATERALS LOCATED WITHIN ANY PROPOSED UTILITY TRENCH SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR (NO SEPARATE PAY ITEM).

2. ALL EXISTING WATER MAINS AND SERVICE LATERALS SHALL REMAIN IN SERVICE UNTIL PROPOSED WATER SYSTEM IS TESTED AND ACCEPTED BY THE CITY OF MESQUITE. TEMPORARY CONNECTIONS AND SERVICES MAY BE NECESSARY TO MAINTAIN SERVICE TO CUSTOMERS AND SHALL BE INSTALLED, MAINTAINED, AND REMOVED AT THE EXPENSE OF THE CONTRACTOR (NO SEPARATE PAY ITEM).

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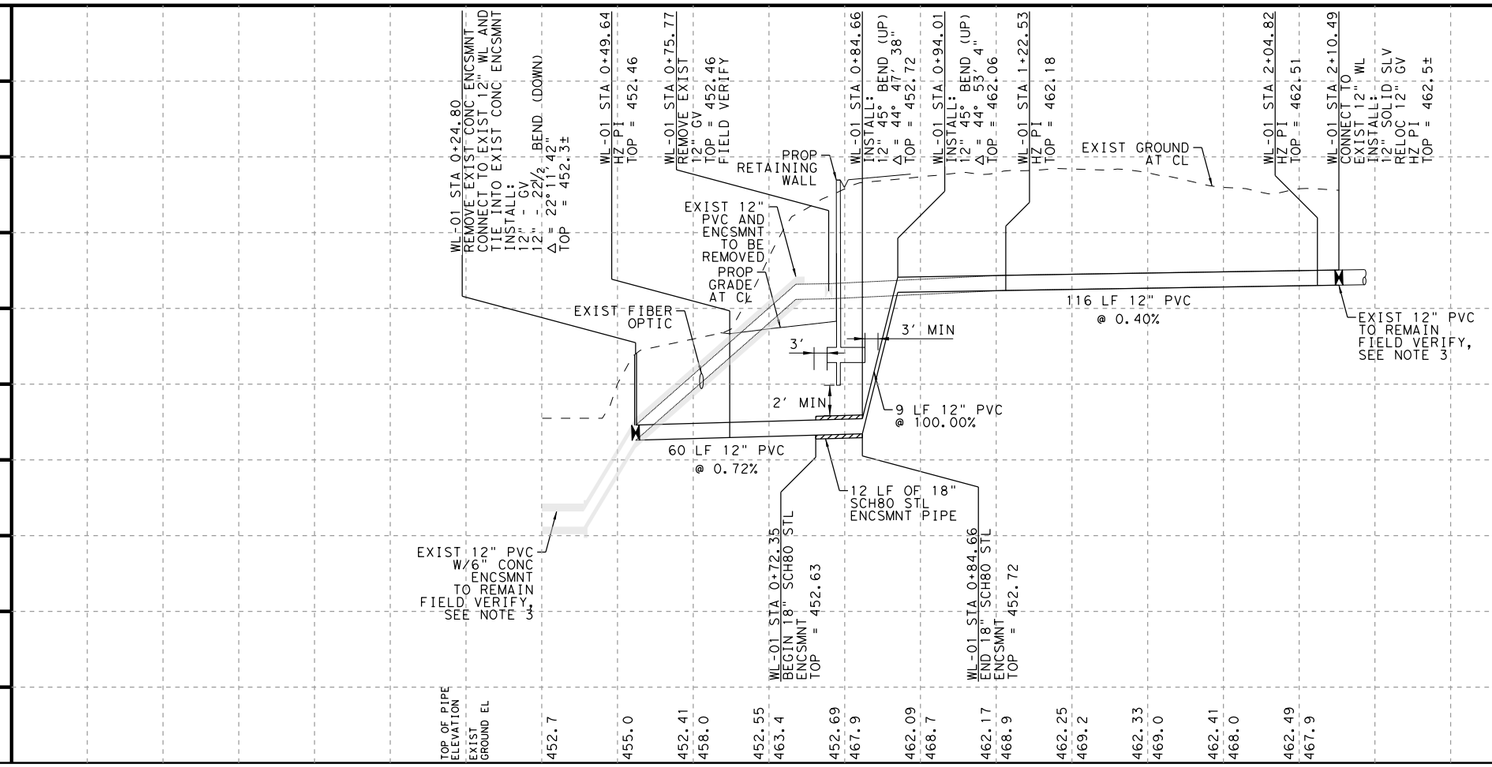
4. THE CONTRACTOR SHALL UNCOVER ALL EXISTING CITY UTILITY LINES BEING TIED INTO TO VERIFY THEIR TYPE, CONDITION, LOCATION, INVERT, SLOPE, AND ANY OTHER INFORMATION NEEDED TO DETERMINE THAT THE UTILITY CONNECTION WILL FUNCTION AS DESIGNED. IF EXISTING CONDITIONS CONFLICT WITH THE RECORD DRAWINGS CITED IN NOTE 3, OR IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE DESIGN CIVIL ENGINEER PRIOR TO PROCEEDING.

5. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTORL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6636) FOR LOCATES A MINMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

6. MAXIMUM OUT OF SERVICE TIME SHALL BE NO MORE THAN 48 HOURS. CONTRACTOR TO COORDINATE WITH CITY OF MESQUITE WATER DEPARTMENT.



STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

WATERLINE WL-01 PLAN & PROFILE

SCALE: H: 1"=20' V: 1"=10' SHEET 1 OF 2

BGE, Inc.
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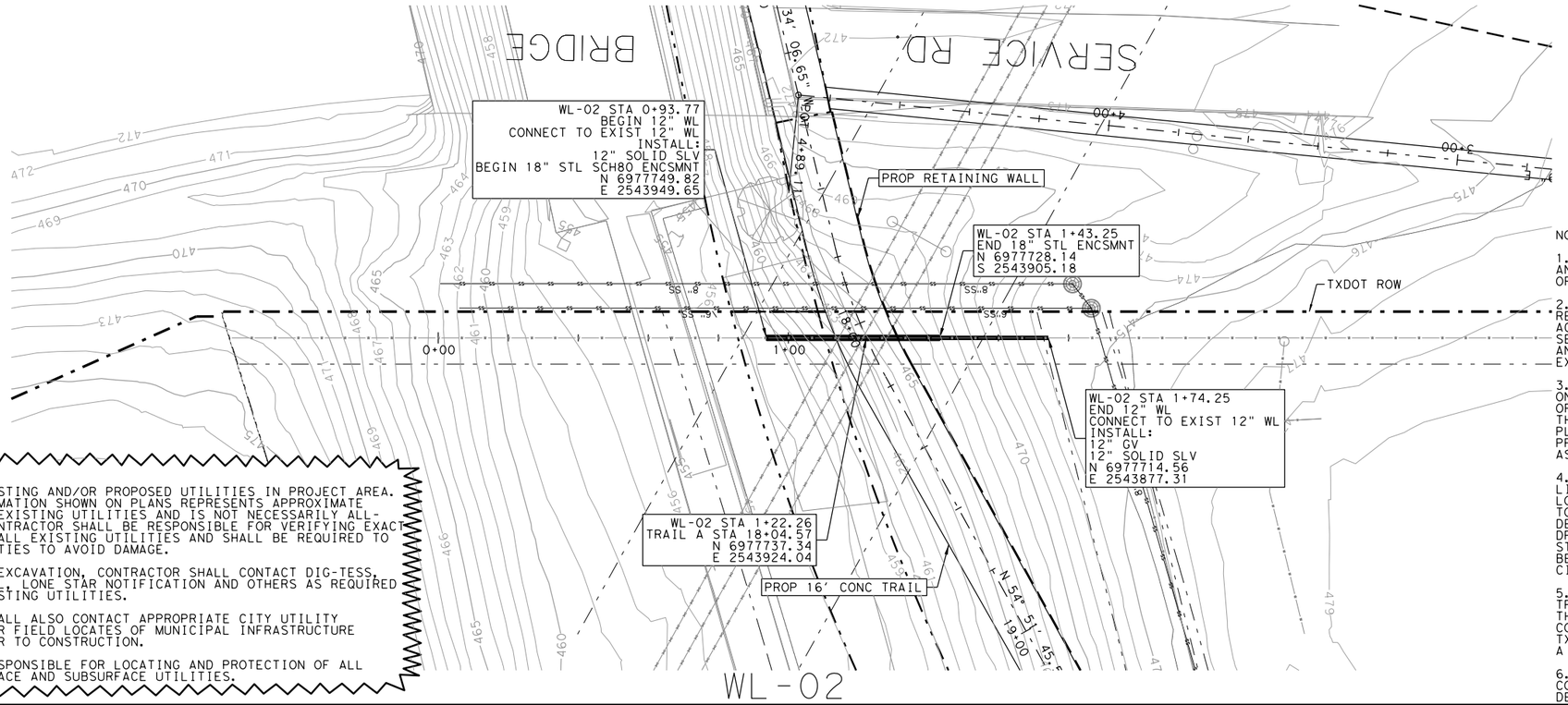
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 76



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HORIZONTAL
20 0 20 40

NOTES

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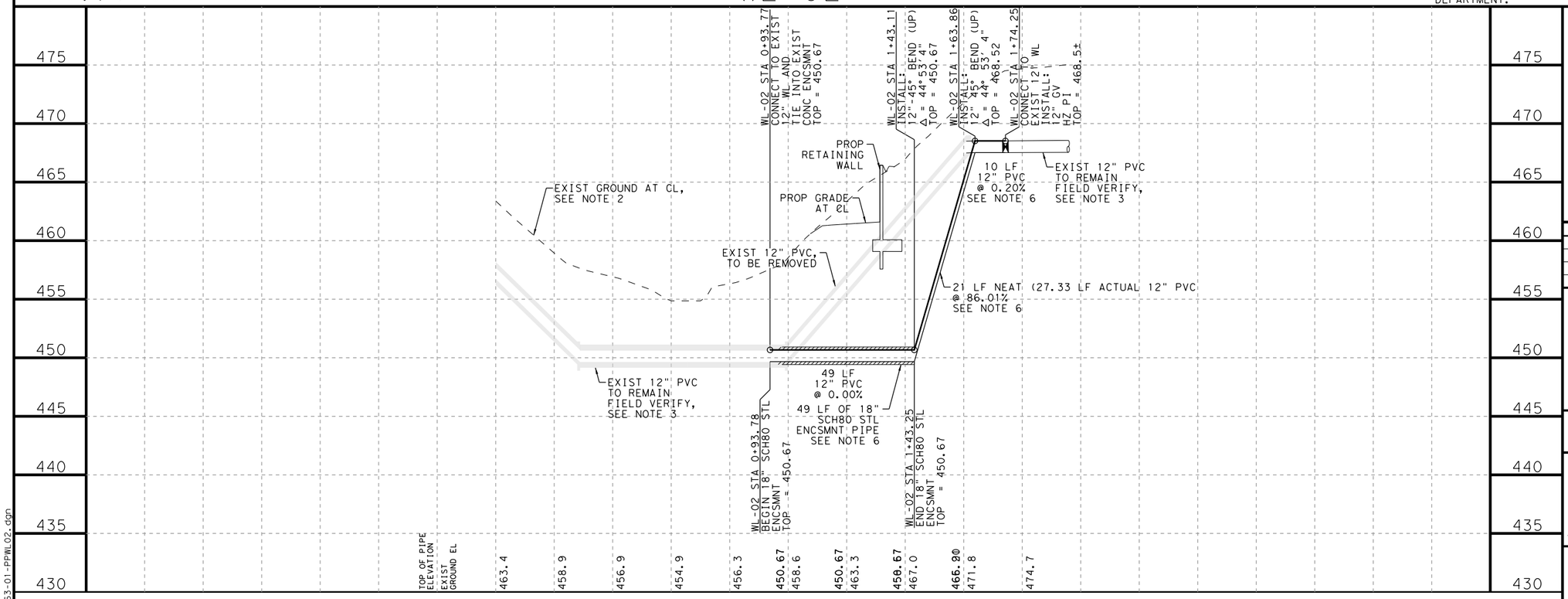
2. ALL EXISTING WATER MAINS AND SERVICE LATERALS SHALL REMAIN IN SERVICE UNTIL PROPOSED WATER SYSTEM IS TESTED AND ACCEPTED BY THE CITY OF MESQUITE. TEMPORARY CONNECTIONS AND SERVICES MAY BE NECESSARY TO MAINTAIN SERVICE TO CUSTOMERS AND SHALL BE INSTALLED, MAINTAINED, AND REMOVED AT THE EXPENSE OF THE CONTRACTOR (NO SEPARATE PAY ITEM).

3. THE LOCATION AND DIMENSIONS OF EXISTING WATERLINES SHOWN ON THE PLANS ARE APPROXIMATE AND WERE OBTAINED FROM THE CITY OF MESQUITE RECORD DRAWINGS. FOR SOURCE PLAN AND PROFILE OF THE EXISTING WATERLINE DRAWN ON THIS SHEET REFER TO: VALLEY PLAZA EAST WATER & SANITARY SEWER PLAN, SHEET WS-1 AND WATER PROFILES, SHEET WS-2, DATED JULY 1985 BY ALBERT H. HALFF ASSOCIATES, INC.

4. THE CONTRACTOR SHALL UNCOVER ALL EXISTING CITY UTILITY LINES BEING TIED INTO TO VERIFY THEIR TYPE, CONDITION, LOCATION, INVERT, SLOPE, AND ANY OTHER INFORMATION NEEDED TO DETERMINE THAT THE UTILITY CONNECTION WILL FUNCTION AS DESIGNED. IF EXISTING CONDITIONS CONFLICT WITH THE RECORD DRAWINGS CITED IN NOTE 3, OR IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE DESIGN CIVIL ENGINEER PRIOR TO PROCEEDING.

5. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTATION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTORL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6636) FOR LOCATES A MINMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.

6. MAXIMUM OUT OF SERVICE TIME SHALL BE NO MORE THAN 48 HOURS. CONTRACTOR TO COORDINATE WITH CITY OF MESQUITE WATER DEPARTMENT.



STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

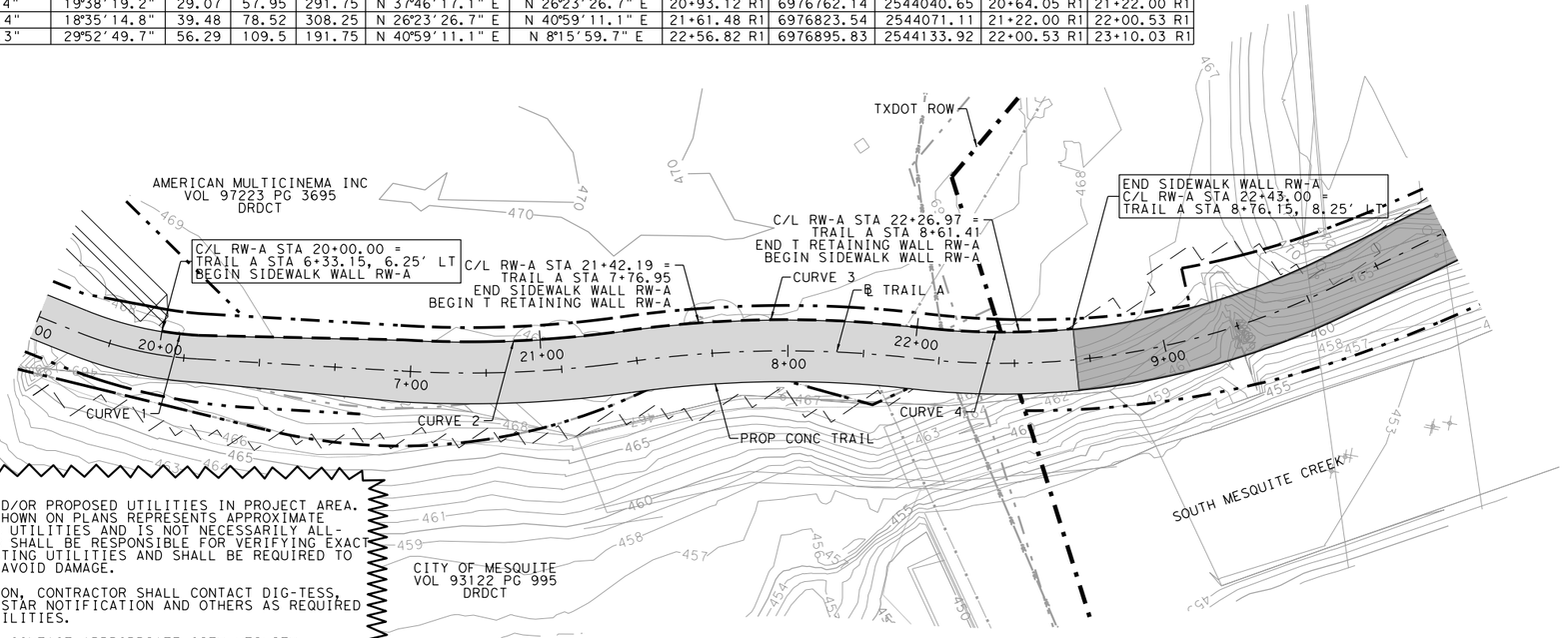
WATERLINE WL-02 PLAN & PROFILE

SCALE: H:1"=20' V:1"=10' SHEET 2 OF 2

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 77

CURVE DATA													
ALIGNMENT	NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT	AHEAD TANGENT	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
RW-A	C1	18°32'18.7"	6°06'55.8"	15.3	30.33	93.75	N 56°18'35.8" E	N 37°46'17.1" E	19+94.70 R1	6976682.93	2543981.80	19+79.40 R1	20+09.73 R1
RW-A	C2	11°22'50.4"	19°38'19.2"	29.07	57.95	291.75	N 37°46'17.1" E	N 26°23'26.7" E	20+93.12 R1	6976762.14	2544040.65	20+64.05 R1	21+22.00 R1
RW-A	C3	14°35'14.8"	18°35'14.8"	39.48	78.52	308.25	N 26°23'26.7" E	N 40°59'11.1" E	21+61.48 R1	6976823.54	2544071.11	21+22.00 R1	22+00.53 R1
RW-A	C4	32°43'11.3"	29°52'49.7"	56.29	109.5	191.75	N 40°59'11.1" E	N 8°15'59.7" E	22+56.82 R1	6976895.83	2544133.92	22+00.53 R1	23+10.03 R1



CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

RW-A

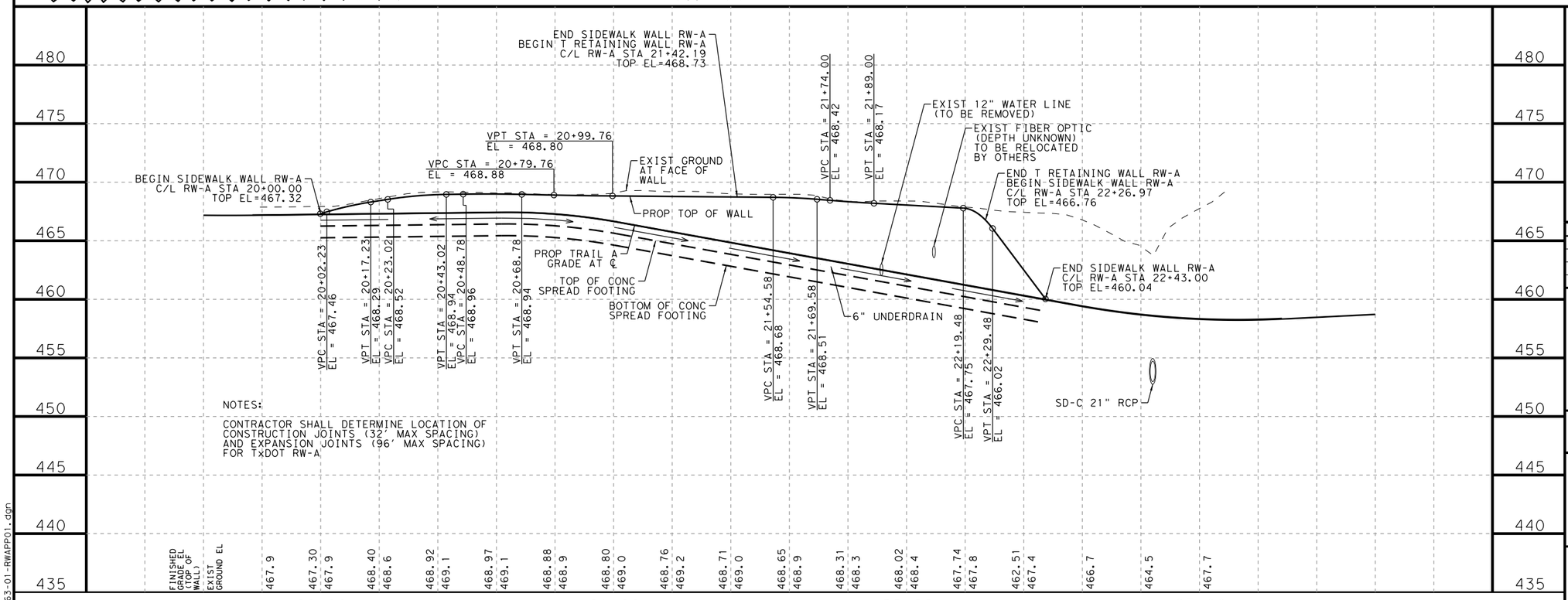
LEGEND

DIRECTIONAL ARROW

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. HORIZONTAL & VERTICAL CONTROL FOR THE RETAINING WALL SHALL BE TO THE FACE OF WALL.
2. CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS FOR THE RETAINING WALL PRIOR TO CONSTRUCTION FOR OWNER AND ENGINEER APPROVAL. SHOP DRAWINGS SHALL BE DETAILED BASED ON THE GENERAL LAYOUT AS SHOWN ON THESE PLANS AND GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.
3. SEE TxDOT STANDARDS RW 1(L)C & RW 2 FOR RETAINING WALL DIMENSIONS AND DETAILS.
4. SEE TxDOT STANDARD PRD-13 FOR PEDESTRIAN RAIL DETAILS
5. SEE RETAINING WALL REBAR AND JOINT DETAILS ON SHEET 99.
6. SELECT FILL SHALL BE TxDOT ITEM 132 TYPE D. COST IS SUBSIDIARY TO ITEM 423.
7. ALL REINFORCING SHALL BE EPOXY COATED.
8. ANY COST ASSOCIATED WITH SAWCUTTING, JOINT PREPARATION (PREPARE AND PLACE THE BONDING EPOXY PER SPEC ITEM 420) AND ADDITIONAL CONC. FLUME OUTSIDE PROPOSED FLUME AREA SHALL BE INCIDENTAL TO CONCRETE FLUME COST.
9. UNDERDRAIN CLEANOUTS SHALL BE LOCATED AT HIGH POINTS AND MAXIMUM SPACING OF 200'. FINAL CLEANOUT LOCATIONS AND DETAILS TO BE SUBMITTED FOR REVIEW AND ACCEPTANCE BY ENGINEER.
10. UNDERGROUND UTILITIES OWNED BY THE TEXAS DEPARTMENT OF TRANSPORTAION MAY BE PRESENT WITHIN THE RIGHT-OF-WAY ON THIS PROJECT. FOR SIGNAL, ILLUMINATION, SURVEILLANCE, AND COMMUNICATIONS & CONTROL MAINTAINED BY TXDOT, CALL THE TXDOT TRAFFIC SIGNAL OFFICE (214-320-6682) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION. FOR IRRIGATION SYSTEMS, CALL TXDOT LANDSCAPE OFFICE (214-320-6636) FOR LOCATES A MINIMUM OF 48 HOURS IN ADVANCE OF EXCAVATION.
11. WHERE TEMPORARY SPECIAL SHORING IS NEEDED, CONTRACTOR TO SUBMIT SHORING PLANS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS TO THE OWNER FOR APPROVAL.



NOTES:

CONTRACTOR SHALL DETERMINE LOCATION OF CONSTRUCTION JOINTS (32' MAX SPACING) AND EXPANSION JOINTS (96' MAX SPACING) FOR TxDOT RW-A

GREGG T. DURHAM
95652
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL LAYOUT RW-A

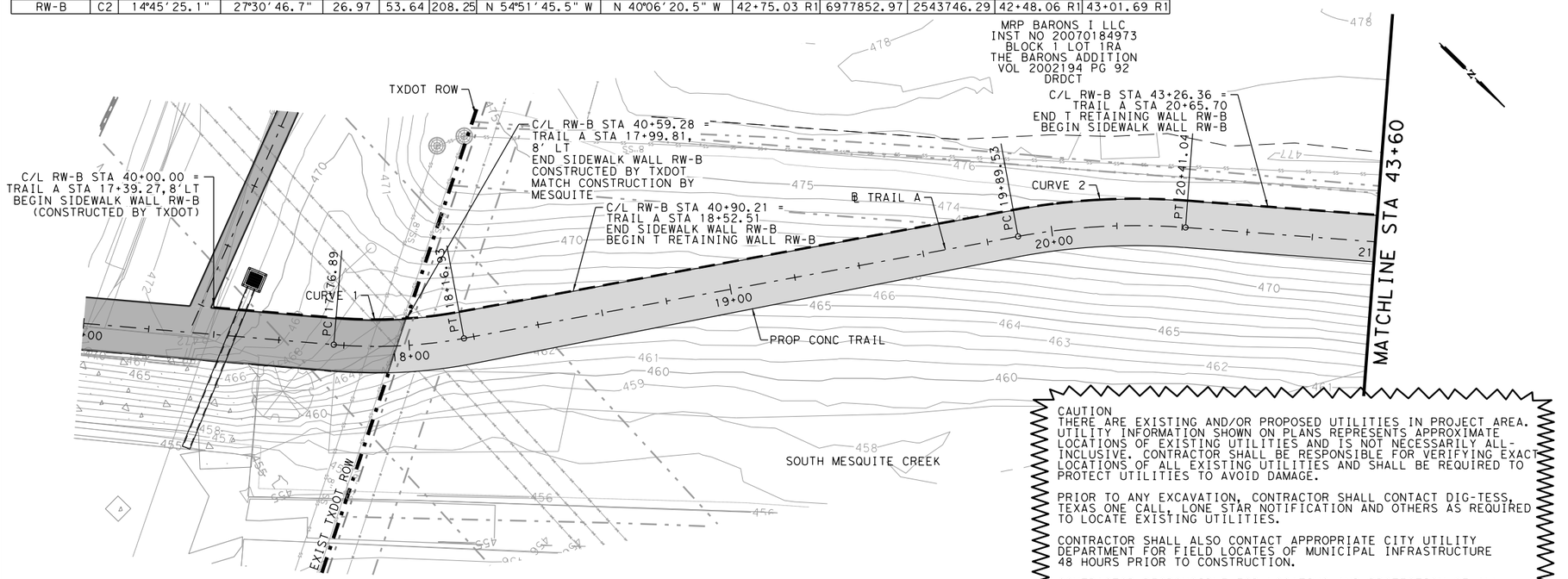
STA 20+00 TO END

SCALE: H:1"=40' V:1"=10' SHEET 1 OF 1

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 78

CURVE DATA														
ALIGNMENT	NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT DIRECTION	AHEAD TANGENT DIRECTION	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
RW-B	C1	15°17'38.9"	40°25'13.1"	19.03	37.84	141.75	N 39°34'06.7" W	N 54°51'45.5" W	40+56.66 R1	6977727.16	2543925.05	40+37.62 R1	40+75.46 R1
RW-B	C2	14°45'25.1"	27°30'46.7"	26.97	53.64	208.25	N 54°51'45.5" W	N 40°06'20.5" W	42+75.03 R1	6977852.97	2543746.29	42+48.06 R1	43+01.69 R1



RW-B

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. HORIZONTAL & VERTICAL CONTROL FOR THE RETAINING WALL SHALL BE TO THE FACE OF WALL.
2. SEE TxDOT STANDARDS RW 1(L)C & RW 2 FOR RETAINING WALL DIMENSIONS AND DETAILS.
3. SEE TxDOT STANDARD PRD-13 FOR PEDESTRIAN RAIL DETAILS
4. SELECT FILL SHALL BE TxDOT ITEM 132 TYPE D. COST IS SUBSIDIARY TO ITEM 423.
5. UNDERDRAIN CLEANOUTS SHALL BE LOCATED AT HIGH POINTS AND MAXIMUM SPACING OF 200'. FINAL CLEANOUT LOCATIONS AND DETAILS TO BE SUBMITTED FOR REVIEW AND ACCEPTANCE BY ENGINEER.
6. ANY COST ASSOCIATED WITH SAWCUTTING, JOINT PREPARATION (PREPARE AND PLACE THE BONDING EPOXY PER SPEC ITEM 420) AND ADDITIONAL CONC. FLUME OUTSIDE PROPOSED FLUME AREA SHALL BE INCIDENTAL TO CONCRETE FLUME COST.
7. GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.
8. WHERE TEMPORARY SPECIAL SHORING IS NEEDED, CONTRACTOR TO SUBMIT SHORING PLANS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS TO THE OWNER FOR APPROVAL.
9. CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS FOR THE RETAINING WALL PRIOR TO CONSTRUCTION FOR OWNER AND ENGINEER APPROVAL. SHOP DRAWINGS SHALL BE DETAILED BASED ON THE GENERAL LAYOUT AS SHOWN ON THESE PLANS AND GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.

CAUTION
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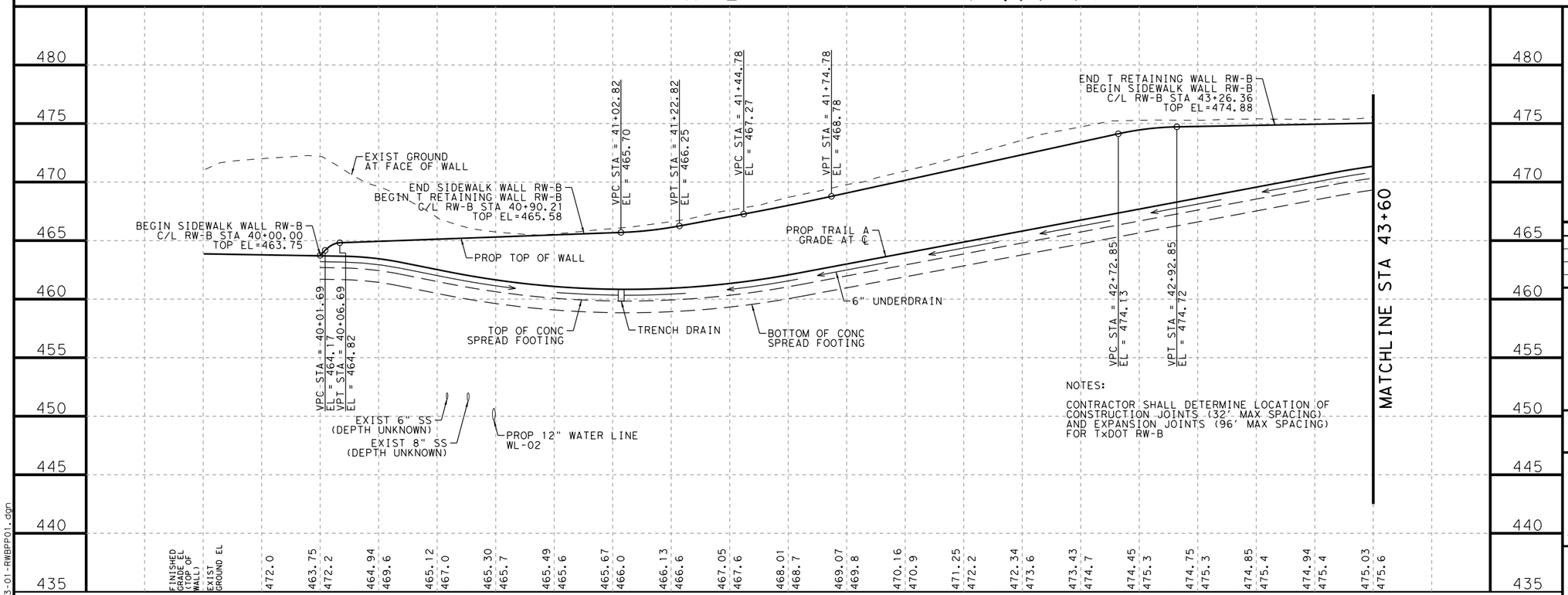
CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.



NOTES:

CONTRACTOR SHALL DETERMINE LOCATION OF CONSTRUCTION JOINTS (32' MAX SPACING) AND EXPANSION JOINTS (96' MAX SPACING) FOR TxDOT RW-B

STATE OF TEXAS
GREGG T. DURHAM
95652
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL LAYOUT RW-B

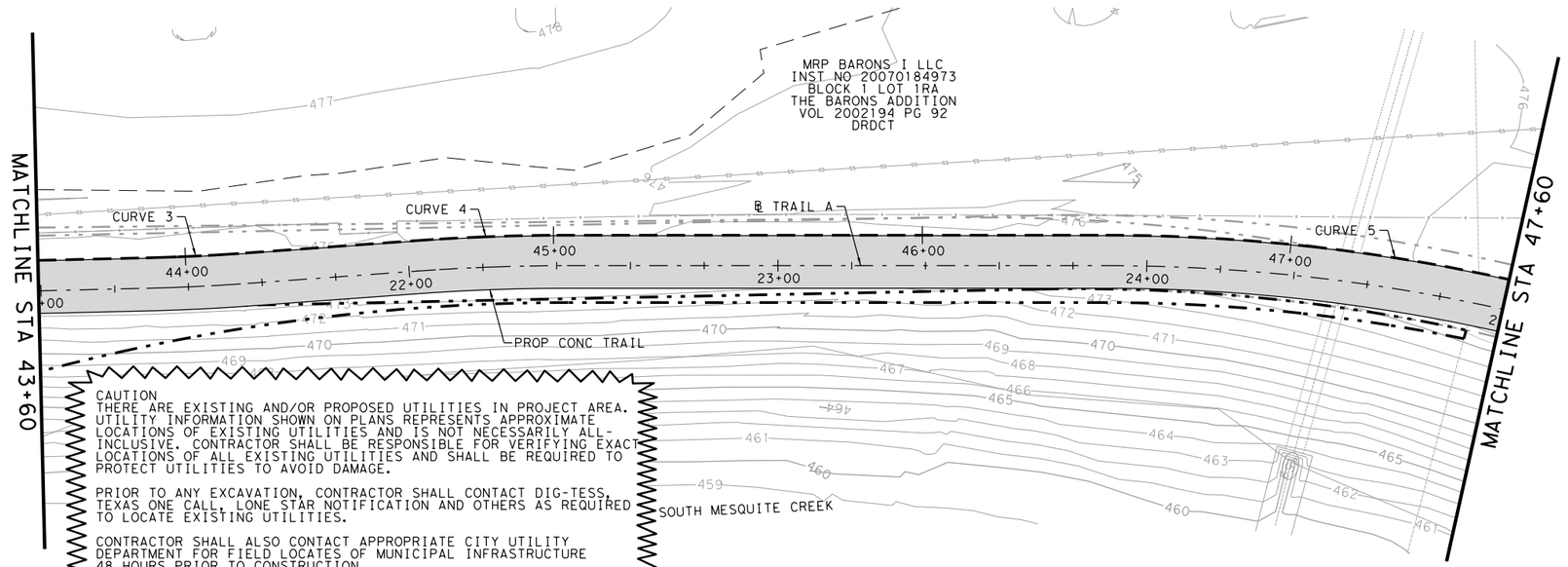
STA 40+00 TO STA 43+60

SCALE: H:1"=40' V:1"=10' SHEET 1 OF 5

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 79

CURVE DATA													
ALIGNMENT	NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT DIRECTION	AHEAD TANGENT DIRECTION	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
RW-B	C3	2°48'16.9"	10°23'03.7"	13.51	27.01	551.75	N 40°06'20.5" W	N 42°54'37.3" W	44+02.80 R1	6977950.93	2543663.78	43+89.29 R1	44+16.30 R1
RW-B	C4	4°09'24.1"	10°04'58.3"	20.62	41.23	568.25	N 42°54'37.3" W	N 38°45'13.3" W	44+83.09 R1	6978009.74	2543609.11	44+62.47 R1	45+03.70 R1
RW-B	C5	3°32'26.4"	11°21'45.2"	142.41	277.58	504.25	N 38°45'13.3" W	N 7°12'46.9" W	47+92.10 R1	6978250.73	2543415.67	46+49.70 R1	49+27.28 R1



CAUTION
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CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

RW-B

HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

NOTES

1. HORIZONTAL & VERTICAL CONTROL FOR THE RETAINING WALL SHALL BE TO THE FACE OF WALL.
2. SEE TxDOT STANDARDS RW 1(L)C & RW 2 FOR RETAINING WALL DIMENSIONS AND DETAILS.
3. SEE TxDOT STANDARD PRD-13 FOR PEDESTRIAN RAIL DETAILS
4. SELECT FILL SHALL BE TxDOT ITEM 132 TYPE D. COST IS SUBSIDIARY TO ITEM 423.
5. UNDERDRAIN CLEANOUTS SHALL BE LOCATED AT HIGH POINTS AND MAXIMUM SPACING OF 200'. FINAL CLEANOUT LOCATIONS AND DETAILS TO BE SUBMITTED FOR REVIEW AND ACCEPTANCE BY ENGINEER.
6. ANY COST ASSOCIATED WITH SAWCUTTING, JOINT PREPARATION (PREPARE AND PLACE THE BONDING EPOXY PER SPEC ITEM 420) AND ADDITIONAL CONC. FLUME OUTSIDE PROPOSED FLUME AREA SHALL BE INCIDENTAL TO CONCRETE FLUME COST.
7. GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.
8. WHERE TEMPORARY SPECIAL SHORING IS NEEDED, CONTRACTOR TO SUBMIT SHORING PLANS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS TO THE OWNER FOR APPROVAL.
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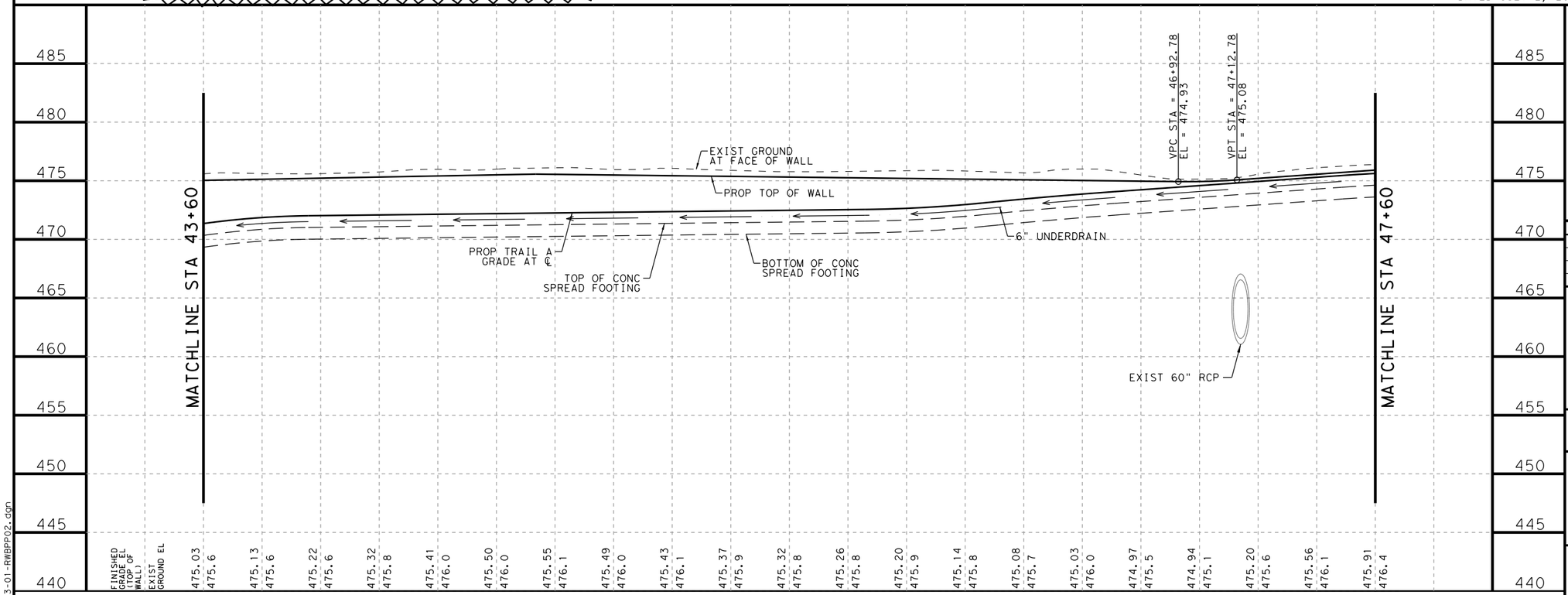
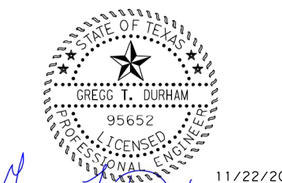




11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL LAYOUT RW-B

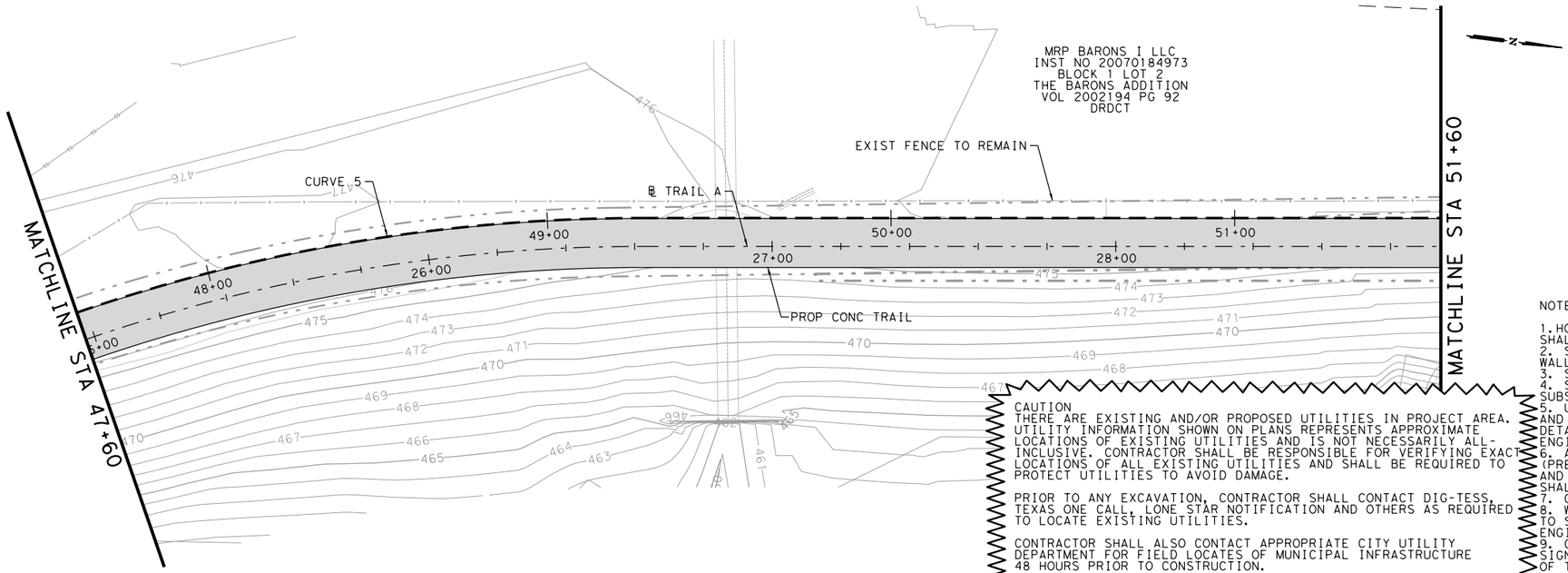
STA 43+60 TO STA 47+60

SCALE: H: 1"=40' V: 1"=10' SHEET 2 OF 5

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 80

CURVE DATA														
ALIGNMENT	NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT DIRECTION	AHEAD TANGENT DIRECTION	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
RW-B	C5	31°32'26.4"	11°21'45.2"	142.41	277.58	504.25	N 38°45'13.3" W	N 7°12'46.9" W	47+92.10 R1	6978250.73	2543415.67	46+49.70 R1	49+27.28 R1



HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

NOTES

1. HORIZONTAL & VERTICAL CONTROL FOR THE RETAINING WALL SHALL BE TO THE FACE OF WALL.
2. SEE TxDOT STANDARDS RW 1(L)C & RW 2 FOR RETAINING WALL DIMENSIONS AND DETAILS.
3. SEE TxDOT STANDARD PRD-13 FOR PEDESTRIAN RAIL DETAILS
4. SELECT FILL SHALL BE TxDOT ITEM 132 TYPE D. COST IS SUBSIDIARY TO ITEM 423.
5. UNDERDRAIN CLEANOUTS SHALL BE LOCATED AT HIGH POINTS AND MAXIMUM SPACING OF 200'. FINAL CLEANOUT LOCATIONS AND DETAILS TO BE SUBMITTED FOR REVIEW AND ACCEPTANCE BY ENGINEER.
6. ANY COST ASSOCIATED WITH SAWCUTTING, JOINT PREPARATION (PREPARE AND PLACE THE BONDING EPOXY PER SPEC ITEM 420) AND ADDITIONAL CONC. FLUME OUTSIDE PROPOSED FLUME AREA SHALL BE INCIDENTAL TO CONCRETE FLUME COST.
7. GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.
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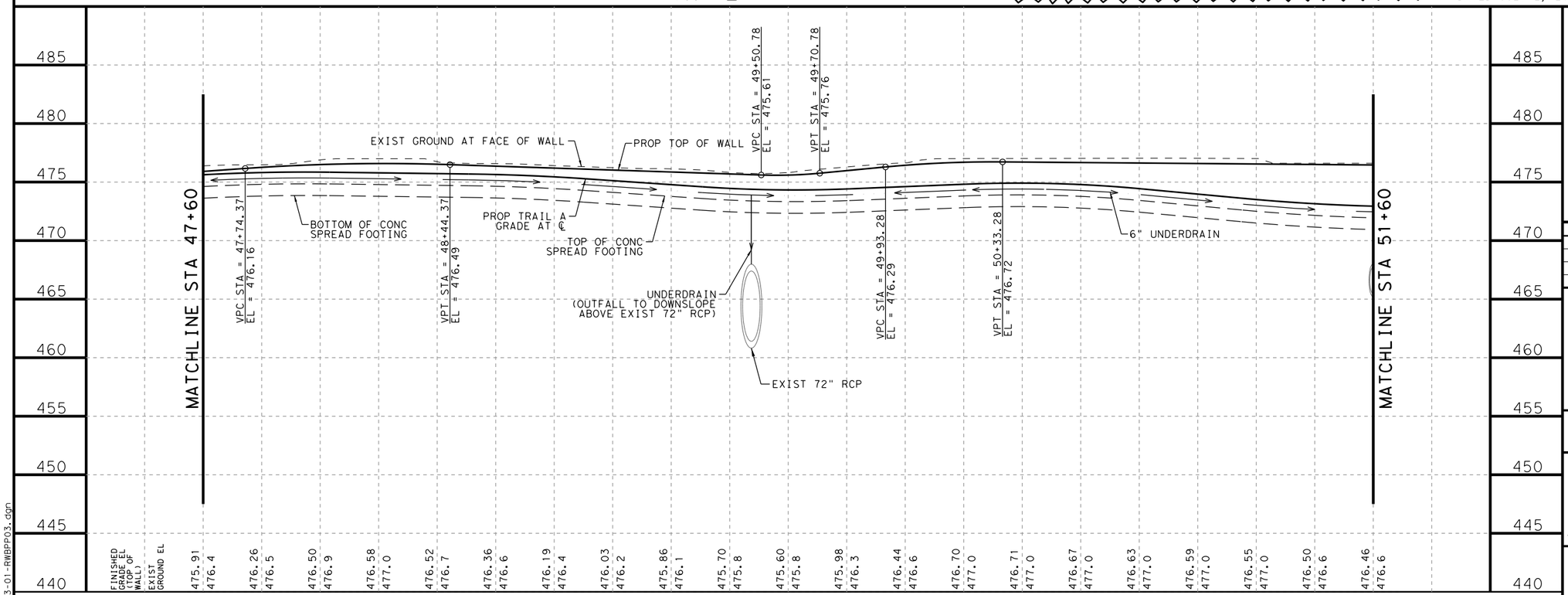
RW-B



STATE OF TEXAS
GREGG T. DURHAM
95652
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL LAYOUT RW-B

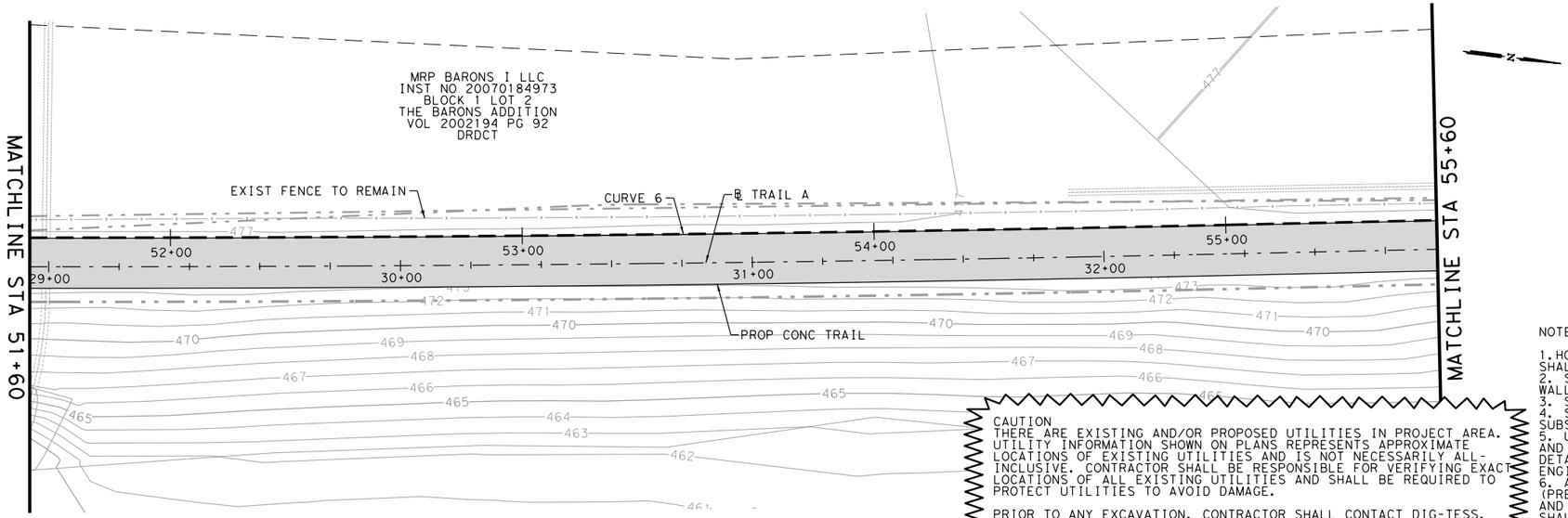
STA 47+60 TO STA 51+60

SCALE: H:1"=40' V:1"=10' SHEET 3 OF 5

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 81

CURVE DATA													
ALIGNMENT	NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	BACK TANGENT DIRECTION	AHEAD TANGENT DIRECTION	PI STATION	PI NORTHING	PI EASTING	PC STATION	PT STATION
RW-B	C6	7°16'05.6"	0°22'55.9"	165.93	331.84	14991	N 7°12'46.9" W	N 8°28'52.5" W	53+35.33 R1	6978796.83	2543346.56	51+69.40 R1	55+01.24 R1



HORIZONTAL
20 0 20 40
VERTICAL
5 0 5 10
SCALE IN FEET

CAUTION
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NOTES

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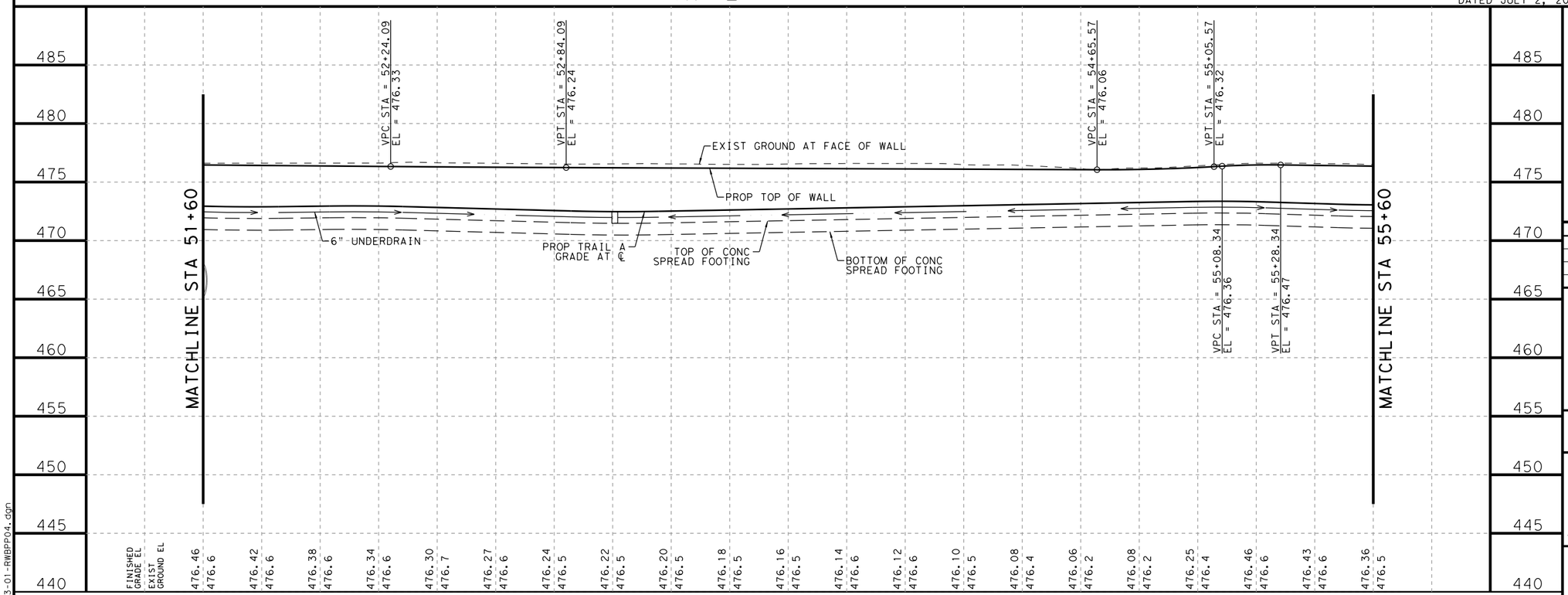
5. UNDERDRAIN CLEANOUTS SHALL BE LOCATED AT HIGH POINTS AND MAXIMUM SPACING OF 200'. FINAL CLEANOUT LOCATIONS AND DETAILS TO BE SUBMITTED FOR REVIEW AND ACCEPTANCE BY ENGINEER.
6. ANY COST ASSOCIATED WITH SAWCUTTING, JOINT PREPARATION (PREPARE AND PLACE THE BONDING EPOXY PER SPEC ITEM 420) AND ADDITIONAL CONC. FLUME OUTSIDE PROPOSED FLUME AREA SHALL BE INCIDENTAL TO CONCRETE FLUME COST.
7. GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.
8. WHERE TEMPORARY SPECIAL SHORING IS NEEDED, CONTRACTOR TO SUBMIT SHORING PLANS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS TO THE OWNER FOR APPROVAL.
9. CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS FOR THE RETAINING WALL PRIOR TO CONSTRUCTION FOR OWNER AND ENGINEER APPROVAL. SHOP DRAWINGS SHALL BE DETAILED BASED ON THE GENERAL LAYOUT AS SHOWN ON THESE PLANS AND GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.

RW-B



11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL LAYOUT RW-B

STA 51+60 TO STA 55+60

SCALE: H:1"=40' V:1"=10' SHEET 4 OF 5

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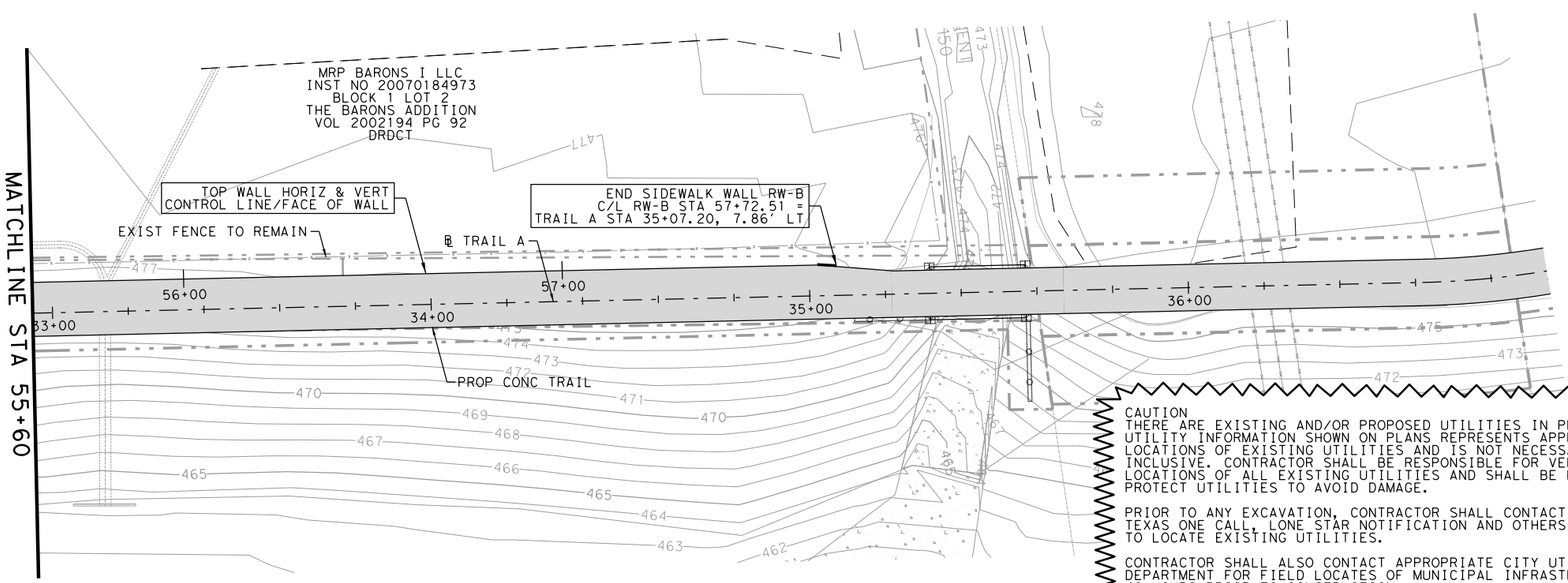
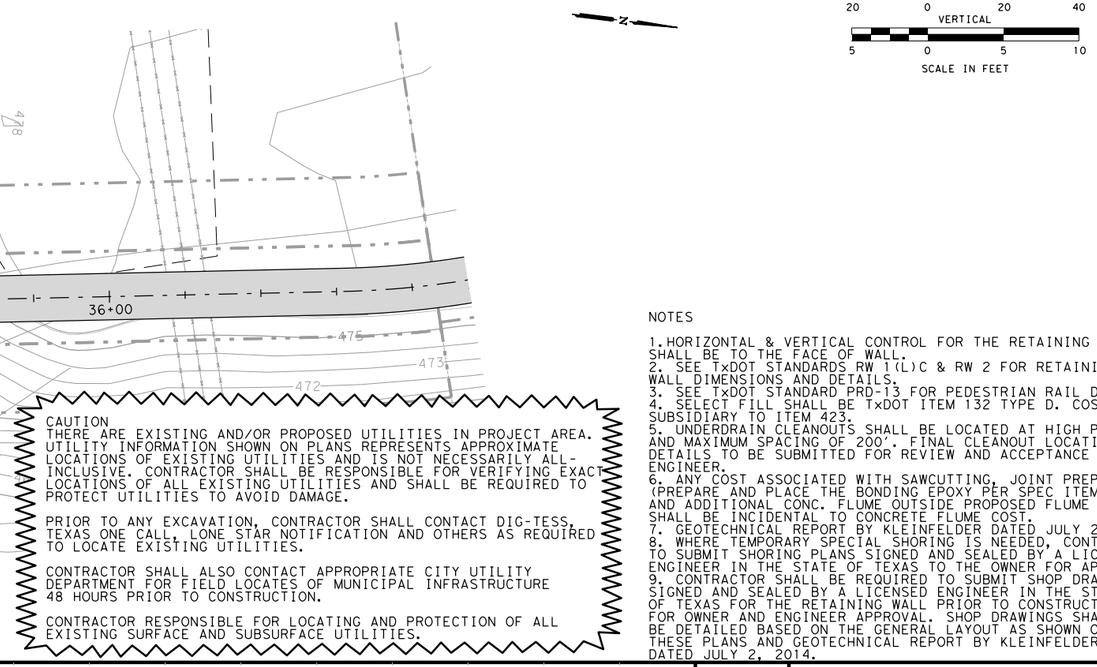
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 82



RW-B



CAUTION
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

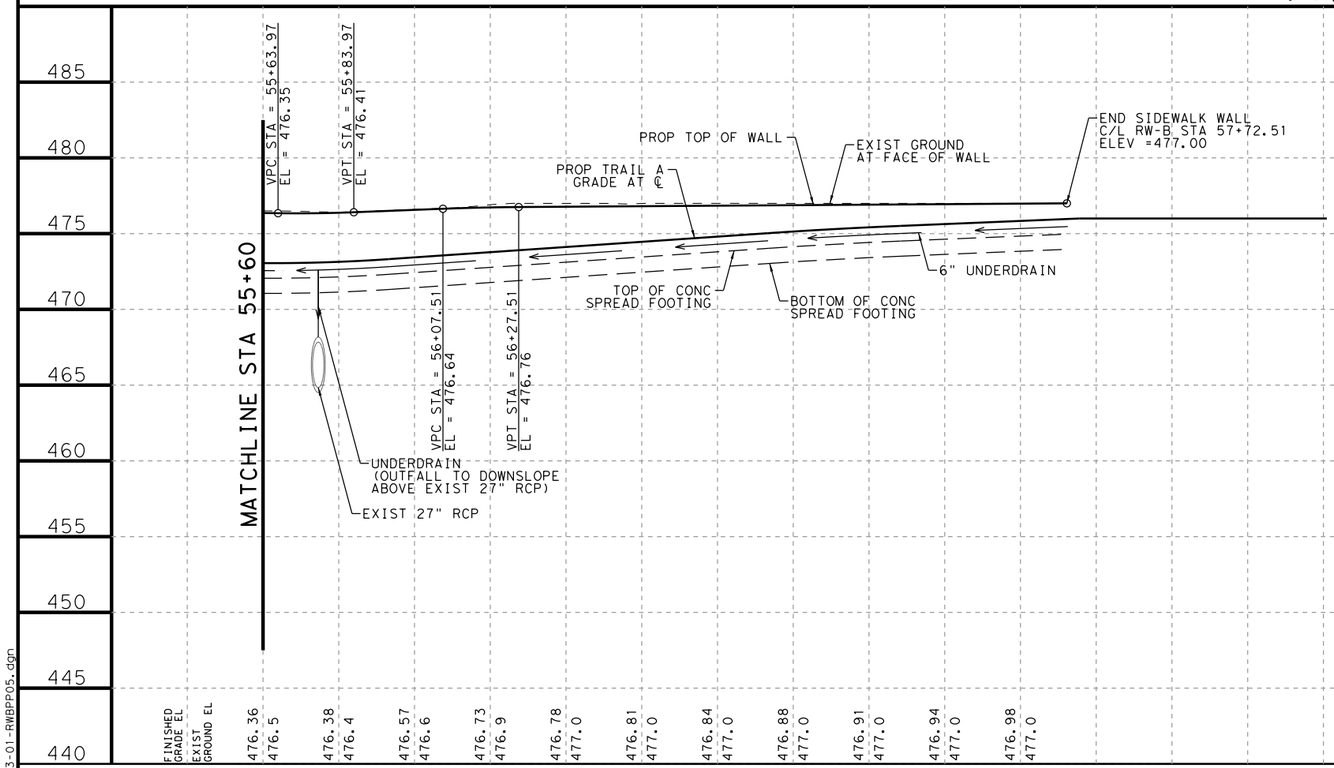
PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

NOTES

1. HORIZONTAL & VERTICAL CONTROL FOR THE RETAINING WALL SHALL BE TO THE FACE OF WALL.
2. SEE TxDOT STANDARDS RW 1(L)C & RW 2 FOR RETAINING WALL DIMENSIONS AND DETAILS.
3. SEE TxDOT STANDARD PRD-13 FOR PEDESTRIAN RAIL DETAILS
4. SELECT FILL SHALL BE TxDOT ITEM 132 TYPE D. COST IS SUBSIDIARY TO ITEM 423.
5. UNDERDRAIN CLEANOUTS SHALL BE LOCATED AT HIGH POINTS AND MAXIMUM SPACING OF 200'. FINAL CLEANOUT LOCATIONS AND DETAILS TO BE SUBMITTED FOR REVIEW AND ACCEPTANCE BY ENGINEER.
6. ANY COST ASSOCIATED WITH SAWCUTTING, JOINT PREPARATION (PREPARE AND PLACE THE BONDING EPOXY PER SPEC ITEM 420) AND ADDITIONAL CONC. FLUME OUTSIDE PROPOSED FLUME AREA SHALL BE INCIDENTAL TO CONCRETE FLUME COST.
7. GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.
8. WHERE TEMPORARY SPECIAL SHORING IS NEEDED, CONTRACTOR TO SUBMIT SHORING PLANS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS TO THE OWNER FOR APPROVAL.
9. CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS FOR THE RETAINING WALL PRIOR TO CONSTRUCTION FOR OWNER AND ENGINEER APPROVAL. SHOP DRAWINGS SHALL BE DETAILED BASED ON THE GENERAL LAYOUT AS SHOWN ON THESE PLANS AND GEOTECHNICAL REPORT BY KLEINFELDER DATED JULY 2, 2014.



STATE OF TEXAS
GREGG T. DURHAM
95652
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL LAYOUT RW-B

STA 55+60 TO END

SCALE: H: 1"=40' V: 1"=10' SHEET 5 OF 5

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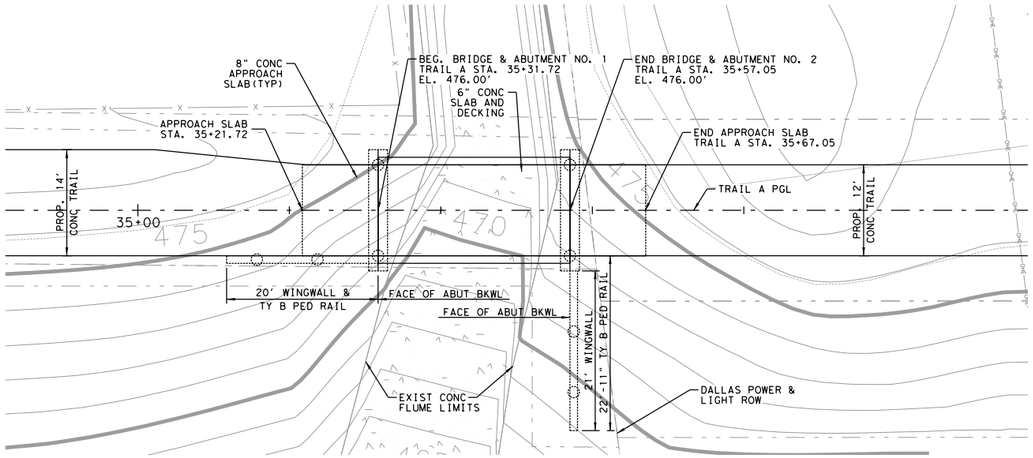
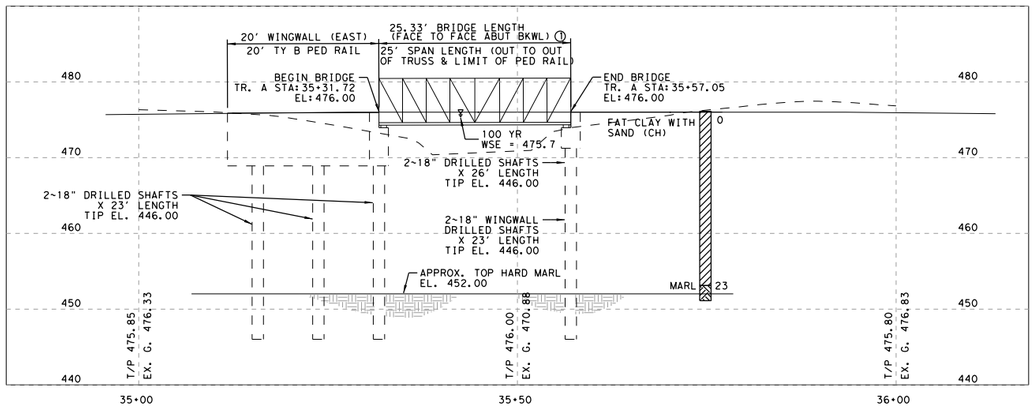
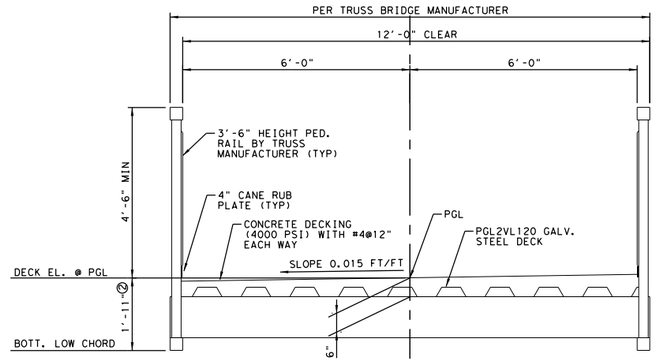


SUMMARY OF ESTIMATED QUANTITIES			
BID ITEM	DESCRIPTION	UNIT	QUANTITY
4000 8001	25.34' PEDESTRIAN TRUSS BRIDGE SPAN	EA	1.00
416 6001	DRILL SHAFT (18 IN)	LF	190.00
420 6013	CL C CONC (ABUT)	CY	25.50
422 6015	APPROACH SLAB	CY	6.00
422 6001	REINF CONC SLAB	SF	300.00
450 6048	RAIL (HANDRAIL)(TY B)	LF	43.00

NOTES:

1. CONSTRUCTION OF THE ABUTMENTS, BENTS, COLUMNS, AND DRILLED SHAFTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF TxDOT'S 2014 "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES".
2. ABUTMENT, BENT, COLUMN, AND DRILLED SHAFT CONCRETE SHALL BE CLASS "C" (3600 PSI).
3. REINFORCING STEEL SHALL BE GRADE 60.
4. ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED TYPE 1, 2, OR 3
5. ALL DAMAGED SOD AND CONCRETE FLUME AROUND ABUTMENT SHALL BE REPLACED AT CONTRACTOR'S COST.
6. GEOTECHNICAL REPORT BY KLEIFELDER DATED JULY 2, 2014
7. SPAN SHALL BE DESIGNED FOR AASHTO PEDESTRIAN BRIDGE LOADING AND FOR A 10,000 4-WHEELED VEHICLE (HS LOADING).
8. SEE TxDOT STANDARD PRD-13 FOR TY B AND TY F PED RAIL DETAILS.
9. BEARING PLATE, ANCHOR BOLTS, PADS, ETC SHALL BE PER TRUSS MANUFACTURER AND SUBMITTED FOR APPROVAL BY ENGINEER.
10. ALL ADJUSTMENTS TO DIMENSIONS AND ELEVATIONS OF ABUTMENT AND WINGWALLS FOR TRUSS MANUFACTURER SUBMITTALS ARE SUBSIDIARY TO TRUSS BID ITEM.
11. DRILLED SHAFTS SHALL BE FOUNDED AT THE ELEVATIONS SHOWN OR DEEPER AS NECESSARY TO OBTAIN A MINIMUM OF SIX FEET PENETRATION INTO HARD MARL.





BRIDGE SECTION
NTS

② CONTRACTOR SHALL VERIFY TRUSS DEPTH WITH TRUSS MANUFACTURER AND ADJUST BRIDGE ELEVATIONS ACCORDINGLY WITH ENGINEER APPROVAL.

STATE OF TEXAS
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11/22/2023

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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A BRIDGE LAYOUT

SCALE: H: 1"=20' V: 1"=20'

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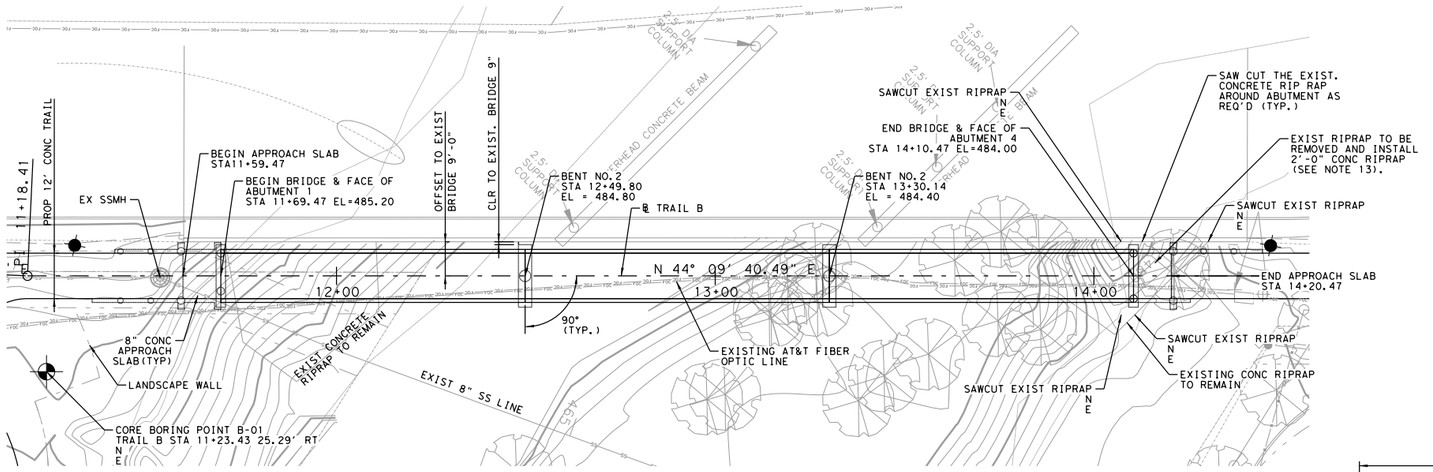
CONTRACT NO. 2024-014 SHEET NO. 84

2163-01-TA-BL01.dgn



CAUTION
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UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

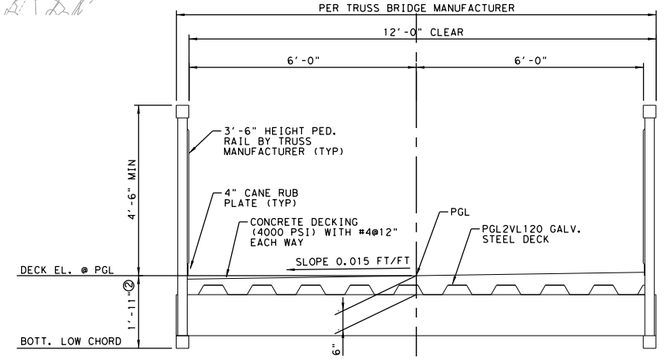
CONTRACTOR RESPONSIBLE FOR LOCATING AND PROTECTION OF ALL EXISTING SURFACE AND SUBSURFACE UTILITIES.

NOTES:

1. CONSTRUCTION OF THE ABUTMENTS, BENTS, COLUMNS, AND DRILLED SHAFTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF TxDOT'S 2014 "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES".
2. ABUTMENT, BENT, COLUMN, AND DRILLED SHAFT CONCRETE SHALL BE CLASS "C" (3600 PSI).
3. REINFORCING STEEL SHALL BE GRADE 60.
4. ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED TYPE 1, 2, OR 3
5. ALL DAMAGED SOD AND CONCRETE FLUME AROUND ABUTMENT SHALL BE REPLACED AT CONTRACTOR'S COST.
6. GEOTECHNICAL REPORT BY KLEIFELDER DATED JULY 2, 2014
7. SPAN SHALL BE DESIGNED FOR AASHTO PEDESTRIAN BRIDGE LOADING AND FOR A 10,000 4-WHEELED VEHICLE (HS LOADING).
8. SEE TxDOT STANDARD PRD-13 FOR TY B AND TY F PED RAIL DETAILS.
9. BEARING PLATE, ANCHOR BOLTS, PADS, ETC SHALL BE PER TRUSS MANUFACTURER AND SUBMITTED FOR APPROVAL BY ENGINEER.
10. ALL ADJUSTMENTS TO DIMENSIONS AND ELEVATIONS OF ABUTMENT AND WINGWALLS FOR TRUSS MANUFACTURER SUBMITTALS ARE SUBSIDIARY TO TRUSS BID ITEM.
11. EXIST RIPRAP TO REMAIN. SAWCUT AND REMOVE EXISTING RIPRAP 2'-0" BEYOND FACE OF CONCRETE ABUTMENT. SEE COORDINATES IN PLAN FOR REFERENCE. ANY DAMAGE TO THE EXISTING RIPRAP DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST.
12. CONTRACTOR SHALL VERIFY LOCATION OF THE EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING FROM CONSTRUCTION WORK.
13. JOINT PREPARATION (PREPARE AND PLACE THE BONDING EPOXY PER SPEC ITEM 420) IS INCLUDED IN CONC RIPRAP COST.
14. DRILLED SHAFTS SHALL BE FOUNDED AT THE ELEVATIONS SHOWN OR DEEPER AS NECESSARY TO OBTAIN A MINIMUM OF SIX FEET PENETRATION INTO HARD MARL.
15. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO CITY AND COUNTY SEVEN (7) DAYS IN ADVANCE. NO WORK SHALL BEGIN PRIOR TO APPROVAL OF TRAFFIC CONTROL PLAN.

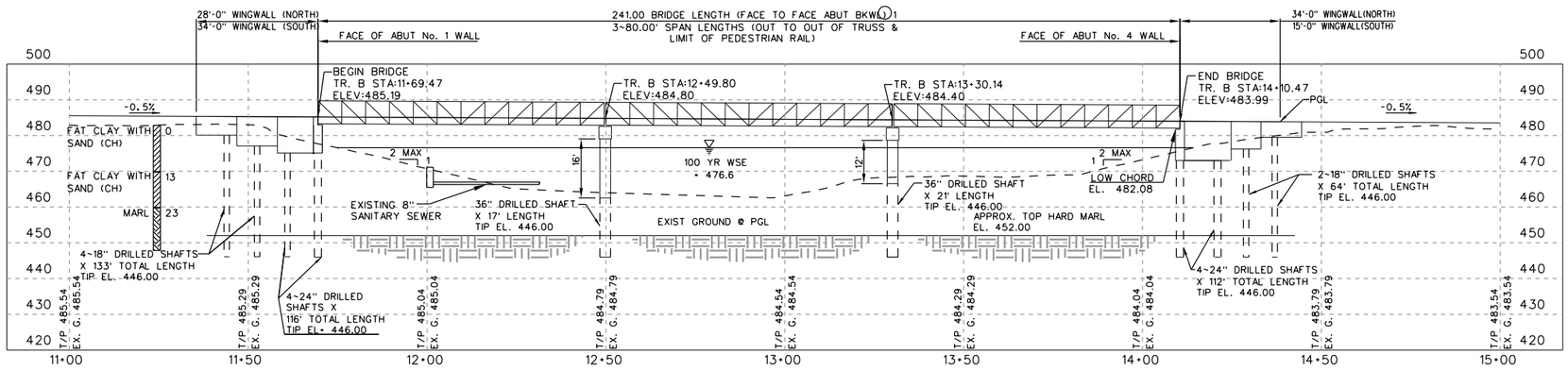
SUMMARY OF ESTIMATED QUANTITIES

BID ITEM	DESCRIPTION	UNIT	QUANTITY
104 6009	REMOVING CONC (RIPRAP)	SY	29.00
4000 8002	241' PEDESTRIAN TRUSS BRIDGE SPAN	EA	1.00
416 6001	DRILL SHAFT (18 IN)	LF	197.00
416 6002	DRILL SHAFT (24 IN)	LF	224.00
416 6004	DRILL SHAFT (36 IN)	LF	38.00
420 6013	CL C CONC (ABUT)	CY	78.00
420 6025	CL C CONC (BENT)	CY	20.40
422 6001	REINF CONC SLAB	SF	2880.00
422 6015	APPROACH SLAB	CY	8.60
432 6002	REPRAP (CONC) (5 IN)	CY	3.40
450 6052	RAIL (HANDRAIL) (TY F)	LF	99.00



BRIDGE SECTION
NTS

② CONTRACTOR SHALL VERIFY TRUSS DEPTH WITH TRUSS MANUFACTURER AND ADJUST BRIDGE ELEVATIONS ACCORDINGLY WITH ENGINEER APPROVAL.



ELEVATION

STATE OF TEXAS
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95652
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PROFESSIONAL ENGINEER

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DATE	BY	REV	REVISION

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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B BRIDGE LAYOUT

SCALE: H:1"=40' SCALE: H:1"=40'

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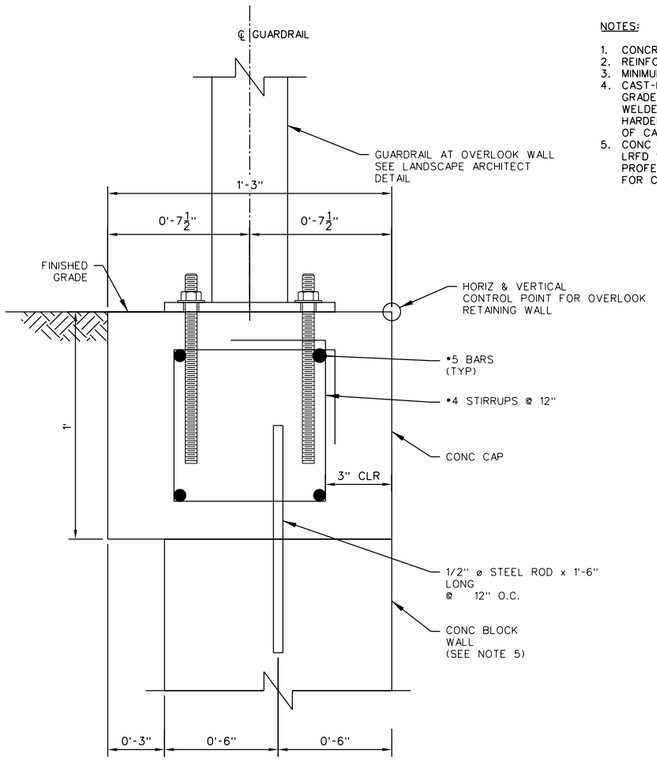
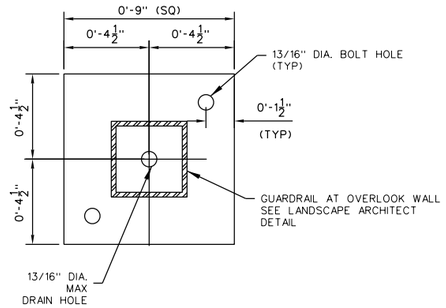


ELEVATION

NOTES:

1. CONCRETE SHALL BE CLASS C, f'c = 3,600 PSI AT 28 DAYS.
2. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
3. MINIMUM REQUIRED YIELD STRENGTH OF STEEL IS 36 KSI.
4. CAST-IN-PLACE ANCHOR BOLTS WILL BE 5/8" DIA ASTM A307 GRADE A BOLTS (OR A36 THREADED RODS WITH ONE TACK WELDED HEX NUT EACH) WITH ONE HEX NUT AND ONE HARDENED STEEL WASHER AT EACH BOLT. EMBEDMENT DEPTH OF CAST-IN-PLACE BOLT WILL BE 8" FOR POST BASE PLATE.
5. CONC BLOCK WALL SHALL BE DESIGNED BASED ON AASHTO LRFD SPECIFICATION AND SIGNED AND SEALED BY PROFESSIONAL ENGINEER. SEE LANDSCAPE ARCHITECT DETAIL FOR CONC BLOCK WALL FINISH.



GUARDRAIL BASE PLATE DETAIL

STATE OF TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

OVERLOOK WALL DETAILS ALTERNATE 2

SCALE: N/A

SHEET 1 OF 2

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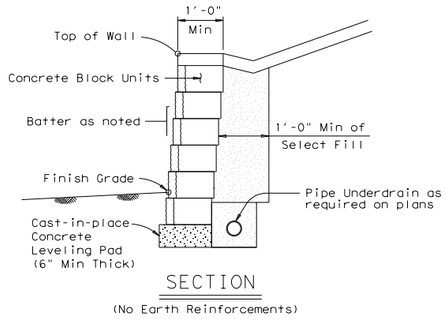
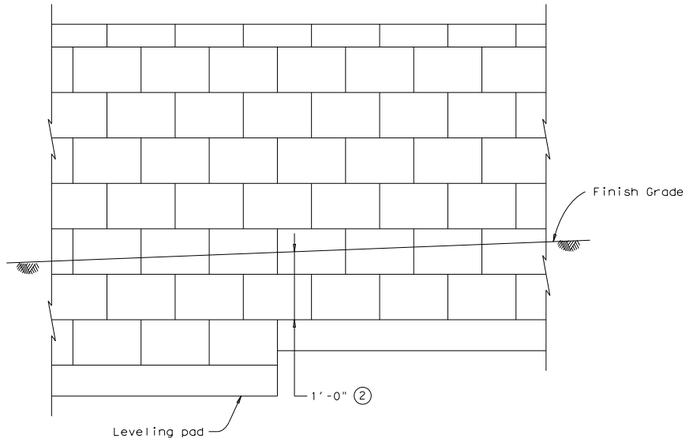
CONTRACT NO. 2024-014

SHEET NO. 86

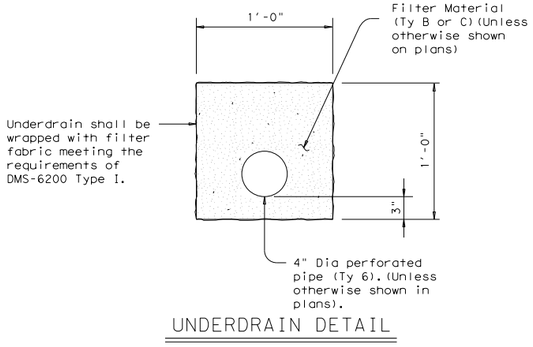


SECTION

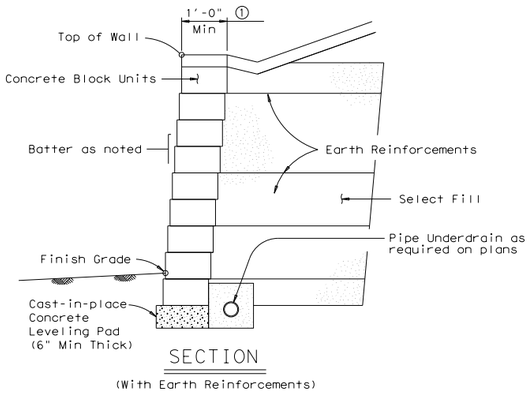
(No Earth Reinforcements)



TYPICAL ELEVATION



UNDERDRAIN DETAIL



SECTION

(With Earth Reinforcements)

① For systems utilizing continuous structural pins passing thru a minimum of 3 block layers, the minimum block depth shall be 8". The maximum vertical spacing of primary reinforcement on these systems shall be 24", and intermediate reinforcement will not be required.

② Unless noted elsewhere in the plans, 1'-0" minimum cover shall be provided from the top of leveling pad to finish grade.

③ For walls which are designated as landscape walls and are less than 6' tall, the following modifications to the design criteria will be allowed:

Factor of safety in sliding > 1.2.
Factor of safety in overturning > 1.5.
Connection strength factor of safety of 1.0 at ¾" strain.
Minimum earth reinforcement length of 4'.

The above modified criteria does not apply to walls over 6' tall regardless of designation.

EARTH REINFORCEMENTS:

Walls may be constructed without earth reinforcements if all stability criteria are met with the blocks alone. If all stability criteria are not satisfied, earth reinforcements shall be provided.

The long term design strength (LTDS) of earth reinforcement shall be calculated in accordance with current AASHTO Standard and Interim Specifications.

Soil-geogrid pullout coefficient values shall be determined in accordance with Geosynthetics Research Institute (GRI) Method GG-5, "Guidelines for Evaluating Geogrid Pullout".

For the combination of concrete block and geogrid chosen, connection strength data shall be provided. The allowable connection load shall be limited to the connection strength developed at ¾" displacement, divided by a 1.5 safety factor. ③

For internal stability calculations, the failure plane will be assumed to originate at the back of the concrete blocks.

The factor of safety against pullout of the earth reinforcements shall be determined from test data evaluated at ¾" strain.

The maximum vertical spacing of primary earth reinforcement layers shall be 40 inches. ①
The minimum length of primary earth reinforcements shall be 8 feet, measured from the front of the blocks. ③

A layer of intermediate reinforcement shall be provided between primary reinforcements when the spacing between primary layers exceeds twice the horizontal depth of the concrete block unit. Intermediate reinforcement shall have a minimum length of 4 feet, and shall provide local stability for the concrete block units. ①

STABILITY CRITERIA:

Factor of safety in sliding along the base of the structure shall be greater than or equal to 1.5. ③

Factor of safety in overturning shall be greater than or equal to 2.0. ③

The base pressure resultant shall fall within the middle third of the retaining wall.

DESIGN PARAMETERS:

Structure shall be based on the following design parameters:

Random Backfill: Unit weight = 120 pcf.
(Embankment or Existing Soils) ø = 30° c = 0 psf
Select Backfill: Unit weight = 120 pcf
ø = 34° c = 0 psf

GENERAL NOTES:

Sections and Typical Elevation shown are for informational purposes only. Specific geometry is to be determined based on wall layouts and other plan information.

Unless otherwise shown in the plans, wall batter shall be a maximum of 3" per foot. Blocks shall be placed horizontally, and a positive means of obtaining batter such as pins, keyways, or concrete lips shall be provided.

STATE OF TEXAS
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Texas Department of Transportation — Bridge Division Standard

CONCRETE BLOCK RETAINING WALL

RW(CB)

FILE: rwstde02.dgn	DN: TxDOT	CK: TxDOT	DW: GHO	CK: MPM
©TxDOT March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

DATE:
FILE:

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MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL DETAILS
ALTERNATE 2

SCALE: N/A SHEET 2 OF 2

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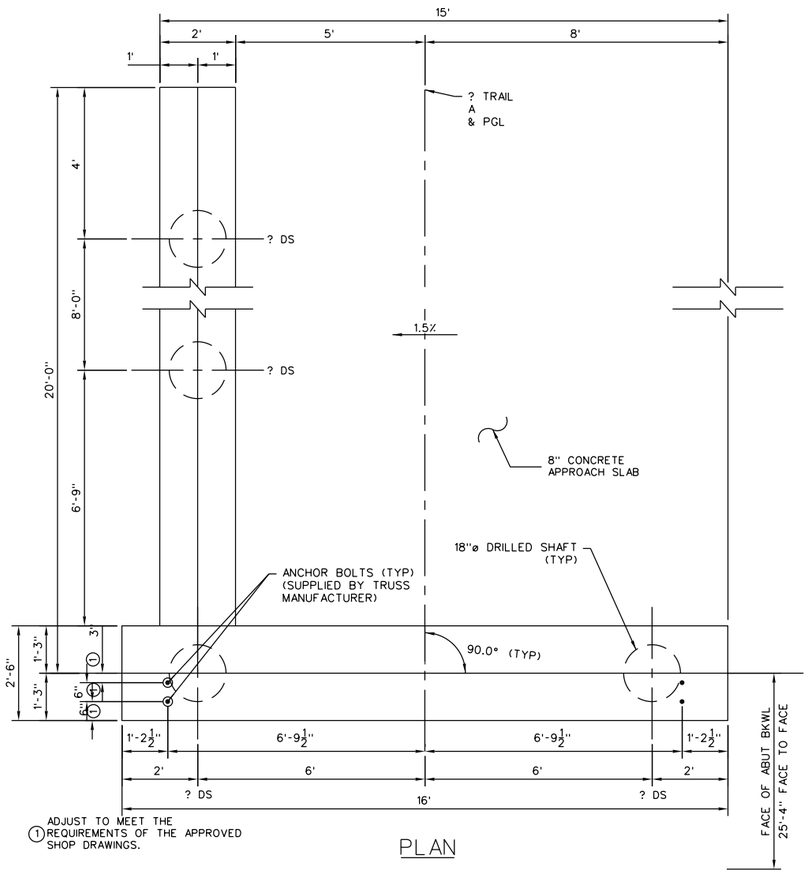
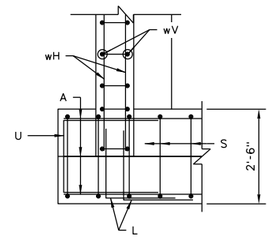


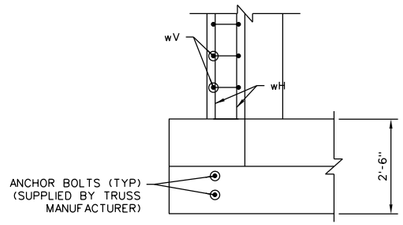
PLAN

SCALE: 1/2" = 1'-0"



CORNER DETAILS - CAP

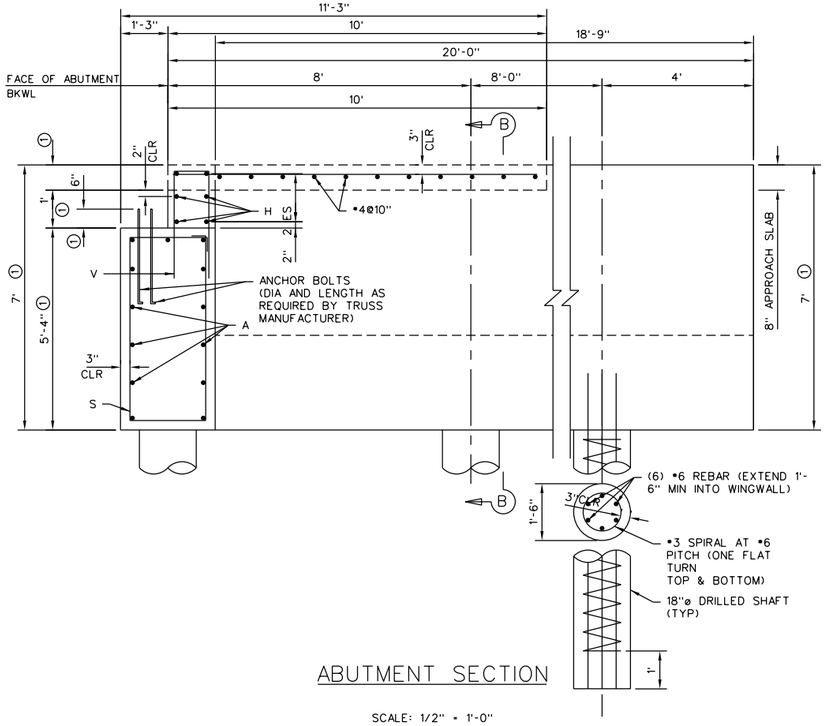
NTS



CORNER DETAILS - BACKWALL

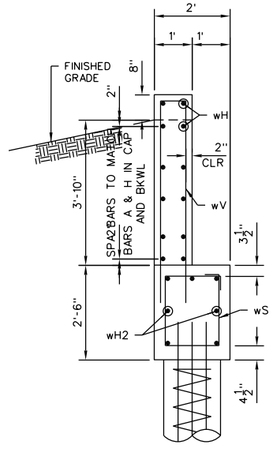
NTS

BAR	SIZE
A	#5
H	#5
L	#5
S	#4
U	#6
V	#4
wH/wH2	#6
wS	#4
wV	#5



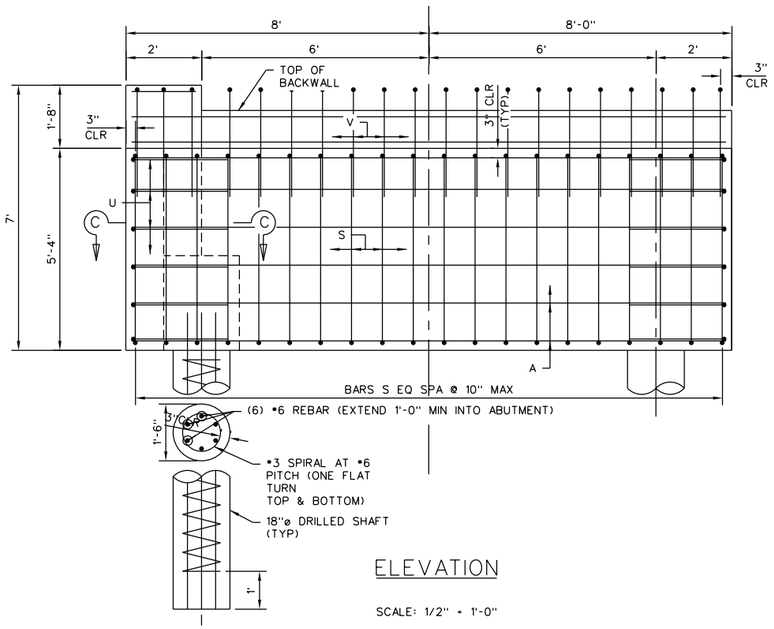
ABUTMENT SECTION

SCALE: 1/2" = 1'-0"



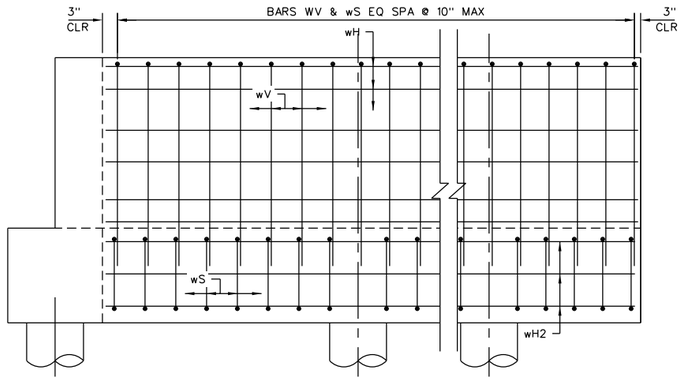
SECTION "B-B"

SCALE: 1/2" = 1'-0"



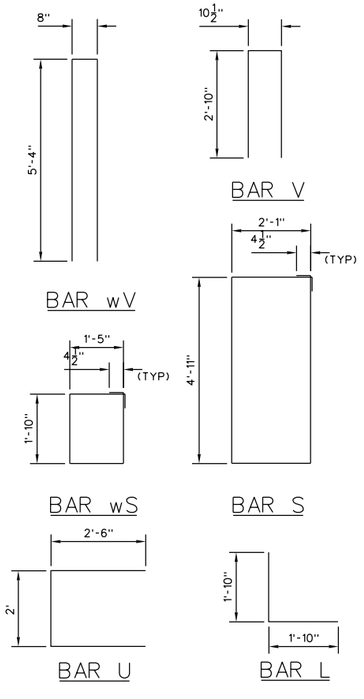
ELEVATION

SCALE: 1/2" = 1'-0"



WINGWALL ELEVATION

SCALE: 1/2" = 1'-0"



NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES

STATE OF TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A ABUTMENT DETAILS

SCALE: N/A

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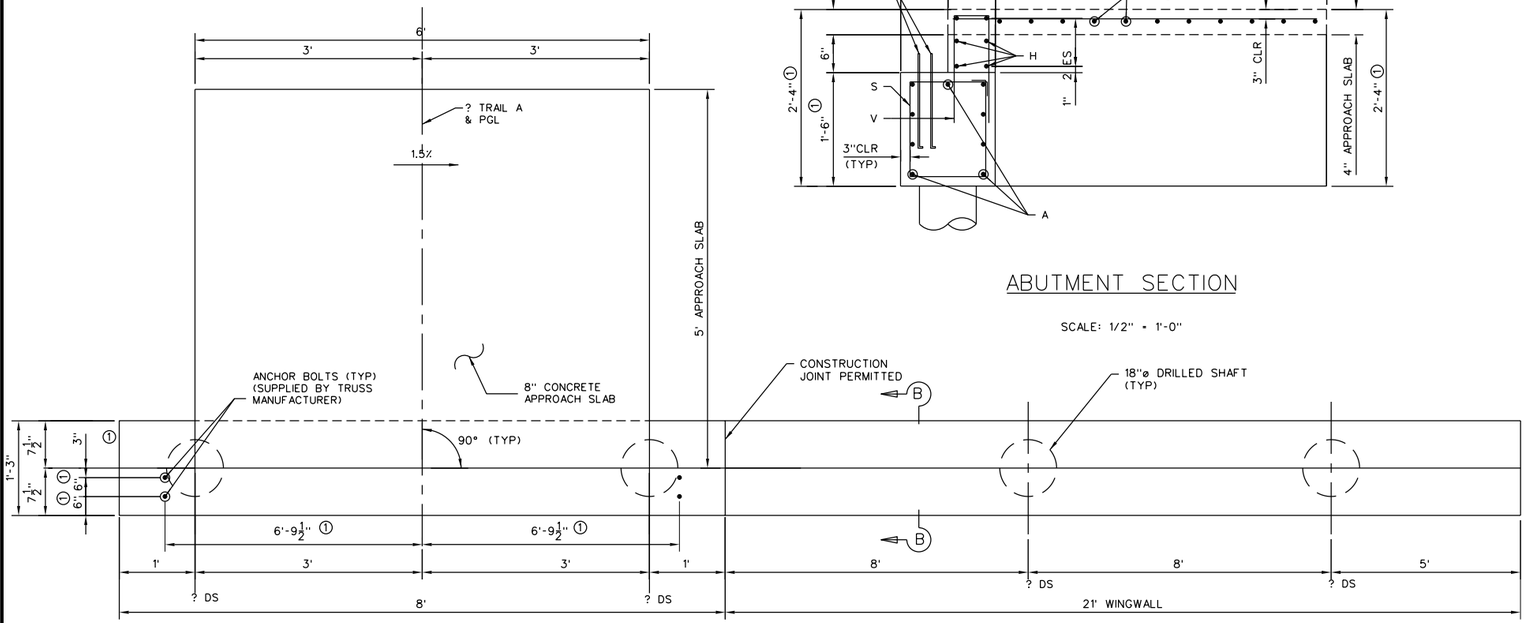
TBPE Registration No. F-1046

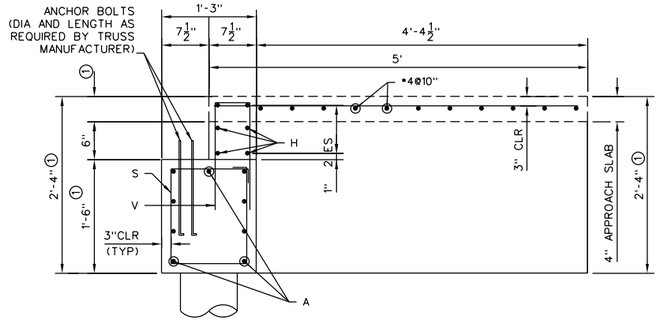
CONTRACT NO. 2024-014 SHEET NO. 88



① ADJUST TO MEET THE REQUIREMENTS OF THE APPROVED SHOP DRAWINGS.

PLAN

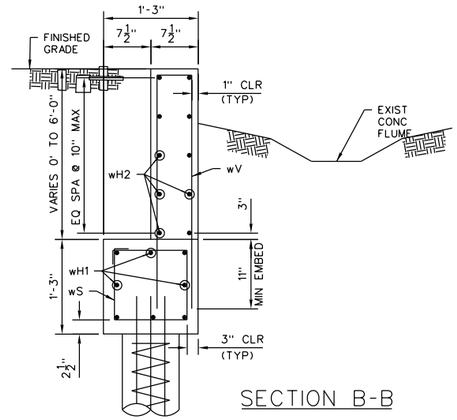
SCALE: 1/2" = 1'-0"



ABUTMENT SECTION

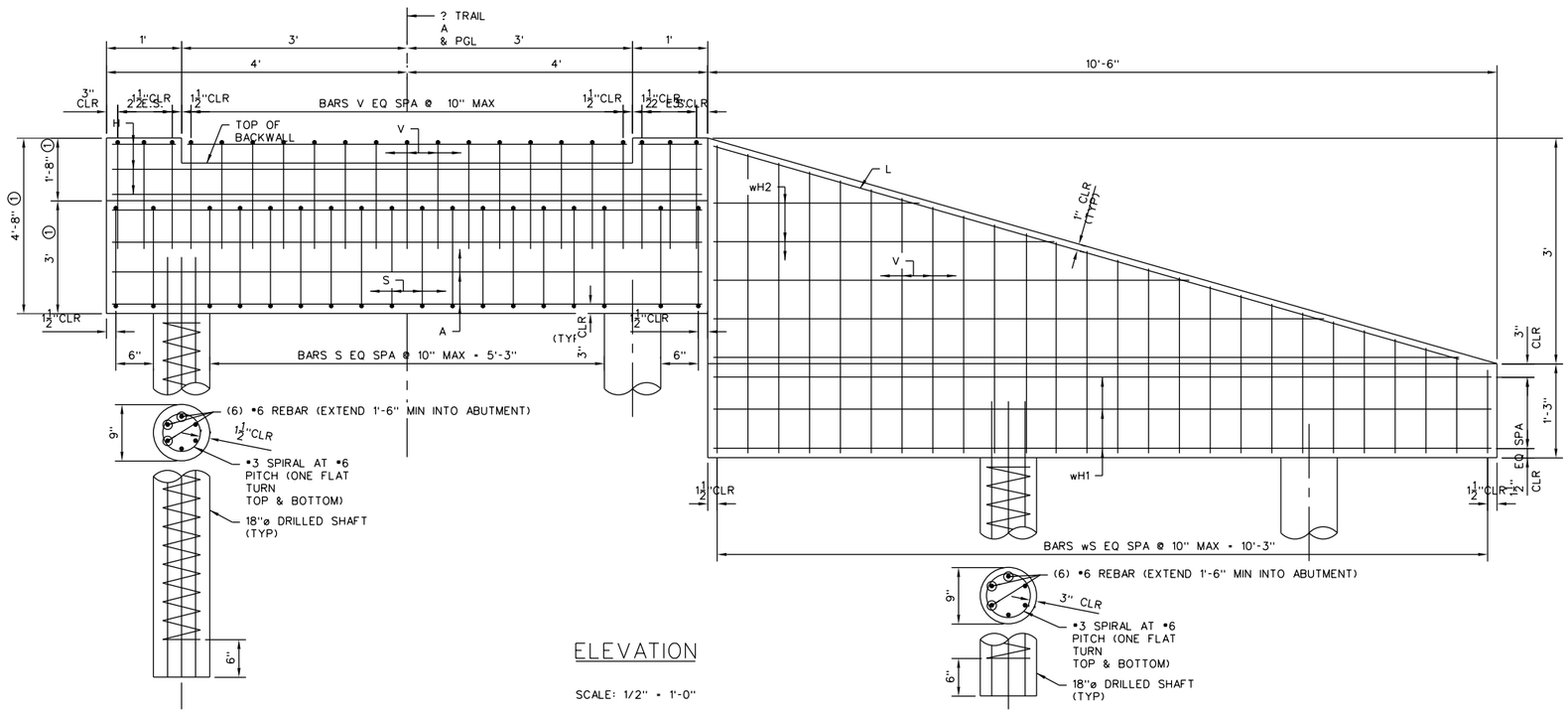
SCALE: 1/2" = 1'-0"

BAR	SIZE
A	•5
H	•5
L	•5
S	•4
U	•6
V	•4
wH1	•6
wH2	•6
wS	•4
wV	•5



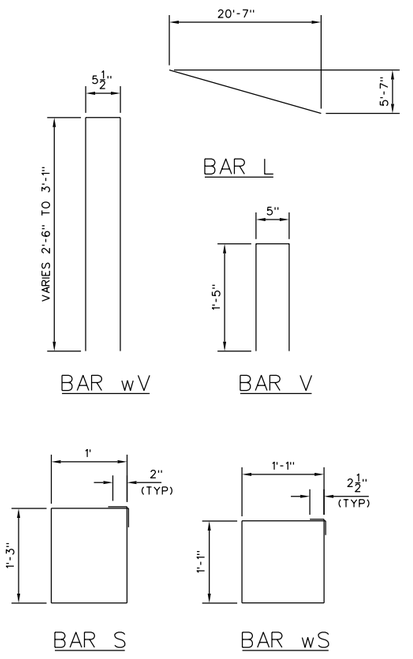
SECTION B-B

SCALE: 1/2" = 1'-0"



ELEVATION

SCALE: 1/2" = 1'-0"



NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES

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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A ABUTMENT 2 DETAILS

SCALE: N/A

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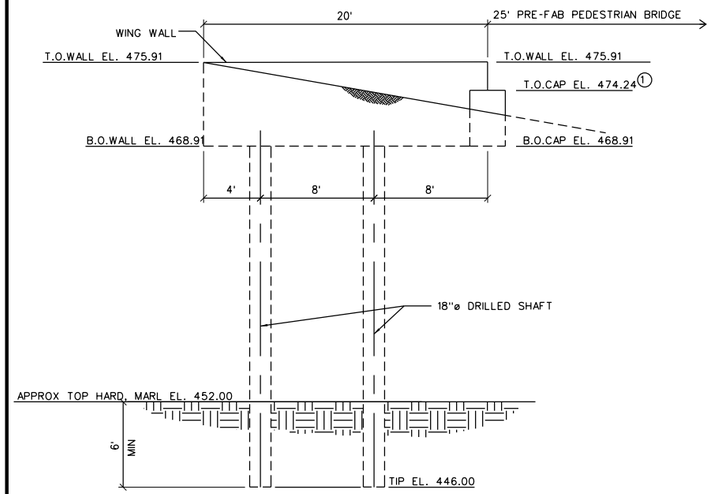
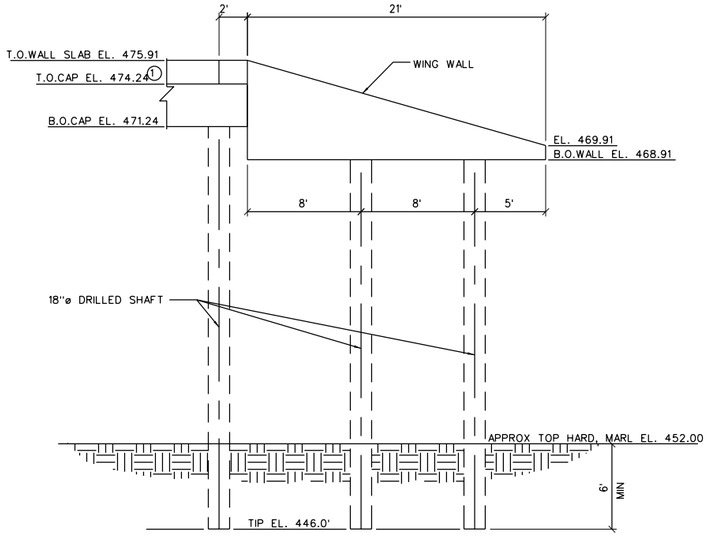


ABUTMENT 1 - EAST WING WALL



ABUTMENT 2 - EAST WING WALL

(1) CONTRACTOR SHALL VERIFY TRUSS DEPTH WITH TRUSS MANUFACTURER AND ADJUST BRIDGE ELEVATIONS ACCORDINGLY WITH ENGINEER APPROVAL.

NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES

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TRAIL A WINGWALL GEOMETRIC LAYOUT

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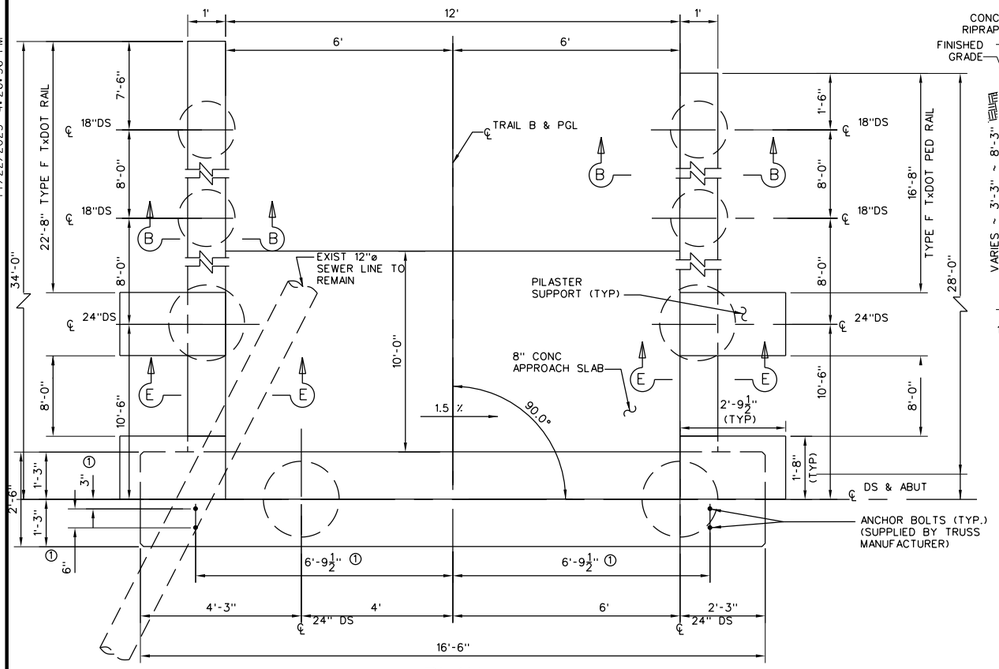
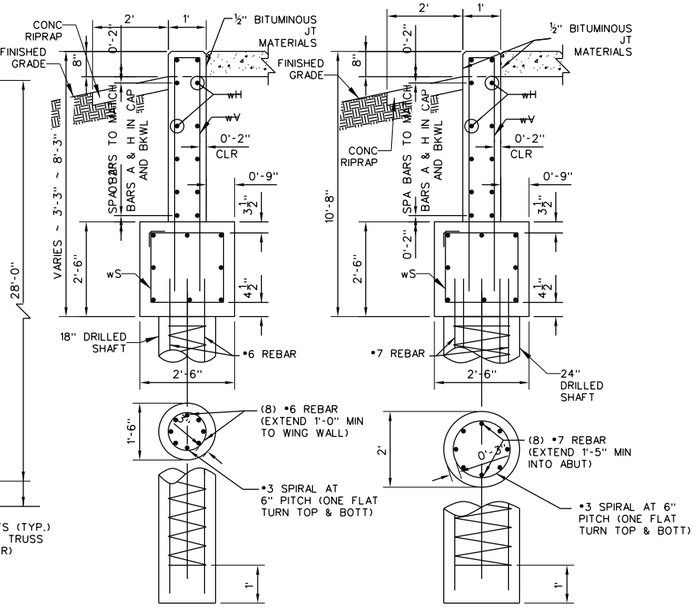
2163-01BR*A*DET03.dgn



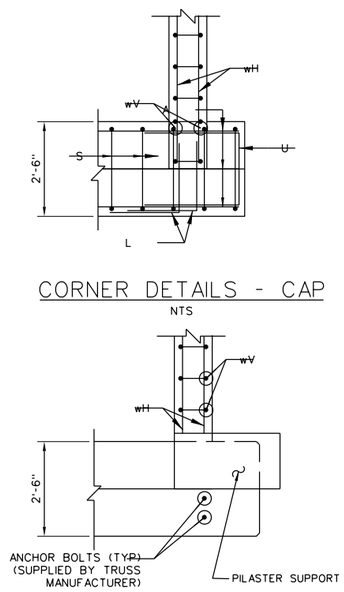
PLAN

① ADJUST TO MEET THE REQUIREMENTS OF THE APPROVED SHOP DRAWINGS.



SECTION "B-B"

SECTION "E-E"



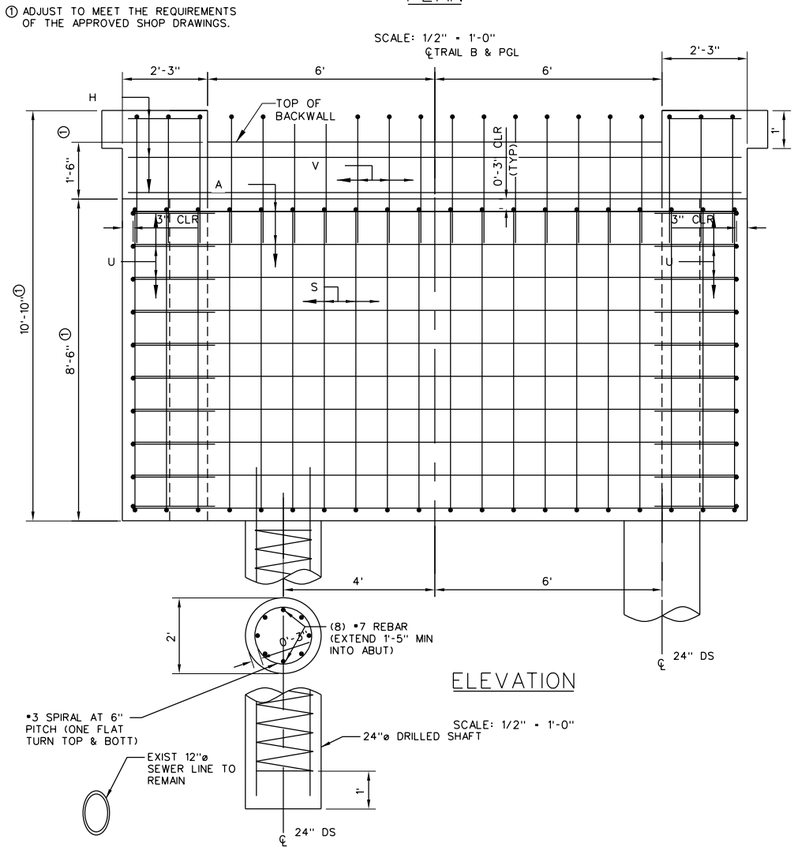
CORNER DETAILS - CAP

NTS

CORNER DETAILS - BACKWALL

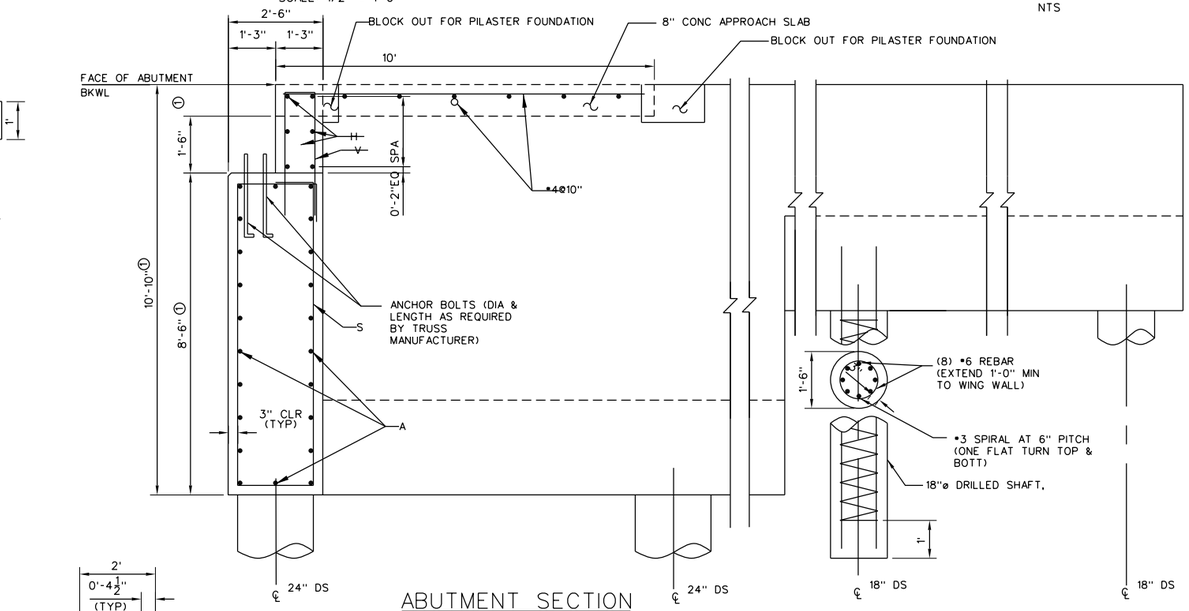
NTS

SCALE: 1/2" = 1'-0"



ELEVATION

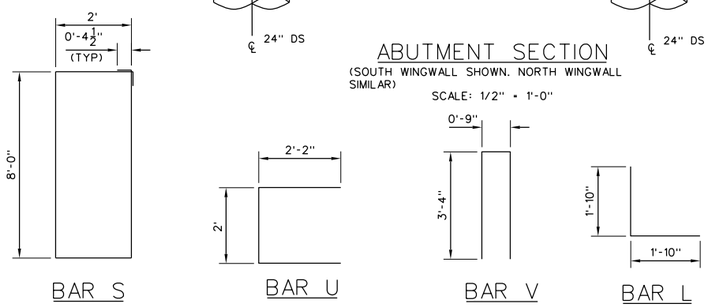
SCALE: 1/2" = 1'-0"



ABUTMENT SECTION

(SOUTH WINGWALL SHOWN. NORTH WINGWALL SIMILAR)

SCALE: 1/2" = 1'-0"



BAR S

BAR U

BAR V

BAR L

NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES.
2. REFER TO TRAIL B ABUTMENT PILASTER REINFORCING DETAILS FOR ADDITIONAL REBAR IN PILASTER SUPPORT. PILASTER SUPPORT REINFORCING NOT SHOWN ON THIS SHEET FOR CLARITY.
3. SEE SHEET 2 OF 2 FOR WINGWALL REINFORCING DETAILS AND DIMENSIONS.
4. SEE SHEET 2 OF 2 FOR REINFORCING STEEL BAR CHART.

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TRAIL B ABUTMENT 1 DETAILS

SCALE = ½" = 1'

SHEET 1 OF 2

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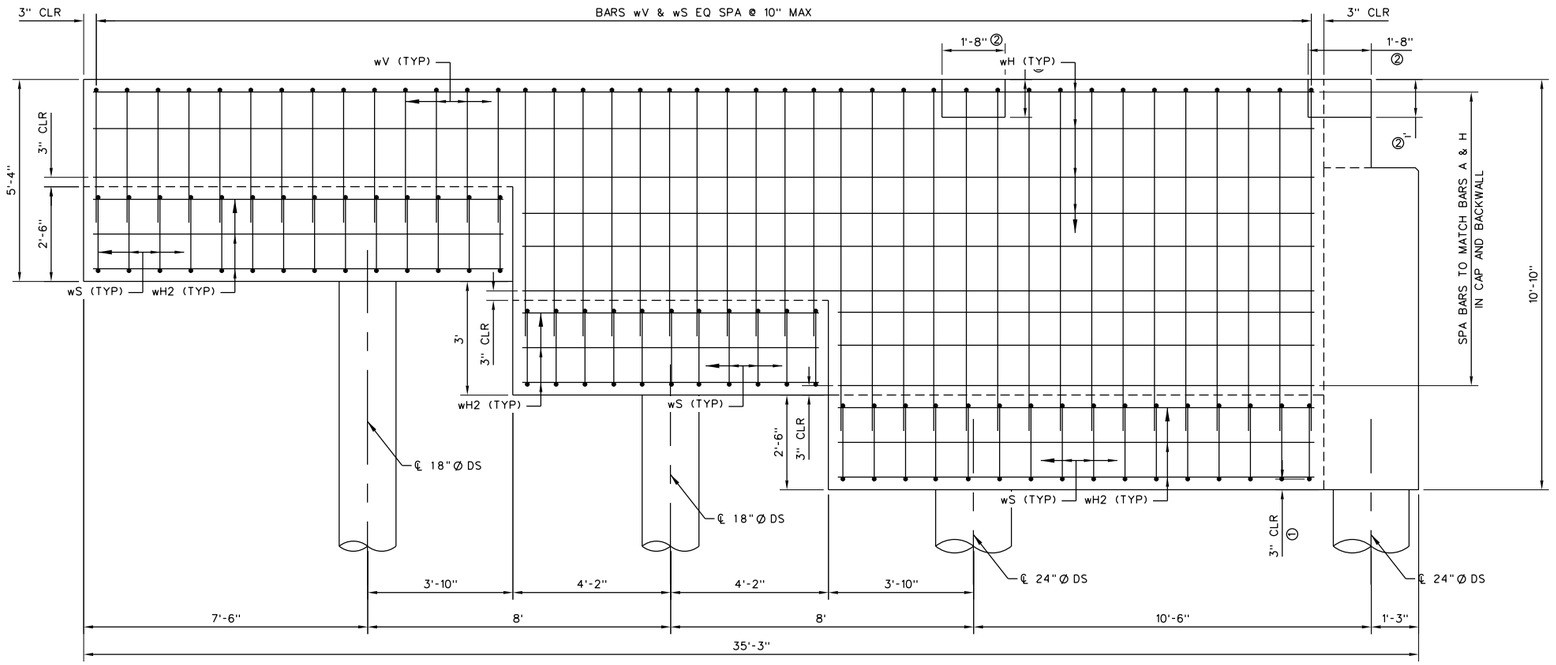
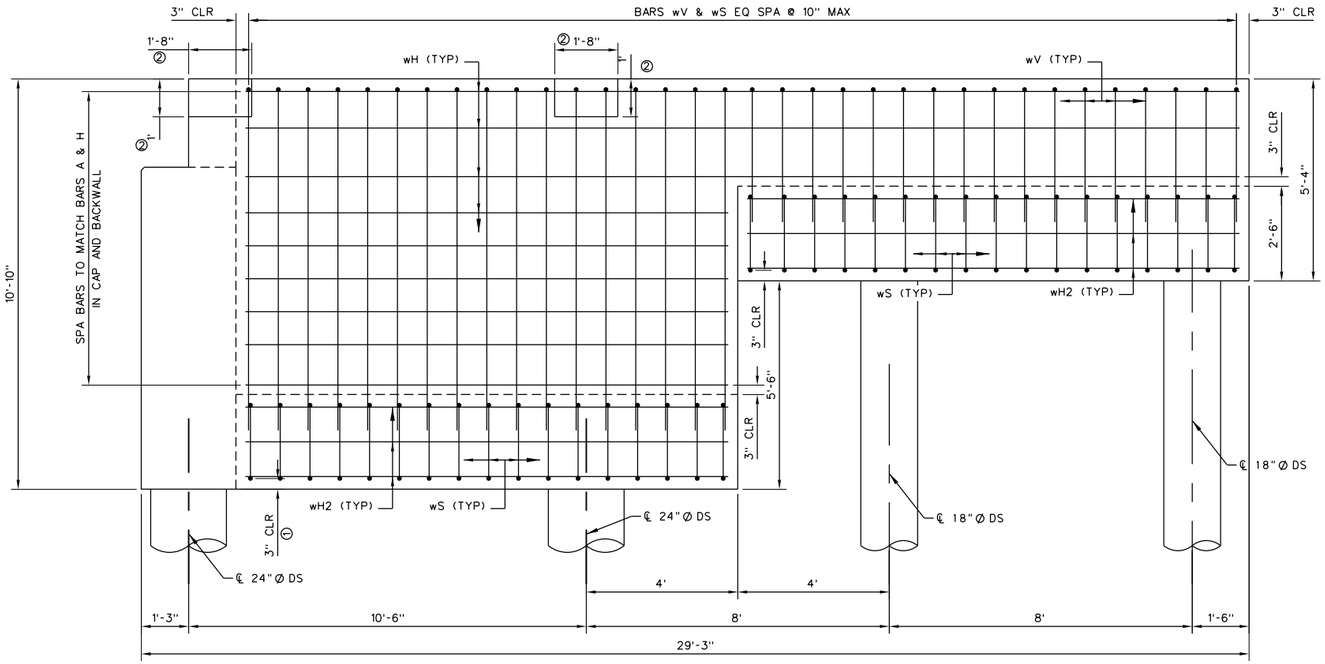
CONTRACT NO. 2024-014 SHEET NO. 91



SOUTH WINGWALL ELEVATION

SCALE: 1/2" = 1'-0"



NORTH WINGWALL ELEVATION

SCALE: 1/2" = 1'-0"

BAR	SIZE
A	#5
H	#5
L	#5
S	#4
U	#6
V	#4
wH/wH2	#6
wS	#4
wV	#5

① COVER TYPICAL FOR TOP AND BOTTOM BARS AND STIRRUPS FOR WINGWALL FOOTING.

② DETAIL SHOWN WITH BLOCKOUT FOR PILASTER SUPPORT. WINGWALL CAN BE OPTIONALLY BUILT WITH PILASTER SUPPORT MONOLITHICALLY WITH WINGWALL. SEE TRAIL B BRIDGE DETAILS SHEET 3 OF 6 FOR PILASTER SUPPORT REINFORCING DETAILS.

NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES.
2. REFER TO TRAIL B ABUTMENT PILASTER REINFORCING DETAILS FOR PILASTER SUPPORT DETAILS AND REINFORCING.

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TRAIL B ABUTMENT 1 DETAILS

SCALE=1/2"=1' SHEET 2 OF 2

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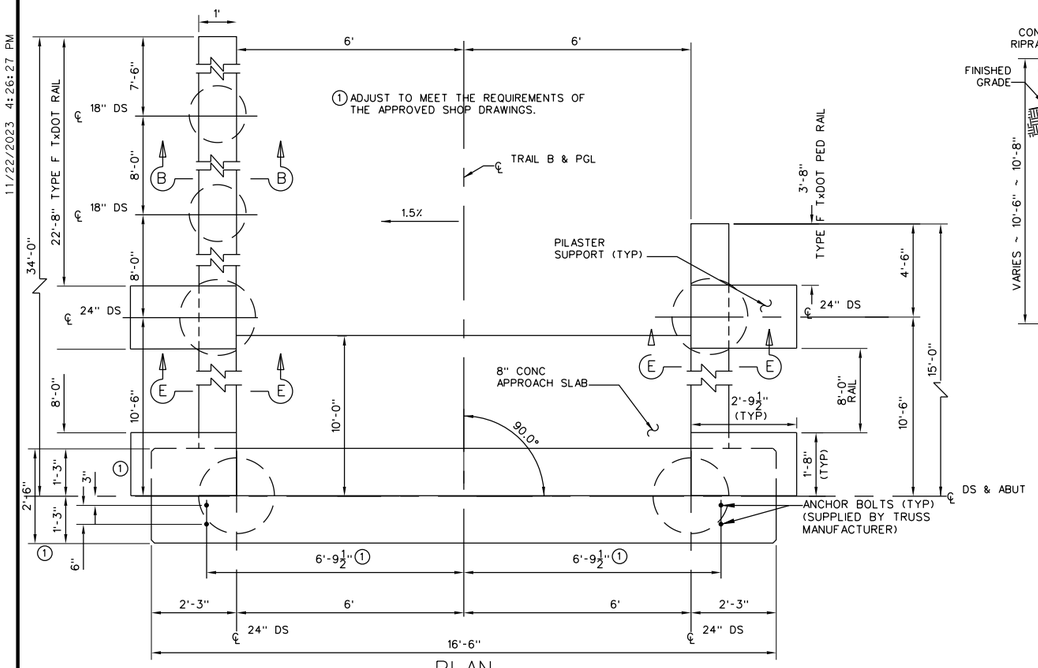
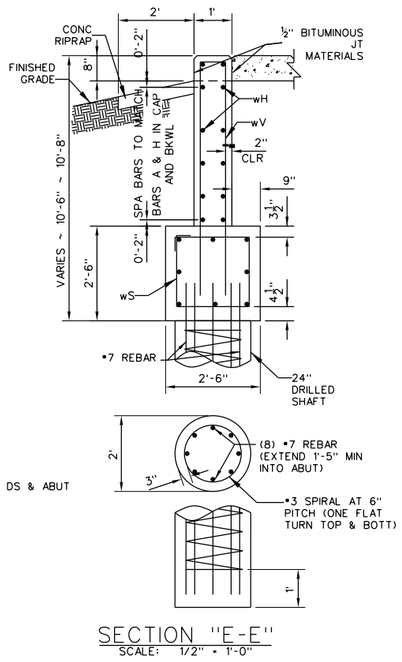
CONTRACT NO. 2024-014 SHEET NO. 92

2163-01BR*B*DET01A.dgn



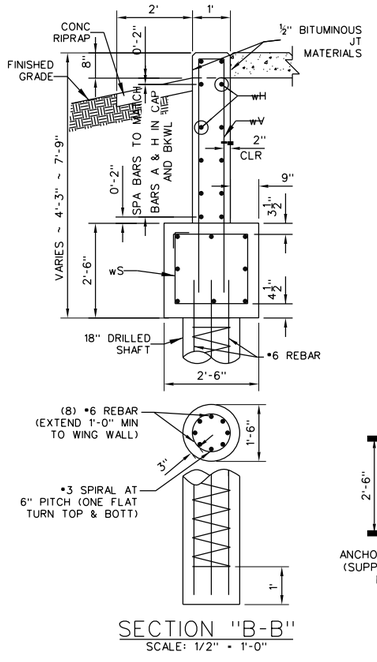
PLAN

SCALE: 1/2" = 1'-0"



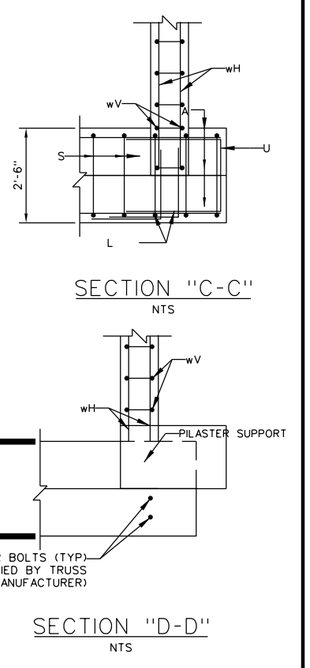
SECTION "E-E"

SCALE: 1/2" = 1'-0"



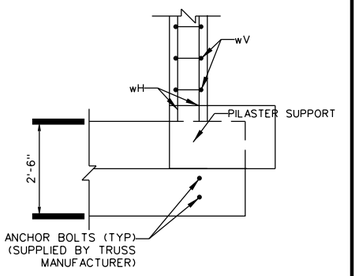
SECTION "B-B"

SCALE: 1/2" = 1'-0"



SECTION "C-C"

NTS

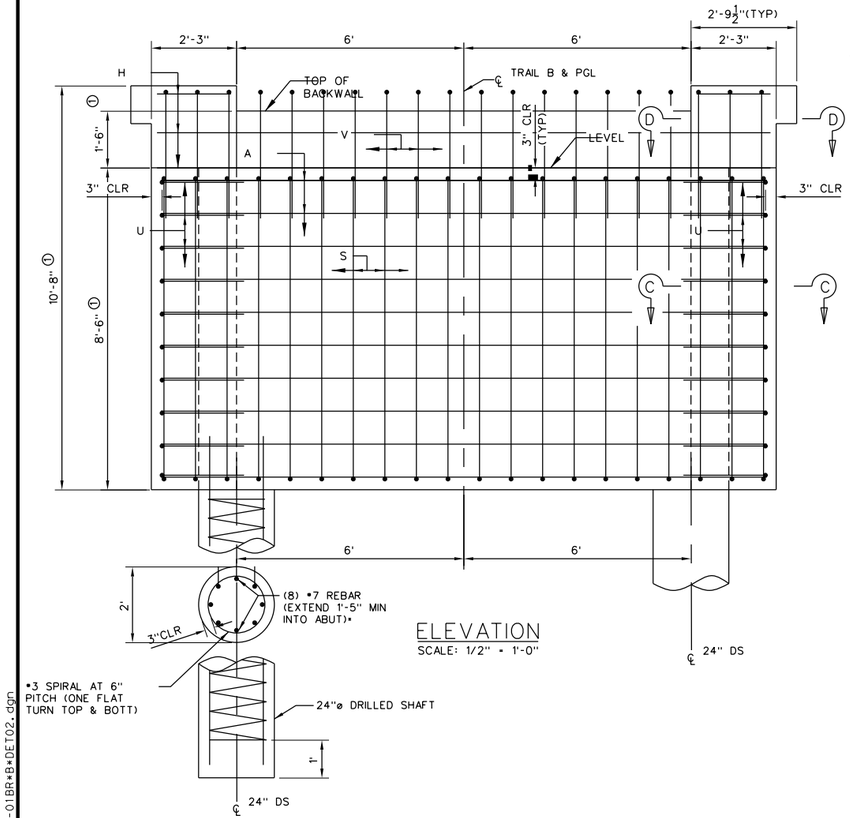


SECTION "D-D"

NTS

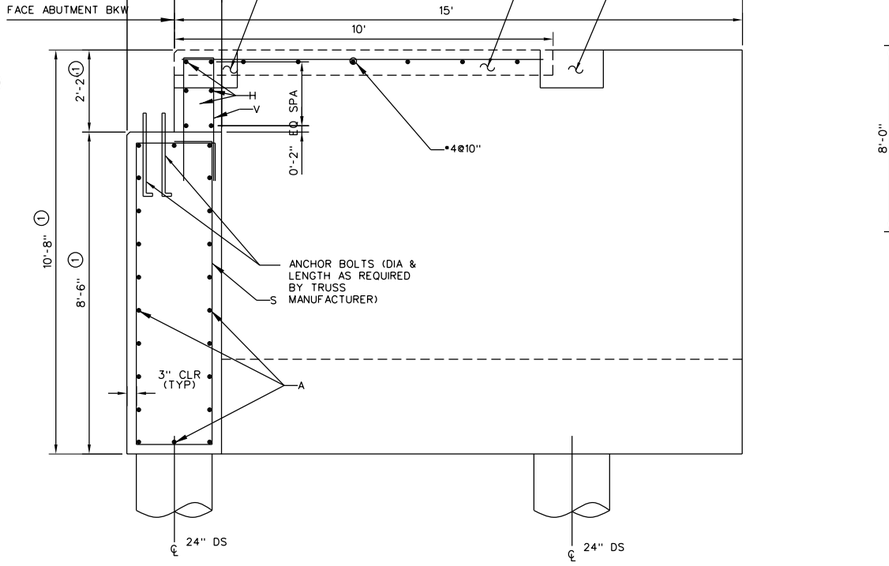
NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES.
2. REFER TO TRAIL B ABUTMENT PILASTER REINFORCING DETAILS FOR ADDITIONAL REBAR IN PILASTER SUPPORT. PILASTER SUPPORT REINFORCING NOT SHOWN ON THIS SHEET FOR CLARITY.
3. SEE SHEET 2 OF 2 FOR WINGWALL REINFORCING DETAILS AND DIMENSIONS.
4. SEE SHEET 2 OF 2 FOR REINFORCING STEEL BAR CHART.



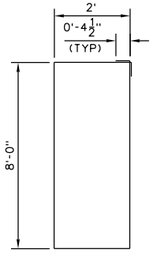
ELEVATION

SCALE: 1/2" = 1'-0"

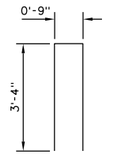


ABUTMENT SECTION

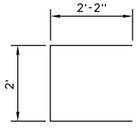
(NORTH WINGWALL SHOWN)
SCALE: 1/2" = 1'-0"



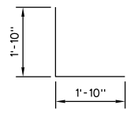
BAR S



BAR V



BAR U



BAR L

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PROFESSIONAL ENGINEER

11/22/2023

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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
ABUTMENT 4 DETAILS

SCALE = 1/2" = 1'

SHEET 1 OF 2

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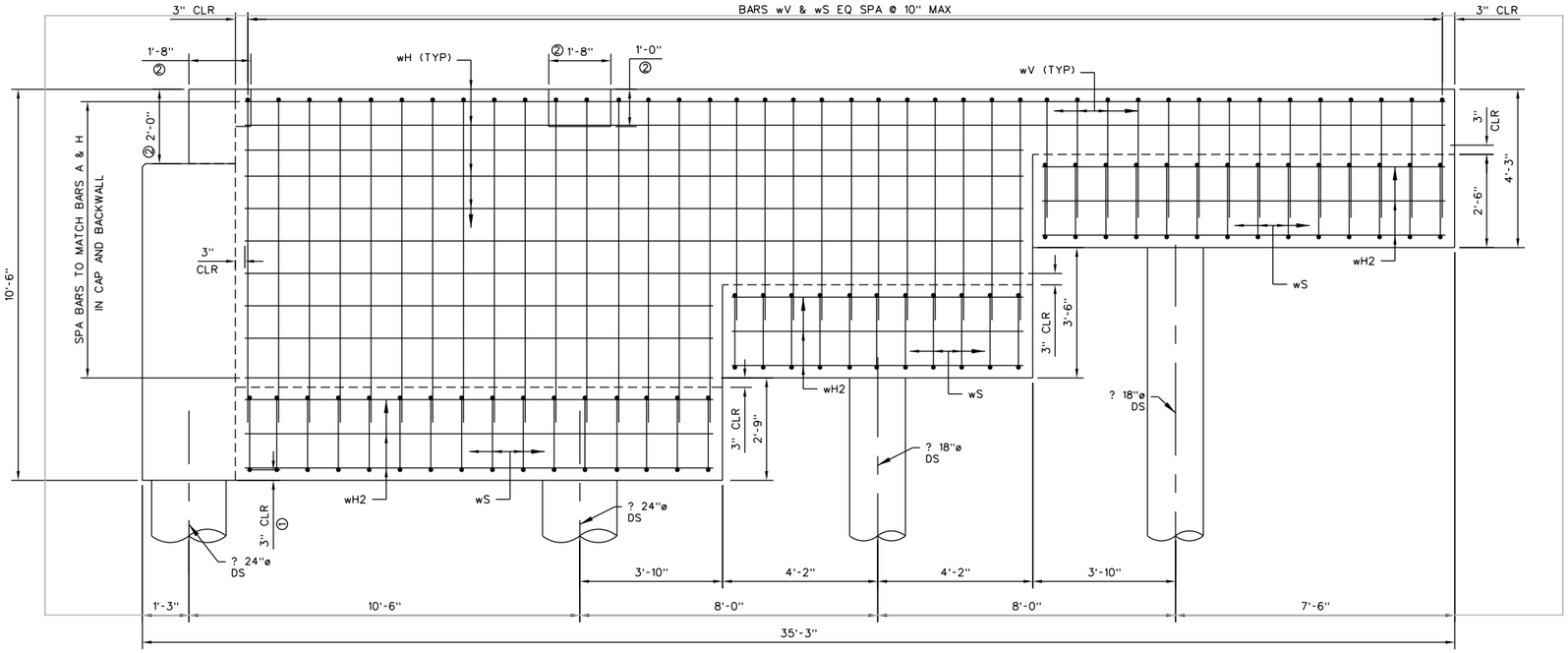
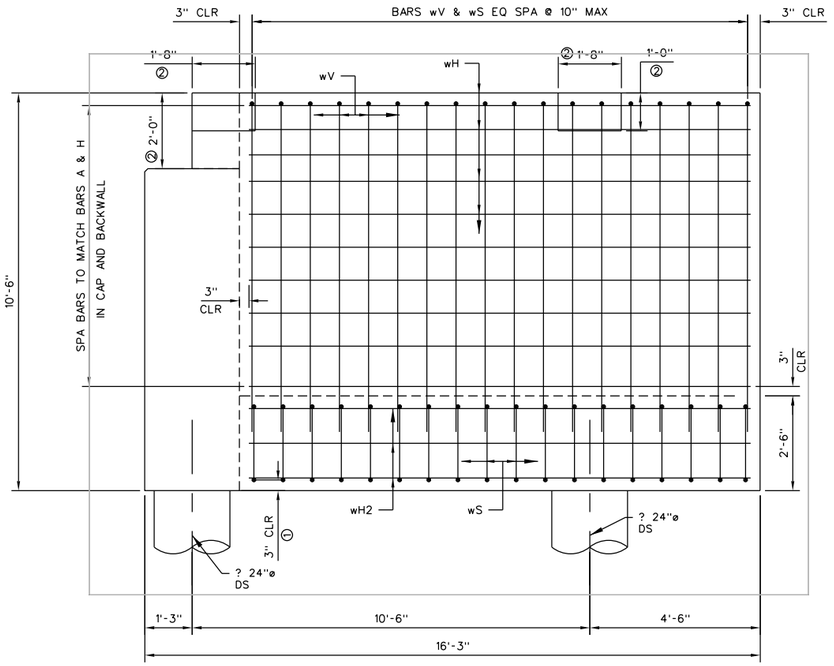
CONTRACT NO. 2024-014

SHEET NO. 93



NORTH WINGWALL ELEVATION
SCALE: 1/2" = 1'-0"



SOUTH WINGWALL ELEVATION
SCALE: 1/2" = 1'-0"

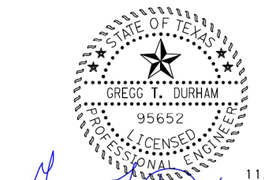
BAR	SIZE
A	#5
H	#5
L	#5
S	#4
U	#6
V	#4
wH/wH2	#6
wS	#4
wV	#5

① COVER TYPICAL FOR TOP AND BOTTOM BARS AND STIRRUPS FOR WINGWALL FOOTING.

② DETAIL SHOWN WITH BLOCKOUT FOR PILASTER SUPPORT. WINGWALL CAN BE OPTIONALLY BUILT WITH PILASTER SUPPORT MONOLITHICALLY WITH WINGWALL. REFER TO TRAIL B ABUTMENT PILASTER REINFORCING DETAILS FOR PILASTER SUPPORT DETAILS AND REINFORCING.

NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES.
2. REFER TO TRAIL B ABUTMENT PILASTER REINFORCING DETAILS FOR PILASTER SUPPORT DETAILS AND REINFORCING.



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TRAIL B ABUTMENT 4 DETAILS

SCALE=1/2"=1' SHEET 2 OF 2

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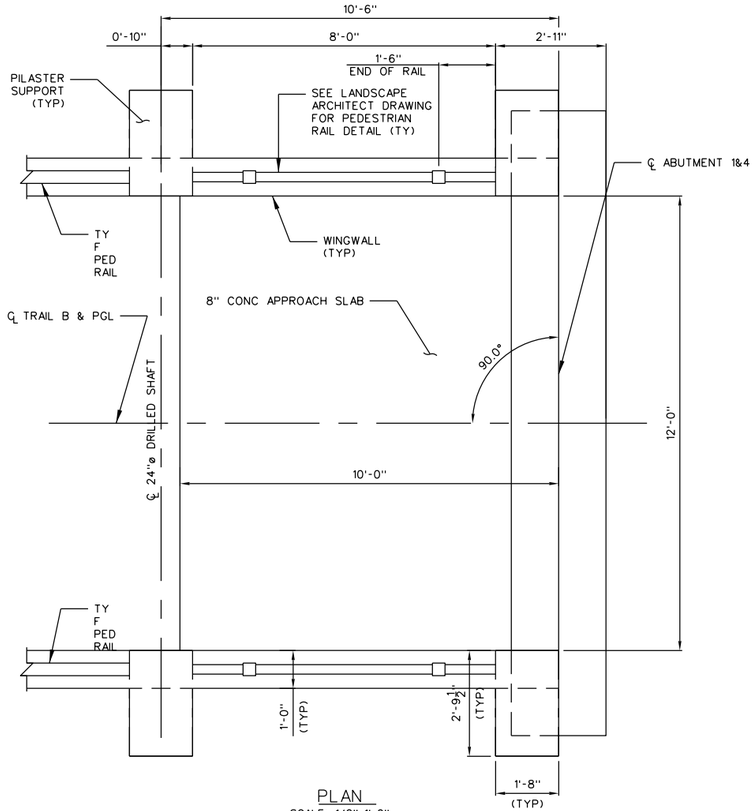
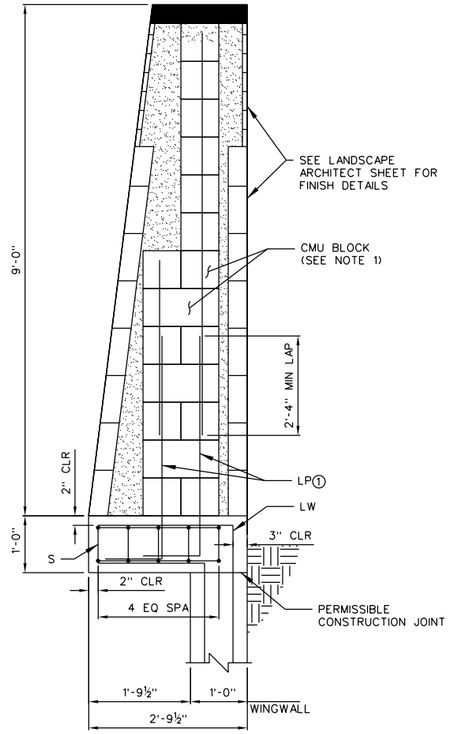
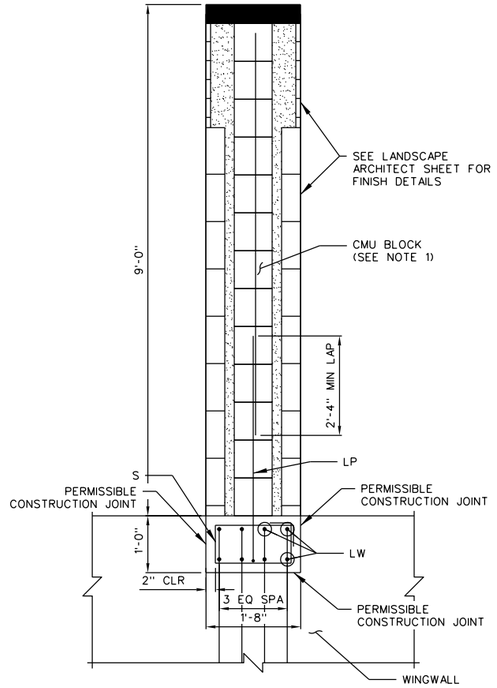


PLAN
SCALE: 1/2"=1'-0"



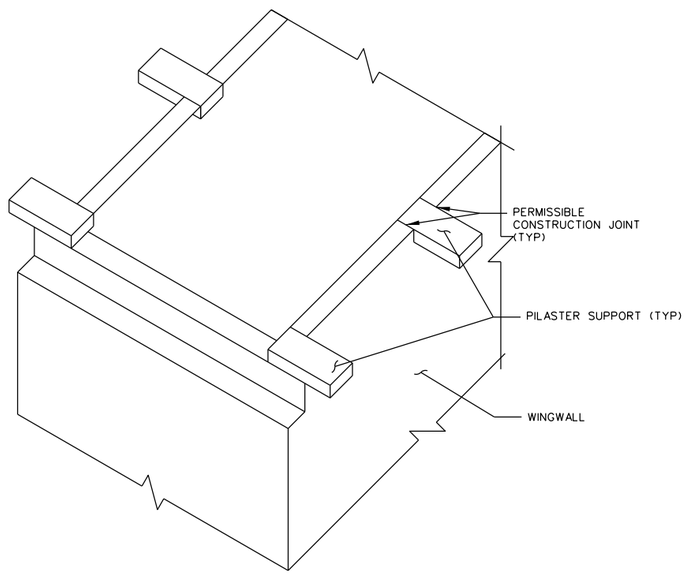
SIDE VIEW



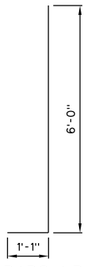
END VIEW

PILASTER SUPPORT DETAIL
SCALE 3/4"=1'-0"

BAR	SIZE
LP	#5
LW	#5
S	#4

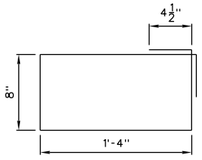


ISOMETRIC OF PILASTER SUPPORT
SCALE: 1/4"=1'-0"

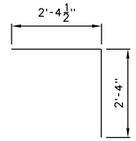


BARS LP①
SCALE: 1/2"=1'-0"

① CONTRACTOR MAY SUBSTITUTE STRAIGHT BAR FOR ONE CONTINUOUS BAR WITH 1'-1" ANCHORAGE HOOK. SEE MISCELLANEOUS 2 OF 2 FOR CMU LIMITS.



BARS S
SCALE: 1-1/2"=1'-0"



BARS LW
SCALE: 1/2"=1'-0"

NOTES:

1. SEE MISC STRUCTURAL DETAILS SHEET FOR PILASTER DETAIL.
2. SEE ABUTMENT DETAILS FOR WINGWALL REINFORCING, CONCRETE STRENGTH, AND COVER REQUIREMENTS

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DATE	BY	REV	REVISION

MESQUITE TEXAS
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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B ABUTMENT PILASTER REINFORCING DETAILS

SCALE: N/A

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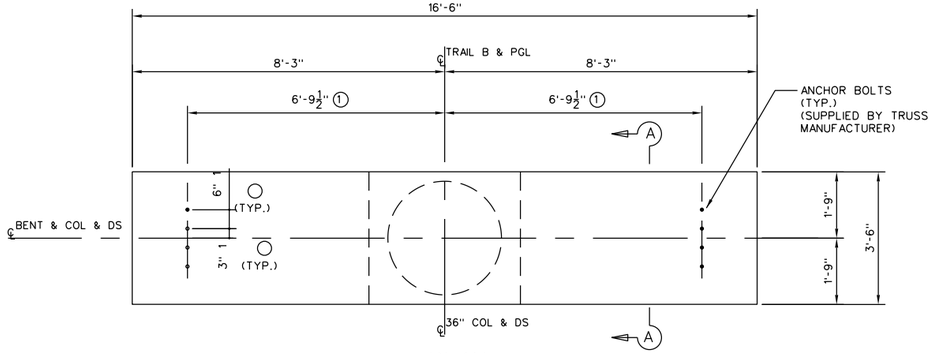
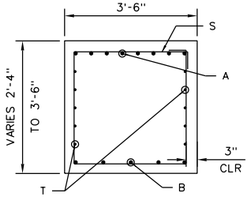
CONTRACT NO. 2024-014 SHEET NO. 95

(1) ADJUST TO MEET THE REQUIREMENTS OF THE APPROVED SHOP DRAWINGS.

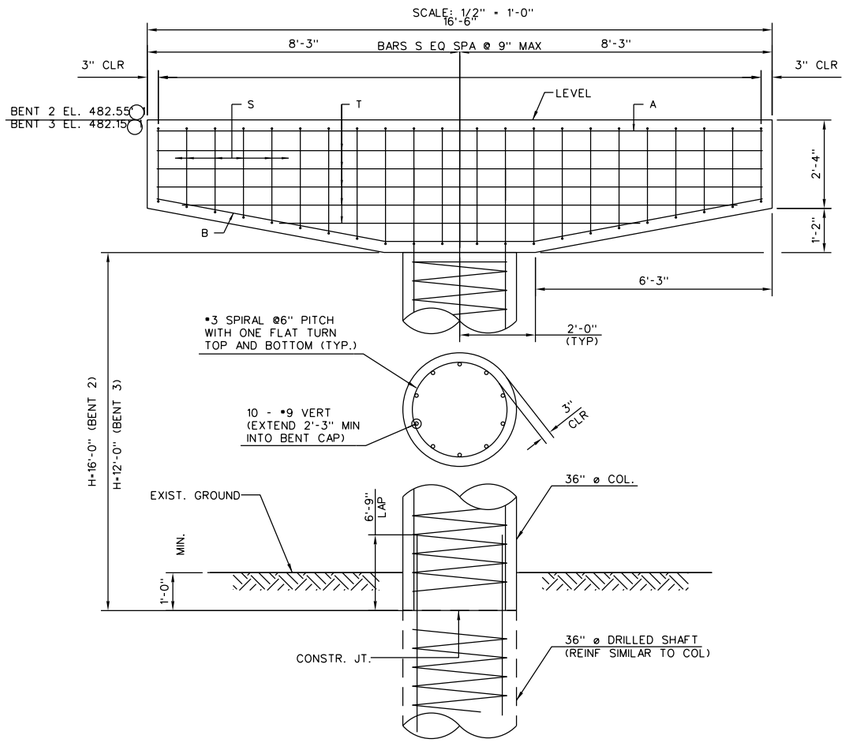


PLAN



SECTION "A-A"

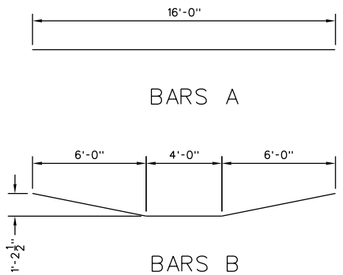
SCALE: 1/2" = 1'-0"

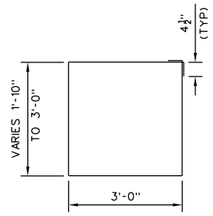


ELEVATION

SCALE: 1/2" = 1'-0"

BENT - 2 & 3





BAR	SIZE
A	•8
B	•6
S	•4
T	•5

NOTES:

1. SEE BRIDGE LAYOUT FOR NOTES.

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TRAIL B BENT 2 & 3 DETAILS

SCALE = ½" = 1'

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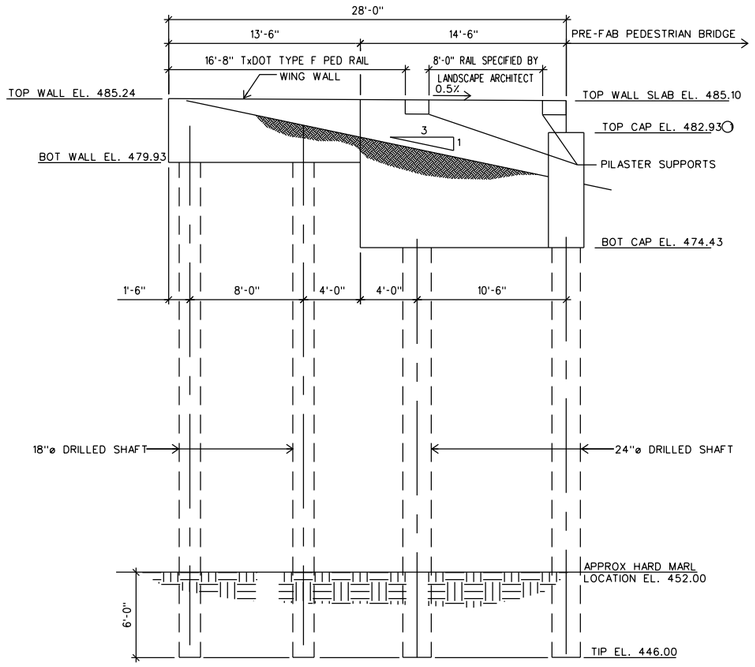
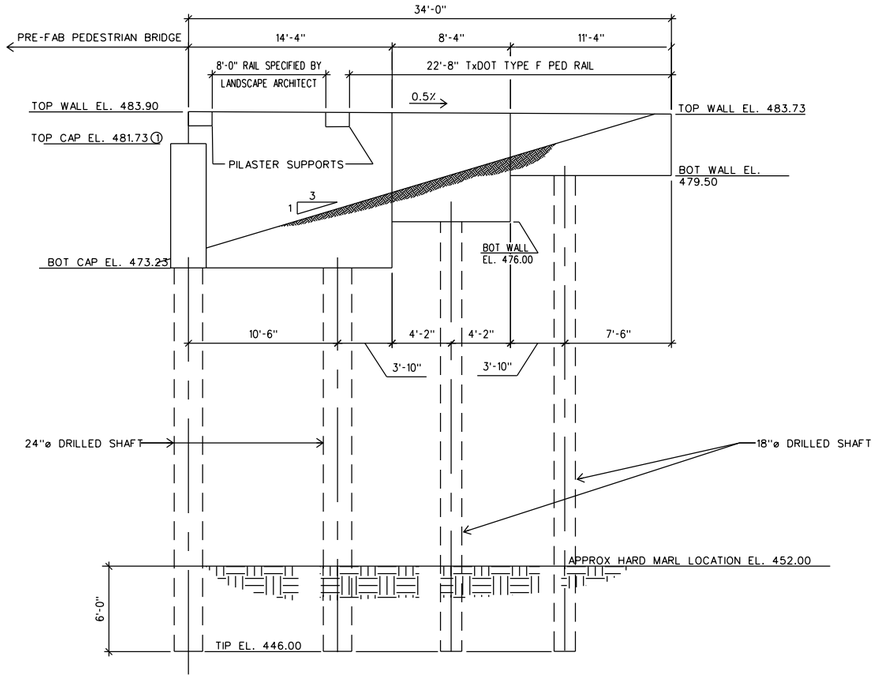
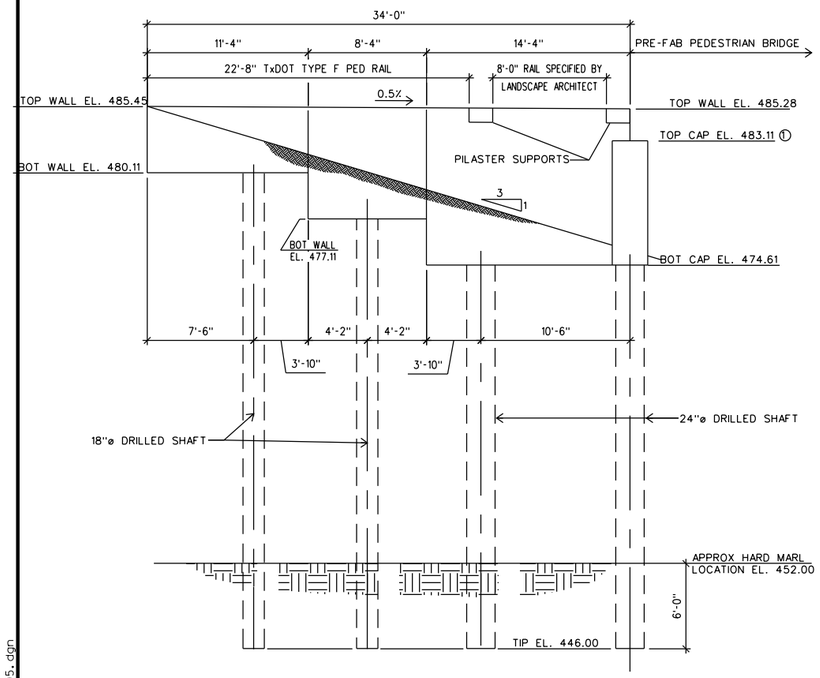


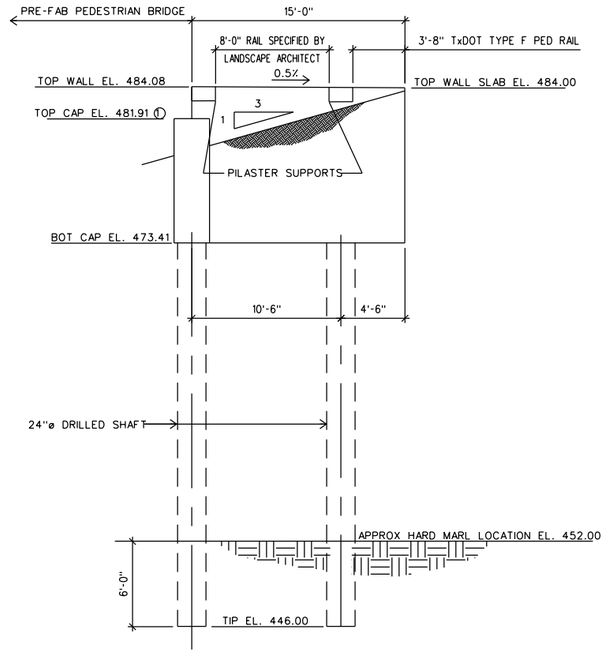
ABUTMENT 1 - NORTH WING WALL (BACK)



ABUTMENT 4 - NORTH WING WALL (BACK)



ABUTMENT 1 - SOUTH WING WALL - (FRONT)



ABUTMENT 4 - SOUTH WING WALL (FRONT)

① CONTRACTOR TO VERIFY TOP OF CAP ELEVATION WITH ENGINEER BEFORE CONSTRUCTION AND ADJUST AT NO ADDITIONAL COST.

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TRAIL B ABUTMENT WINGWALL GEOMETRIC LAYOUT

SCALE=3/16" = 1'

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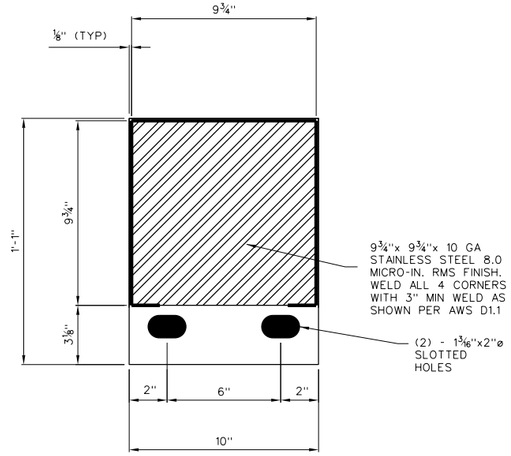
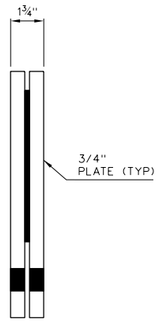
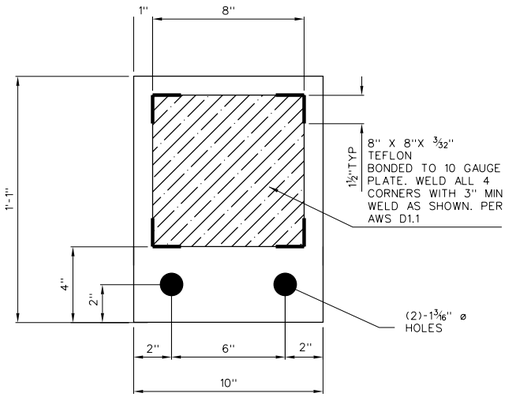


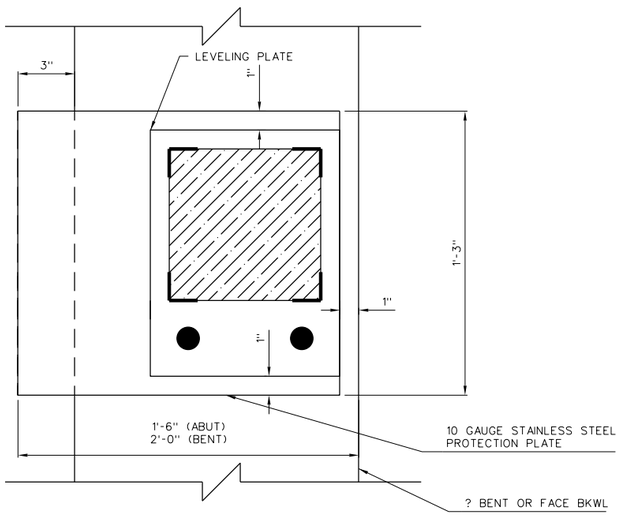
BEARING PLATE
SCALE: 3"=1'-0"



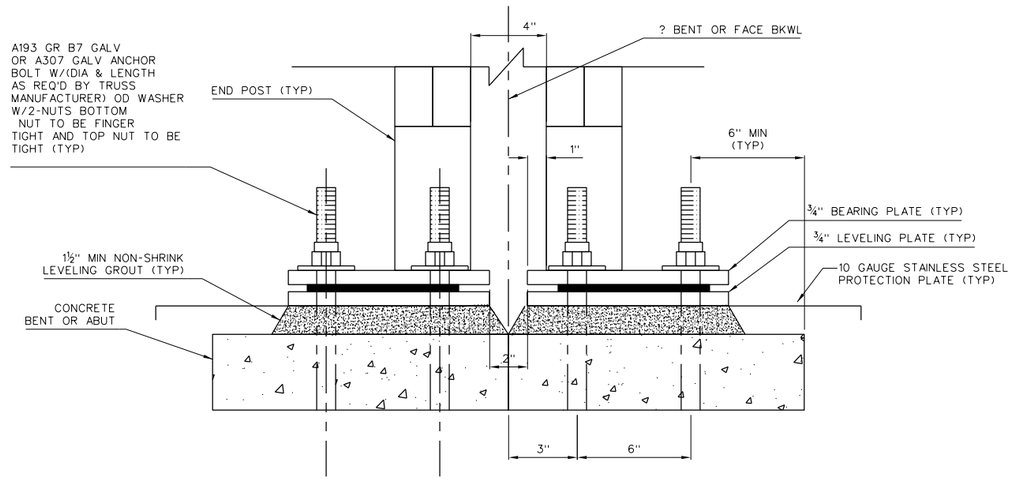
PLACEMENT
SCALE: 3" = 1'-0"



LEVELING PLATE
SCALE: 3" = 1'-0"



PROTECTION PLATE
SCALE: 3" = 1'-0"



BEARING DETAIL
SCALE: 3" = 1'-0"

BEARING AND ANCHOR BOLT NOTES:

1. ANCHOR BOLTS SHALL HAVE AN EMBEDMENT DEPTH OF 9" MIN INTO TOP OF CAP. THE CHEMICAL ADHESIVE SHALL BE HAMMER CAPSULE OR EQUAL AS APPROVED BY THE TRUSS MANUFACTURER SEALING ENGINEER. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION
2. CEMENTITIOUS NON-SHRINK GROUT SHALL MEET ASTM C-1107, 7000 PSI MINIMUM, UNLESS SPECIFED OTHERWISE ON APPROVED SHOP DRAWINGS.
3. ABUTMENT REINFORCEMNT SHALL BE CAREFULLY PLACED TO AVOID ANCHOR RODS, 2" CLEARANCE REQUIRED. ANCHORS SHALL BE SURROUNDED BY AT LEAST ONE BAR ON ALL SIDES.
4. FINAL ELEVATION ADJUSTMENT OF THE BRIDGE MAY BE MADE WITH TWO INCH BY TWO INCH SQUARE SHIMS (PROVIDED BY TRUSS MANUFACTURER). SHIM PLATES SHALL BE CENTERED ON THE END POST. ALLOW COVER ANGLES TO JUST TOUCH THE TOP OF THE ABUTMENT BACKWALL. DO NOT ALLOW ANY BRIDGE WEIGHT TO REST ON COVER ANGLES
5. THE SHIM KIT SHALL BE PLACED ON A 4" X 4" X 0.5" PL (PROVIDED). THE BEARINGS SHALL NOT BE GROUTED UNTIL AFTER CONCRETE DECK PLACEMENT. THE CONTRACTOR SHALL ENSURE STABILITY PRIOR TO GROUTING.
6. ALL DIMENSIONS AND THICKNESSES MAY BE ADJUSTED TO MEET THE REQUIREMENTS OF THE APPROVED SHOP DRAWINGS OF THE TRUSS SPANS.

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Gregg T. Durham 11/22/2023

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TRAIL B
BRIDGE DETAILS

SCALE=3"=1'

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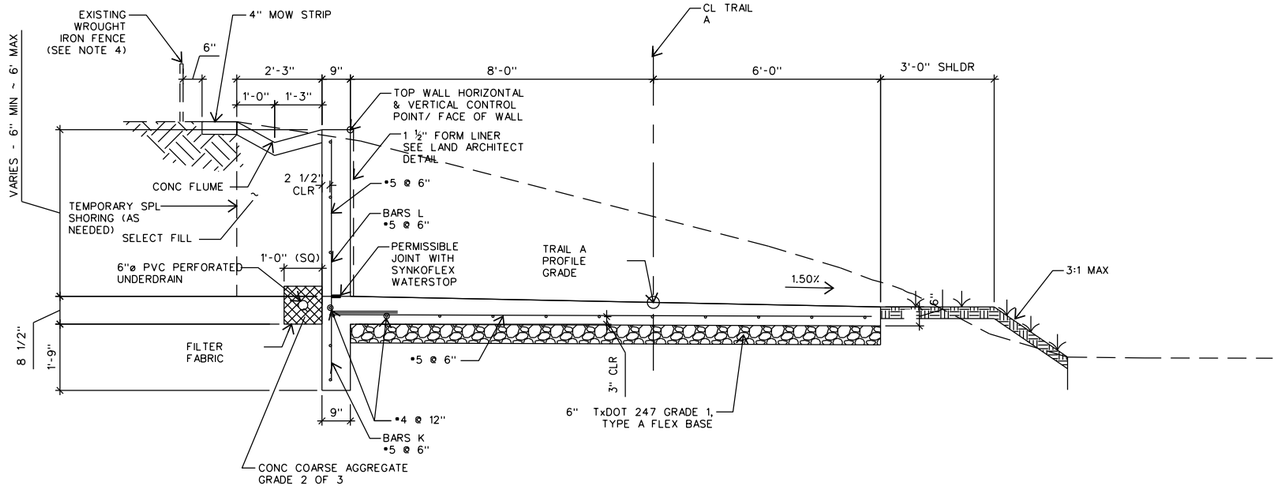
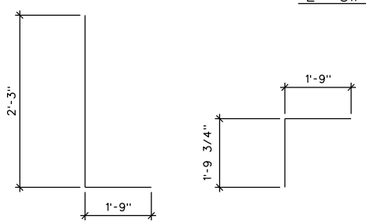
CONTRACT NO. 2024-014 SHEET NO. 98

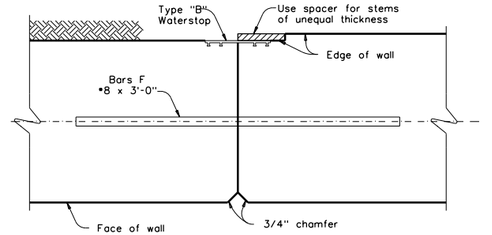
2163-01BR*B*DET06.dgn



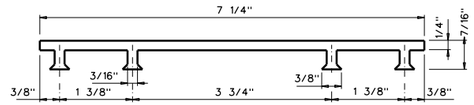
"L" CIP RETAINING WALL TYPICAL SECTION FOR SIDEWALK WALLS
NTS



BAR L BAR K

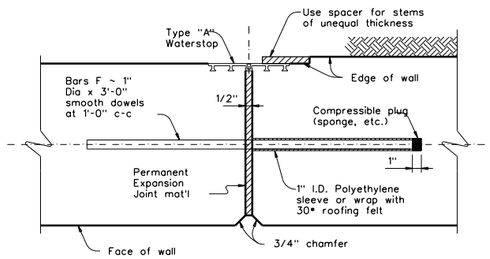


CONSTRUCTION JOINT

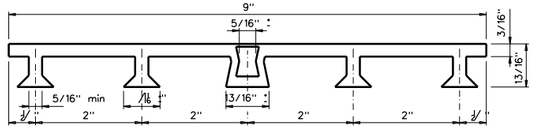


PVC WATERSTOP TYPE "B"
NTS

Note: Dimensions and shapes may vary slightly depending on manufacturer.

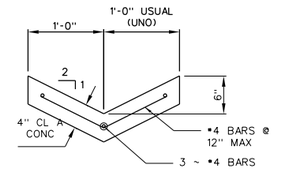


EXPANSION JOINT

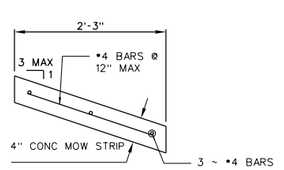


PVC WATERSTOP TYPE "A"
NTS

Note: Dimensions and shapes may vary slightly depending on manufacturer.



CONCRETE FLUME DETAIL
NTS



CONCRETE MOW STRIP DETAIL
NTS

NOTES:

1. CONCRETE "L" WALLS SHALL BE CLASS "C" WITH f'c MIN - 3,600 PSI AT 28 DAYS. CONCRETE FLUME AND MOWSTRIP SHALL BE CLASS "A" WITH f'c MIN - 3,000 PSI AT 28 DAYS.
2. ALL REINFORCING SHALL BE ASTM A 615 GRADE 60 EPOXY COATED.
3. TEMPORARY SPECIAL SHORING SHALL BE PROVIDED FOR EXCAVATION THAT EXCEED 5' DEEP AND AS INDICATED ON THE LAYOUTS.
4. EXISTING WROUGHT IRON FENCE TO BE TEMPORARILY BRACED (AS NECESSARY) TO MAINTAIN THE STRUCTURAL INTEGRITY. CONTRACTOR SHALL DOCUMENT AND PROTECT CONDITION OF EXISTING FENCE TO REMAIN. ANY DAMAGE, REPAIRS, REPLACEMENT NEEDED AS A RESULT OF CONSTRUCTION SHALL BE AT NO ADDITIONAL COST TO THE PROJECT.
5. SEE LAYOUTS FOR LOCATIONS OF TY B HANDRAIL.

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MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL DETAILS

SCALE: N/A

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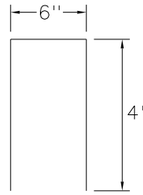
CONTRACT NO. 2024-014 SHEET NO. 99

2163-01RTW*DET01.dgn

BARS "T" & "D" = PANEL LENGTH - 6"

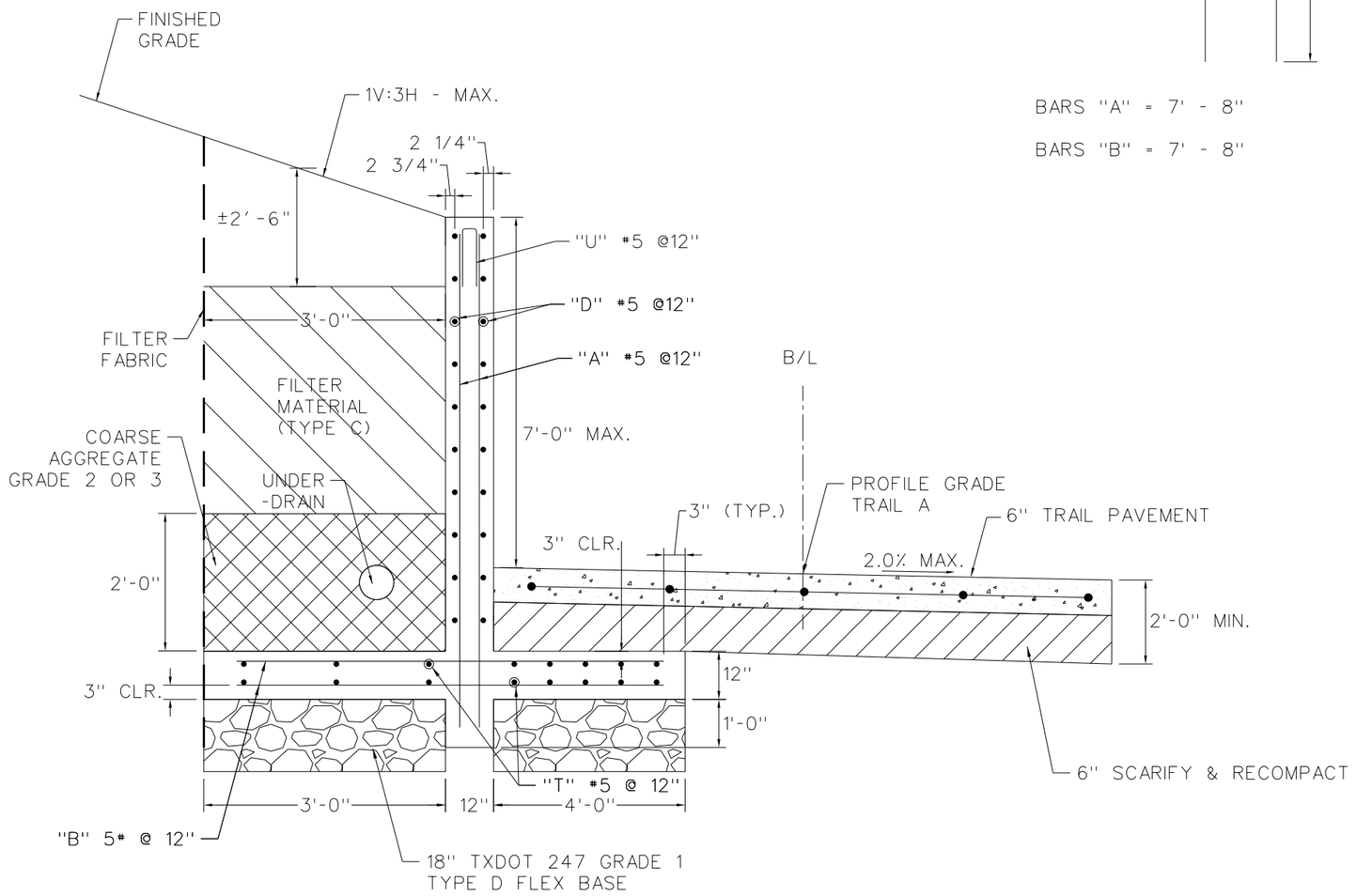
BARS "U" =



8'-4" TOTAL

BARS "A" = 7' - 8"

BARS "B" = 7' - 8"



T RETAINING WALL DETAIL

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MESQUITE HERITAGE TRAIL, PHASE II

RETAINING WALL DETAIL

SCALE: N/A

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CONTRACT NO. 2024-014 SHEET NO. 100

SHEET IS LEFT INTENTIONALLY BLANK

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11/22/2023

DATE	BY	REV	REVISION

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MESQUITE HERITAGE TRAIL, PHASE II

SHEET OMITTED

SCALE: N/A SHEET OF

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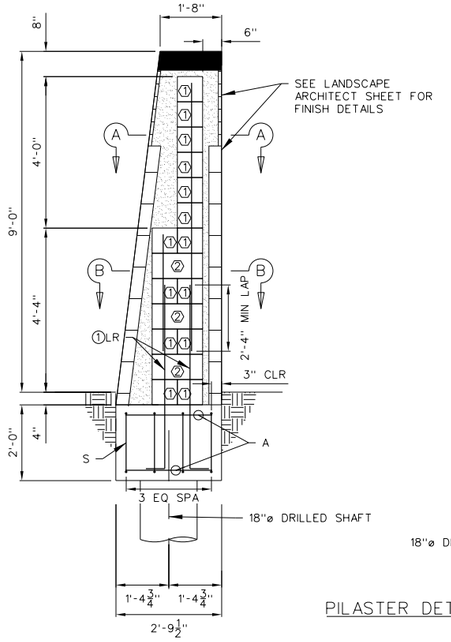
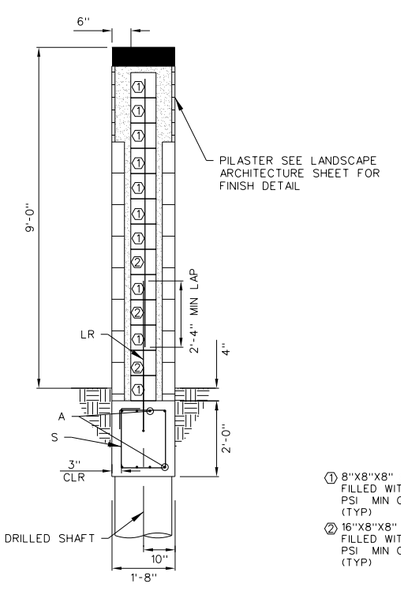
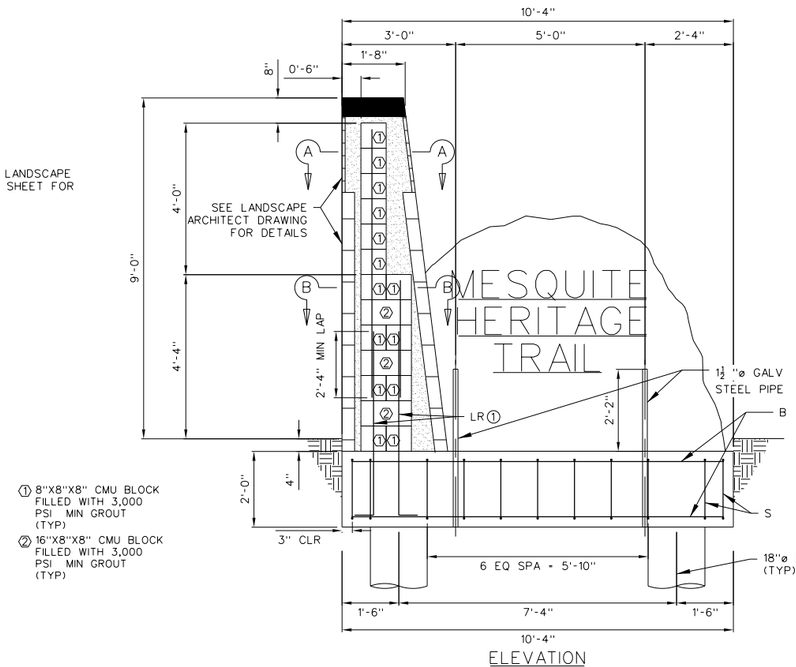
CONTRACT NO. 2024-014 SHEET NO. 101



PILASTER DETAIL

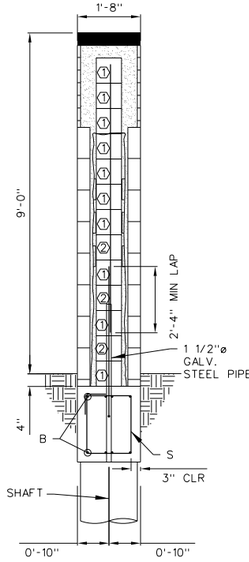




① 8"X8"X8" CMU BLOCK FILLED WITH 3,000 PSI MIN GROUT (TYP)

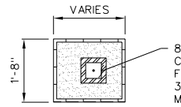
② 16"X8"X8" CMU BLOCK FILLED WITH 3,000 PSI MIN GROUT (TYP)

ELEVATION

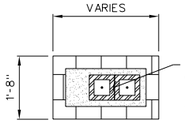


END

TRAIL IDENTIFICATION SIGN



SECTION "A-A"



SECTION "B-B"

SUMMARY OF ESTIMATED QUANTITIES - MISCELLANEOUS STRUCTURES

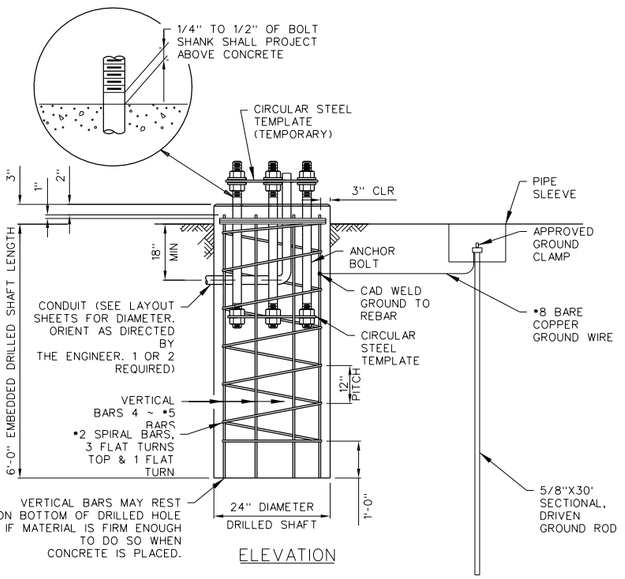
BID ITEM	DESCRIPTION	UNIT	QUANTITY
416 6001	DRILL SHAFT (18 IN)	LF	189
420 6074	CL C CONC (MISC) (TRENCH DRAIN)	CY	1.0
420 6074	CL C CONC (MISC) (MONUMENT CAP)	CY	4.3
442 2048	STRUCTURAL STEEL(MISC NON-BRIDGE) (TRENCH DRAIN PLATE)	LB	292

NOTES:

1. CONCRETE SHALL BE CLASS C, f'c = 3,600 PSI MIN AT 28 DAYS.
2. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60 UNCOATED.
3. MORTAR SHALL BE TYPE "S".
4. DESIGN WIND LOAD FOR 90 MPH 3 SEC GUST.
5. FOUNDATION DESIGN IS BASED ON ALLOWABLE BEARING PRESSURE OF 20,000 PSF AND ALLOWABLE SIDE SHEAR OF 3,200 PSF OF HARD MARL STRATUM.
6. SEE LANDSCAPE ARCHITECTURE SHEET FOR PILASTER AND IDENTIFICATION SIGN DETAIL.
7. PILASTER DRILLED SHAFTS TO BE EMBEDDED 6' BELOW HARD MARL.

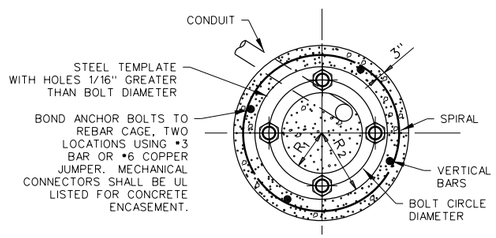
TRAIL IDENTIFICATION SIGN ESTIMATED QUANTITIES

BAR	SIZE
LR	#5
S	#4
A	#5
B	#5



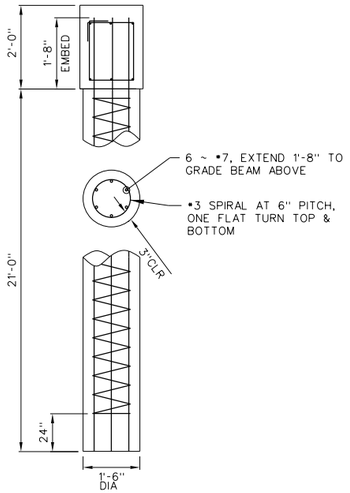
ELEVATION

LIGHT POLE FOUNDATION

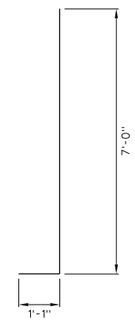


TOP VIEW

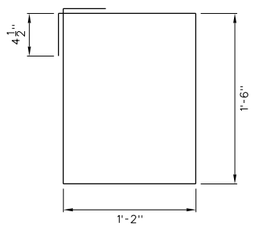
(ANCHOR BOLT PATTERN AND SIZE SHALL FOLLOW LIGHT POLE MANUFACTURER'S REQUIREMENTS.)



18" DRILL SHAFT DETAIL



BARS LR①



BARS S

① CONTRACTOR MAY SUBSTITUTE STRAIGHT BAR FOR ONE CONTINUOUS BAR WITH 1'-1" ANCHORAGE HOOK. SEE MISCELLANEOUS 2 OF 2 FOR CMU LIMITS.

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MESQUITE HERITAGE TRAIL, PHASE II

MISCELLANEOUS STURCTURAL DETAILS

SCALE: N/A SHEET 1 OF 1

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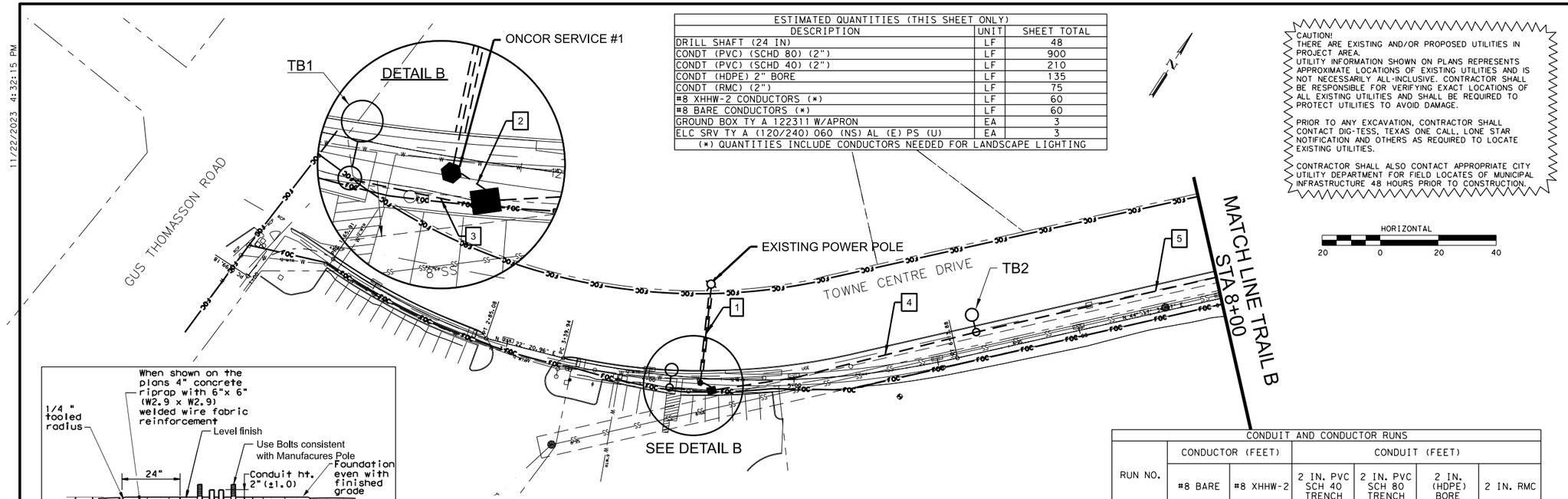
CONTRACT NO. 2024-014 SHEET NO. 102

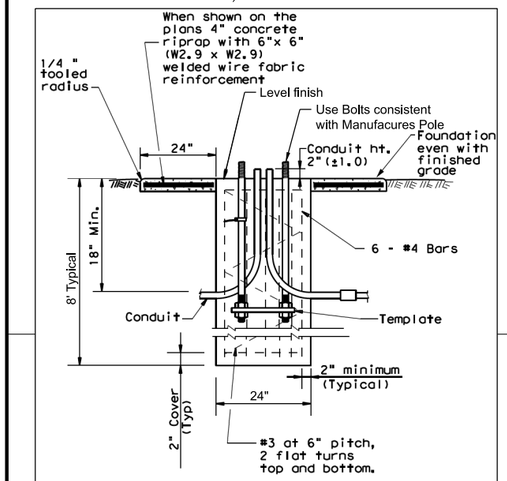
ESTIMATED QUANTITIES (THIS SHEET ONLY)		
DESCRIPTION	UNIT	SHEET TOTAL
DRILL SHAFT (24 IN)	LF	48
CONDT (PVC) (SCHD 80) (2")	LF	900
CONDT (PVC) (SCHD 40) (2")	LF	210
CONDT (HDPE) 2" BORE	LF	135
CONDT (RMC) (2")	LF	75
#8 XHHW-2 CONDUCTORS (*)	LF	60
#8 BARE CONDUCTORS (*)	LF	60
GROUND BOX TY A 122311 W/APRON	EA	3
ELC SRV TY A (120/240) 060 (NS) AL (E) PS (U)	EA	3
(*) QUANTITIES INCLUDE CONDUCTORS NEEDED FOR LANDSCAPE LIGHTING		

CAUTION!
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA.
UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

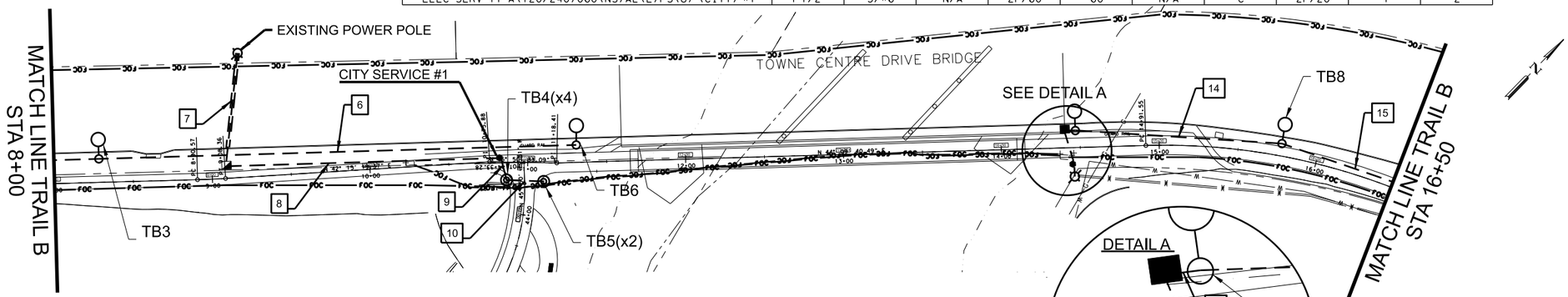




FOUNDATION DETAIL CROSS SECTION

CONDUIT AND CONDUCTOR RUNS						
RUN NO.	CONDUCTOR (FEET)		CONDUIT (FEET)			
	#8 BARE	#8 XHHW-2	2 IN. PVC SCH 40 TRENCH	2 IN. PVC SCH 80 TRENCH	2 IN. (HDPE) BORE	2 IN. RMC
1	**	**			65	25
2	**	**		10		
3	**	**		30		
4	**	**		185		
5	**	**		200		
6	**	**		300		
7	**	**			70	25
8	**	**	170			
9	25	25	15			
10	35	35	25			
11	**	**		10		25
12	**	**		25		
13	**	**		5		
14	**	**		135		
TOTAL	60	60	210	900	135	75
** TO BE PROVIDED AND INSTALLED BY ONCOR						

Electical Service Description (see ED (4,5, and 9) - 14)	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amp	Two-Pole Contactor Amps	Panelbd/ Loadcenter Amp Rating	Circuit No.	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
ELEC SERV TY A (120/240) 060 (NS) AL (E) PS (U) (ONCOR) #1	1 1/2"	3/#6	N/A	2P/60	60	N/A	A	2P/20	6	1.4
ELEC SERV TY A (120/240) 060 (NS) AL (E) PS (U) (ONCOR) #2	1 1/2"	3/#6	N/A	2P/60	60	N/A	B	2P/20	7.5	1.9
ELEC SERV TY A (120/240) 060 (NS) AL (E) PS (U) (CITY) #1	1 1/2"	3/#6	N/A	2P/60	60	N/A	C	2P/20	1	2



ITEM DESCRIPTION	ILLUMINATION STRUCTURE ID	STATION (TRAIL B)	OFFSET (FEET)
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB1	4+15	10 RT
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB2	6+30	15 LT
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB3	8+30	15 LT
ACUITY - HYDREL UPLIGHT - M9420C A LED P1 30K MVOLT NSP FLC10 34B LC DNA	TB4 (*)	10+85	12 RT
ACUITY - HYDREL UPLIGHT - M9420C A LED P1 30K MVOLT NSP FLC10 34B LC DNA	TB5 (*)	11+10	13 RT
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB6	11+30	10 LT
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB7	14+47	10 LT
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB8	15+78	7 LT
(*) SEE LANDSCAPE SITEWORK PLANS FOR LIGHTING LOCATION DETAIL AND QUANTITY			

LEGEND

- CONDUIT
- BORE
- ONCOR GROUND BOX (SEE NOTE 2)
- GROUND BOX (TY A)
- VISIONAIRE LIGHT POLE
- LITHONIA LIGHT POLE
- SERVICE METER
- EXISTING POWER POLE

NOTES

1. FOR LIGHTS ALONG TOWNE CENTER DRIVE, CONTRACTOR TO INSTALL FOUNDATIONS AND CONDUIT FOR ART DECO 25' POLES WITH ROWS OF TEXAS DECORATIVE ARM. POLES, LIGHTS, AND ARMS TO BE PROVIDED BY CITY OF MESQUITE. ONCOR TO SET UP POLES AND PULL CONDUCTORS.

2. ALL PROPOSED ONCOR GROUND BOXES FOR TOWNE CENTER DRIVE LIGHTING SHALL HAVE THE ONCOR LABEL (SEE ONCOR GROUND BOX DETAIL)

3. INSTALL CONDUIT IN CONJUNCTION WITH SIDEWALK CONSTRUCTION.

4. SEE SHEET 104 FOR FOUNDATION DETAIL PLAN VIEW.

STATE OF TEXAS
SEAN P. MERRELL
95803
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

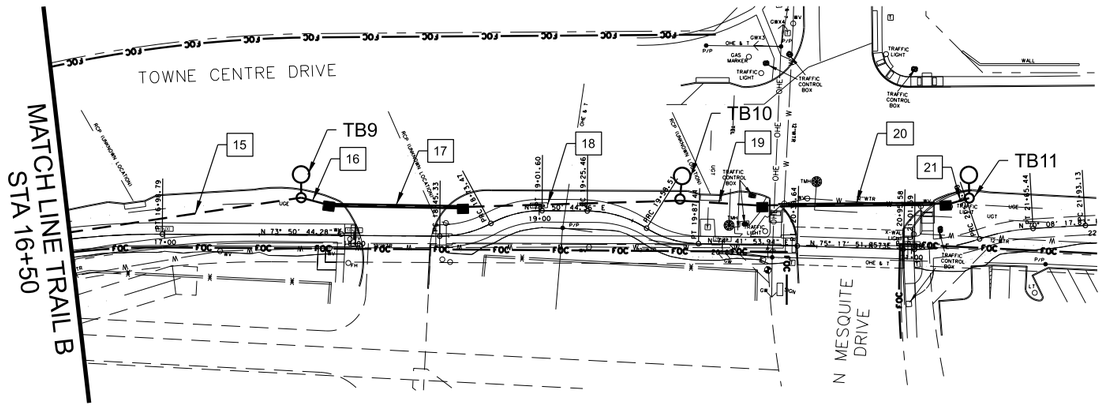
LIGHTING PLAN

SCALE: 1" = 40' SHEET 1 OF 2

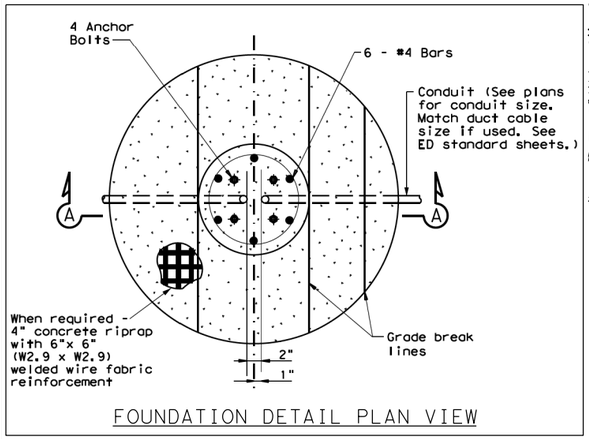
BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 103

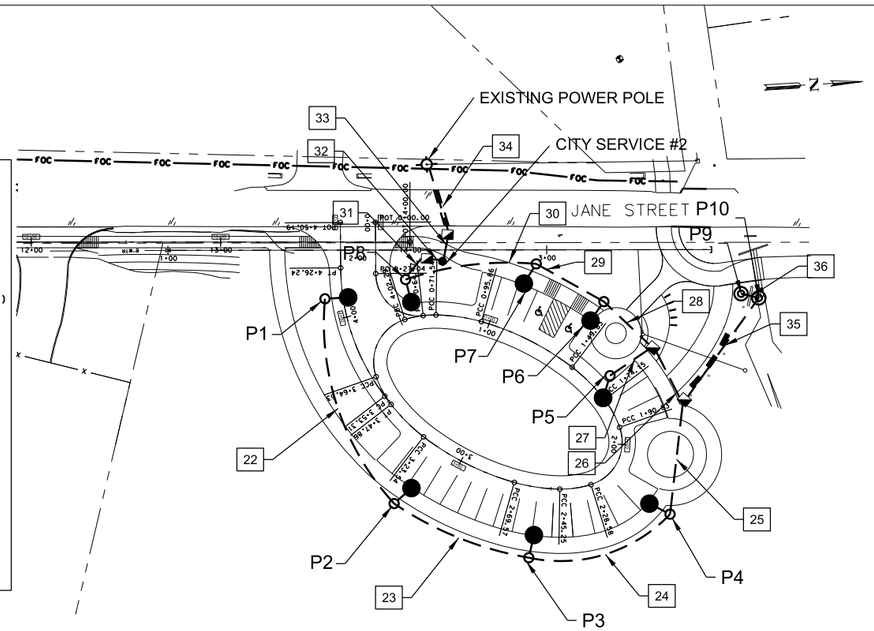
ITEM DESCRIPTION	ILLUMINATION STRUCTURE ID	STATION (TRAIL B)	OFFSET (FEET)
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB9	17+70	20 LT
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB10	19+72	21 LT
VISIONAIRE LIGHTING - ODN-3-L T2 96LC 3 3K UNV UAM BK C5H6 (POLE RTSP 25 7 12BC 136 T35R BK) - VA101-L-S1 3 1/2 BK	TB11	21+35	22 LT



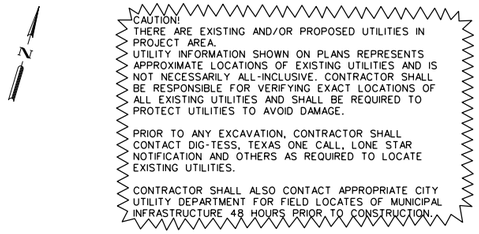
ITEM DESCRIPTION	ILLUMINATION STRUCTURE ID	STATION (PARKING LOT)	OFFSET (FEET)
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P1	4+10	10 RT
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P2	3+14	38 RT
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P3	2+56	38 RT
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P4	2+14	39 RT
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P5	1+66	10 RT
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P6	1+44	38 RT
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P7	1+10	38 RT
LITHONIA LIGHTING- KAD LED 20C 700 40K R4 MVOLT SPD04 DBLXD	P8	0+90	15 RT
ACUITY - HYDREL UPLIGHT - M9420C A LED P1 30K MVOLT NSP FLC10 34B LC DNA	P9	1+74	91 RT
ACUITY - HYDREL UPLIGHT - M9420C A LED P1 30K MVOLT NSP FLC10 34B LC DNA	P10	1+77	97 RT



FOUNDATION DETAIL PLAN VIEW



Electrical Servce Description (see ED (4,5, and 9 - 14))	Service Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amp	Two-Pole Contactor Arnps	Panelbd/ Loadcenter Amp Rating	Circuit No.	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
ELEC SERV TY A(120/240)060(NS)AL(E)PS(U) (CITY) #2	1 1/2"	3/#6	N/A	2P/60	60	N/A	D	2P/20	3	0.7



ESTIMATED QUANTITIES (THIS SHEET ONLY) - TRAIL B		
DESCRIPTION	UNIT	SHEET TOTAL
DRILL SHAFT (24 IN)	LF	24
CONDT (PVC) (SCHD 80) (2")	LF	390
CONDT (PVC) (SCHD 40) (2")	LF	0
CONDT (HDPE) (2") (BORE)	LF	165
# 8 XHHW-2 CONDUCTORS	LF	0
# 8 BARE CONDUCTORS	LF	0
GROUND BOX TY A 122311 W/APRON	EA	4
ELC SRV TY A (120/240) 060 (NS) AL (E) PS (U)	EA	0

CONDUIT AND CONDUCTOR RUNS						
RUN NO.	CONDUCTOR (FEET)		CONDUIT (FEET)			
	#8 BAR	#8 XHHW-2	2 IN. PVC HDPE BORE	2 IN. PVC SCH 40 TRENCH	2 IN. PVC SCH 80 TRENCH	2 IN. RMC
15	**	**			200	
16	**	**			15	
17	**	**	70			
18	**	**			115	
19	**	**			45	
20	**	**	95			
21	**	**			15	
TOTAL			165		390	
** TO BE PROVIDED AND INSTALLED BY ONCOR						

ESTIMATED QUANTITIES (THIS SHEET ONLY) - PARKING LOT		
DESCRIPTION	UNIT	SHEET TOTAL
DRILL SHAFT (24 IN)	LF	64
CONDT (PVC) (SCHD 80) (2")	LF	0
CONDT (PVC) (SCHD 40) (2")	LF	675
CONDT (HDPE) (2") (BORE)	LF	35
CONDT (RMC) (2")	LF	25
# 8 XHHW-2 CONDUCTORS	LF	790
# 8 BARE CONDUCTORS	LF	790
GROUND BOX TY A (122311) W/APRON	EA	4
ELC SRV TY A (120/240) 060 (NS) AL (E) PS (U)	EA	1

CONDUIT AND CONDUCTOR RUNS						
RUN NO.	CONDUCTOR (FEET)		CONDUIT (FEET)			
	#8 BARE	#8 XHHW-2	2 IN. PVC HDPE	2 IN. PVC SCH 40	2 IN. PVC SCH 80	2 IN. RMC
22	130	130		120		
23	90	90		80		
24	95	95		85		
25	70	70		60		
26	40	40		30		
27	40	40		30		
28	45	45		35		
29	55	55		45		
30	85	85		75		
31	25	25		15		
32	20	20		10		
33	**	**		15		
34	**	**	35			25
35	75	75		65		
36	20	20		10		
TOTAL	790	790	35	675		25
** TO BE PROVIDED AND INSTALLED BY ONCOR						

LEGEND

- CONDUIT
- BORE
- ONCOR GROUND BOX (SEE NOTE 2)
- GROUND BOX (TY A)
- VISIONAIRE LIGHT POLE
- LITHONIA LIGHT POLE
- SERVICE METER
- EXISTING POWER POLE

NOTES

1. FOR LIGHTS ALONG TOWNE CENTER DRIVE, CONTRACTOR TO INSTALL FOUNDATIONS AND CONDUIT FOR ART DECO 25' POLES WITH ROWS OF TEXAS DECORATIVE ARM. POLES, LIGHTS, AND ARMS TO BE PROVIDED BY CITY OF MESQUITE. ONCOR TO SET UP POLES AND PULL CONDUCTORS.
2. ALL PROPOSED ONCOR GROUND BOXES FOR TOWNE CENTER DRIVE LIGHTING SHALL HAVE THE ONCOR LABEL (SEE ONCOR GROUND BOX DETAIL)
3. INSTALL CONDUIT IN CONJUNCTION WITH SIDEWALK CONSTRUCTION.
4. SEE SHEET 103 FOR FOUNDATION DETAIL CROSS SECTION.

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

LIGHTING PLAN

SCALE: 1" = 40' SHEET 2 OF 2

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 104

2163-01-TBL02.dgn

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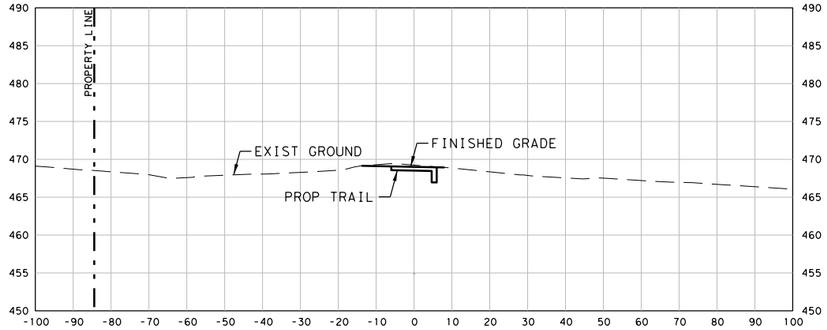

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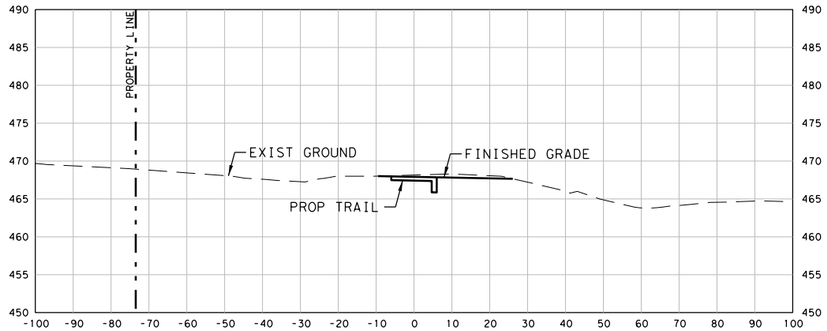

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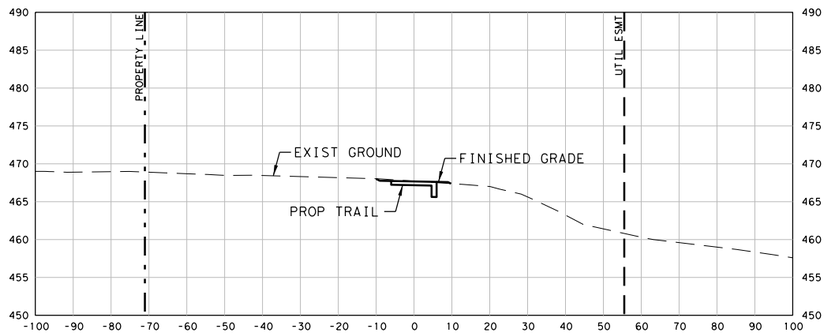

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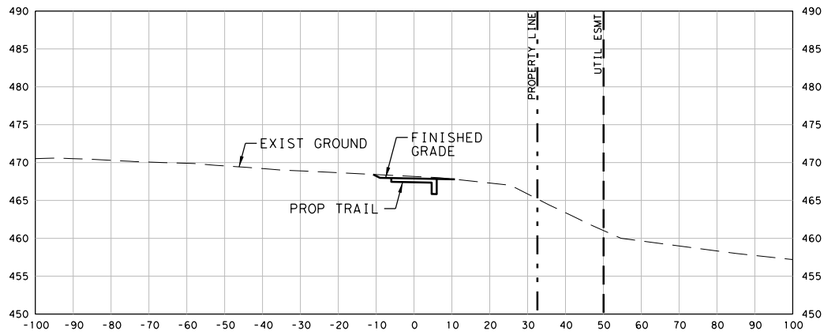

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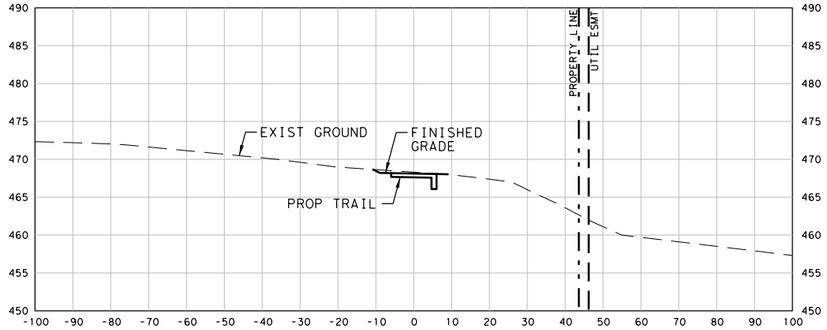

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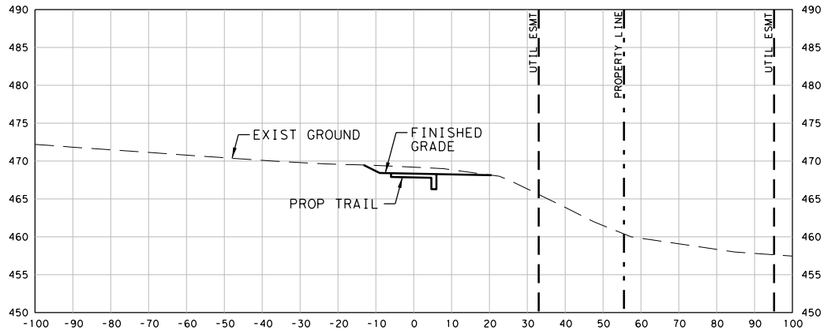

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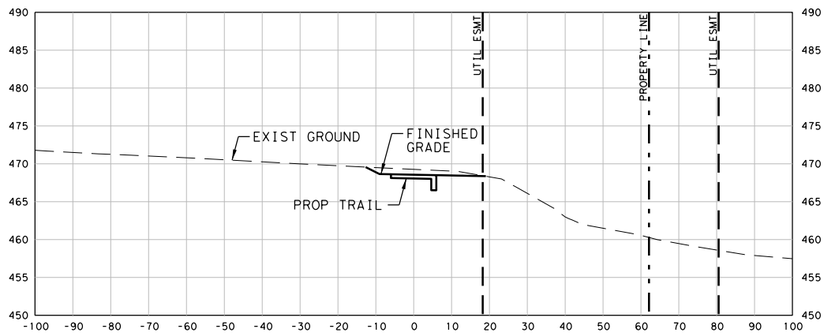

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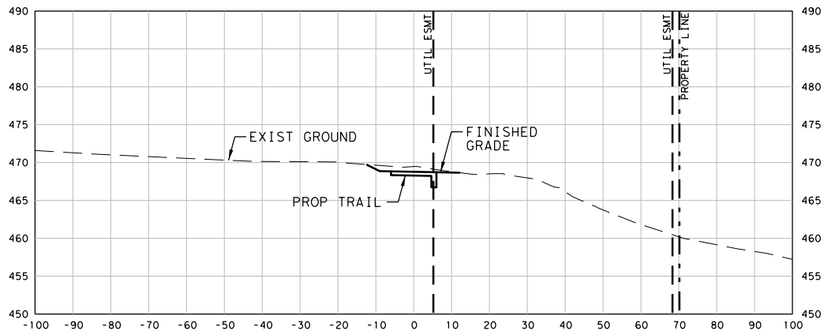

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A CROSS SECTIONS BEGIN TO STA 4+00

SCALE: H: 1"=20' V: 1"=10' SHEET 1 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 105

2163-00*TAXS1.dgn

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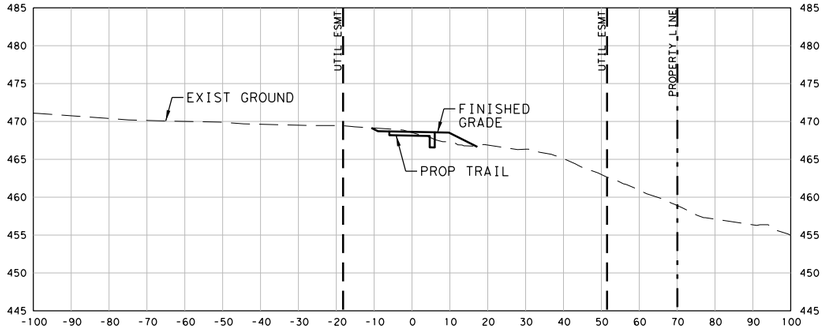

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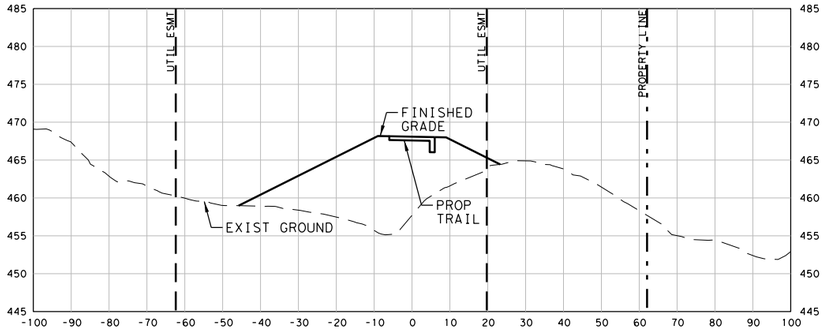

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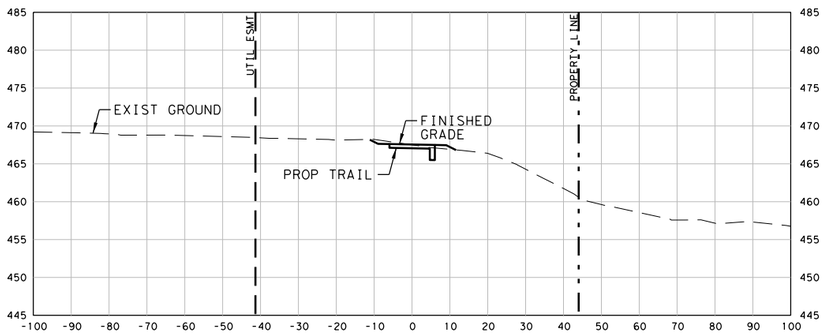

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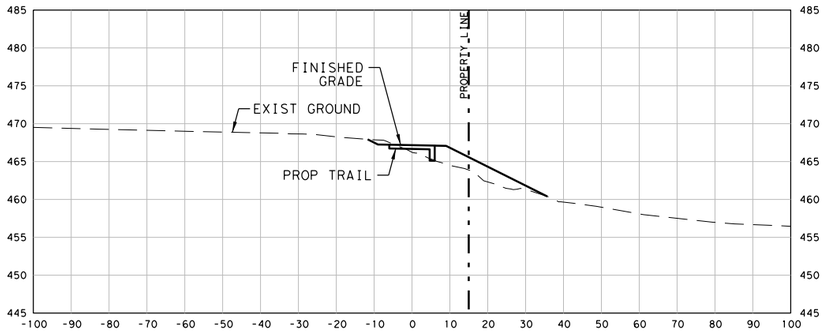

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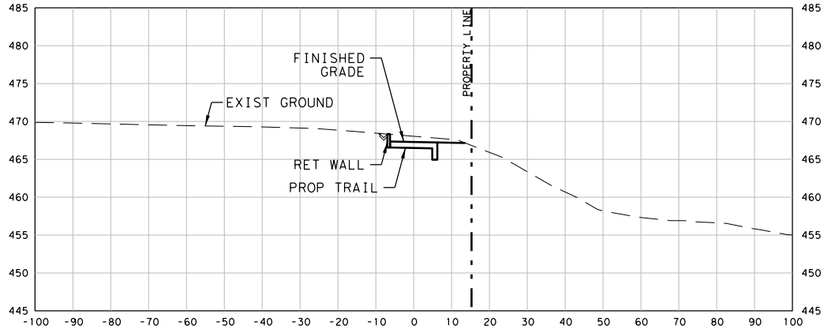

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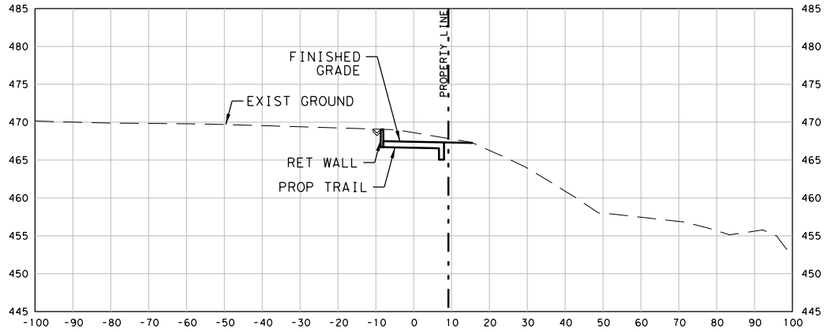

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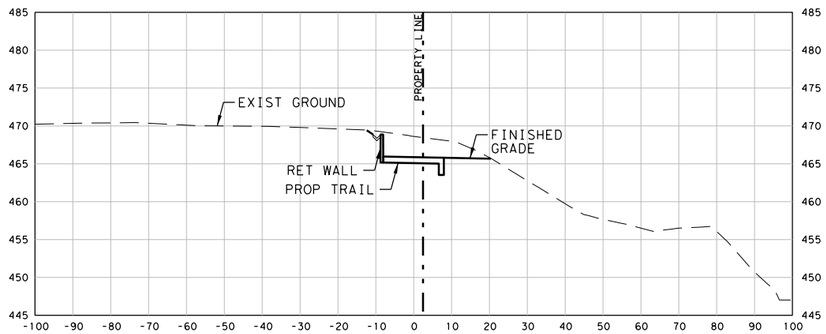

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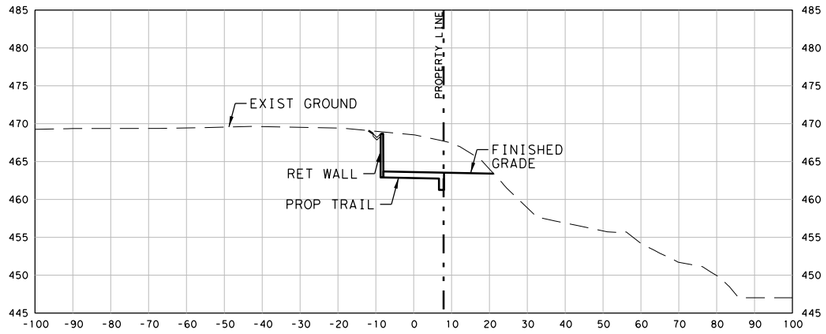

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A CROSS SECTIONS

STA 4+00 TO STA STA 8+00

SCALE: H:1"=20' V:1"=10' SHEET 2 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 106

2163-00*TAXS2.dgn

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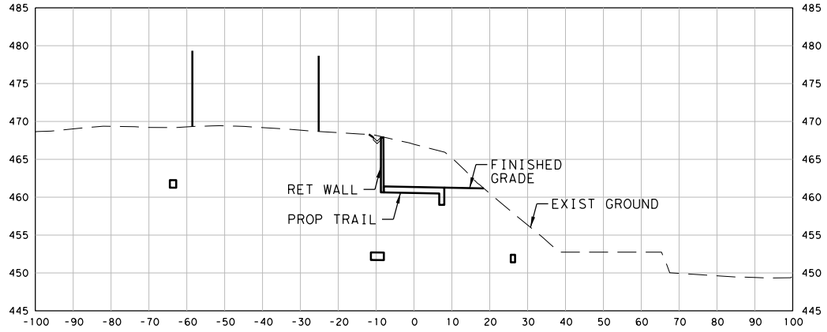

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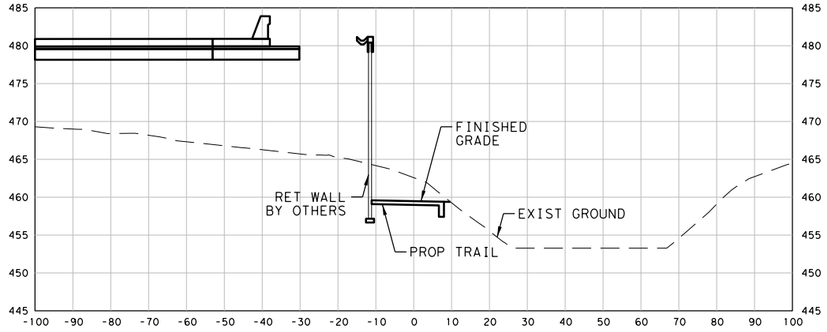

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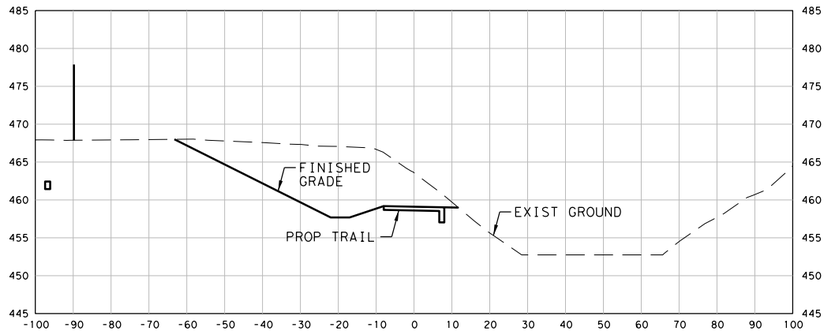

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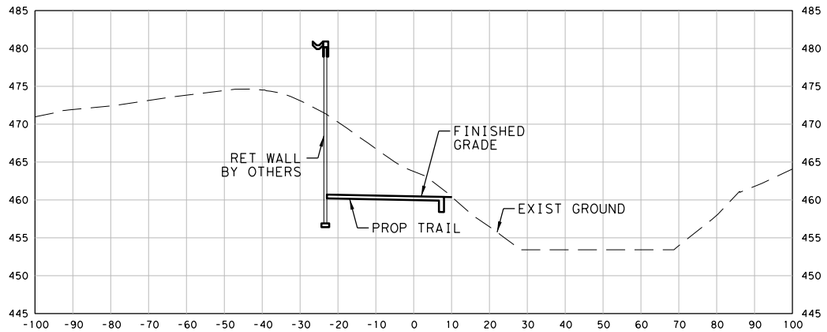

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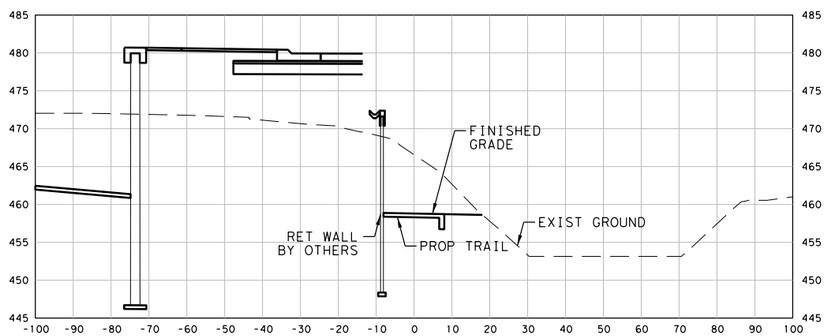
STA 11+50

STA 10+00



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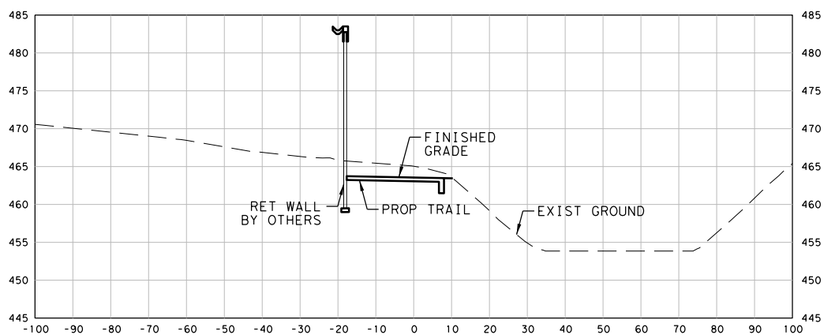

STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A CROSS SECTIONS

STA 8+00 TO STA 12+00

SCALE: H:1"=20' V:1"=10' SHEET 3 OF 11

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
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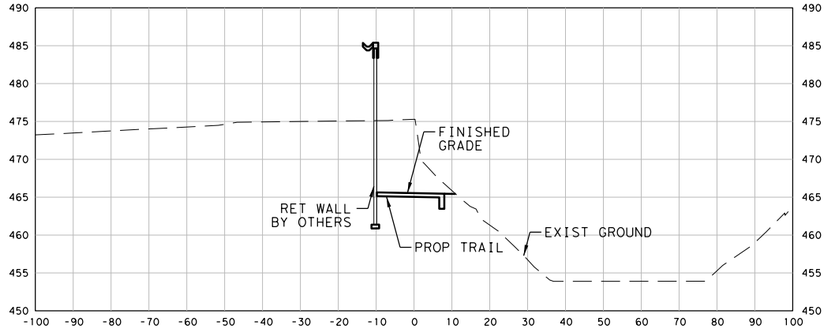
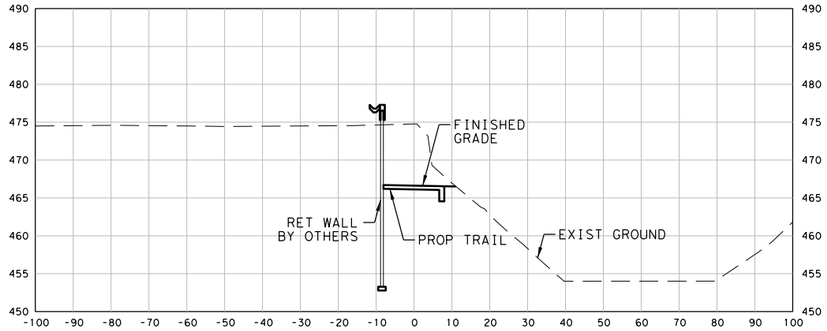
CONTRACT NO. 2024-014 SHEET NO. 107

2163-00*TAXS3.dgn

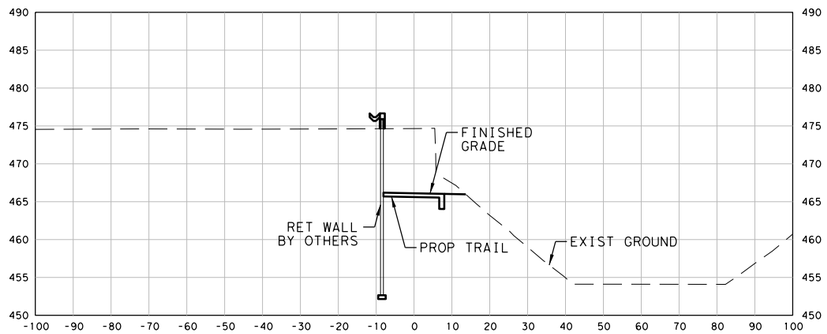
STA 12+50



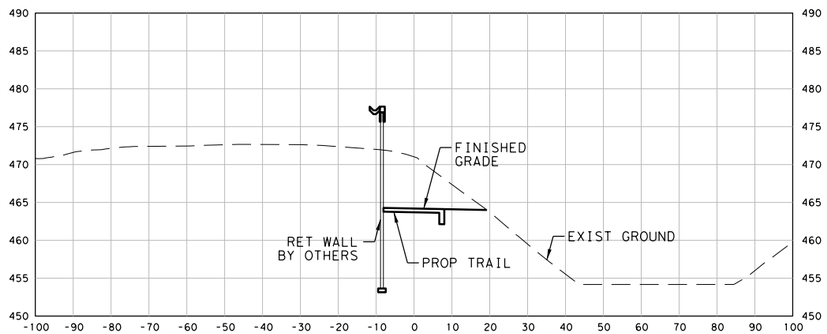
STA 13+00



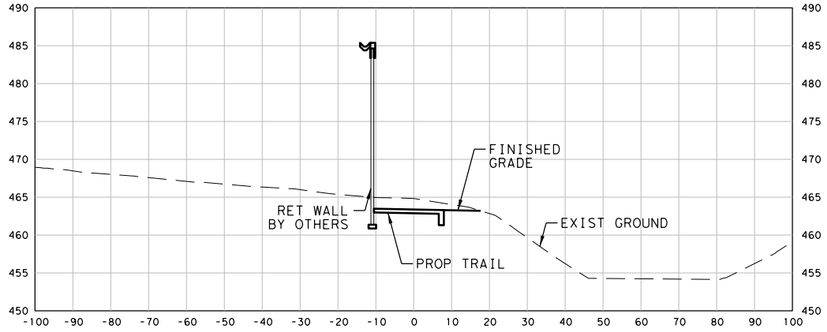
STA 13+50



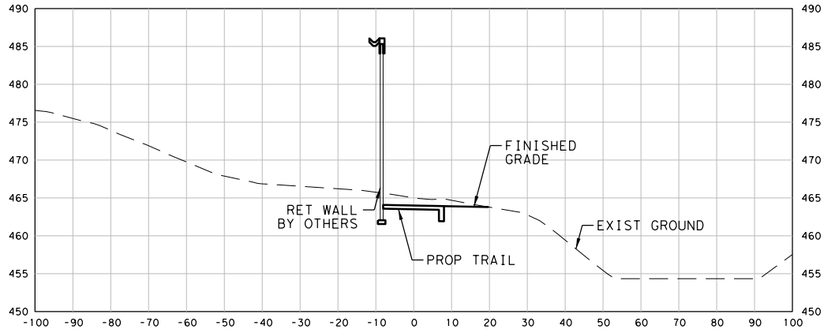
STA 14+00



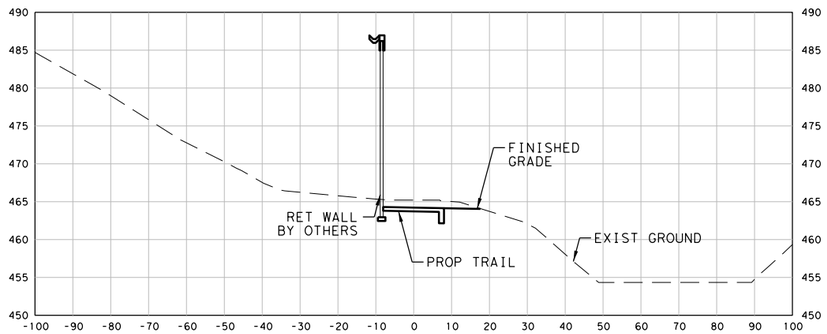
STA 14+50



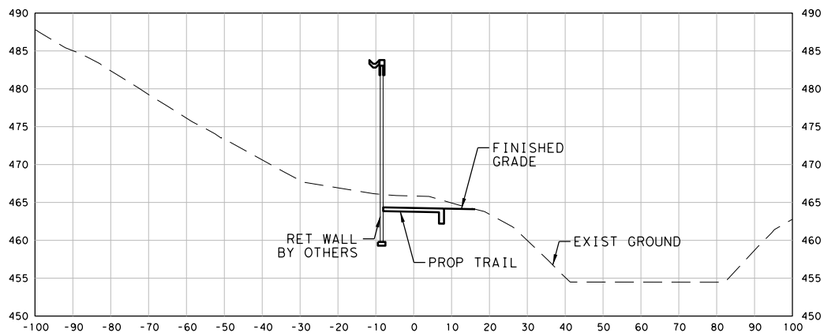
STA 15+00



STA 15+50



STA 16+00



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DATE	BY	REV	REVISION

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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A CROSS SECTIONS

STA 12+00 TO STA 16+00

SCALE: H:1"=20' V:1"=10' SHEET 4 OF 11

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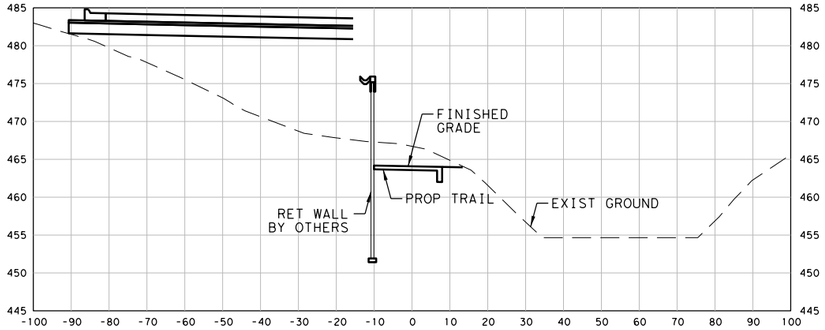
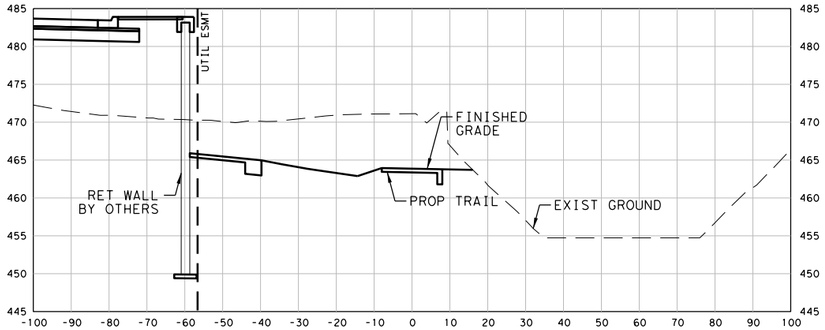
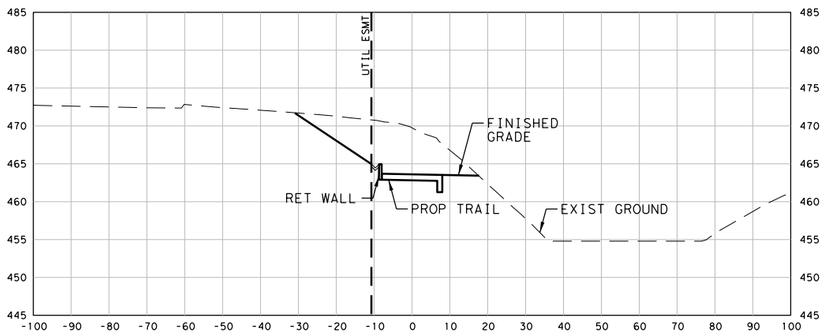
STA 16+50



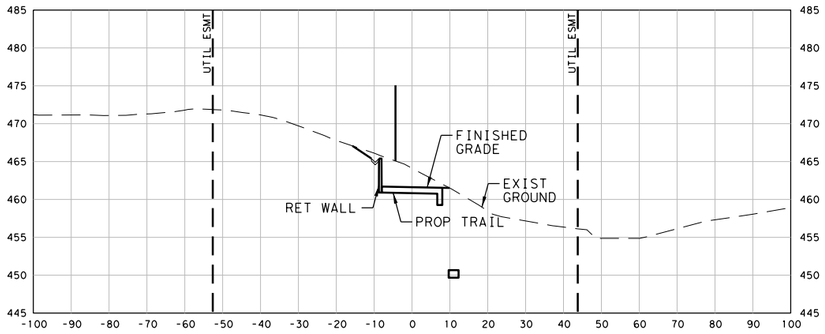
STA 17+00



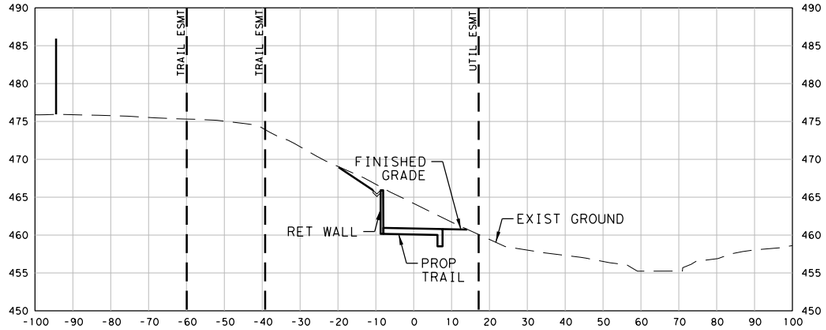
STA 17+50



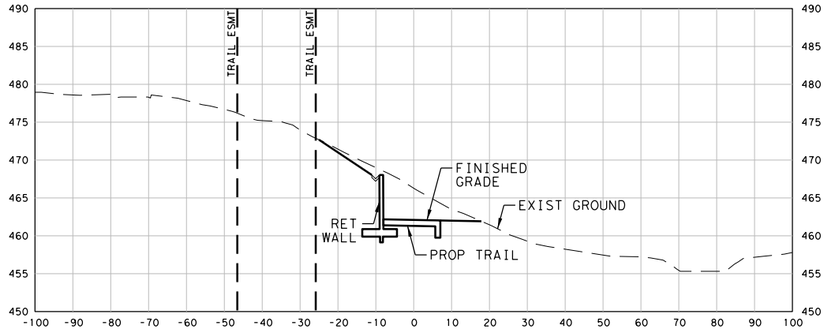
STA 18+00



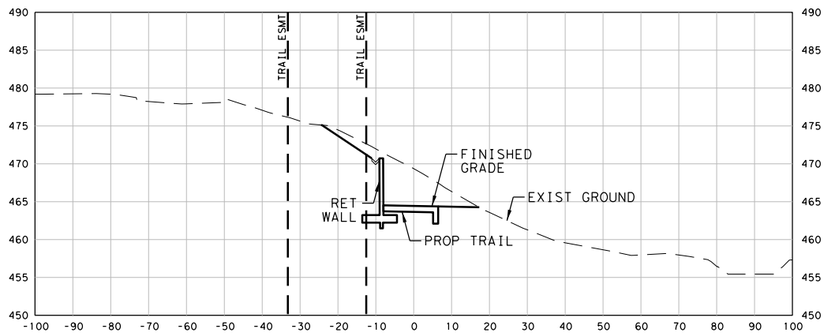
STA 18+50



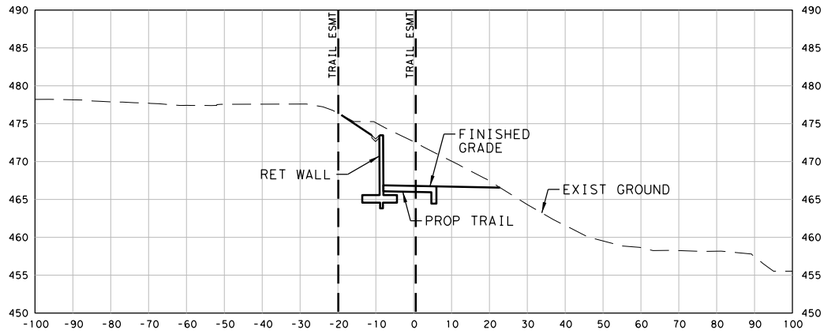
STA 19+00



STA 19+50



STA 20+00



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A CROSS SECTIONS

STA 16+00 TO STA 20+00

SCALE: H:1"=20' V:1"=10' SHEET 5 OF 11

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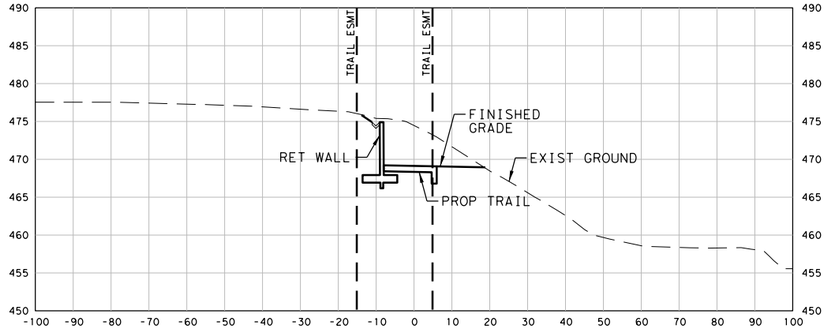
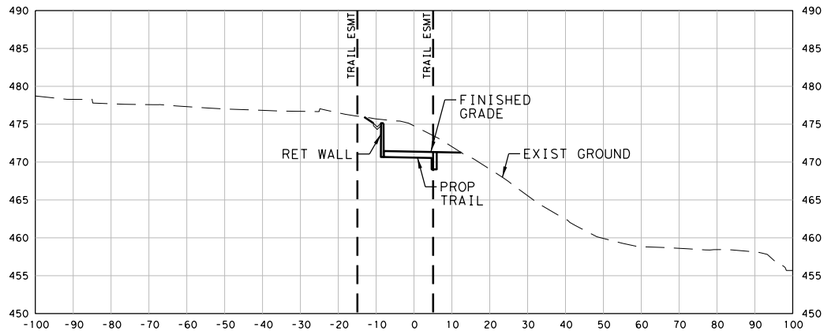
2163-00*TAXS5.dgn

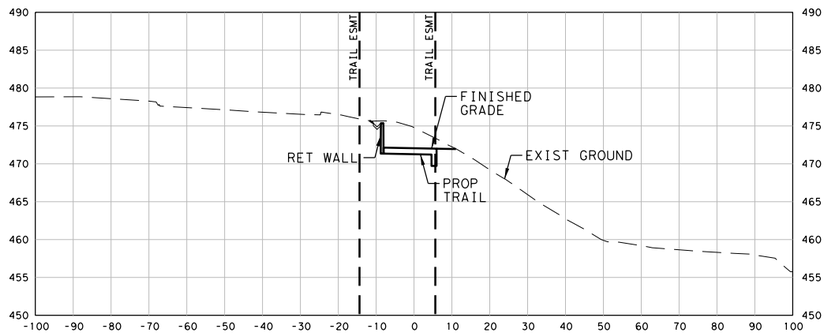
STA 20+50



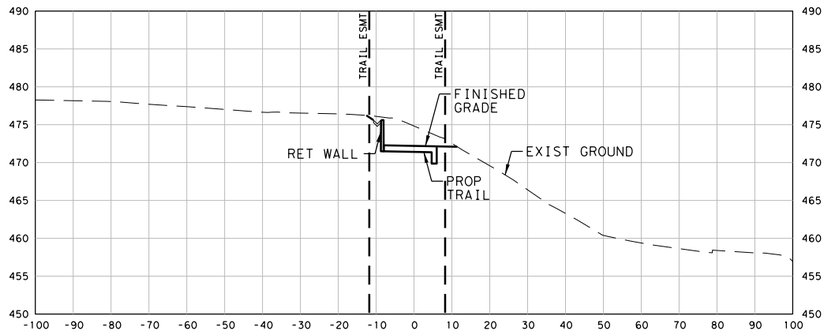
STA 21+00



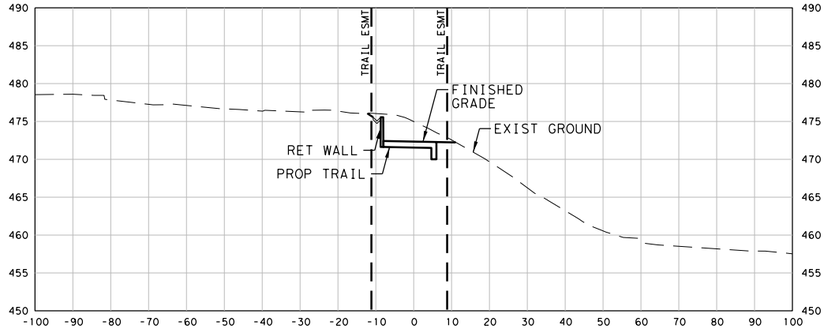
STA 21+50



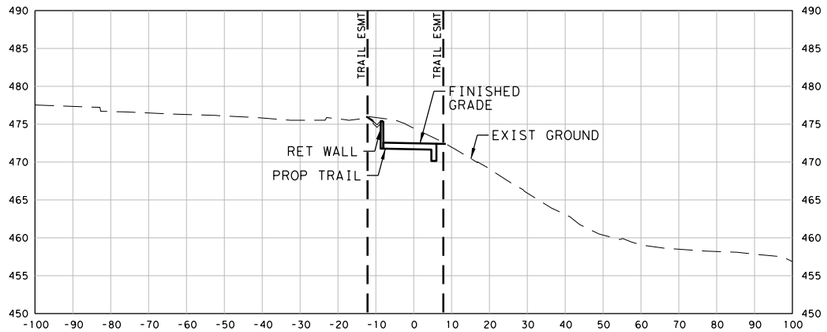
STA 22+00



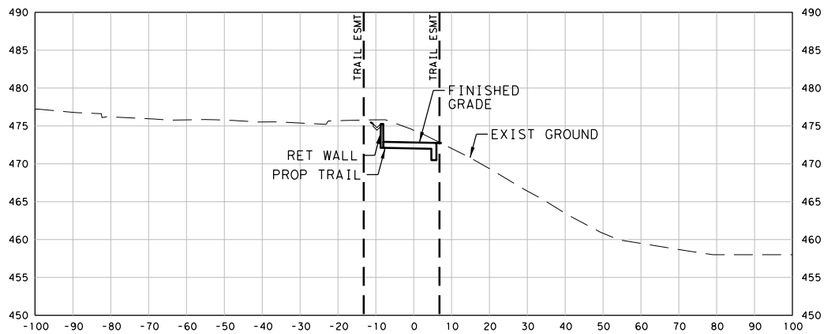
STA 22+50



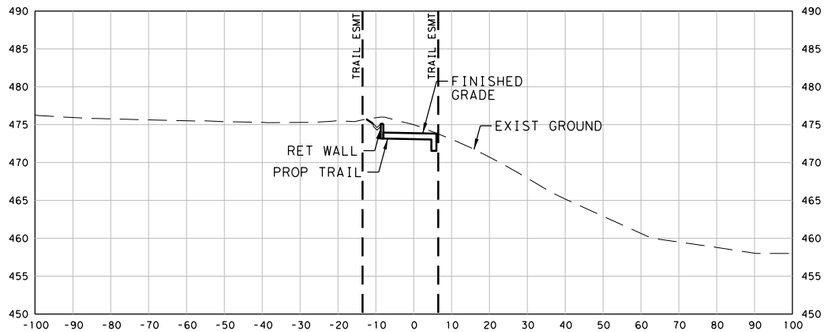
STA 23+00



STA 23+50



STA 24+00



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A CROSS SECTIONS STA 20+00 TO STA 24+00

SCALE: H: 1"=20' V: 1"=10' SHEET 6 OF 11

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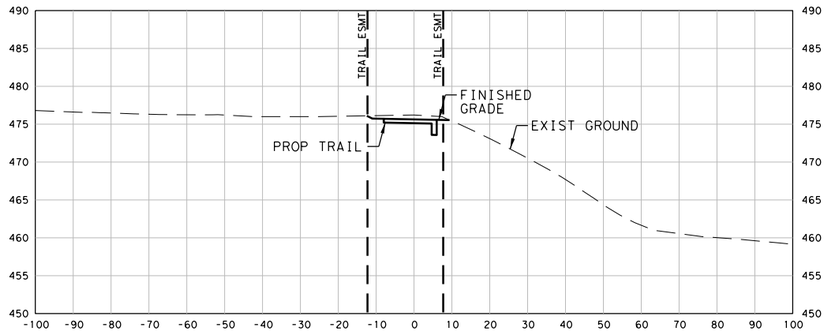
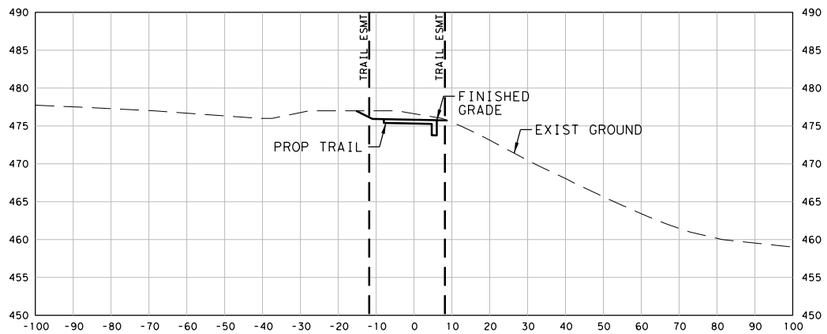
CONTRACT NO. 2024-014 SHEET NO. 110

STA 24+50

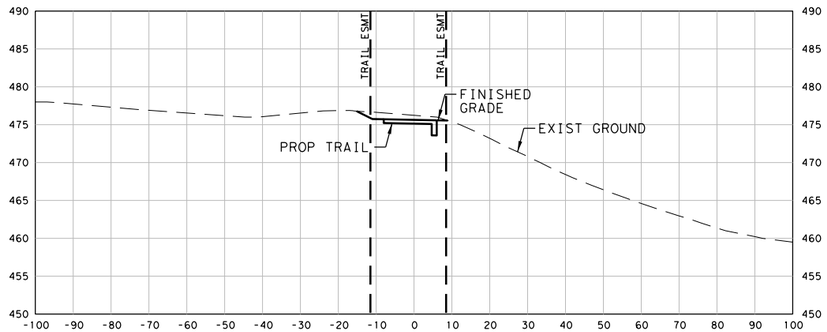
STA 25+00



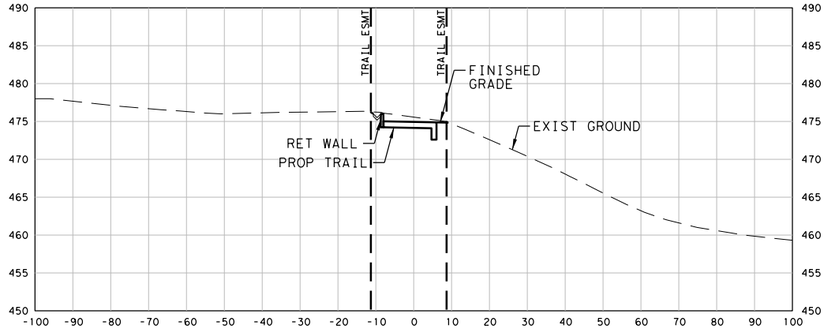
STA 25+50



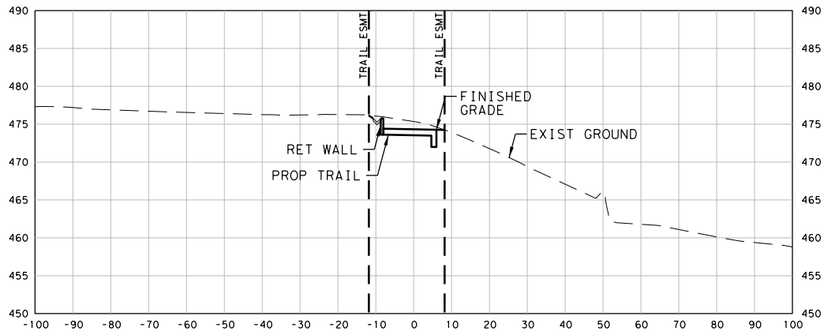
STA 26+00



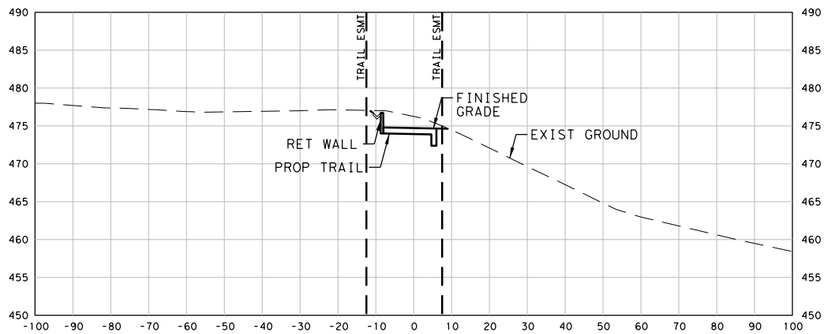
STA 26+50



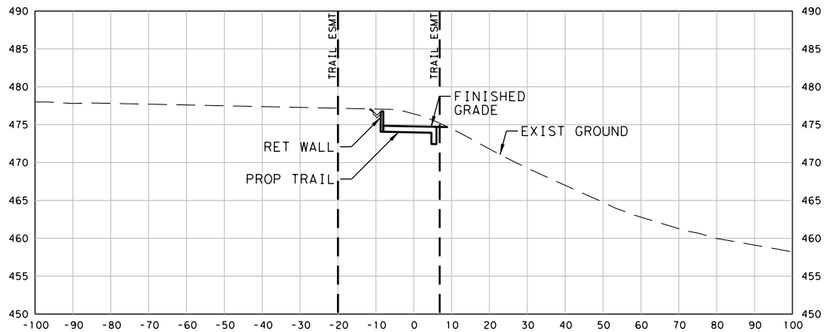
STA 27+00



STA 27+50



STA 28+00



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TRAIL A
CROSS SECTIONS
STA 24+00 TO STA 28+00

SCALE: H: 1"=20' V: 1"=10' SHEET 7 OF 11

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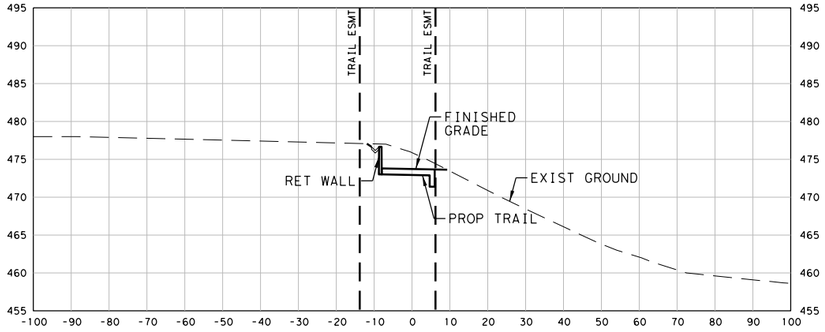
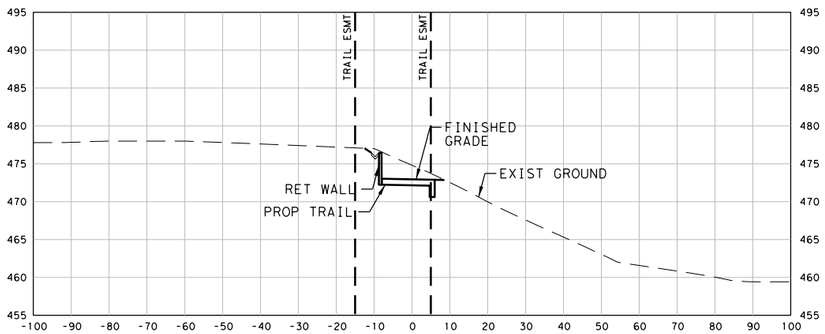
CONTRACT NO. 2024-014 SHEET NO. 111

STA 28+50

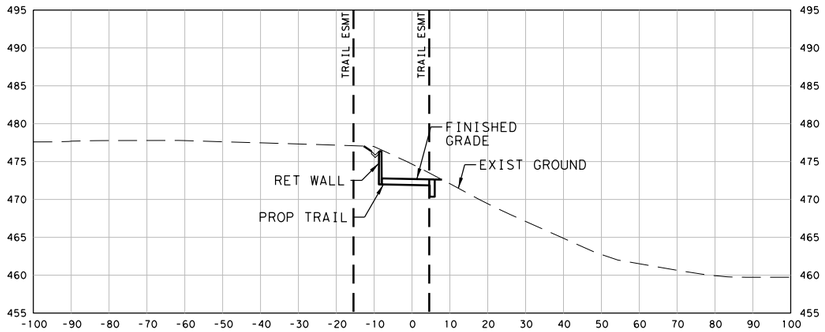


STA 29+00

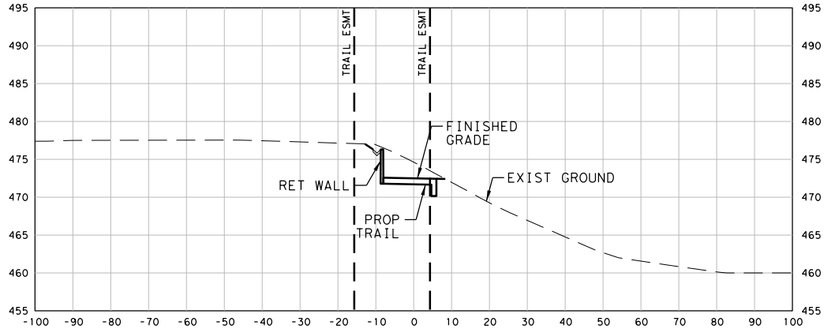
STA 29+50



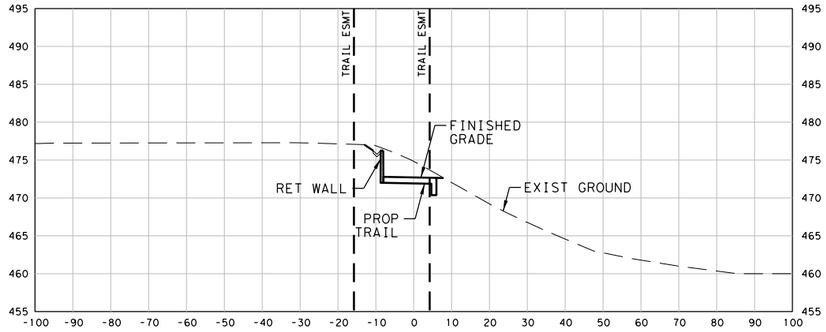
STA 30+00



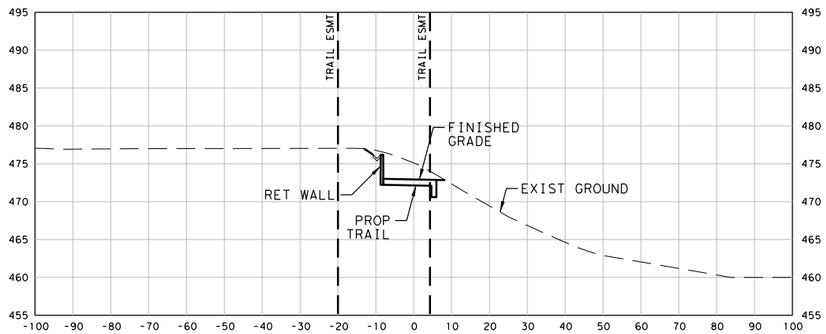
STA 30+50



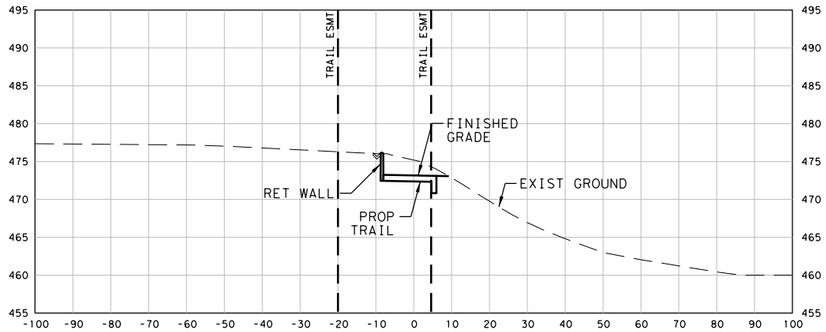
STA 31+00



STA 31+50



STA 32+00



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A CROSS SECTIONS

STA 28+00 TO STA 32+00

SCALE: H: 1"=20' V: 1"=10' SHEET 8 OF 11

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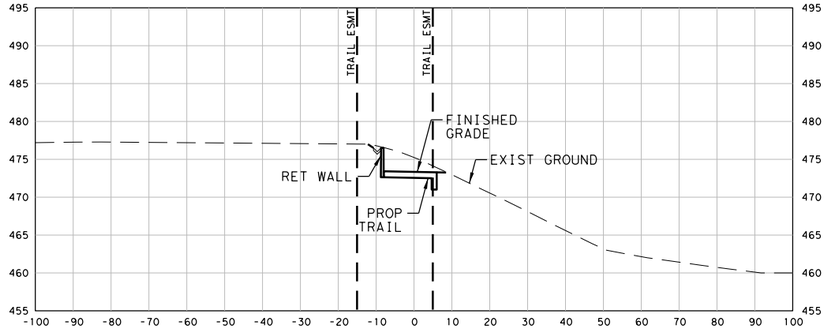
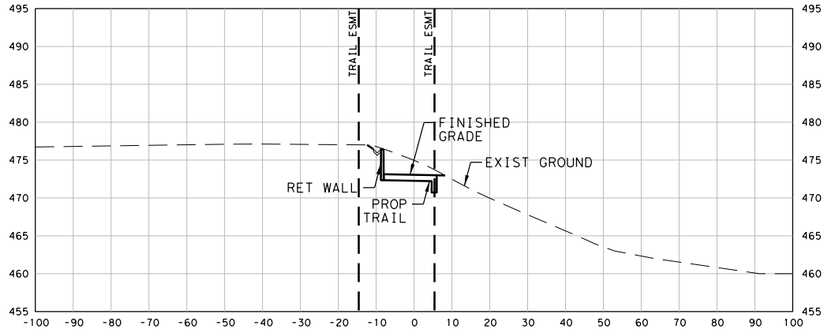
CONTRACT NO. 2024-014 SHEET NO. 112

2163-00*TAXS8.dgn

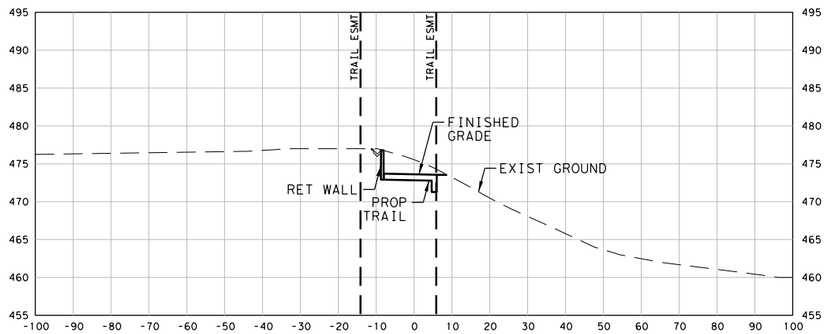
STA 32+50



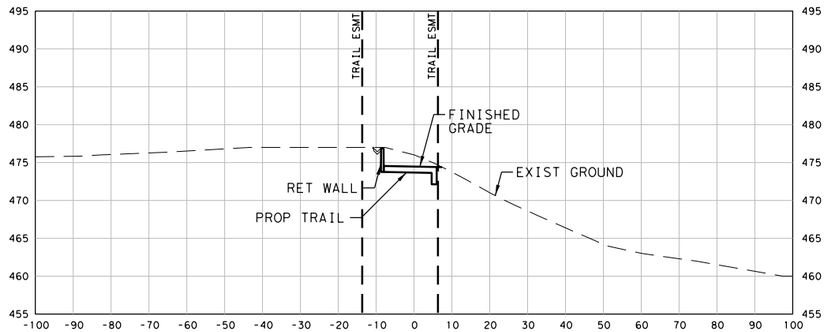
STA 33+00



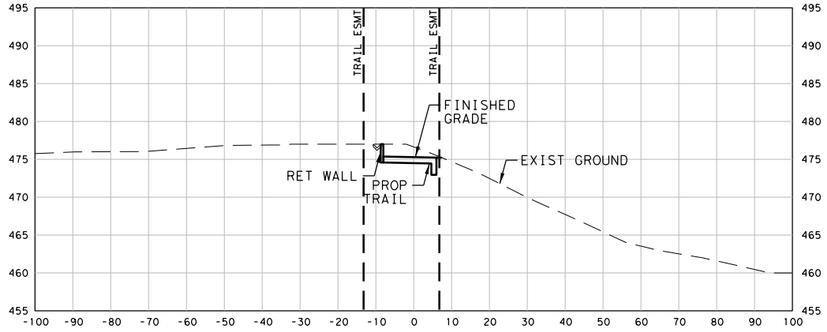
STA 33+50



STA 34+00

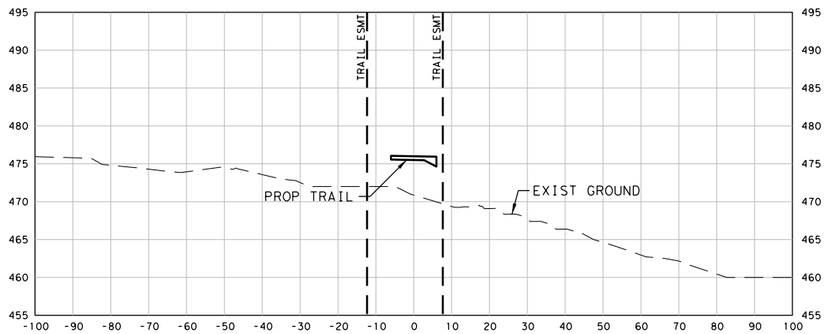


STA 34+50

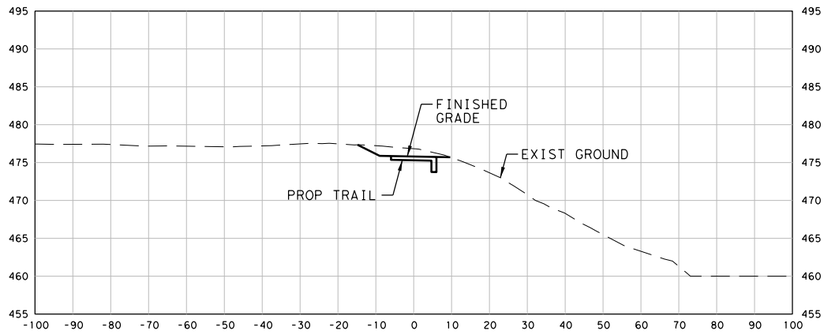


STA 35+00

STA 35+50



STA 36+00



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TRAIL A CROSS SECTIONS

STA 32+00 TO STA 36+00

SCALE: H:1"=20' V:1"=10' SHEET 9 OF 11

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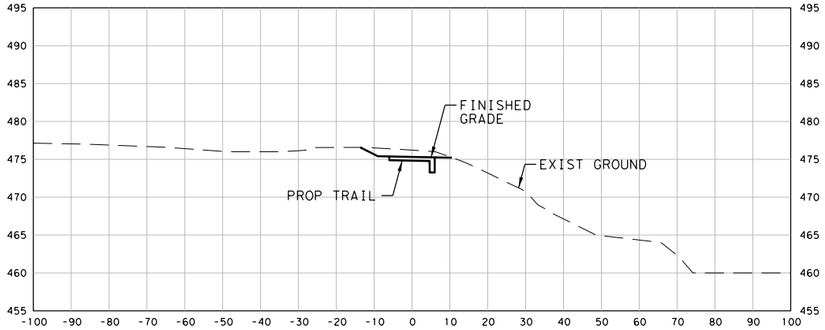
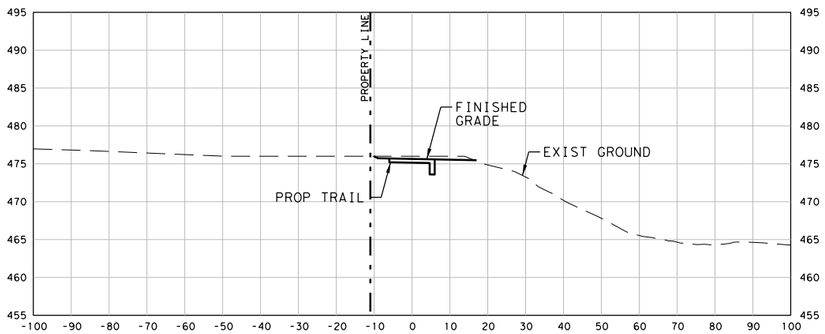
STA 36+50

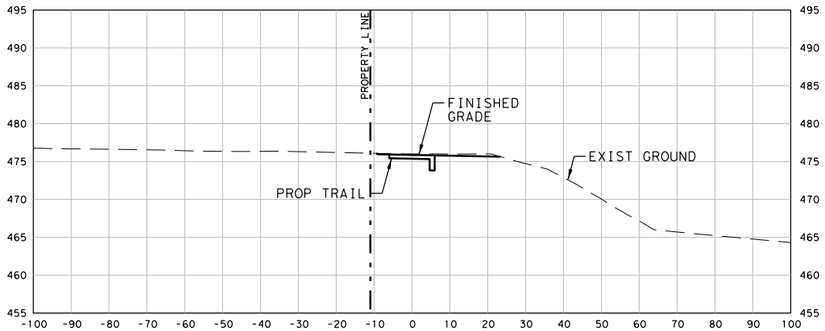


STA 37+00

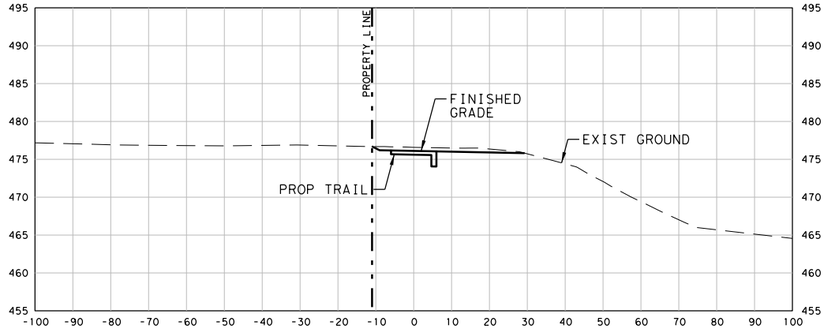
STA 37+50



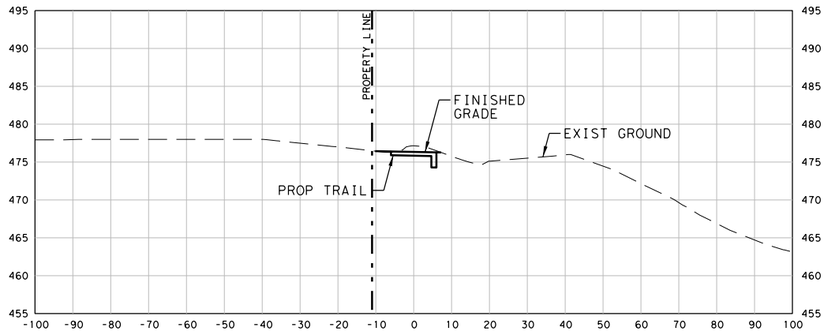
STA 38+00



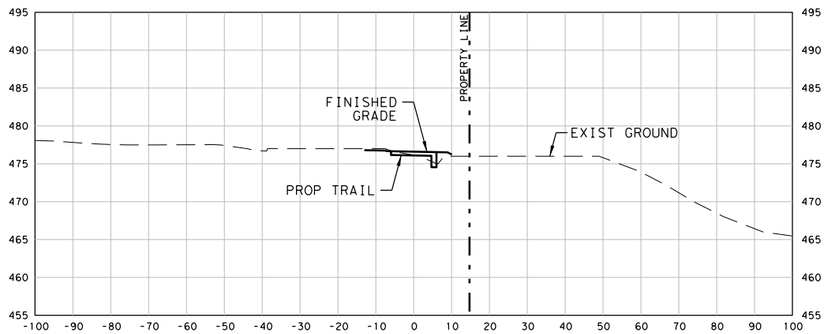
STA 38+50



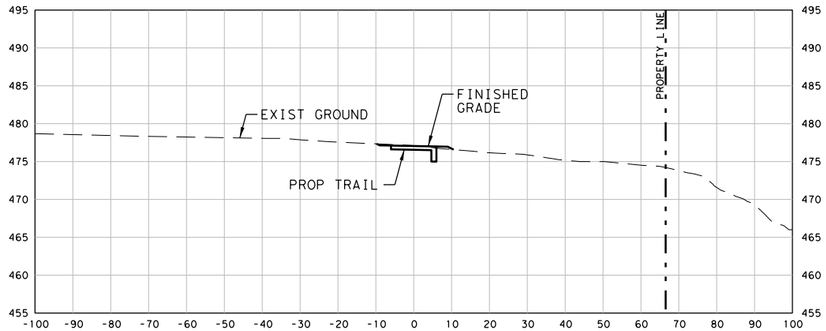
STA 39+00



STA 39+50



STA 40+00



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
CROSS SECTIONS
STA 36+00 TO STA 40+00

SCALE: H: 1"=20' V: 1"=10' SHEET 10 OF 11

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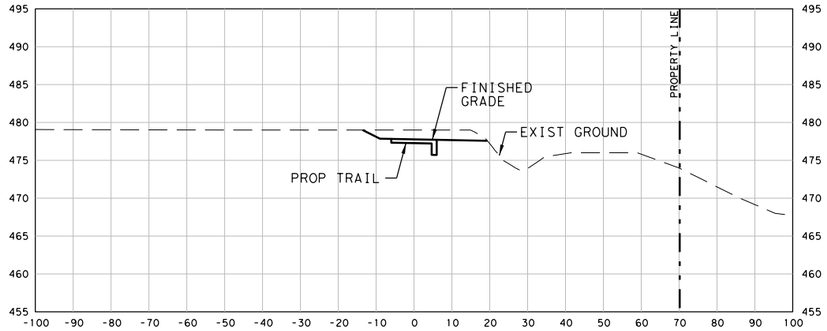
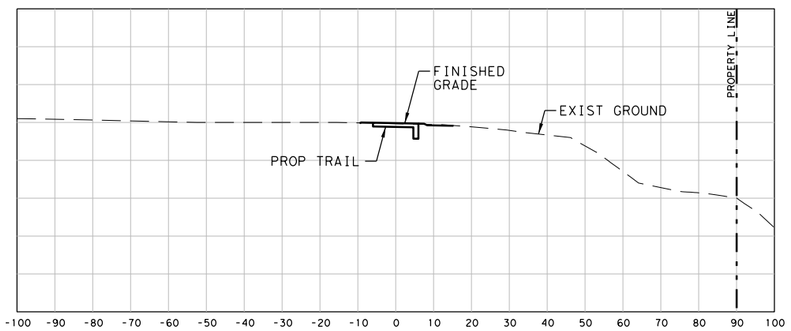
2163-00*TAXS10.dgn

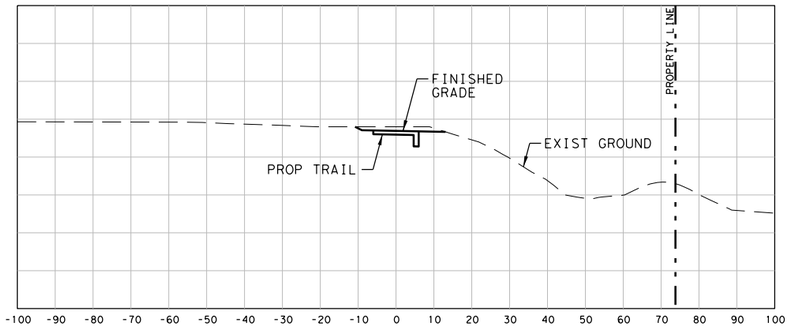
STA 40+50



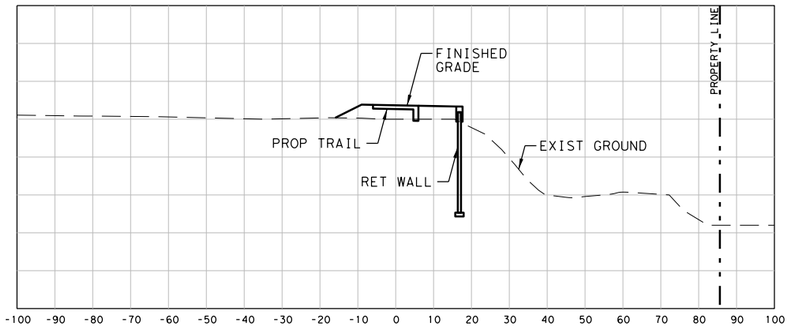
STA 42+50



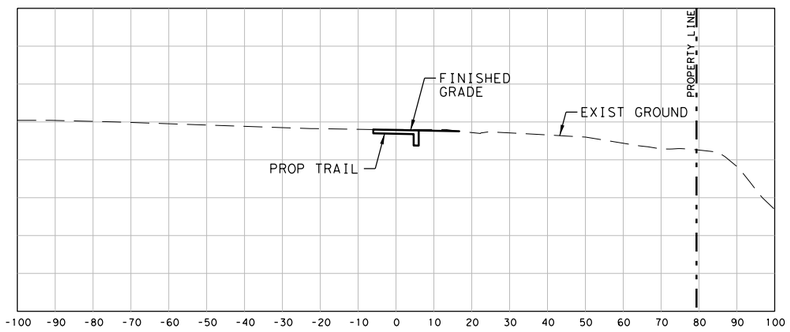
STA 41+00



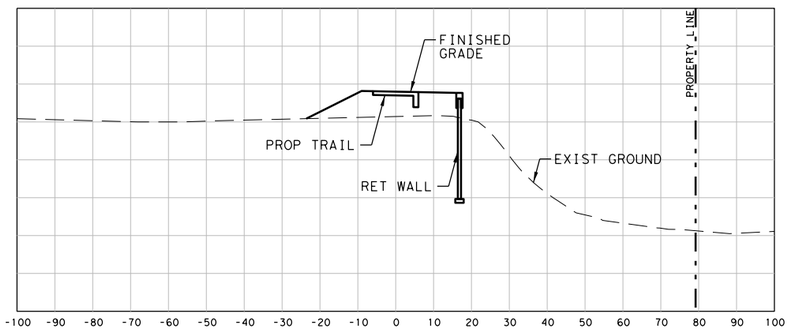
STA 43+00



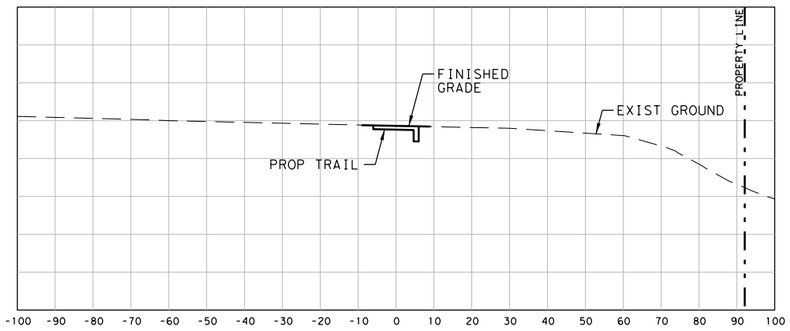
STA 41+50



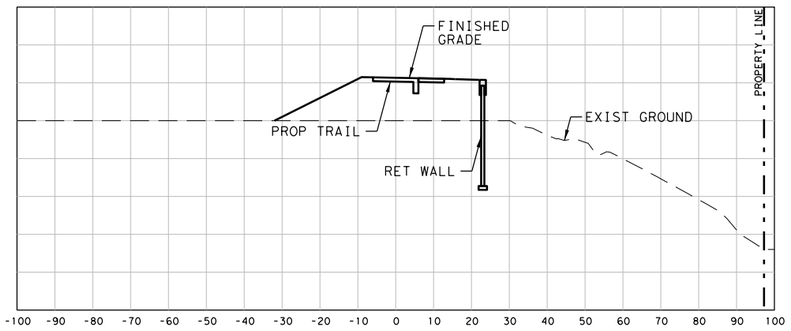
STA 43+50



STA 42+00



STA 44+00



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL A
CROSS SECTIONS
STA 40+00 TO STA 44+00

SCALE: H: 1"=20' V: 1"=10' SHEET 11 OF 11

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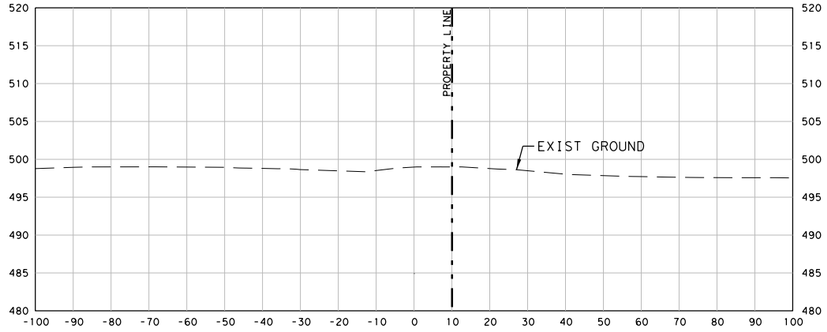
CONTRACT NO. 2024-014 SHEET NO. 115

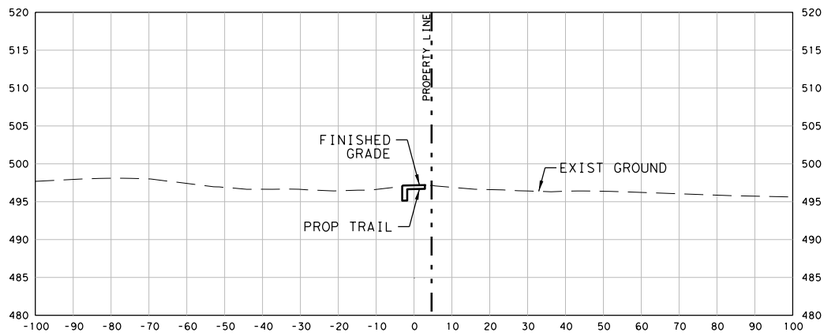
2163-00*TAXS11.dgn

STA 1+65.91

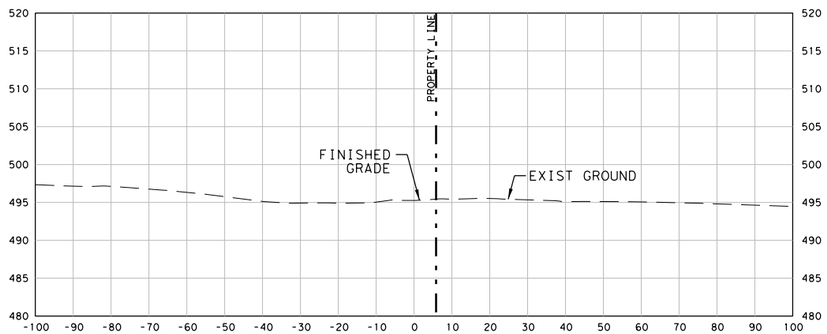


STA 2+00

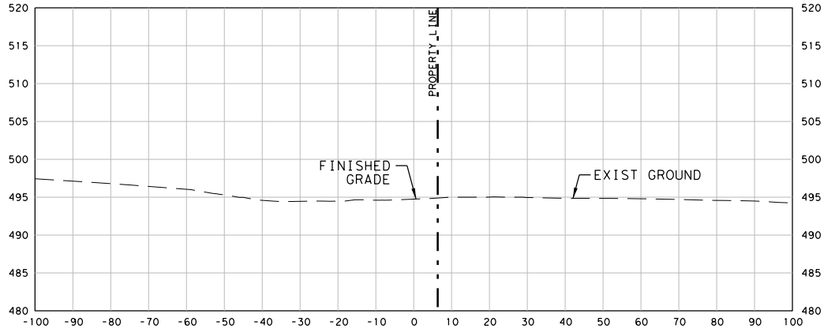
STA 2+50



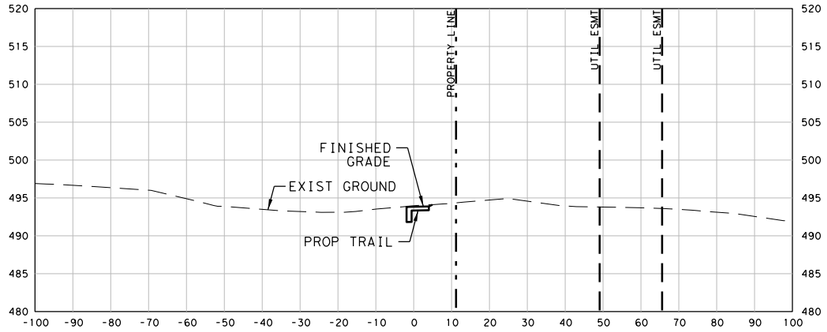
STA 3+00



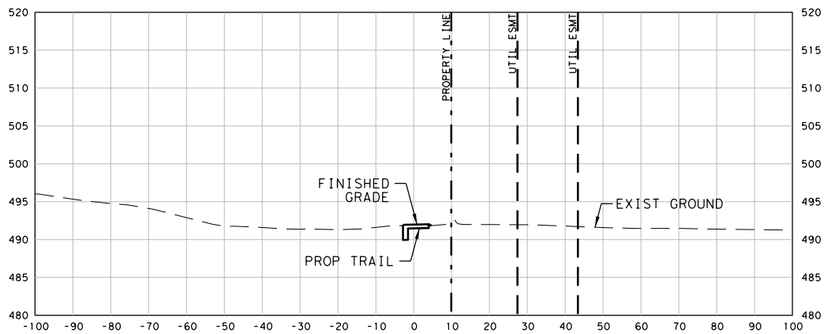
STA 3+12.51



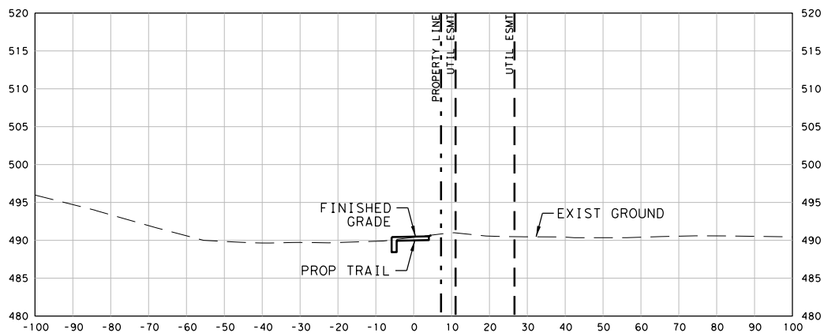
STA 3+50



STA 4+00



STA 4+50



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
CROSS SECTIONS
BEGIN TO STA 4+50

SCALE: H:1"=20' V:1"=10' SHEET 1 OF 5

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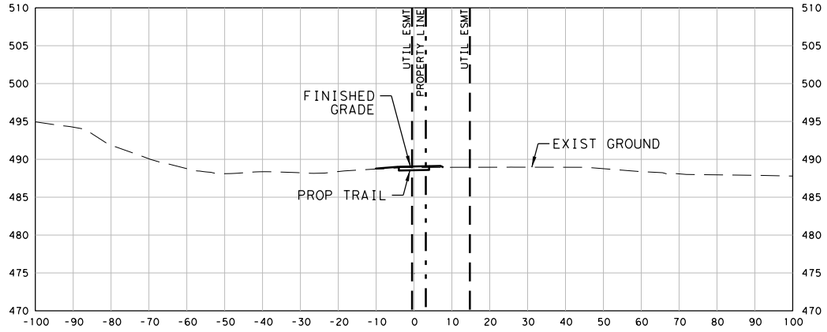
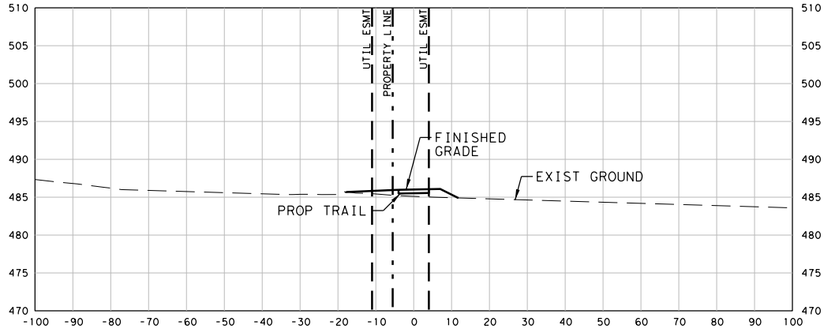
2163-00*TBXS1.dgn

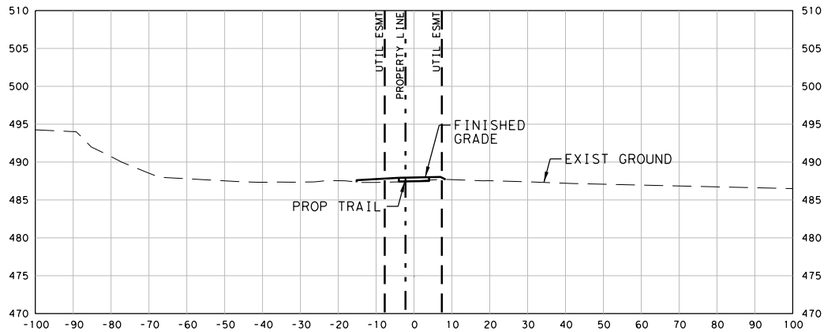
STA 5+00



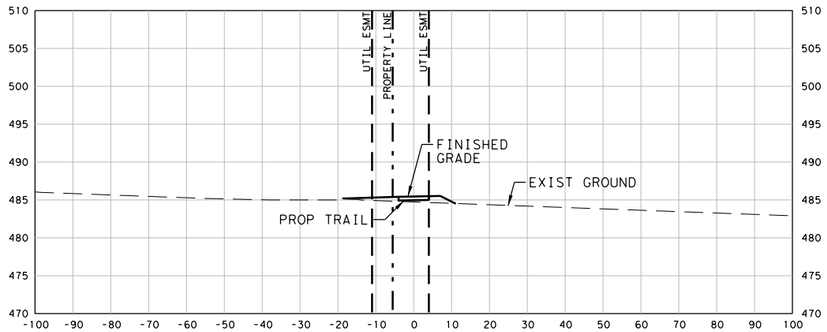
STA 7+00



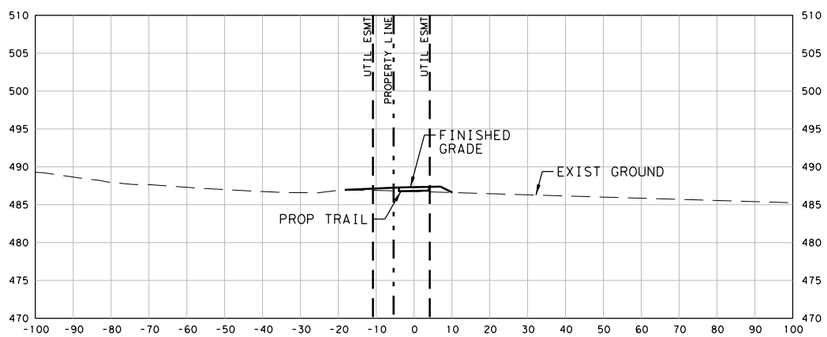
STA 5+50



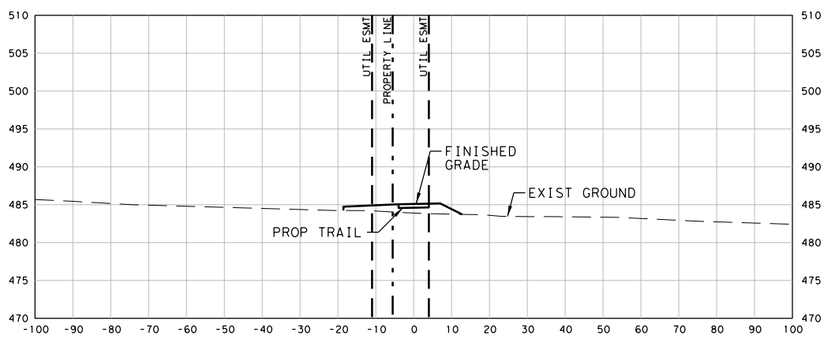
STA 7+50



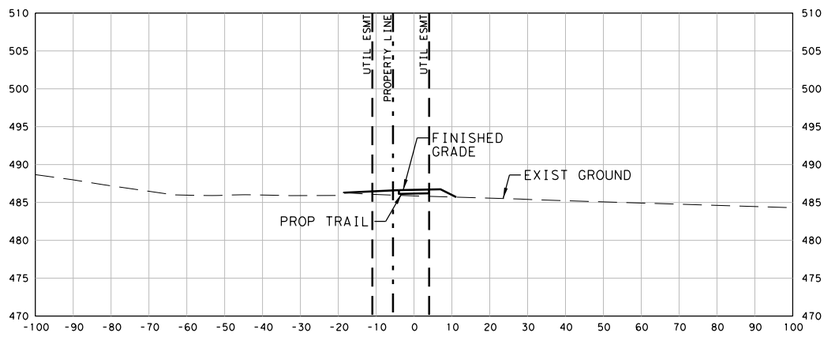
STA 6+00



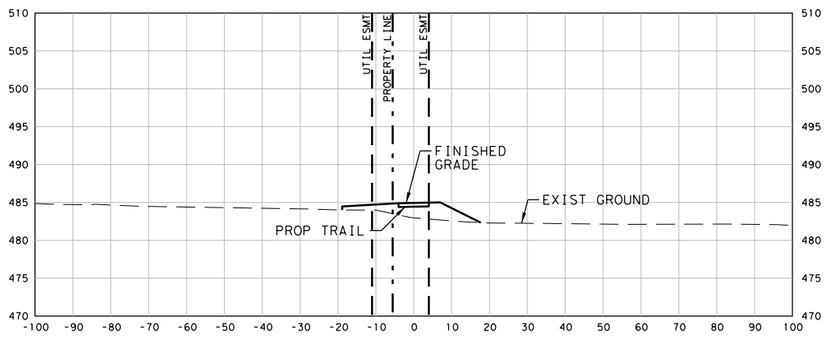
STA 8+00



STA 6+50



STA 8+50



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
CROSS SECTIONS
STA 4+50 TO STA 8+50

SCALE: H:1"=20' V:1"=10' SHEET 2 OF 5

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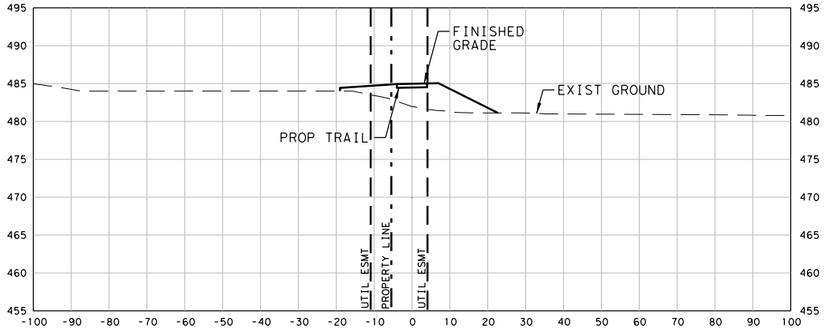
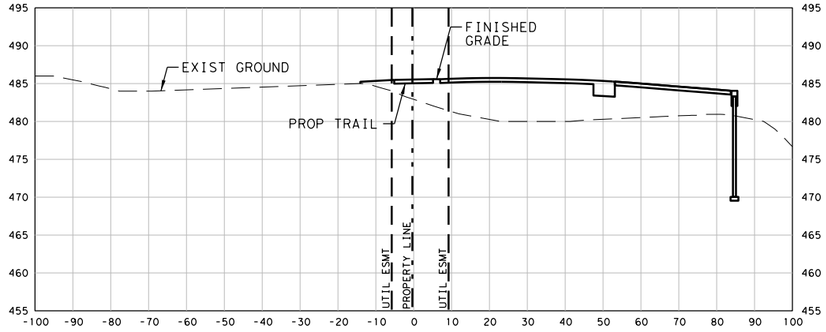
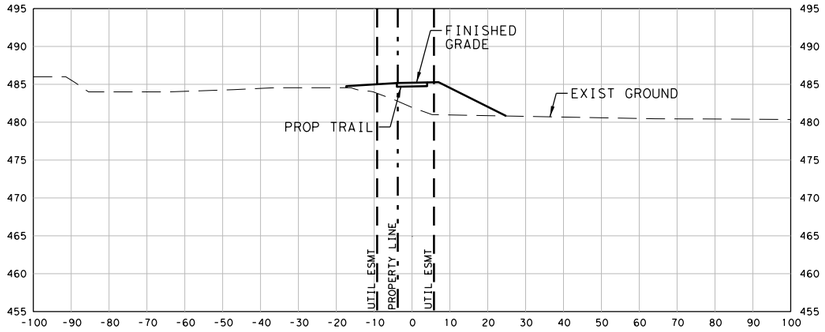
STA 9+00



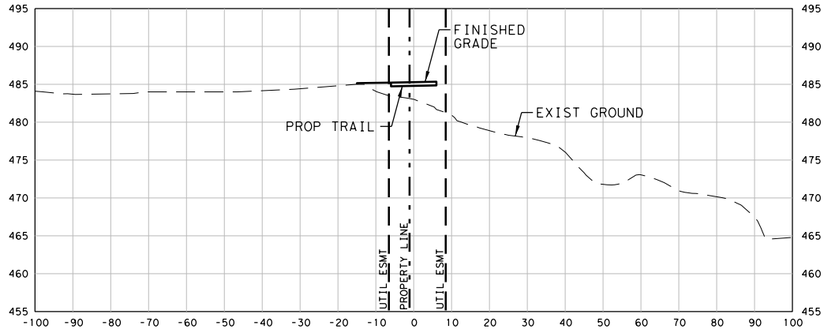
STA 11+00



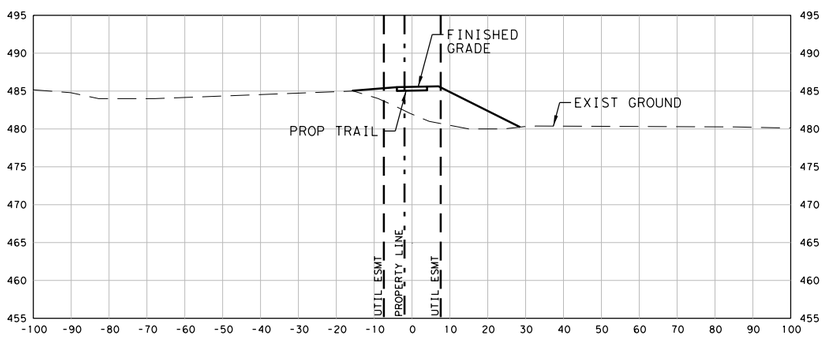
STA 9+50



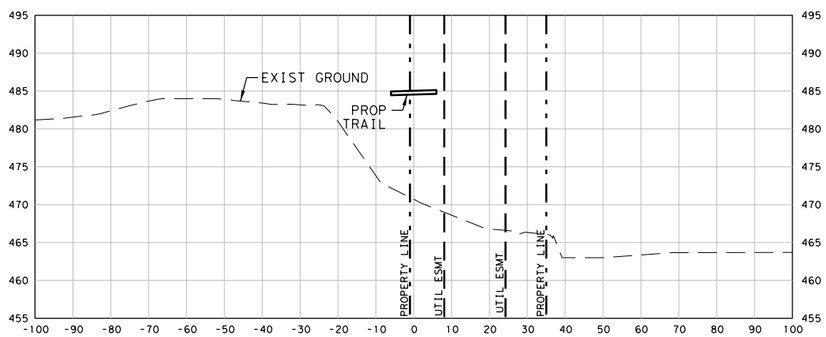
STA 11+50



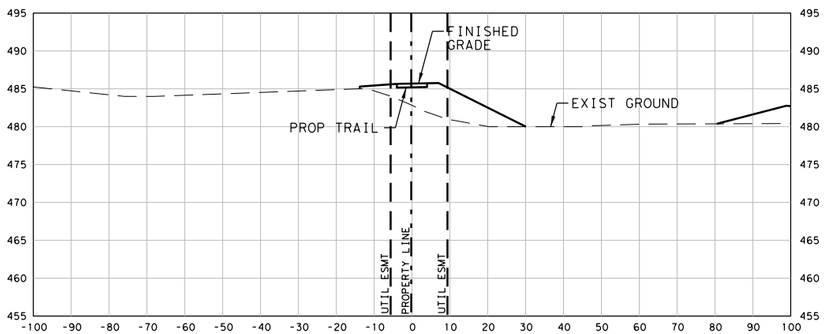
STA 10+00



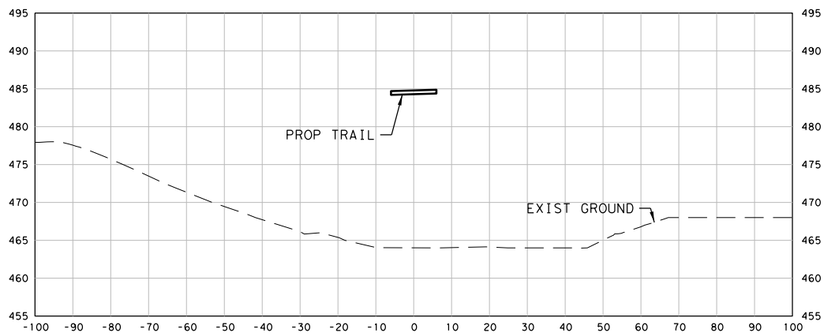
STA 12+00



STA 10+50



STA 12+50



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MESQUITE HERITAGE TRAIL, PHASE II

TRAIL B
CROSS SECTIONS
STA 8+50 TO STA 12+50

SCALE: H: 1"=20' V: 1"=10' SHEET 3 OF 5

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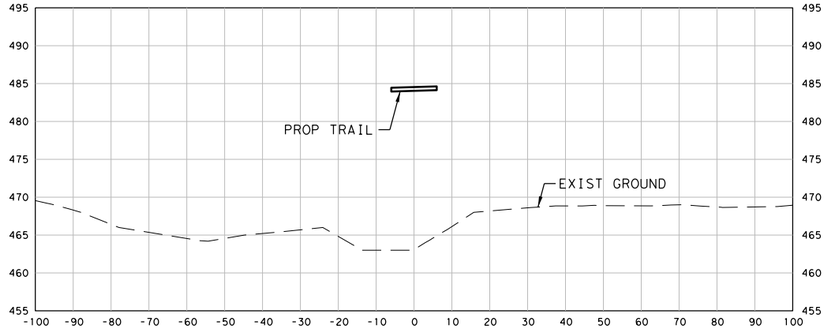
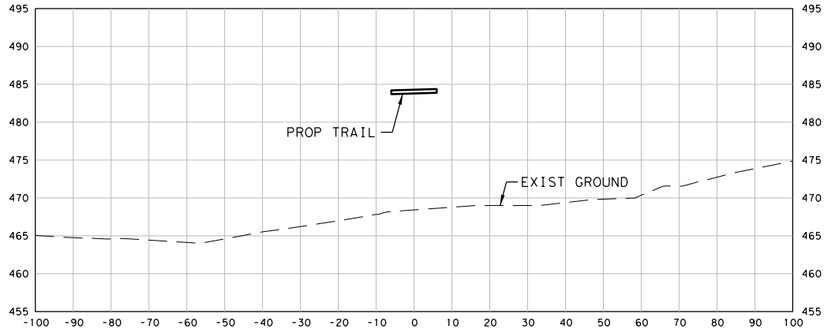
2163-00*TBXS3.dgn

STA 13+00

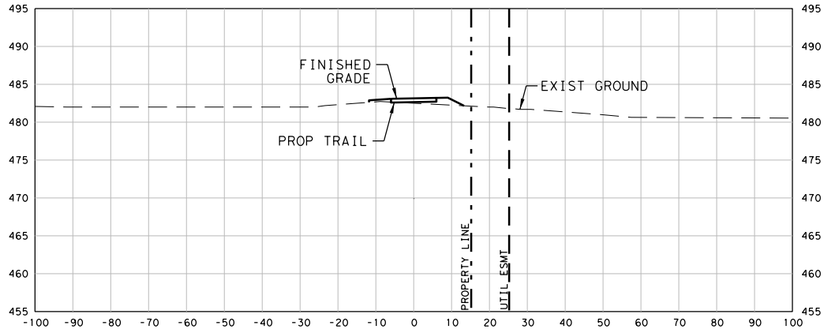


STA 15+00

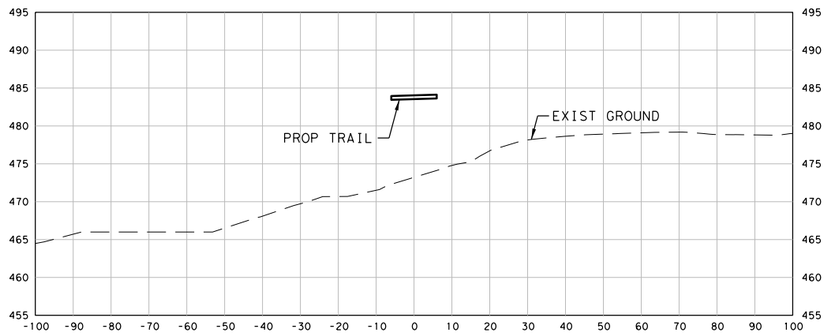
STA 13+50



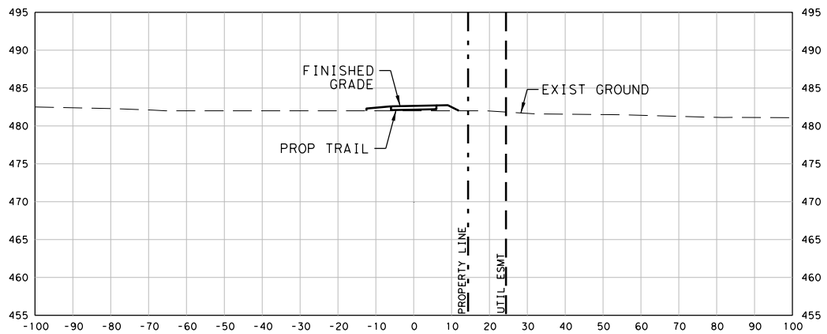
STA 15+50



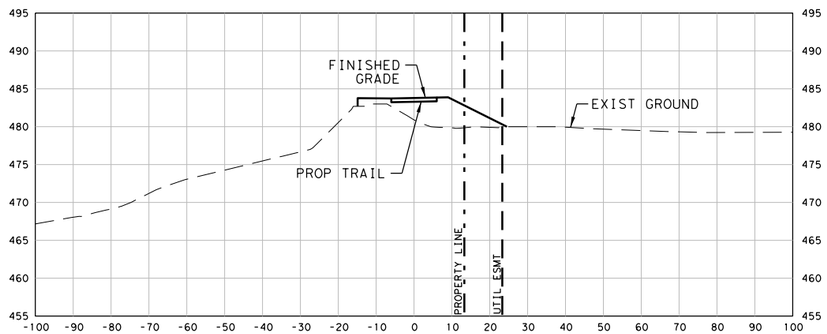
STA 14+00



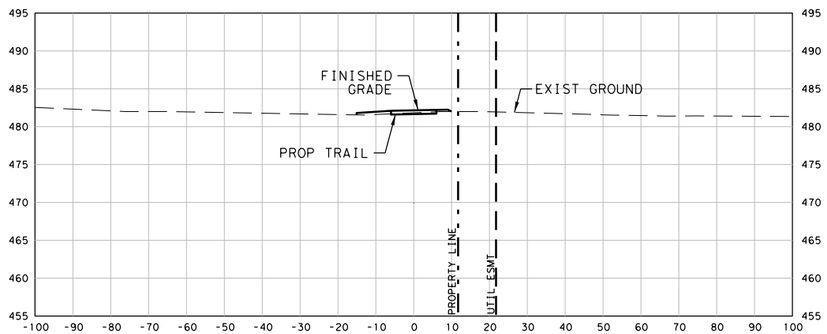
STA 16+00



STA 14+50



STA 16+50



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TRAIL B
CROSS SECTIONS
STA 12+50 TO STA 16+50

SCALE: H: 1"=20' V: 1"=10' SHEET 4 OF 5

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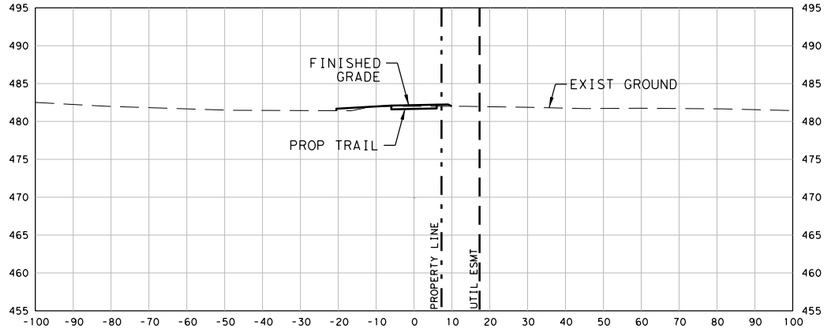
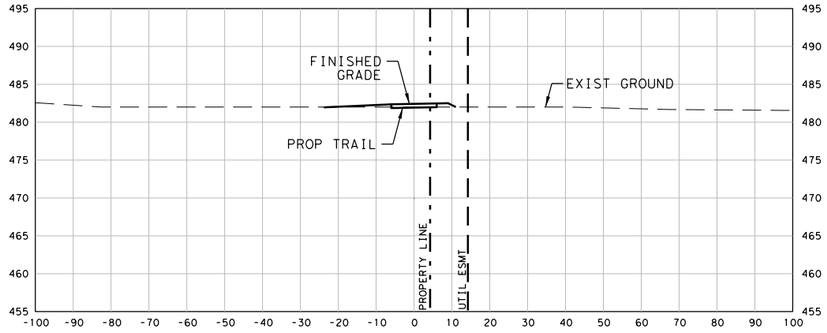
CONTRACT NO. 2024-014 SHEET NO. 119

2163-00*TBXS4.dgn

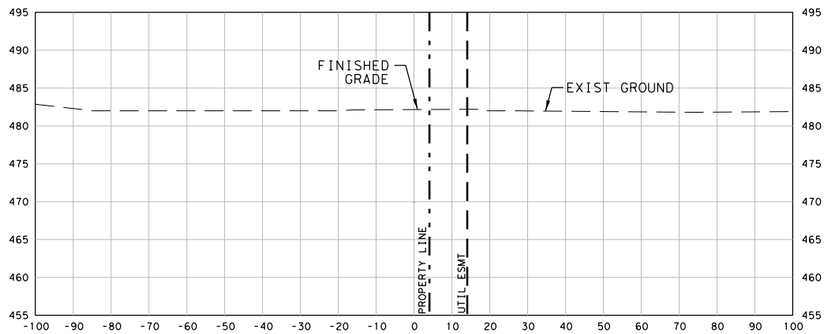
STA 17+00



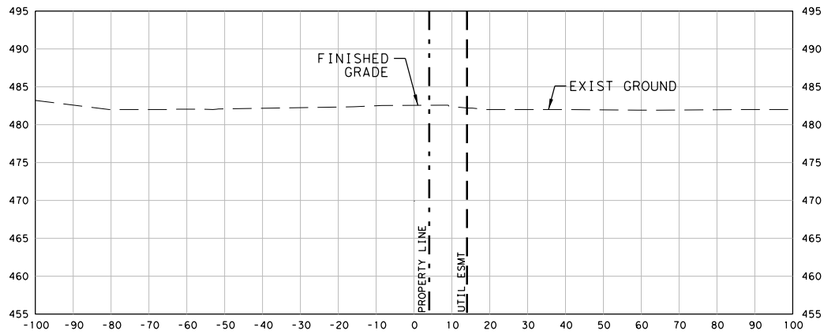
STA 17+50



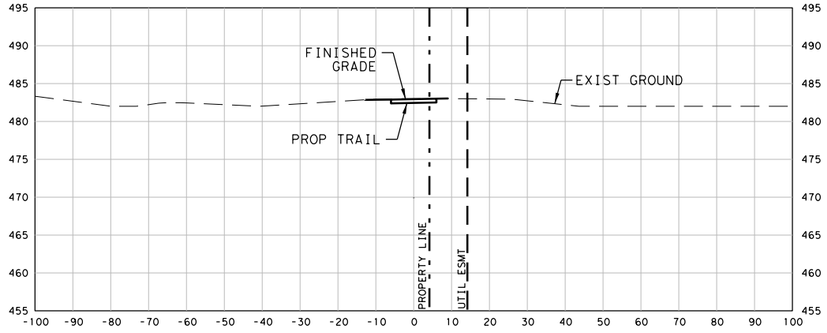
STA 18+00



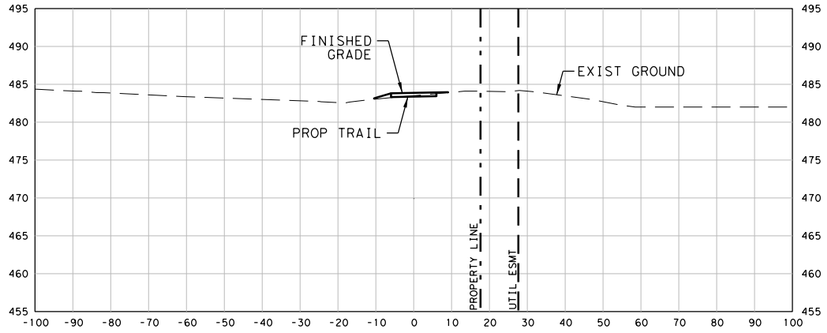
STA 18+22.15



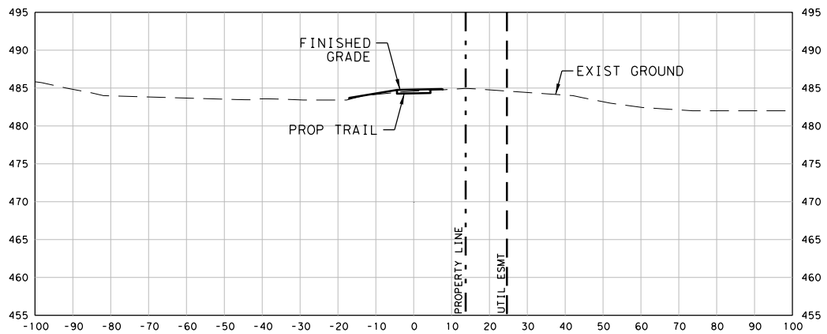
STA 18+50



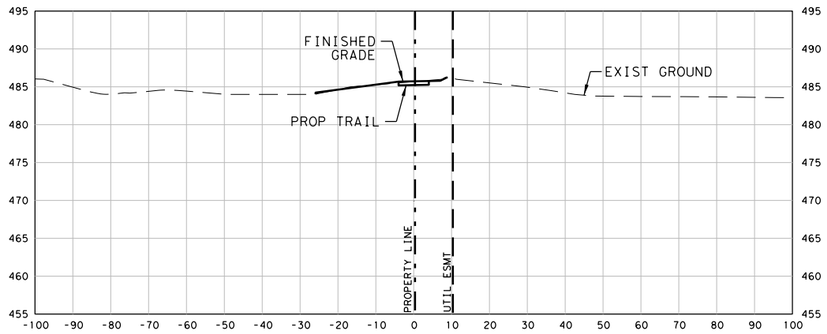
STA 19+00



STA 19+50



STA 20+00



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TRAIL B
CROSS SECTIONS
STA 16+50 TO STA 20+00

SCALE: H:1"=20' V:1"=10' SHEET 5 OF 5

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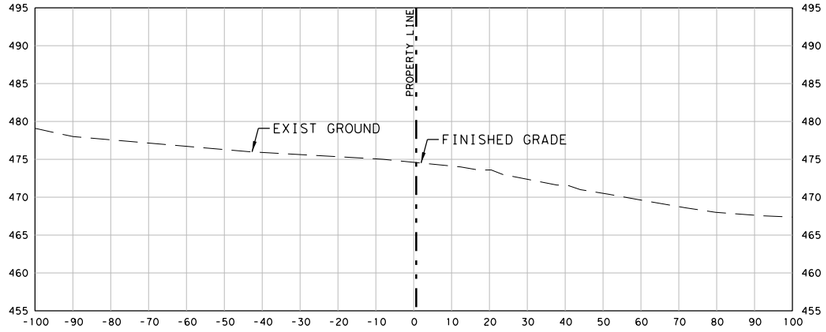
CONTRACT NO. 2024-014 SHEET NO. 120

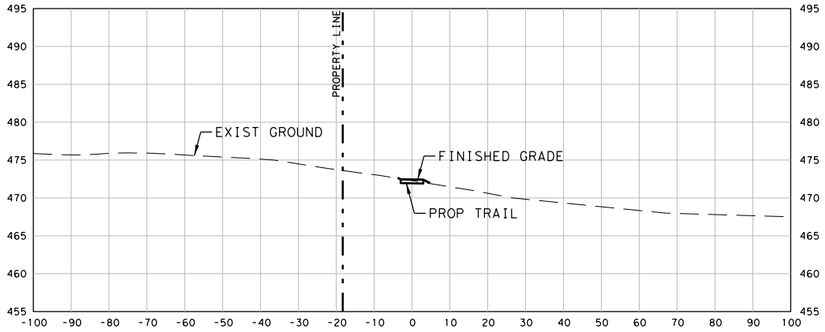
2163-00*TBXS5.dgn

STA 10+00

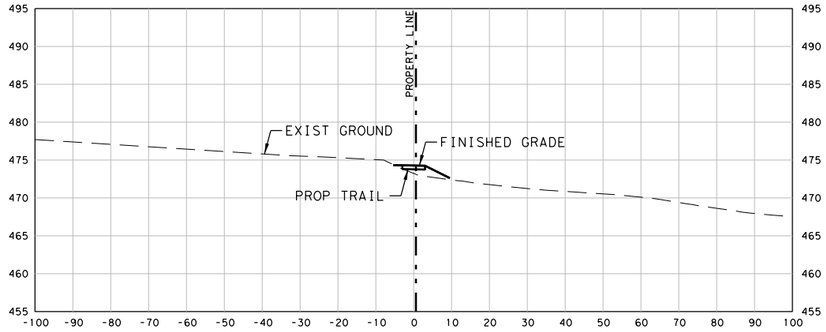
STA 12+00



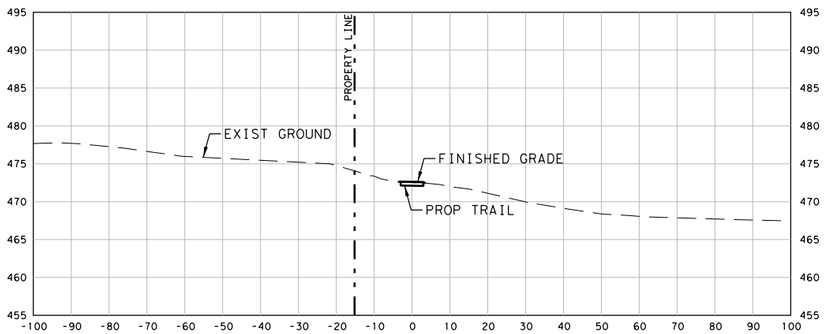
STA 10+50



STA 12+50



STA 11+00



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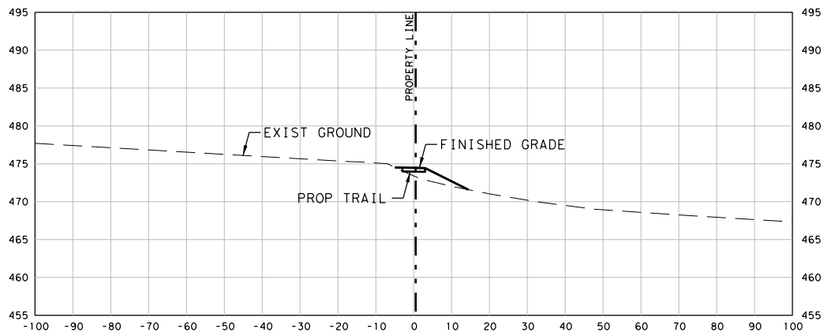

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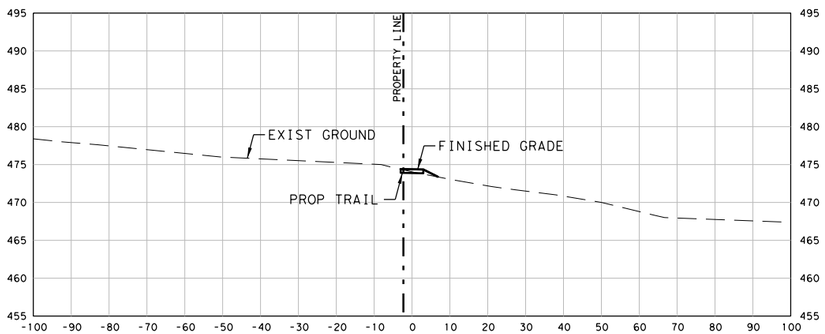

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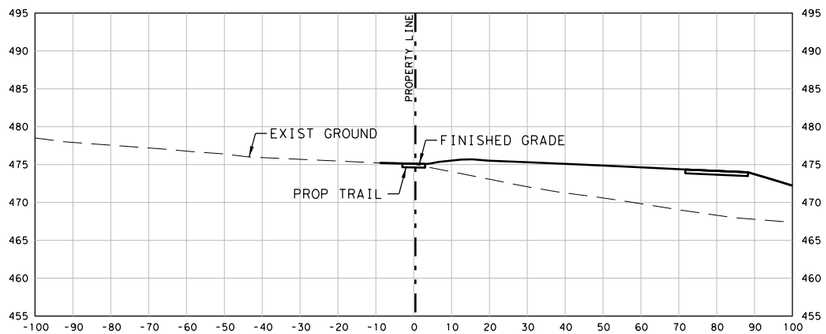


STATE OF TEXAS
BRENNAN P FANNING
149259
LICENSED
PROFESSIONAL ENGINEER

11/22/2023

DATE	BY	REV	REVISION

MESQUITE
TEXAS
Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

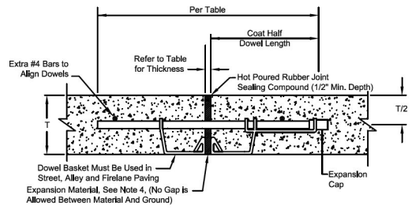
TRAIL C
CROSS SECTIONS
STA 10+00 TO STA 13+50

SCALE: H: 1"=20' V: 1"=10' SHEET 1 OF 1

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 121

2163-00*TCXS1.dgn

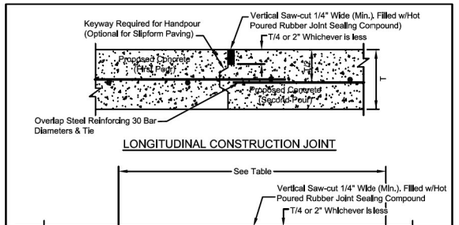


EXPANSION JOINT

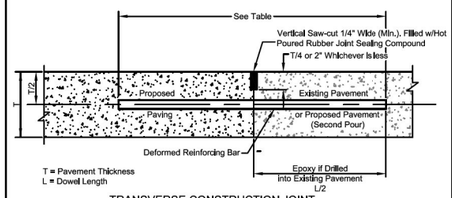
Smooth Dowel Bars				
Commercial Driveway, Street, Alley & Firelane Paving Thickness (In.)	**Diameter (In.)**	**Length (In.)**	**Spacing (In.)**	**Expansion Joint Thickness**
6	#8 (1 In.)	30	18	3/4"
> 6 and ≤ 12	#11 (1.4 In.)	30	12	3/4"
> 12	Determined by City Engineer			
Sidewalk, Residential Driveway and Trail Thickness (In.)	**Diameter (In.)**	**Length (In.)**	**Spacing (In.)**	**Expansion Joint Thickness**
4-6	#4 (1/2 In.)	24	12	1/2"

NOTES:
1. Expansion Cap for Dowels Shall have an Inside Diameter of 1/16" Greater than that of Dowel and be Designed to Provide Free Movement of the Dowel Bar.
2. Expansion Cap to Fit Dowel Min. 2" Embedment and Min. 1-1/4" Clearance from the Closed End of the Sleeve to the Dowel.
3. Expansion Joints Shall be Installed at a Maximum Distance of Six Hundred (600) Feet, and at Street Intersections Radii, PC's and PT's or as Otherwise Directed. No Expansion Joint Shall fall in a Driveway Approach or Inlet.
4. Expansion Material Per Approved Material List
5. Dowel Bars to be Placed Parallel to Pavement at Spacing and Lengths per Table, Centered on Expansion Material. One Side of Dowel Bar Shall be Coated in Thin Film of Grease or Other Approved De-Bonding Material. Where Drilling of Dowel Bars is Required, it Shall be Done by an Approved Mechanical Rig.
6. Expansion Joints Shall Not Be Placed At Pavement Grade Breaks.

MESQUITE TEXAS Real. Texas. Service. | Public Works | EXPANSION JOINTS | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 11/11/2019 | SHEET: P-1



LONGITUDINAL CONSTRUCTION JOINT

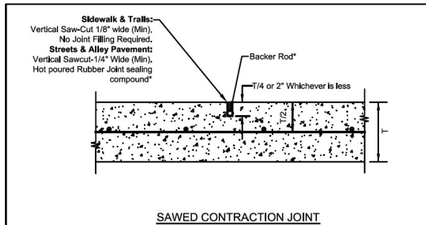


TRANSVERSE CONSTRUCTION JOINT

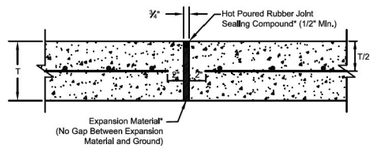
Deformed Reinforcing Bars			
Commercial Driveway, Street, Alley & Firelane Paving Thickness (In.)	**Diameter (In.)**	**Length (In.) (L)**	**Spacing (In.)**
< 8	#6 (1 In.)	30	18
≥ 8	#11 (1.4 In.)	30	12
Sidewalk, Residential Driveway and Trail Thickness (In.)	**Diameter (In.)**	**Length (In.)**	**Spacing (In.)**
4-6	#4 (.5 In)	24	12

NOTES:
1. Dowel Bars to be Placed Parallel to Pavement at Spacing and Lengths per Table. Where Drilling of Dowel Bars is Required, it Shall be Done by an Approved Mechanical Rig.
2. Transverse Construction Joint can be used as Longitudinal Construction Joint In applications where new pavement is to be constructed or reconstructed next to old pavement.

MESQUITE TEXAS Real. Texas. Service. | Public Works | CONSTRUCTION JOINTS | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 11/11/2019 | SHEET: P-2



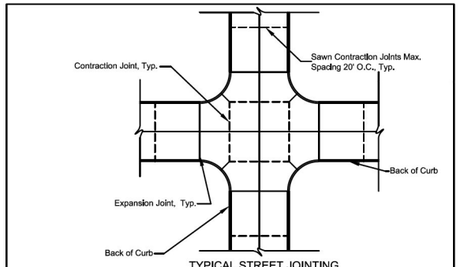
SAWED CONTRACTION JOINT



ISOLATION JOINT

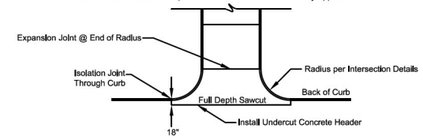
* Refer Approved Materials List for recommended material.

MESQUITE TEXAS Real. Texas. Service. | Public Works | SAWED CONTRACTION & ISOLATION JOINT | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-3



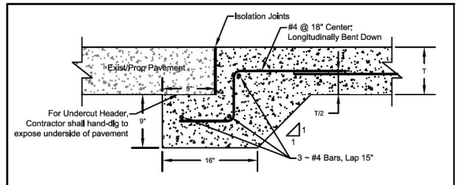
TYPICAL STREET JOINTING

NOTE:
1. All Concrete Placement Shall End in a Construction Joint, an Expansion Joint or a Concrete Header.
2. Sawed Contraction Joints are Required at Center Line and Lane Line on any Street Pavement Width Greater than 22.5 Feet (Back to Back of Curb).
3. Expansion Joints Shall be Installed at a Maximum Distance of Six Hundred (600) Feet and Street Intersections, PC's and PT's or as Otherwise Directed. No Expansion Joint Shall Fall in a Driveway Approach or Inlet.



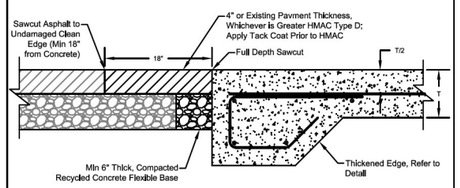
EXISTING CONCRETE STREET TO NEW CONCRETE STREET TEE INTERSECTION

MESQUITE TEXAS Real. Texas. Service. | Public Works | STREET JOINTING | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-4



CONCRETE HEADER

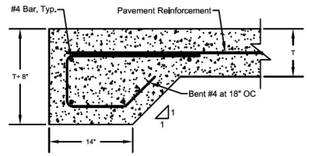
T = Pavement Thickness, Not Less than Street Pavement Depth or 8", whichever is greater



CONCRETE TO ASPHALT HEADER

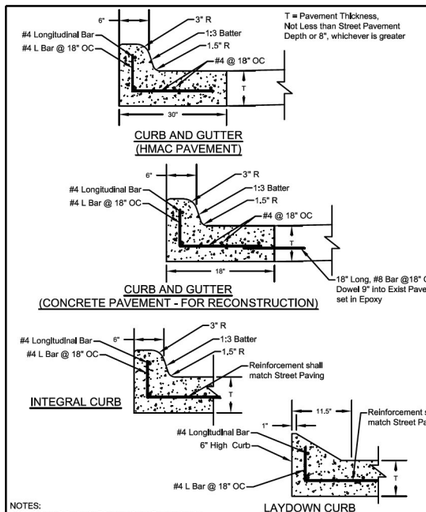
NOTES:
1. Concrete Headers Shall be Continuous Along Existing or Phased Pavement when Adjacent to the New Pavement. Additional Locations can be Shown on the Plans or at the Discretion of the City Engineer.

MESQUITE TEXAS Real. Texas. Service. | Public Works | TYPICAL HEADERS | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-5



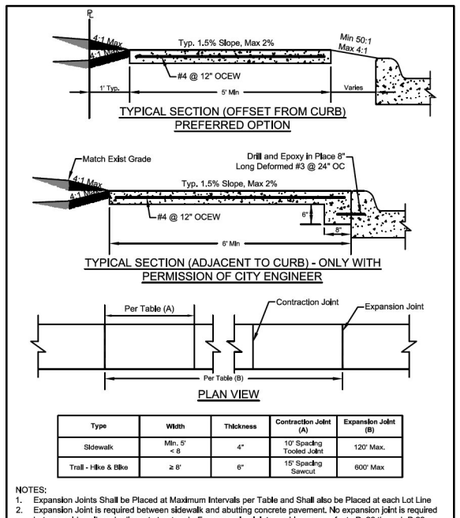
T = Pavement Thickness, Not Less than Street Pavement Depth or 8", whichever is greater

MESQUITE TEXAS Real. Texas. Service. | Public Works | THICKENED CONCRETE EDGE | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-6



NOTES:
1. Integral Curb shall be used on all new streets.
2. Any honeycomb present on backside of curb shall be filled In.

MESQUITE TEXAS Real. Texas. Service. | Public Works | TYPICAL CURB & GUTTER | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 07/22/2019 | SHEET: P-7



Type	Width	Thickness	Contraction Joint (A)	Expansion Joint (B)
Sidewalk	Min. 5' < 8	4"	10' Spacing Tooled Joint	120' Max.
Trail - Hike & Bike	≥ 8'	6"	15' Spacing Sawcut	600' Max

NOTES:
1. Expansion Joints Shall be Placed at Maximum Intervals per Table and Shall also be Placed at each Lot Line
2. Expansion Joint is required between sidewalk and abutting concrete pavement. No expansion joint is required between sidewalk and adjacent street curb. For expansion joints on driveways, refer to P- 26 through P-29.
3. All Sidewalks shall drain positive.

MESQUITE TEXAS Real. Texas. Service. | Public Works | PEDESTRIAN FACILITIES | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 11/11/2019 | SHEET: P-8

PAVING - 1

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

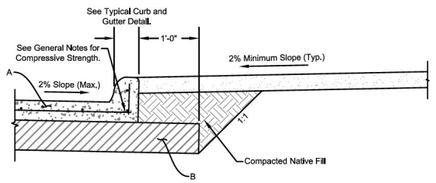
CITY OF MESQUITE PAVING DETAILS

SCALE: N/A SHEET 1 OF 3

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 122

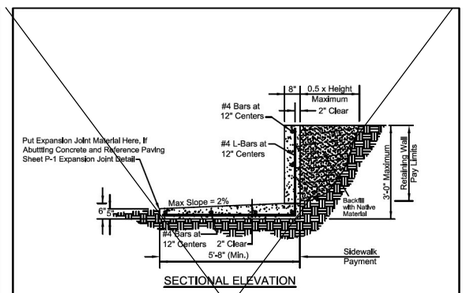
2163-01-DET-PAV01.dgn



Classification	Minimum Pavement Thickness (A)	Minimum Subgrade Thickness (B)	Minimum Bar: Maximum Spacing Reinforcing Steel
Local	6"	6" Lime Stabilized at 8% (Or 6" Crushed Concrete)	#4 @ 18" C.C.
Collector	8"	8" Lime Stabilized at 8% (Or 8" Crushed Concrete)	#4 @ 18" C.C.
Fire Lane	Per Fire Lane Detail		
Alleys	Per Typical Alley Detail		
Arterials	Per Engineering Design Manual Section 2.11		#4 @ 18" C.C.

NOTE:
Crushed concrete shall meet TXDOT specifications, Item 247, Type D, Grade 1 or 2 with Triax TX 140 Geogrid (or approved equal).

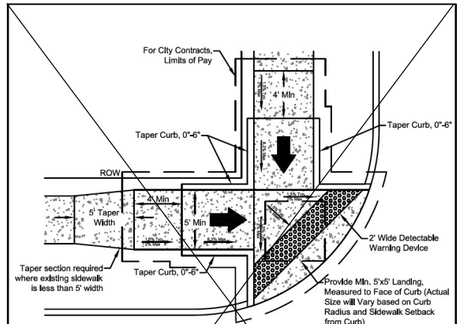
MESQUITE TEXAS Real. Texas. Service. | Public Works | CONCRETE PAVEMENT DETAIL TYPICAL SECTION | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-14



SECTIONAL ELEVATION

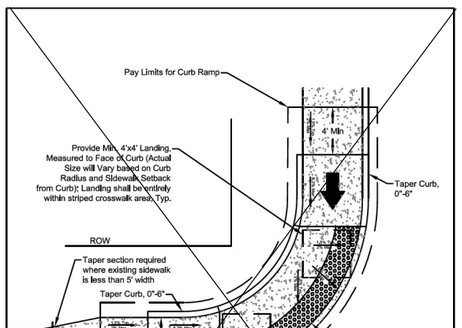
NOTES:
1. Exposed face or wall shall have form liner Sika Greenstreak #439 Sierra Drystack or Symons #F3170575 /#F3170503 Standard Dry Stack or as directed by the City Engineer. Form liner is required for walls 6-inches in height and over.
2. Minimum compressive design strength of the concrete shall be 4,000psi at 28 days, 6 sack minimum cement content.
3. Minimum grade of reinforcing steel is to be ASTM A615 grade 60.
4. All distances to reinforcing steel refer to clear concrete cover over reinforcing steel unless noted otherwise.
5. Minimum reinforcing steel lap is to be thirty (30) bar diameters.
6. Maximum spacing of expansion joints shall be 120-feet. An expansion joint shall be placed at each property line. Expansion joints shall be continuous through wall and associated sidewalk.
7. All exposed edges shall have a 3/4 inch chamfer.
8. Sidewalk width shown is minimum width. Consult paving plans for the clear sidewalk width.

MESQUITE TEXAS Real. Texas. Service. | Public Works | CONCRETE SIDEWALK WITH RETAINING WALL | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-15



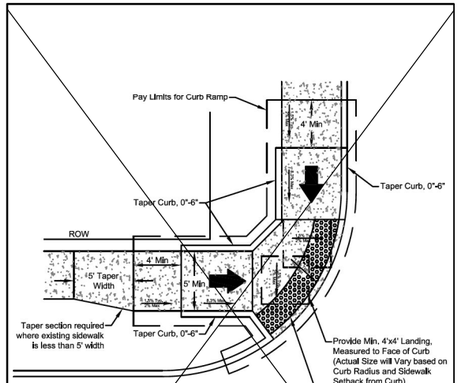
NOTES:
1. All pedestrian elements, including curb ramps, shall comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), published by the Architectural and Transportation Compliance Board on July 26, 20111, 36 CFR Part 1190 or its final adopted guidelines.
2. All pedestrian paths shall have typical 1.5%, maximum 2% cross slope.
3. Detail are representation of information from PROWAG and are intended to provide guidance. It is the responsibility of the Design Professional and the Contractor to ensure that all ramps constructed meet the requirements of PROWAG.

MESQUITE TEXAS Real. Texas. Service. | Public Works | CURB RAMP TYPE A | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-16



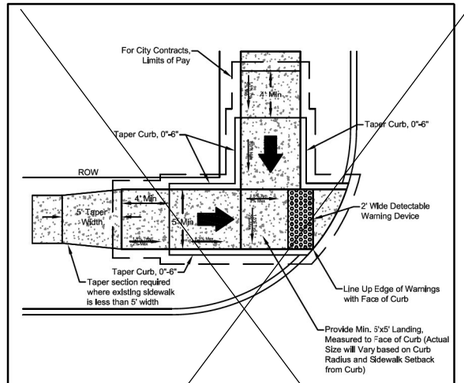
NOTES:
1. All pedestrian elements, including curb ramps, shall comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), published by the Architectural and Transportation Compliance Board on July 26, 20111, 36 CFR Part 1190 or its final adopted guidelines.
2. All pedestrian paths shall have typical 1.5%, maximum 2% cross slope.
3. Detail are representation of information from PROWAG and are intended to provide guidance. It is the responsibility of the Design Professional and the Contractor to ensure that all ramps constructed meet the requirements of PROWAG.

MESQUITE TEXAS Real. Texas. Service. | Public Works | CURB RAMP TYPE B | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-17



NOTES:
1. All pedestrian elements, including curb ramps, shall comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), published by the Architectural and Transportation Compliance Board on July 26, 20111, 36 CFR Part 1190 or its final adopted guidelines.
2. All pedestrian paths shall have typical 1.5%, maximum 2% cross slope.
3. Detail are representation of information from PROWAG and are intended to provide guidance. It is the responsibility of the Design Professional and the Contractor to ensure that all ramps constructed meet the requirements of PROWAG.

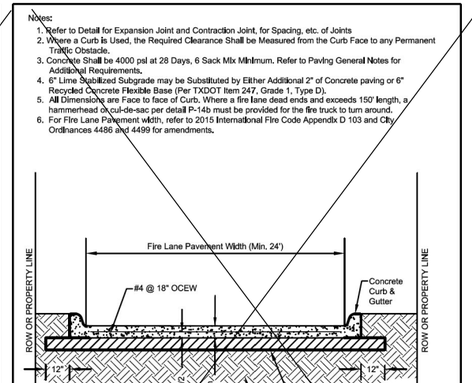
MESQUITE TEXAS Real. Texas. Service. | Public Works | CURB RAMP TYPE C | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-18



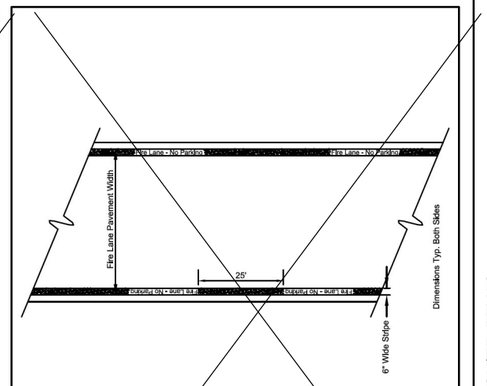
NOTES:
1. All pedestrian elements, including curb ramps, shall comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), published by the Architectural and Transportation Compliance Board on July 26, 20111, 36 CFR Part 1190 or its final adopted guidelines.
2. All pedestrian paths shall have typical 1.5%, maximum 2% cross slope.
3. Detail are representation of information from PROWAG and are intended to provide guidance. It is the responsibility of the Design Professional and the Contractor to ensure that all ramps constructed meet the requirements of PROWAG.

MESQUITE TEXAS Real. Texas. Service. | Public Works | CURB RAMP TYPE D | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-19

Notes:
1. Refer to Detail for Expansion Joint and Contraction Joint, for Spacing, etc. of Joints
2. Where a Curb Is Used, the Required Clearance Shall be Measured from the Curb Face to any Permanent Traffic Obstacle.
3. Concrete Shall be 4000 psi at 28 Days, 6 Sack Mix Minimum. Refer to Paving General Notes for Additional Requirements.
4. 6" Lime Stabilized Subgrade may be Substituted by Either Additional 2" of Concrete paving or 6" Recycled Concrete Flexible Base (Per TXDOT Item 247, Grade 1, Type D).
5. All Dimensions are Face to face of Curb. Where a fire lane dead ends and exceeds 150' length, a hammerhead or cul-de-sac per detail P-14b must be provided for the fire truck to turn around.
6. For Fire Lane Pavement width, refer to 2015 International Fire Code Appendix D 103 and City Ordinances 4486 and 4499 for amendments.



MESQUITE TEXAS Real. Texas. Service. | Public Works | FIRE LANE PAVING | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-20



NOTES:
1. Lettering Shall be "Fire Lane - No Parking" or "No Parking-Fire Lane" with 4" White Letters.
2. Where Curb Is Available, the Striping Shall be on the Vertical Face of Curb.

MESQUITE TEXAS Real. Texas. Service. | Public Works | FIRE LANE STRIPING | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-21

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

PAVING - 3

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

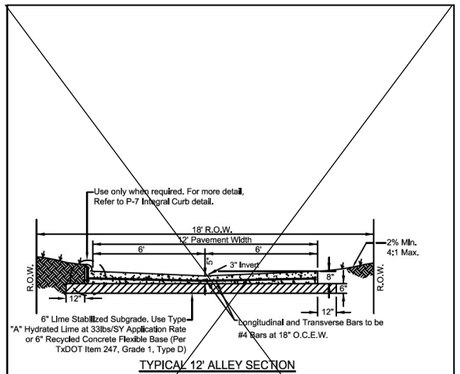
MESQUITE HERITAGE TRAIL, PHASE II

CITY OF MESQUITE PAVING DETAILS

SCALE: N/A SHEET 2 OF 3

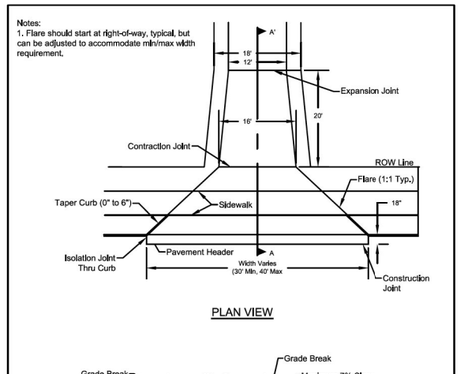
BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 123

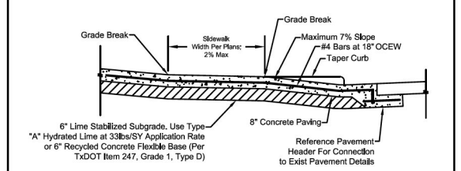


TYPICAL 12' ALLEY SECTION

MESQUITE TEXAS Real. Texas. Service.	Public Works	ALLEY PAVING	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: P-22

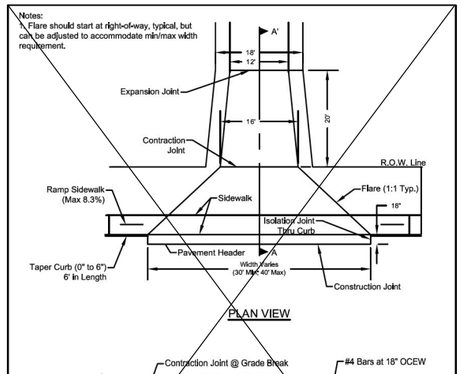


PLAN VIEW

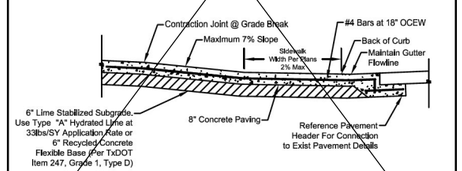


SECTION A-A'

MESQUITE TEXAS Real. Texas. Service.	Public Works	ALLEY/STREET INTERSECTION OFFSET SIDEWALK	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: P-23

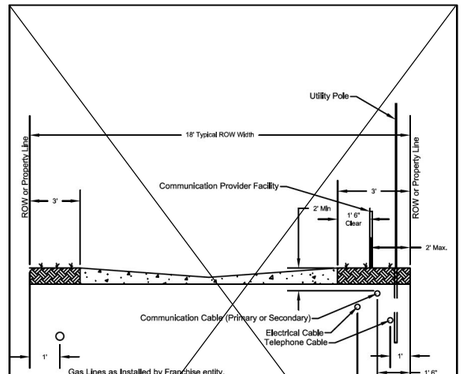


PLAN VIEW



SECTION A-A'

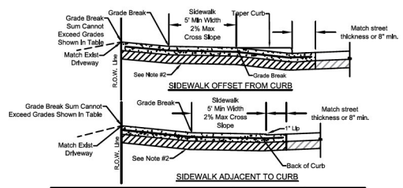
MESQUITE TEXAS Real. Texas. Service.	Public Works	ALLEY/STREET INTERSECTION ADJACENT SIDEWALK	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: P-24



NOTES:
1. All franchised utilities are to have a Minimum Burial Depth of 24" below bottom of Paving, as required by state and federal codes and standards.

MESQUITE TEXAS Real. Texas. Service.	Public Works	ALLEY UTILITY LOCATION	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: P-25

DRIVEWAY NOTES:
1. On residential driveways, in lieu of 18" blockout into street, contractor may horizontally sawcut curb. On commercial driveways, use full-depth sawcut 18" from face of curb.
2. For driveway width and curb radii, refer to Section 2 of Design Manual. Residential driveway shall be a minimum 10' wide and maximum 24' wide. If residential property has three enclosed garages, maximum driveway width can be 30'. Driveways must still be in compliance with Ordinance in percentage of improved area allowed.
3. The flare or radius cannot extend past the extension of the adjoining property line.
4. Sidewalk ramps adjacent to commercial driveways must be compliant as per Texas Accessibility Standards (TAS) & Draft Proposed Right-of-Way Accessibility Guidelines (PROWAG). As per PROWAG R208.1, where commercial driveways are provided with yield or stop control, detectable warning surfaces should be provided at the junction between the sidewalk and street.
5. Expansion Joints are required at the Right-Of-Way/Property line, when connecting to existing concrete driveways and at grade breaks on driveway approaches.
6. Sidewalk through a driveway is to be built to maintain constant cross-slope across the length of the driveway.
7. The installation of pre-cast concrete paving blocks may be used on driveway approaches as an alternative to the placement of Portland cement concrete and must comply with the same width and thickness specifications required for Portland cement concrete driveway approaches.
8. Where driveway connections are made to public streets with curbs and gutters; such curb and gutter shall be removed to the nearest construction joint. Design of such connections are to be submitted to the City prior construction.

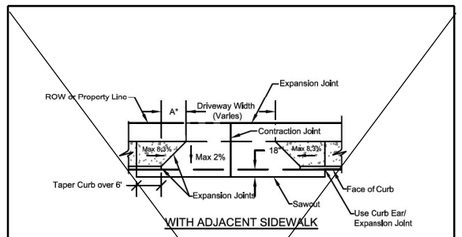


SIDEWALK ADJACENT TO CURB

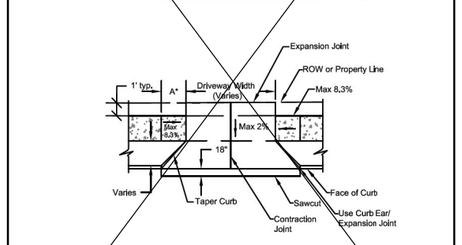
	Residential	Commercial	Industrial
Concrete Thickness (Minimum)	6"	8" Min.	12"
Reinforcing (Minimum)	#4 @ 18" OCEW		
Max Slope Connecting to Street	10%	7%	7%
Max Slope Connecting to Alley	14%	11%	11%
Flare/Radius	5' Min.	By Ordinance	By Ordinance

DRIVEWAY PARAMETERS

MESQUITE TEXAS Real. Texas. Service.	Public Works	DRIVEWAY	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 09/30/2020 SHEET: P-26



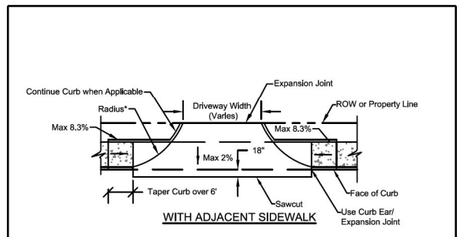
WITH ADJACENT SIDEWALK



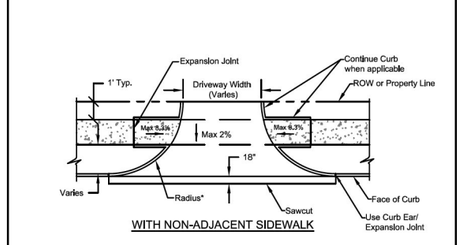
WITH NON-ADJACENT SIDEWALK

* Refer to P-26, Driveway Parameters Table

MESQUITE TEXAS Real. Texas. Service.	Public Works	DRIVEWAY FLARED	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: P-27



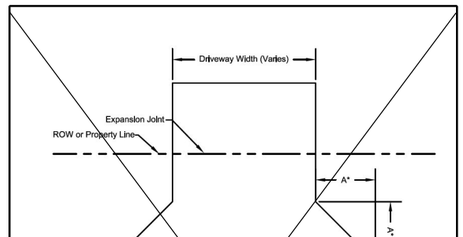
WITH ADJACENT SIDEWALK



WITH NON-ADJACENT SIDEWALK

* Refer to P-26, Driveway Parameters Table

MESQUITE TEXAS Real. Texas. Service.	Public Works	DRIVEWAY RADIAL	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: P-28



* Refer to P-26, Driveway Parameters Table

MESQUITE TEXAS Real. Texas. Service.	Public Works	DRIVEWAY RESIDENTIAL IN ALLEY	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: P-29

PAVING - 4

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

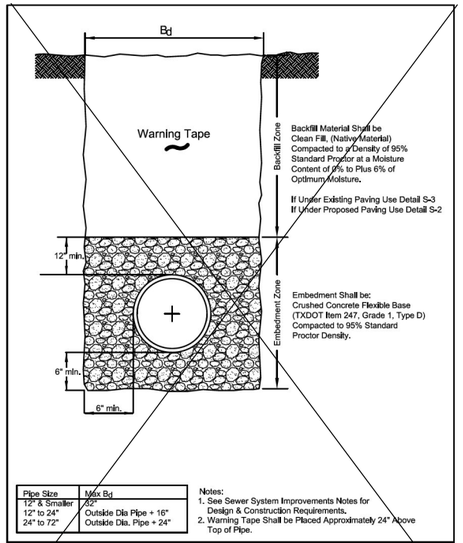
MESQUITE HERITAGE TRAIL, PHASE II

CITY OF MESQUITE PAVING DETAILS

SCALE: N/A SHEET 3 OF 3

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

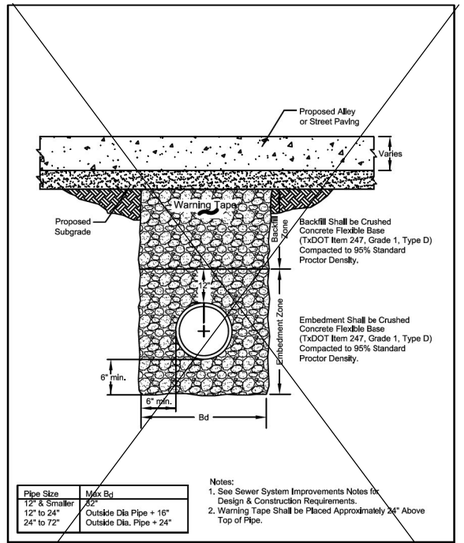
CONTRACT NO. 2024-014 SHEET NO. 124



Pipe Size	Max Bd
12" & Smaller	30"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

Notes:
1. See Sewer System Improvements Notes for Design & Construction Requirements.
2. Warning Tape Shall be Placed Approximately 24" Above Top of Pipe.

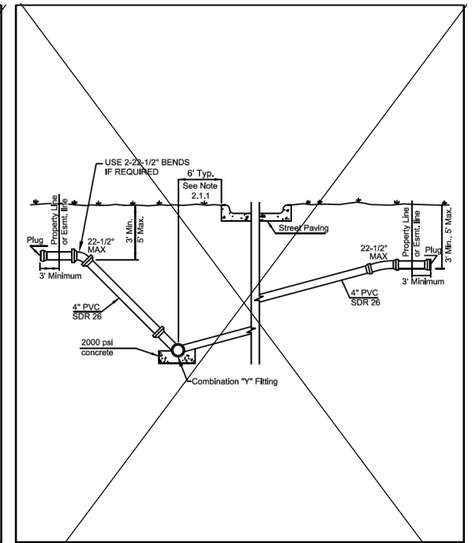
MESQUITE TEXAS Real. Texas. Service. | Public Works | WASTEWATER EMBEDMENT (NOT UNDER PAVING) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 04/13/2020 | SHEET: WW-1



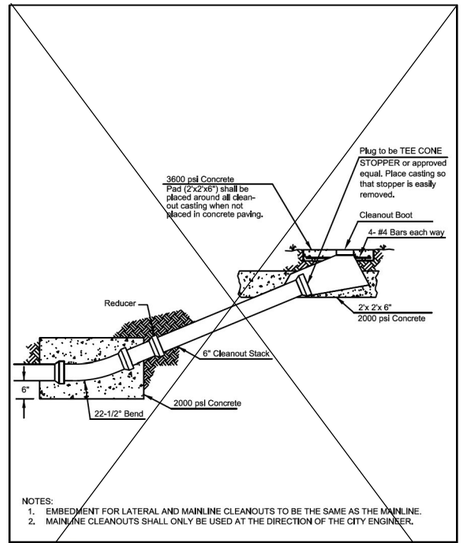
Pipe Size	Max Bd
12" & Smaller	30"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

Notes:
1. See Sewer System Improvements Notes for Design & Construction Requirements.
2. Warning Tape Shall be Placed Approximately 24" Above Top of Pipe.

MESQUITE TEXAS Real. Texas. Service. | Public Works | WASTEWATER EMBEDMENT (UNDER PAVING) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 04/13/2020 | SHEET: WW-2

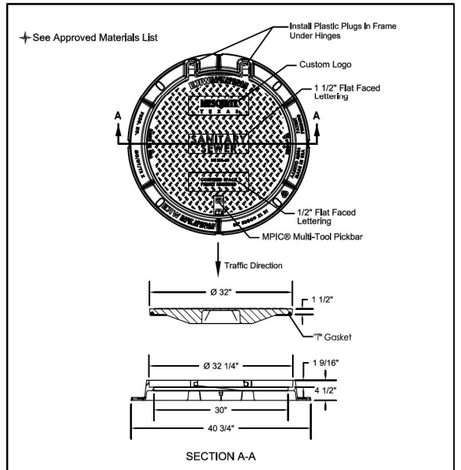


MESQUITE TEXAS Real. Texas. Service. | Public Works | WASTEWATER LATERAL | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: WW-3



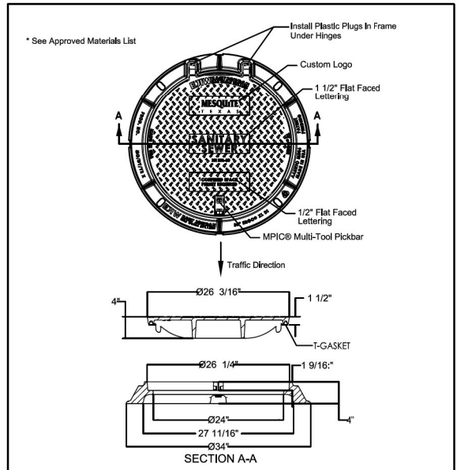
NOTES:
1. EMBEDMENT FOR LATERAL AND MAINLINE CLEANOUTS TO BE THE SAME AS THE MAINLINE.
2. MAINLINE CLEANOUTS SHALL ONLY BE USED AT THE DIRECTION OF THE CITY ENGINEER.

MESQUITE TEXAS Real. Texas. Service. | Public Works | WASTEWATER MAINLINE CLEANOUT | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: WW-4



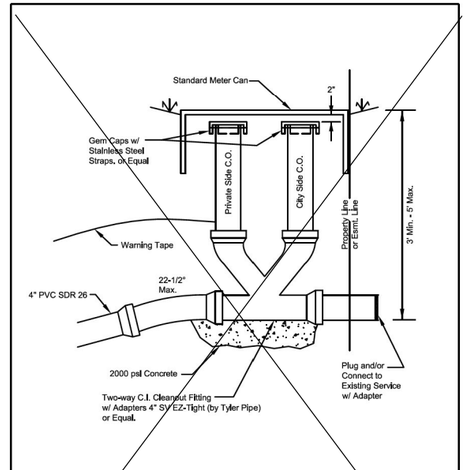
Notes:
1. Materials Shall be Ductile Iron ASTM A536 for Frame and Cover
2. Design Load Shall be Heavy Duty (HS-20)
3. Lid Shall be Oriented such that Pickbar is Oriented with Traffic Flow
4. Lid shall be bolted when In floodplain

MESQUITE TEXAS Real. Texas. Service. | Public Works | WASTEWATER MANHOLE RING AND COVER | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: WW-5



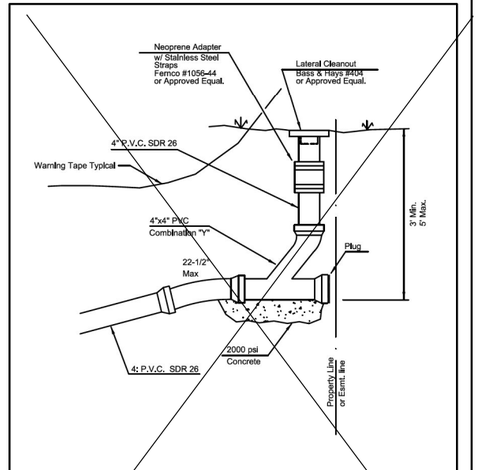
Notes:
1. Materials Shall be Ductile Iron ASTM A536for Frame and Cover
2. Design Load Shall be Heavy Duty (HS-20)
3. Lid Shall be Oriented such that Pickbar is Oriented with Traffic Flow
4. Lid shall be bolted when In floodplain

MESQUITE TEXAS Real. Texas. Service. | Public Works | WASTEWATER MANHOLE RING AND COVER (RETROFIT ONLY) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: WW-6



Install only at the direction of the City Engineer.

MESQUITE TEXAS Real. Texas. Service. | Public Works | DOUBLE CLEANOUT | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: WW-7



Install only at the direction of the City Engineer.

MESQUITE TEXAS Real. Texas. Service. | Public Works | SINGLE CLEANOUT | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: WW-8

WASTEWATER - 2

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

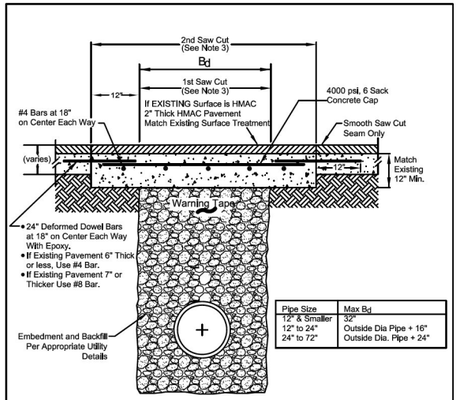
MESQUITE HERITAGE TRAIL, PHASE II

CITY OF MESQUITE SANITARY SEWER

SCALE: N/A SHEET 1 OF 1

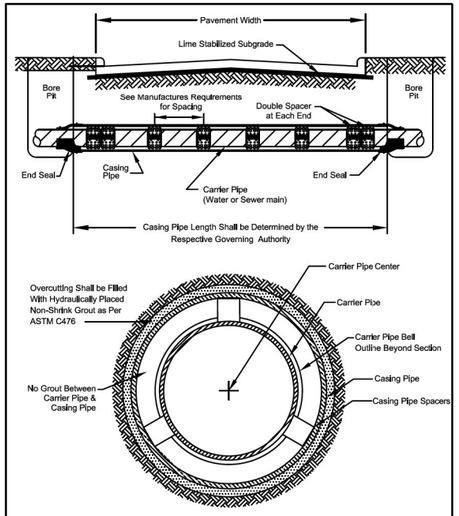
BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 125

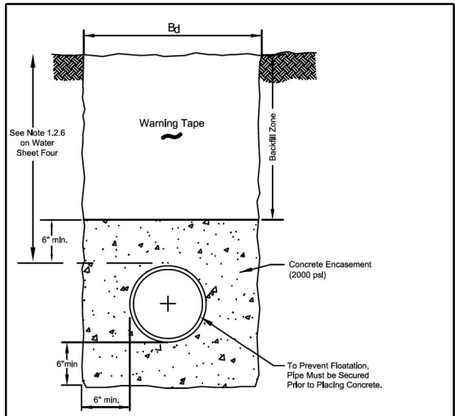


Pipe Size	Max Bd
12" & Smaller	32"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

NOTES:
1. PAVEMENT CUTS SHALL BE FULL DEPTH SAW CUTS
2. WITHIN 3' OF AN EXISTING JOINT, REMOVE JOINT. CITY PUBLIC WORKS INSPECTOR CAN REQUIRE ADDITIONAL PAVEMENT REMOVAL AND REPLACEMENT TO AN ADJACENT JOINT.
3. MAKE 1ST SAWCUT WHEN BEGINNING PIPE INSTALLATION. MAKE 2ND CUT AFTER PIPE INSTALLATION, TEST AND BACKFILL TO BOTTOM OF PROPOSED PAVEMENT REPLACEMENT.
4. WARNING TAPE SHALL BE PLACED APPROXIMATELY 24" ABOVE TOP OF PIPE.
5. BACKFILL MATERIAL, TRENCH WIDTH, EMBEDMENT DEPTH AND MATERIAL SHALL MATCH UTILITY INSTALLATION DETAIL FOR INSTALLATION UNDER PAVEMENT.



NOTES:
1. REFER TO ENGINEERING DESIGN MANUAL, SECTION 4.8.7 FOR ADDITIONAL DETAILS



Pipe Size	Max Bd
12" & Smaller	32"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

Notes:
1. Warning Tape Shall be Placed Approximately 24" Above Top of Pipe.

GENERAL - 2

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

CITY OF MESQUITE WATER SHEETS

SCALE: N/A SHEET 1 OF 5

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 126

GENERAL NOTES FOR WATER MAINS AND RELATED APPURTENANCES:

1. GENERAL:
   - 1.1. All water system improvements in the City of Mesquite, both privately and publicly maintained shall be designed and constructed in accordance with the City of Mesquite Engineering Design Standards.
   - 1.2. All water system design and construction shall conform to the current Texas Commission on Environmental Quality (TCEQ) regulations. These regulations can be found in the Texas Administrative Code (TAC), Title 30, Chapter 290, Subchapter D - (Rules and Regulations for Public Water Systems).
   - 1.3. All water system design, construction and materials shall conform to current American Water Works Association (AWWA) standards.
   - 1.4. All materials that will come into contact with potable water must be approved for use under National Sanitation Foundation (NSF) Standard 61 (Drinking Water System Components - Health Effects)
   - 1.5. Water systems shall be designed to comply with the latest City adopted version of the International Fire Code with adopted City amendments.
   - 1.6. Water systems shall be designed to comply with the current Insurance Services Office (ISO) Fire Suppression Rating Schedule (edition 02-03) - Section 600 - Water Supply.

2. GENERAL INSTALLATION
   - 2.1. All components of the water system (pipe, valves, fittings, restraints, blocking, services, and appurtenances) shall be designed for 200 psi working pressure and an AASHTO HS-20 live load except where loading conditions could exceed HS-20 live load limits in which case the City Engineer shall specify the appropriate design load.
   - 2.2. Minimum Cover: Water mains with a nominal diameter less than 14-inches shall have a minimum cover of 42" and water mains with a nominal diameter 14" or greater shall have a minimum cover of 60-inches, unless otherwise approved by the City Engineer.
   - 2.3. Utility Clearance: Water mains and sanitary sewer mains shall have a minimum clearance of nine (9) feet. If this clearance cannot be maintained, TCEQ alternate requirements shall be met.
   - 2.4. Water mains are generally placed to be centered under the back of curb, unless otherwise approved by the City Engineer.
   - 2.5. Storm Sewer Inlets shall be staked prior to water main placement so that the water main can be gradually deflected around and below the proposed inlets or other obstructions or conflicts in alignment. The Contractor shall stake the location of the back of curbs to ensure no valves fall within a curb.
   - 2.6. Warning Tape: Warning tape shall be installed 24 inches above the top of pipe or as otherwise directed by the City Engineer. The tape shall be a plastic, high stretch, 4-inch width tape approved by the City Engineer. The tape shall be blue in color and have the words "Caution - Water Main Buried Below" imprinted on the tape.
   - 2.7. Grading Operations: The Contractor shall complete all fill and cut operations in accordance with released engineering plans prior to installing any utilities (i.e. water, sanitary sewer, drainage).
   - 2.8. The Contractor shall not operate any valves in the existing water system nor operate any new valves that would allow connection to the City water system. The Contractor shall coordinate and notify the City Public Works Construction Inspector 48-hours in advance to schedule a shut-down of the existing water system by City personnel. The City may require a night or weekend shut-down in order to maintain customer service.
   - 2.9. Temporary Fire Hydrant Meters: The City of Mesquite requires portable fire hydrant meters for temporary and/or construction water use at construction sites. They are routinely used to account for water usage prior to installation of a permanent water meter. These meters have a backflow prevention device attached. The City requires support for this device to prevent excessive torque when attached to a fire hydrant. The City requires payment for each meter. An invoice for water use is rendered each month. Arrangements for portable fire hydrant meters are administered by the City of Mesquite Water & Sewer Accounting Division at 757 N. Galloway Avenue. Please coordinate meter usage through the Utilities Division - Meter Services Section.

3. MATERIALS
   - 3.1. Bolts and nuts for all fittings shall be stainless steel Grade 304 or 316 or ASTM A325 Type 3 Enhanced Corrosion Resistant steel. Stainless steel all-thread may be used in some applications with the approval of the City Engineer.
   - 3.2. All fittings shall be mechanically restrained using restrained fittings as shown on the City of Mesquite Approved Water Materials List and meeting requirements of ASTM F1674 (PVC) or U.L. Standard 194 (Ductile Iron). Restraint gland and body and wedge components shall be ductile iron material. For pipe diameters 12" or greater, waterline plan shall show length of joints to be restrained on each side of fittings. For pipe diameters less than 12", all joints within 15-feet of fitting shall be restrained.
   - 3.3. Concrete Blocking: All fittings, valves, hydrants, etc. shall be blocked with 2,000 p.s.i. concrete, 4-sack minimum cement content. All blocking shall be poured to avoid nuts and bolts to allow easy access for maintenance. Excessive blocking shall not be allowed and shall be removed at the contractor's expense. Sizing and construction of blocking shall be as shown in standard drawings 4010A to 4040 of the North Central Texas Council of Governments Public Works Construction Standards, Fourth Edition (October 2004).
   - 3.4. Polyethylene Tube Wrap: All cast and ductile iron pipe, fittings and valves shall be wrapped with polyethylene tube wrap in accordance with AWWA C105. The polyethylene wrap must be blue in color. The wrap shall be installed in accordance with AWWA C105, Method A.

4. VALVES
   - 4.1. **Location:** Valves shall be anchored to adjacent fittings at Tee and Cross fittings and on fire hydrant leads. Valves shall not be used at the dead end of mains as a plug. Contractors generally do not wish to pressure test against an old valve that may leak, therefore new mains shall start with a valve and end with a plug.
   - 4.2. **Location Marking:** Valves located within a right-of-way shall be indicated on the face of the curb, or where curbs do not exist, on a conspicuous location adjacent to the valve location. Markings are to be the cutting of a four (4) inch high and 1/8" deep letter "V" with the point of the "V" pointing towards the valve location. The "V" shall be cut into the curb or paving using an approved motor driven concrete saw. The completed cut and valve riser lids shall receive a coating of blue paint if a main line valve or red if a fire hydrant valve. Contractor shall coat the interior, and exterior of the cut to a width of one (1) inch.
   - 4.3. **Joint Restraint:** All valves shall be mechanically restrained per Section 3.2. Bolts and Nuts for all fittings shall be ASTM A325 Type 3 Enhanced Corrosion Resistant steel, or stainless steel A151 304 or 316.
   - 4.4. **Three-piece adjustable valve boxes:** Adjustable valve boxes shall be furnished and set on each valve in accordance with the appropriate General Design Standards and the **City of Mesquite Approved Water Materials List**. After the final clean up and alignment has been completed, the Contractor shall cast in place a concrete block, 2-foot x 2-foot x 4-inch around all valve box tops at the finish grade.

5. TAPPING SLEEVES AND VALVES
   - 5.1. Wet connections to existing water mains (6-inch through 12-inch in size), shall be made with a tapping sleeve and valve. **EXCEPTION:** In some cases where the size of the tap approaches the size of the main, as judged by the City Engineer, the use of a cut-in sleeve and tee will be required. Both the tapping sleeve and valve shall be rated for a minimum 200 psi service pressure.
   - 5.2. Prior to tapping, all tapping sleeves and valves shall be air tested at 120 psi for three (3) minutes, with no pressure loss.
   - 5.3. Tapping is to be accomplished with no interruption of service. Facilities shall be provided for proper dewatering and for disposal of water removed from the water mains and excavations without damage to adjacent property. Special care shall be taken to prevent contamination of the existing potable water line when dewatering, cutting, and making connections with existing pipe. No trench water, mud, or other contaminating substances shall be permitted to enter the existing lines. The interior of all tapping sleeves, tapping machine cutter assemblies, and tapping gate valves installed in such connections, and the surface of the existing pipe at these connections, shall be thoroughly cleaned and then swabbed with a solution having a chlorine content of 200 milligrams per liter.

6. FIRE HYDRANTS
   - 6.1. Fire hydrants shall be located to minimize interference with driveways and shall be located with sufficient clearance from drive and street radii to prevent the fire hydrant from being struck if a vehicle jumps the curb and/or takes a wide turn. Hydrants shall not be placed in intersection radii or other locations with a high probability of being damaged by traffic. A 3-foot clear space shall be maintained around the circumference of fire hydrants except as otherwise required or approved.
   - 6.2. Mid-block fire hydrants shall be located on property lines (extended) to minimize interference with drives and on-street parking.
   - 6.3. Hydrants shall be placed 2-feet to 10-feet from the back of curb and shall not interfere with sidewalks, driveways, etc. Hydrants shall be placed so the bury mark is at ground or paving level. Mounding of the ground or paving shall not be allowed to achieve this requirement. No more than one extension of 18 inches maximum will be allowed for grade adjustment. Hydrants shall have a barrel length of 4-feet to 6-feet unless approved by the City Engineer. All hydrants shall be surrounded by a 2 to 9 feet long x 3-feet wide x 4-inch thick concrete pad with 3,600 psi, 6 sack concrete and #4 reinforcing bars on 18" centers both ways placed to anchor the hydrant and to provide a splash pad between the hydrant and the curb for flushing operations.
   - 6.4. **Installation:** Installation shall be of a type as detailed in these standards. All fire hydrant leads shall be from an MJ to Flanged tee and all valves and fittings from the tee to hydrant shall be flanged.
   - 6.5. **Out of Service:** If a fire hydrant is out of service, for any reason, the contractor shall bag the fire hydrant with a black trash bag secured with duct tape and report hydrant to the Utility Dispatch office with the reason why it is out of service. This includes, but is not limited to, hydrants that are out of service for the following reasons:
     - 6.5.1. Water main valved-off and being abandoned but connected hydrant is not yet removed.
     - 6.5.2. New hydrant recently Installed but not yet ready for service
     - 6.5.3. Hydrant temporarily out of service due to main shut down
   - 6.6. **Fire Hydrant Markers:** The contractor shall place a Stimsonite Model 88-SSA blue fire hydrant marker in the street adjacent to the hydrant. The marker shall be located perpendicular to the curb, at the center of the driving lane closest to the fire hydrant. The marker shall be installed with a two part epoxy adhesive per manufacturer's instructions.
   - 6.7. **Fire Hydrant Painting (color coding):** All fire hydrants are to be painted with a base coat consisting of two (2) coats of aluminum paint as specified below. Refer to **City of Mesquite Approved Water Materials List** for approved paint. When a color code other than aluminum is required, the top bonnet (from operating nut to underneath the uppermost flange) shall be painted two coats of the appropriate color in accordance with the following color code. Nozzle caps are not to be color-coded.
     - 6.7.1. **Base undercoat:** Two (2) coats of aluminum paint are required as a base coat on all hydrants.
     - 6.7.2. **Overcoats:** Two (2) additional coats of paint are required over the base coat. The colors shall conform as follows:

MAIN SIZE	COLOR
6 INCHES	ALUMINUM - TOP & BOTTOM
8 INCHES	BLUE TOP - ALUMINUM BOTTOM
10 INCHES OR LARGER	YELLOW TOP - ALUMINUM BOTTOM

7. SERVICES AND METERS
   - 7.1. **Meter and Service Location:** Meters and services must be located within R.O.W. or easements in accordance with City approved plans and details. In residential developments, residential water meters and services are generally placed at the center of the lot in the grassed parkway. Water meters shall not be located in proposed driveways, sidewalks, parking lots or other paved areas. For narrow lots or front entry lots, the designer must design the location of the meters to make sure they are placed in an unpaved area. Meters in conflict with this requirement will be relocated by the developer/builder at their expense. In non-residential developments, water meters shall be located in unpaved islands. Meters should be set so that the meter face is 6-inches to 10-inches below finished grade.
   - 7.2. All PEX-A water service lines shall be in accordance with ASTM F876 and AWWA C904 and the following procedures:
     - 7.2.1. For installation under a non-residential street, service line shall be installed with detectable tracing wire. Detectable tracing wire shall be a minimum 12 gauge with HDPE coating.
     - 7.2.2. A Plastic insert stiffener shall be used at all fittings.
   - 7.3. All water services shall be continuous from the corporation valve at the water main to the angle meter valve in the meter box (No Couplings). Service line shall be "goose necked". Crimping or excessive bending of the service line shall not be allowed. Service lines shall be continuous and shall have no fittings under any paving, unless approved by the City Engineer. Long copper service lines that exceed the length of standard rolls of copper may be spliced in unpaved areas with a silver solder coupling. When installing a water main the Contractor shall furnish and install new meter boxes. Service lines shall be poly-wrapped for the first 5-feet of copper service from the main. Water services shall have a minimum depth under paving of 36-inches (measured from surface of paving).
   - 7.4. All service connections to the main for services 2" or smaller shall be made with service saddles.
   - 7.5. A water meter box with locking lid shall be furnished and installed by the Contractor after paving and fine grading is complete. When installing a water main, new meter boxes shall be furnished, installed and connected to the main. Meters larger than 2-inches in size shall be furnished and installed by the Contractor in concrete vaults in accordance with City details.
   - 7.6. Each individual service location shall be marked on the face of the curb with a 4-inch high and 1/8 -inch deep scribe mark "I" cut in the curb using an approved motor driven concrete saw. The scribe mark "I" shall receive a coating of blue paint, which shall coat the interior and exterior of the cut to a width of 1-inch.

8. WATER SYSTEM INSTALLATION
   - 8.1. **Excavation:** Excavation in general, shall be made in open cut from the surface of the ground and shall be no greater in width and depth than is necessary to permit the proper construction of the work. When the trench depth exceeds five (5) feet, see Standard Procedures Section 12.2 regarding "Trench Safety" requirements. The amount of trench excavation to grade shall not exceed 100 (one hundred) feet from the end of the pipe laying operations and no excavation shall be 300 (three hundred) feet in advance of the completed pipe operations (includes backfilling). At the end of the workday, all trench excavation shall be backfilled. Any landscaping and irrigation system within the City medians and right-of-ways that are disturbed, removed, or damaged during construction shall be replaced to original condition or better by a licensed irrigator.
   - 8.2. **Minimum bury depth:** Minimum bury depth shall be forty-two (42) inches from finished grade to the top of the pipe, unless otherwise directed by the City Engineer.
   - 8.3. **Sanitation:** The inside of all pipe and fittings shall be kept clean during installation. The City Engineer may require swabbing or pigging of all new pipe if the pipe is installed in an unsanitary manor. See Section 11 TESTING PROCEDURES for more information.
   - 8.4. **Lifting Straps:** All water pipe, valves, fire hydrants, and fittings shall be installed by the use of lifting straps. The use of chains is prohibited.
   - 8.5. **Backfill and Compaction:** For trenches not under paving, final backfill material shall be from the trench excavation placed in a maximum of 12 inch loose lifts and compacted to 95% of Standard Proctor Density (ASTM D698) at a moisture range of 0% to plus 6% of optimum moisture. Under existing or proposed paving (public/private sidewalks, streets, alleys, driveways, etc.), backfill shall be crushed concrete flexible base (TxDOT, Item 247, Grade 1, Type D) compacted to 95% of Standard Proctor Density (ASTM D698) at a moisture range of 0% to plus 6% of optimum moisture unless alternate material is approved by the City Engineer. The contractor shall take new proctors at each change in soil type. Water jetting will not be allowed for any trench.

9. TESTING PROCEDURES
   - 9.1. **Notification of Testing:** The Contractor shall hire an Independent testing lab, subject to the approval of the City Engineer, for all material and acceptance testing at Contractors Expense. The Contractor shall notify the assigned City Public Works Construction Inspector of all density testing 24 hours prior to the scheduled test. Copies of all test reports shall be sent to the Public Works Inspector for review and acceptance and inclusion in the City project file. Projects will not receive City acceptance until all test results are complete and satisfactory.
   - 9.2. **Compaction of Trenches and Excavations:** Density tests shall be performed at a frequency of one test per lift, per 300 linear feet of trench (including services) at locations specified by the City Public Works Construction Inspector. All nuclear gauge density tests shall be performed per ASTM D2922.
   - 9.3. **Pressure Testing and Disinfecting Water Mains:** The purpose of this specification is to define the minimum requirements for the pressure testing and disinfection of water mains, including the preparation of water mains, hydrostatic tests, flushing, application of chlorine, and sampling for the presence of coliform bacteria. Water mains, services and fire sprinkler systems shall be flushed and disinfected per the following requirements and in accordance with AWWA C651 "Disinfecting Water Mains".
   - 9.4. **Connection to Existing Water System:** Water required to fill the new main for hydrostatic pressure testing, disinfection, and flushing shall be supplied through a temporary connection between the distribution system and the new main. The temporary connection shall include an appropriate cross-connection control device and shall be disconnected during the hydrostatic pressure test. As an alternate, a connection to the existing distribution system is permitted provided a new valve is placed at the connection point. **Do not test against an existing valve in the existing system.**
   - 9.5. **General Procedures and Precautions Taken During Construction:**
     - 9.5.1. Inspect materials prior to installation to ensure their cleanliness and integrity.
     - 9.5.2. Keep interior of pipe dry and clean during storage and installation. Prevent contaminates from entering the water main during storage and construction.
     - 9.5.3. If dirt enters the pipe during storage or installation, it shall be removed and the interior surface swabbed with a 1 to 5 percent hypochlorite disinfecting solution.
     - 9.5.4. During construction openings in the pipe shall be closed with a watertight plug when pipe laying is stopped at the close of each day's work or for other reasons such as rest breaks and meals to prevent contaminants and animals from entering pipe
     - 9.5.5. Remove, by flushing or other means, those materials that may have entered the water main.
     - 9.5.6. Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main.
     - 9.5.7. Protecting the existing distribution system from backflow caused by hydrostatic test and disinfection procedure.
     - 9.5.8. Documenting that an adequate level of chlorine contacted each pipe to provide disinfection.
     - 9.5.9. Once the contractor has been notified by the City Public Works Construction Inspector of a successfully (negative result) laboratory bacteriological testing result, the contractor can make connection of the approved new water main to the active distribution system.
   - 9.6. **Hydrostatic (Pressure) Test:** All water mains, fittings and services shall be tested with a hydraulic test pressure of not less than 200 psi over a period of not less than 2 hours. The allowable leakage, in gallons, of all pipe tested shall be calculated per the following equation:

$$\text{ALLOWABLE LEAKAGE} = \frac{28.28L^*D}{148{,}000}$$

WHERE L = LENGTH OF PIPE (FT)
D = DIAMETER OF PIPE (IN)

     - 9.6.1. For a two hour pressure test at a pressure of 200 psi. If the tests indicate a leakage in excess of the acceptable rate, the Contractor shall be required to find and repair the leak. Even if the test requirements are met, all apparent leaks shall be repaired and stopped.
     - 9.6.2. The hydrostatic pump shall be connected to a system where the amount of leakage can be determined by measurement or gauge. The 200-psi pressure shall be maintained at the highest point of the main being tested over the entire 2-hour test period. The leakage shall be determined by comparing the quantity of water in the measuring system at the beginning of the test and quantity of water at the end of the test. The difference in these quantities shall be the leakage. An alternate method is to add water to the measuring system during the test. At the end of the 2-hour test, the quantity of water added shall be the leakage.
   - 9.7. **Flushing and Pigging the Main Prior to Disinfection / Chlorination**
     - 9.7.1. **Flushing Method:** Before the main is chlorinated, it shall be filled to eliminate air pockets and flushed to remove particulates. The flushing velocity in the main shall not be less than 3.0 ft/sec. Below is the required flow and openings needed to flush pipelines with a pressure of 40 psi

M	FLOW (GPM)	1" TAP	1.5" TAP	2" TAP	2.5" HYDRANT OUTLET
4"	120	1			1
6"	260		1		1
8"	470		2		1
10"	730		3	2	1
12"	1060			3	2
16"	1880			5	2

     - 9.7.2. **Pigging Method:**
       - 9.7.2.1. Pigging is accomplished by passing an appropriate sized pig through the pipe. A pig is a bullet-shaped, flexible sponge available in different sizes, densities, and degrees of roughness. **All mains 12-inch and larger must be pigged prior to flushing and disinfection with chlorine.**
       - 9.7.2.2. The pig shall be inserted in the new conduit at the location where the new conduit is connected to the active distribution system.
       - 9.7.2.3. Where expulsion of the pig is required through a dead-ended conduit, the Contractor shall make every effort to prevent back flow of the purged water into the conduit after passage of the pig. Backwater re-entry into the pipe can be prevented by the temporary installation of mechanical joint bends and pipe joints to provide a riser out of the trench.
       - 9.7.2.4. After passage of the pig, flushing of all backwater from the pipe, and satisfactory test results, the Contractor shall secure the test location openings and then proceed with disinfection.
   - 9.8. **Disinfection (Chlorination):**
     - 9.8.1. The Continuous-feed method must be used unless it is stated otherwise in the Contract Specifications.
     - 9.8.2. The Contractor shall Install and remove all pump-in, blow-off and sampling points.
     - 9.8.3. Water from the existing system or other approved source shall be made to flow at a constant rate In the new main.
     - 9.8.4. At a point no more than 10-ft downstream of the beginning of the new conduit, water entering the new conduit shall receive a dose of chlorine such that the water shall have not less than 100-mg/L (ppm) free chlorine. Chlorine application shall not cease until the entire conduit is filled with heavily chlorinated water. 125 lbs of Calcium Hypochlorite (65% available chlorine) is required in 100,000 gal of water to produce 100 mg/L (ppm) Chlorine concentration.
     - 9.8.5. The chlorinated water shall be retained in the conduit for at least 24 hours, during which time all valves and hydrants in the section treated shall be operated In order to disInfect the appurtenances. Every effort shall be made to prevent the flow of chlorinated water Into conduits In active service. At the end of the 24-hour period, the treated water In all portions of the conduit shall have a residual of at least 10-mg/L (ppm) free chlorine.
     - 9.8.6. **Chlorine for DisInfection:**
       - 9.8.6.1. Calcium Hypochlorite in granular form conforming to ANSI/AWWA B300 must be used and must contain approximately 65 percent available chlorine by weight. The material should be stored In a cool, dry, and dark environment to minimize deterioration.
       - 9.8.6.2. The heavily chlorInated water shall then be flushed from the conduit and disposed In a manner meeting the requirements set out below.
       - 9.8.6.3. The chlorine residual shall be tested prior to flushing operations.
     - 9.8.9. **Disposal of Hyper-Chlorinated Water:** If the chlorine residual exceeds 4-mg/L (ppm) the water shall remain in the new water conduit until the chlorine residual is less than 4-mg/L (ppm). As an alternate, the Contractor may choose to evacuate the water into water trucks, or an approved storage facility (such as a detention pond until the chlorine residual is 4-mg/L (ppm) or less), or treat the water with Sodium Bisulfite or another dechlorination chemical (Sulfur Dioxide, Sodium Sulfite, Sodium Thiosulfate, or Ascorbic Acid) or method appropriate for potable water and approved by the Owner until the chlorine residual is reduced to 4-mg/L (ppm) or less. **The heavily chlorInated water shall not be disposed of Into the storm sewer system.** After the specified chlorine residual Is obtained, less than 4-mg/L (ppm), the water may then be discharged Into the storm sewer system or utilized by the Contractor.
       - 9.9.1. The requirement for discharge of heavily chlorInated water is found in the TPDES General Permit to Authorize the Discharge of Storm Water and Certain Non-Storm Water Discharges from Regulated Construction Activities Within the State of Texas.
       - 9.9.2. The Contractor shall prepare the conduit for disInfection activities and secure same after chlorination is complete.
       - 9.9.3. This shall consist of furnishing all equipment, material and labor to satisfactorily prepare the conduit for disInfection. The Contractor shall also be required to provide adequate provisions for sampling.
       - 9.9.4. The Contractor shall make all necessary taps Into the pipe to accomplish chlorination of a new line.
       - 9.9.5. After satisfactory completion of the disInfection operation, the Contractor shall remove surplus pipe at the chlorination and sampling points, plug the remaining pipe, backfill, and complete all appurtenant work necessary to secure the conduit.
   - 9.10. **Bacterial Sampling:**
     - 9.10.1. Unless otherwise specified, the Contractor shall Inject chlorine disInfectant Into the conduit and monitor the solution.
     - 9.10.2. The City Public Works Construction Inspector shall supervise the taking of water samples from a suitable tap (not through a fire hydrant) for analysis by the North Texas Municipal Water District laboratory. The sample(s) shall be transported by City staff to the laboratory at 9:00 AM on Tuesdays and Thursdays. Samples may not be taken earlier than 3:00 PM on the day prior to delivery. The City Public Works Construction Inspector shall notify the Contractor of the results.
     - 9.10.3. Microbiological sampling shall be done prior to connecting the new conduit Into the existing distribution system In accordance with AWWA C651 DisInfecting Water Mains. Samples shall be tested In accordance with ***Standard Methods for the Examination of Water and Wastewater***. Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate. At least one sample shall be collected from every 1,000-linear-feet of new water conduit, plus one set from the end of the line and at least one set from each branch. If trench water has entered the new conduit during construction or, if in the opinion of the City Inspector, excessive quantities of dirt or debris have entered the new conduit, samples shall be taken at intervals of approximately 200-linear-feet. Samples shall be taken of water that has been in the new conduit for at least 16-hours.
     - 9.10.4. Unsatisfactory test results shall require a repeat of the disInfection process and resampling as required above until a satisfactory sample is obtained.
     - 9.10.5. **In the event there are two unsatisfactory test results from the same sampling point, the Contractor must "poly-pig" the new water main and samples taken again until a satisfactory sample is obtained.**
   - 9.11. **Tapping Sleeve and Valve Air Test:** Prior to tapping, all tapping sleeves and valves shall be air tested at 120 psi for three (3) minutes, with no pressure loss.

WATER - 1
GENERAL NOTES

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE HERITAGE TRAIL, PHASE II

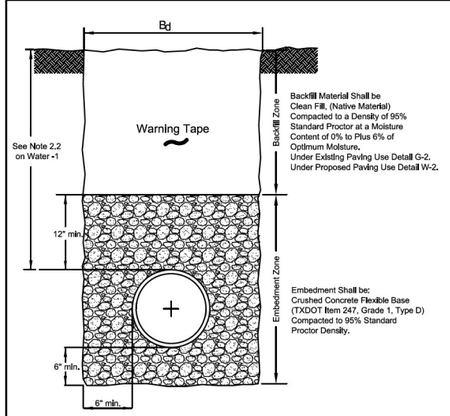
CITY OF MESQUITE
WATER SHEETS

GENERAL DESIGN STANDARDS
STANDARD DETAILS
SCALE: N.T.S
REVISION DATE: 07/24/2019
SHEET: W-GN

SCALE: N/A SHEET 2 OF 5

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

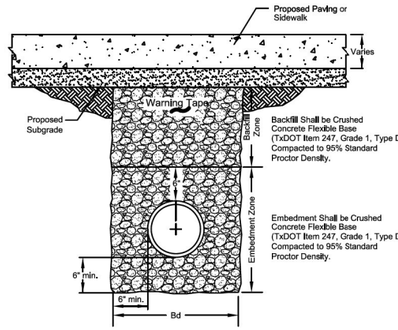
CONTRACT NO. 2024-014 SHEET NO. 127



NOTES:
1. TYPICAL COVER OVER WATER MAIN IS 42" FOR MAIN < 14" DIAMETER AND 60" FOR MAINS 14" OR GREATER IN DIAMETER.
2. WARNING TAPE SHALL BE PLACED APPROX. 24" ABOVE TOP OF PIPE.
3. DUCTILE IRON PIPE AND FITTINGS SHALL HAVE CONTINUOUS POLYETHYLENE WRAP (BLUE COLOR).

Pipe Size	Max Bd
12" & Smaller	32"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

MESQUITE TEXAS Real. Texas. Service. | Public Works | WATER MAIN EMBEDMENT (NOT UNDER PAVING) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 09/08/2020 | SHEET: W-1



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Pipe Size	Max Bd
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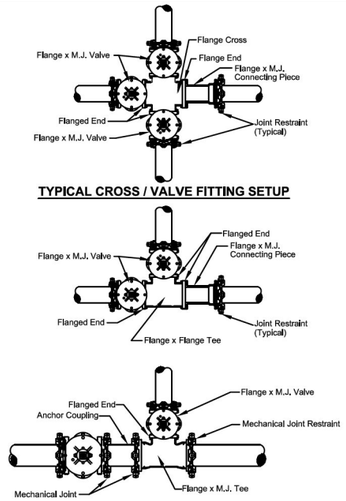
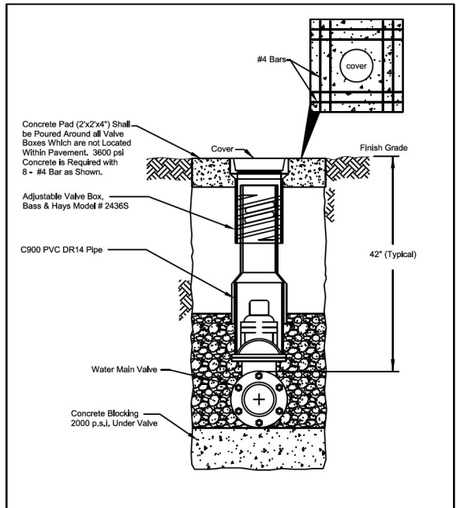
MESQUITE TEXAS Real. Texas. Service. | Public Works | WATER MAIN EMBEDMENT (UNDER PAVING) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 11/11/2019 | SHEET: W-2

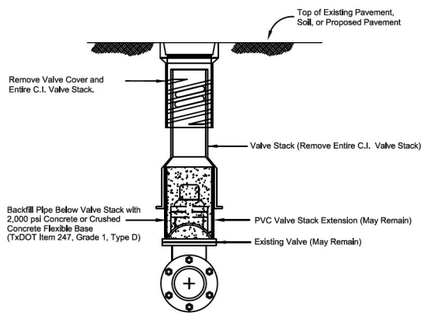


MESQUITE TEXAS Real. Texas. Service. | Public Works | WATER FLANGED FITTINGS | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: W-3



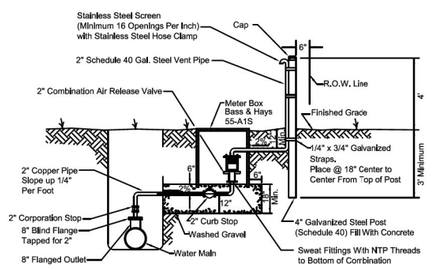
Notes:
See Details W-1, W-2, W-3 or W-4 for Valve Embedment & Backfill Requirements.

MESQUITE TEXAS Real. Texas. Service. | Public Works | WATER VALVE | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: W-4



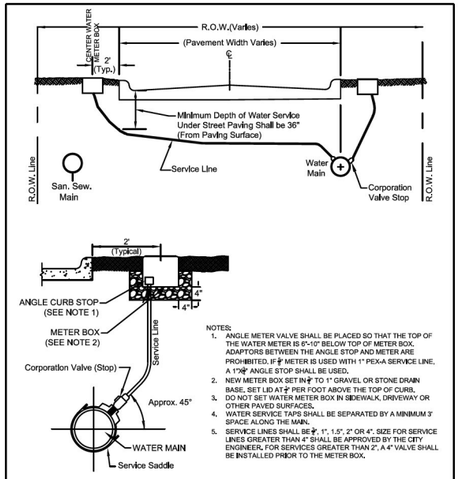
Notes:
1. Not In Pavement - Match Existing Soil and Sod. Compact to 95% Standard Proctor Density.
2. In Pavement - All Pavement Repairs Must Conform to Detail W-3.

MESQUITE TEXAS Real. Texas. Service. | Public Works | ABANDONMENT OF VALVE STACK | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: W-5



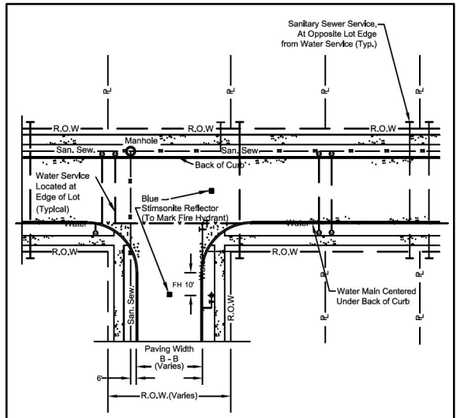
Notes:
1. For 1" Air Release Valve
2. For Larger Sizes Consult with City Engineer
3. Corporation & Curb Stop Per Typical Service Detail

MESQUITE TEXAS Real. Texas. Service. | Public Works | AIR RELEASE VALVE | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: W-6



NOTES:
1. ANGLE METER VALVE SHALL BE PLACED SO THAT THE TOP OF THE WATER METER IS 6"-12" BELOW TOP OF METER BOX. ADAPTORS BETWEEN THE ANGLE STOP AND METER ARE PROHIBITED. IF 1" METER IS USED WITH 1" PEX-A SERVICE LINE, A 1"x1" ANGLE STOP SHALL BE USED.
2. NEW METER BOX SET IN 1" TO 1" GRAVEL OR STONE DRAIN BASE. SET LID AT ½" PER FOOT ABOVE THE TOP OF CURB.
3. DO NOT SET WATER METER BOX IN SIDEWALK, DRIVEWAY OR OTHER PAVED SURFACES.
4. WATER SERVICE TAPS SHALL BE SEPARATED BY A MINIMUM 3' SPACE ALONG THE MAIN.
5. SERVICE LINES SHALL BE ¾", 1", 1.5", 2" OR 4". SIZE FOR SERVICE LINES GREATER THAN 4" SHALL BE APPROVED BY THE CITY ENGINEER. FOR SERVICES GREATER THAN 2", A 4" VALVE SHALL BE INSTALLED PRIOR TO THE METER BOX.

MESQUITE TEXAS Real. Texas. Service. | Public Works | WATER SERVICE | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 09/08/2020 | SHEET: W-7



Notes:
1. Water meters shall not be in paving (sidewalks, drives, parking).
2. Fire hydrants located at street intersections shall be placed a minimum of 10' from the street radius tangent point.
3. All water and sewer service locations shall be marked at the curb and painted per City standards.
4. Water meters for lots with driveway access off an alley should be at the center of the lot. For lots with driveway access off the street, water meters should be located near the property line as shown in this detail.

MESQUITE TEXAS Real. Texas. Service. | Public Works | TYPICAL UTILITY LOCATIONS | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 09/08/2020 | SHEET: W-8

WATER - 2

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

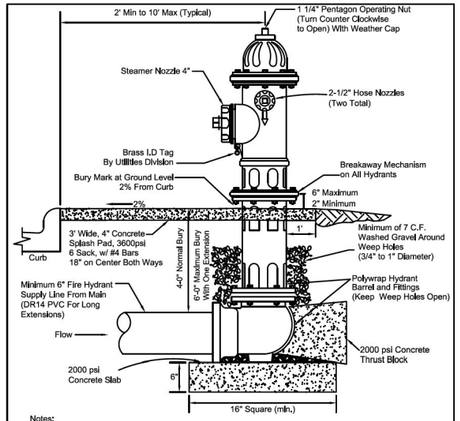
CITY OF MESQUITE WATER SHEETS

SCALE: N/A

SHEET 3 OF 5

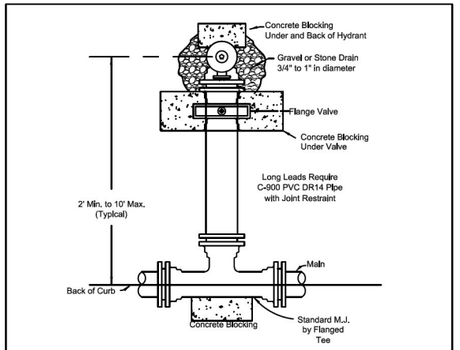
BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 128



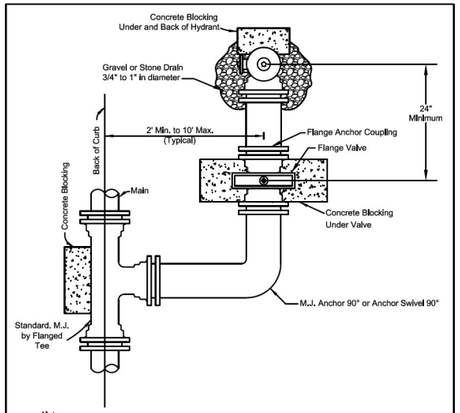
Notes:
1. Fire Hydrants shall not be Installed in Sidewalks or Overhang Sidewalks (ADA Requirement).
2. Fire Hydrants shall not be Placed Within Curb Radius.
3. Fire Hydrants Located Between Street Intersections Shall be Placed at a Property Line (Extended).
4. Fire Hydrant Leads shall have Embedment & Backfill the Same as Water Main Embedment.
5. All Fittings and Valves shall have M.J. Anchoring Couplings, Flanged Joints or Mechanical Restrained Retainer Glands.
6. Fire Hydrants shall have No More Than One Extension - 18" Maximum.
7. All Concrete Blocking shall be Minimum 2000 psi.

MESQUITE TEXAS Real. Texas. Service.	Public Works	FIRE HYDRANT	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 09/08/2020
			SHEET: W-9



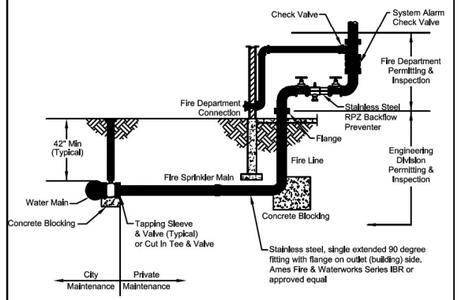
NOTES:
1. FIRE HYDRANTS SHALL NOT BE INSTALLED IN SIDEWALKS OR OVERHANG SIDEWALKS (ADA REQUIREMENT)
2. FIRE HYDRANTS SHALL NOT BE PLACED WITHIN CURB RADIUS
3. FIRE HYDRANTS LOCATED BETWEEN STREET INTERSECTIONS SHALL BE PLACED AT A PROPERTY LINE (EXTENDED)
4. FIRE HYDRANT LEADS SHALL HAVE EMBEDMENT AND BACKFILL THE SAME AS WATER MAIN EMBEDMENT
5. ALL FITTINGS AND VALVES SHALL HAVE M.J. ANCHORING COUPLINGS, FLANGED JOINTS OR MECHANICAL RESTRAINED RETAINER GLANDS
6. FIRE HYDRANTS SHALL HAVE NO MORE THAN ONE EXTENSION - 18" MAXIMUM
7. ALL CONCRETE BLOCKING SHALL BE MINIMUM 2000 PSI
8. IF HYDRANT LEAD EXTENDS UNDER ARTERIAL ROADWAY, AN ADDITIONAL VALVE SHALL BE INSTALLED AT THE TEE.

MESQUITE TEXAS Real. Texas. Service.	Public Works	FIRE HYDRANT (STRAIGHT)	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: W-10



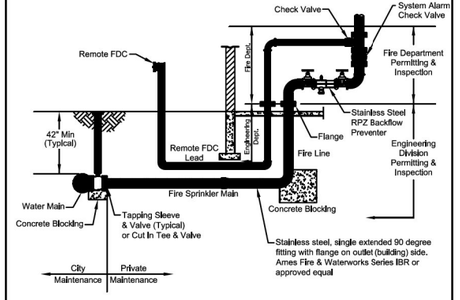
Notes:
1. Fire Hydrants shall not be Installed in Sidewalks or Overhang Sidewalks (ADA Requirement).
2. Fire Hydrants shall not be Placed Within Curb Radius.
3. Fire Hydrant Located Between Street Intersections Shall be Placed at a Property Line (Extended).
4. Fire Hydrant Leads shall have Embedment & Backfill the Same as Water Main Embedment.
5. All Fittings and Valves shall have M.J. Anchoring Couplings, Flanged Joints or Mechanical Restrained Retainer Glands
6. Fire Hydrants shall have No More Than One Extension - 18" Maximum.
7. All Concrete Blocking shall be Minimum 2000 psi.

MESQUITE TEXAS Real. Texas. Service.	Public Works	FIRE HYDRANT (90 BEND)	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: W-11



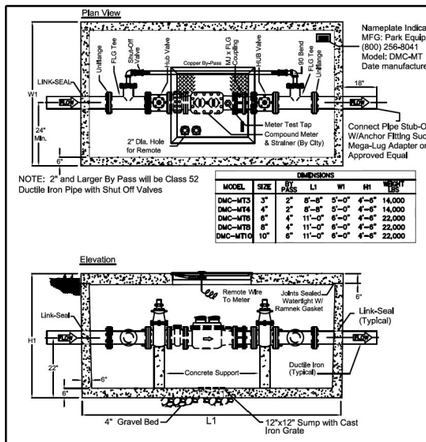
Notes:
1. All Fittings Must be Mechanically Anchored & Blocked.
2. All Below Grade / Ground construction is Permitted & Inspected by the Engineering Division(Including Remote FDC).
3. All Above Grade / Ground Construction is Permitted & Inspected by Fire Department.
4. All Concrete Blocking shall be Minimum 2000 psi.
5. Underground Test Reports are Required for Fire Sprinkler Lead and FDC by a Licensed Installer.

MESQUITE TEXAS Real. Texas. Service.	Public Works	FIRE SPRINKLER YARD PIPING	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: W-13



Notes:
1. All Fittings Must be Mechanically Anchored & Blocked.
2. All Below Grade / Ground construction is Permitted & Inspected by the Engineering Division(Including Remote FDC).
3. All Above Grade / Ground Construction is Permitted & Inspected by Fire Department. (Including Remote FDC that Remains in the Building and Above Ground
4. All Concrete Blocking shall be Minimum 2000 psi.
5. Underground Test Reports are Required for Fire Sprinkler Lead and FDC by a Licensed Installer.

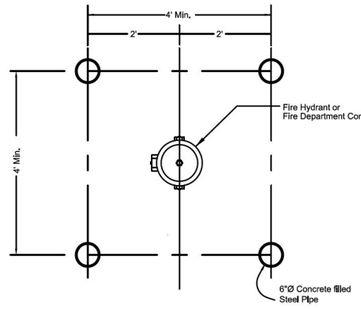
MESQUITE TEXAS Real. Texas. Service.	Public Works	REMOTE FDC AND FIRE LINE	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: W-14



DIMENSIONS						
MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS
DMC-MT3	3"	2"	5'-8"	5'-0"	4'-6"	14,000
DMC-MT4	4"	2"	5'-8"	5'-0"	4'-6"	14,000
DMC-MT6	6"	4"	11'-0"	6'-0"	4'-6"	22,000
DMC-MT8	8"	4"	11'-0"	6'-0"	4'-6"	22,000
DMC-MT10	10"	6"	11'-0"	6'-0"	4'-6"	22,000

Notes:
1. Vault Concrete: Class 1 Concrete with Design Strength of 4500 PSI at 28 Days. Unit is of Monolithic Construction at Floor and First Stage of Wall with Sectional Riser Depth.
2. Vault Reinforcement: Grade 60 Reinforced. Steel Rebar Conforming to ASTM A615 on Required Centers or Equal.
3. Vault Hatchway: 36" x 36" Aluminum hatchway (BILCO PCM-4). Hinged ¼" Aluminum Diamond Plate Cover, with 2" Extruded Aluminum Frame. Hatch to be Furnished with 316 Stainless Steel Snap Lock & Brass Hinges.

MESQUITE TEXAS Real. Texas. Service.	Public Works	3" THRU 10" DOMESTIC TURBINE WATER METER ASSEMBLY	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: W-15



Notes:
1. Bollards are not a Substitute for Proper Traffic Flow Layout and should be used Only After Options for Relocation of Hydrant Have Proved Infeasible.
2. Bollards shall only be Used in Low Speed Areas Where Speed Limit is 10 MPH or Lower (Such as Around Loading Docks and In Parking Lots).
3. Bollards shall not be Used in City Street Right-of-Way or Alley Right-of-Way.
4. 5' of Bollard shall Extend Above Paving to Allow Viewing of Bollard in Rear View Mirrors.
5. 6" Diameter Steel Pipe, Schedule 40, 0.28" Wall Thickness, Filled with Concrete.
6. 8' Length (5' Above Paving, 3' Below Paving), Set 18" Diameter Pier.
7. Bollard shall be Painted Yellow.

MESQUITE TEXAS Real. Texas. Service.	Public Works	FIRE HYDRANT BOLLARD	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: W-16

WATER - 3

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

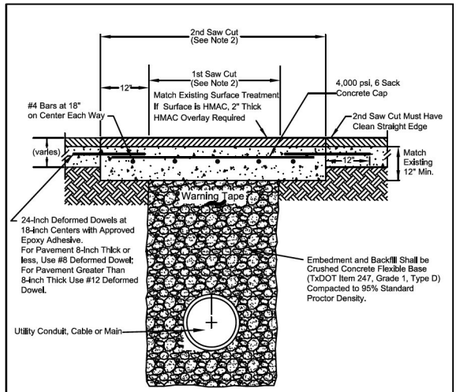
CITY OF MESQUITE WATER SHEETS

SCALE: N/A

SHEET 4 OF 5

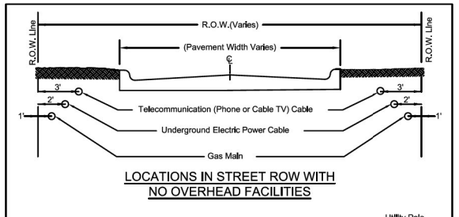
BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014 SHEET NO. 129

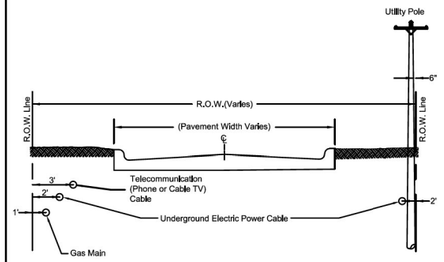


Notes:
1. Pavement Cuts Shall be Full Depth Saw Cuts.
2. Make 1st Saw Cut when Opening Pavement to Begin Conduit Installation. Make 2nd Cut after Conduit Installation and Backfill and Preparing to Replace Pavement.
3. Where Existing Pavement Is HMAC, Replace with 12-Inch Thick Minimum Concrete with 2-Inch Thick HMAC Overlay

MESQUITE TEXAS Real. Texas. Service.	Public Works	FRANCHISE UTILITY PAVEMENT CUT REPLACEMENT	GENERAL DESIGN STANDARDS STANDARD DETAILS SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: F-1

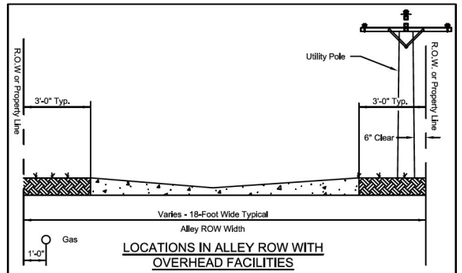


LOCATIONS IN STREET ROW WITH NO OVERHEAD FACILITIES

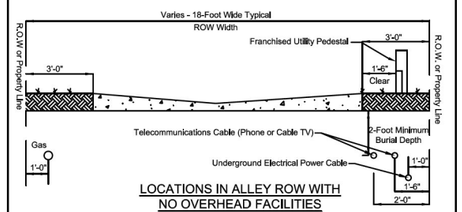


LOCATIONS IN STREET ROW WITH OVERHEAD FACILITIES

MESQUITE TEXAS Real. Texas. Service.	Public Works	TYPICAL UTILITY LOCATIONS IN STREET ROW	GENERAL DESIGN STANDARDS STANDARD DETAILS SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: F-2



LOCATIONS IN ALLEY ROW WITH OVERHEAD FACILITIES



LOCATIONS IN ALLEY ROW WITH NO OVERHEAD FACILITIES

NOTE:
1. All Franchised Utilities Shall Have a Minimum Burial Depth of 24-Inches Below Bottom of Paving.
2. Gas Services Line for House Shall be Installed 1'-0" Beyond ROW / Property Line.

MESQUITE TEXAS Real. Texas. Service.	Public Works	TYPICAL UTILITY LOCATIONS IN ALLEY ROW	GENERAL DESIGN STANDARDS STANDARD DETAILS SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: F-3

MESQUITE TEXAS Real. Texas. Service.	Public Works	RESERVED FOR FUTURE USE	GENERAL DESIGN STANDARDS STANDARD DETAILS SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: F-4

CITY OF MESQUITE - ENGINEERING DIVISION
UTILITY RIGHT-OF-WAY/EASEMENT USE & CONSTRUCTION PERMIT CONDITIONS AND RESTRICTIONS

THIS PERMIT IS ISSUED IN ACCORDANCE WITH THE MESQUITE CITY CODE, CHAPTER 15, ARTICLE III AND THE APPLICABLE FRANCHISE AGREEMENT BETWEEN THE UTILITY FRANCHISE REQUESTING THE PERMIT AND THE CITY OF MESQUITE AND OTHER APPLICABLE **FEDERAL, STATE AND CITY LAWS, REGULATIONS AND ORDINANCES.**

DESIGN AND LOCATION OF FACILITIES:
GENERALLY, FRANCHISED UTILITY CABLES, GUYS, POLES, CONDUIT, ETC SHALL BE PLACED AS CLOSE TO THE R.O.W. LINE AS PRACTICABLE. **SEE ATTACHED DETAIL SHEETS TITLED "TYPICAL UTILITY LOCATION PLAN" FOR STANDARD UTILITY LOCATIONS.** PLEASE CONSULT THE CITY PUBLIC WORKS CONSTRUCTION INSPECTOR FOR THE LOCATION WHERE ABOVE GROUND GUYS, POLES, ETC, SHALL BE PLACED.

CABLE OR FACILITY BURIAL DEPTH: ALL CONDUCTOR BURIAL DEPTHS SHALL BE IN COMPLIANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE, SECTION 353.D (PUBLISHED BY THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC., (IEEE) AND APPROVED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)). **MINIMUM DEPTH FOR VOLTAGES 0 TO 600 VOLTS IS 24-INCHES BELOW BOTTOM OF EDGE OF PAVEMENT FOR STREETS WITH CURB AND GUTTER OR BELOW ROADWAY DITCH FLOWLINE GRADE FOR STREETS WITHOUT CURB AND GUTTER.**

VISIBILITY OBSTRUCTIONS: NO FACILITY SHALL BE DESIGNED OR INSTALLED WHERE IT CAUSES A SIGHT VISIBILITY OBSTRUCTION OR VIEW OBSTRUCTION. PLEASE CONSULT MESQUITE CITY CODE, CHAPTER 9, ARTICLE X (SECTIONS 9-305 TO 9-308) FOR REQUIREMENTS AND DETAILS.

ACCESSIBLE ROUTES: OBSTRUCTIONS OR PROTRUSIONS OF UTILITY POLES, GUY LINES, PEDESTALS, CABINETS OR OTHER UTILITY FACILITIES OVER A SIDEWALK, RAMP, TRAIL OR OTHER TRANSPORTATION FACILITY SO AS TO HINDER OR PREVENT FULL USE OF THE FACILITY OR IMPEDE FULL ACCESS ARE PROHIBITED.

FRANCHISED UTILITY SIGNAGE AND MARKERS: ALL FRANCHISED UTILITY SIGNAGE AND MARKERS SHALL BE OF THE FLEXIBLE VERTICAL FIBERGLASS CARSONITE® TYPE AND NO TALLER THAN 48-INCHES ABOVE GRADE (SEE HTTP://WWW.CARSONITE.COM/UTI-MARKERS.ASP) **OR** STICKERS & PLAQUES PLACED ON EXISTING FACILITIES SUCH AS POLES, PEDESTALS AND CABINETS **OR** PLACEMENT MARKER BUTTONS ON CURBS, SIDEWALKS OR PAVEMENT, **GENERALLY, SEPARATE SIGNAGE IS DISCOURAGED.** SIGNAGE SHALL BE FLEXIBLE SO THAT IT DOES NOT PRESENT A DANGER TO PEDESTRIANS, BICYCLISTS AND MOTORISTS IF THE SIGNAGE IS IMPACTED AT SPEED. **METAL POLES AND SIGNS ARE PROHIBITED. THE CITY WILL REQUIRE REMOVAL OF PROHIBITED, DAMAGED OR DILAPIDATED EXISTING SIGNAGE WITHIN 300-FEET OF PROPOSED CONSTRUCTION.**

BOLLARDS: USE OF BOLLARDS IN CITY RIGHT-OF-WAY **IS PROHIBITED.** BOLLARDS PRESENT A DANGER TO MOTORISTS, BICYCLISTS AND OTHER USERS OF THE ROW AND EASEMENTS. IF A FACILITY IS IN DANGER OF BEING HIT BY A MOTORIST IT SHOULD BE RELOCATED TO A SAFER LOCATION RATHER THAN BE PROTECTED BY BOLLARDS. **IN ADDITION, THE CITY WILL REQUIRE REMOVAL OF EXISTING BOLLARDS WITHIN 300-FEET OF PROPOSED CONSTRUCTION.**

CONSTRUCTION TRAFFIC CONTROL, BARRICADING AND SIGNING: THE UTILITY COMPANY AND THEIR CONTRACTORS AND SUBCONTRACTORS ARE RESPONSIBLE FOR DESIGN AND IMPLEMENTATION OF A PLAN DURING CONSTRUCTION AND MAINTENANCE OPERATIONS FOR TRAFFIC CONTROL, BARRICADING AND SIGNAGE THAT SHALL AS A MINIMUM MEET THE REQUIREMENTS OF THE MOST CURRENT *"TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES"* (MESQUITE CITY CODE SECTIONS 11-104 AND 11-105). NO ALLEY OR STREET SHALL BE CLOSED WITHOUT 48 HOURS NOTICE TO THE ASSIGNED PUBLIC WORKS CONSTRUCTION INSPECTOR.

THE CITY PUBLIC WORKS CONSTRUCTION INSPECTOR WILL PERIODICALLY REVIEW THE PROJECT BARRICADING AND NOTIFY THE UTILITY SUPERVISOR/FOREMAN OF ANY DEFICIENCY OBSERVED.

ABANDONMENT OF FACILITIES: ANY CONDUIT/PIPE THAT IS ABANDONED IN PLACE AND IS 6" OR GREATER IN DIAMETER SHALL BE GROUT FILLED.

MESQUITE TEXAS Real. Texas. Service.	Public Works	FRANCHISE UTILITY GENERAL NOTES	GENERAL DESIGN STANDARDS STANDARD DETAILS SCALE: N.T.S REVISION DATE: 04/13/2020 SHEET: F-5A

TRENCH SAFETY, CONFINED SPACE AND OTHER SAFETY ISSUES:
ALL OSHA GUIDELINES MUST BE FOLLOWED INCLUDING BUT NOT LIMITED TO TRENCH SAFETY, CONFINED SPACE ENTRY, PERSONAL PROTECTIVE EQUIPMENT AND TRAFFIC CONTROL.

THE FRANCHISED UTILITY COMPANY AND SUBCONTRACTOR (IF ANY) ARE RESPONSIBLE FOR DESIGN AND IMPLEMENTATION OF A PLAN TO ENSURE TRENCH SAFETY THAT, AS A MINIMUM SHALL MEET THE REQUIREMENTS OF OSHA STANDARDS AND INTERPRETATIONS, PART 1926, SUBPART P - EXCAVATIONS, TRENCHING, SHORING AND ANY OTHER APPLICABLE FEDERAL, STATE AND CITY LAWS, REGULATIONS AND ORDINANCES. TRENCH SAFETY PLANS SHALL BE SEALED BY A PROFESSIONAL ENGINEER. THE FRANCHISED UTILITY COMPANY AND HIS SUBCONTRACTOR (IF ANY) ARE RESPONSIBLE FOR MAKING A SOIL CLASSIFICATION FOR TRENCH SAFETY DESIGN PURPOSES. IF THE FRANCHISED UTILITY DOES NOT MAKE A DETERMINATION OF SOIL TYPE, ALL INSPECTION SHALL BE BASED ON THE WORST CASE SOIL TYPE (TYPE C). THE FRANCHISED UTILITY COMPANY AND HIS SUBCONTRACTOR (IF ANY) SHALL ALSO DESIGNATE A "COMPETENT PERSON", AS DEFINED BY OSHA TRENCH SAFETY REGULATIONS, TO MAKE AT LEAST A DALY TRENCH SAFETY INSPECTION.

FACILITY LOCATES NOTIFICATION PRIOR TO DIGGING:
THE UTILITY COMPANY AND THEIR CONTRACTORS AND SUBCONTRACTORS ARE RESPONSIBLE FOR NOTIFYING DIG TESS FOR UTILITY LOCATES 48-HOURS BEFORE COMMENCING DIGGING. IN ADDITION, THE UTILITY COMPANY AND THEIR CONTRACTORS AND SUBCONTRACTORS ARE RESPONSIBLE FOR NOTIFYING THE CITY OF MESQUITE WATER UTILITIES DISPATCH OFFICE FOR LOCATIONS OF WATER AND SANITARY SEWER MAINS AND NOTIFICATION OF THE TRAFFIC SUPERINTENDENT FOR LOCATION OF TRAFFIC SIGNAL CONDUITS AND CONDUCTORS A MINIMUM OF 48-1OURS BEFORE COMMENCING DIGGING.
SEE *CITY OF MESQUITE CONTACT LIST* FOR PHONE NUMBERS AND OTHER CONTACT INFORMATION.

PAVEMENT CUTS:
NO PAVEMENT SHALL BE CUT OR REPAIRED WITHOUT PRIOR NOTIFICATION AND INSPECTION BY THE ASSIGNED PUBLIC WORKS CONSTRUCTION INSPECTOR.

ALL PAVEMENT CUTS SHALL BE BACKFILLED TO BOTTOM OF REPLACEMENT PAVEMENT WITH RECYCLED CRUSHED CONCRETE FLEXIBLE BASE (PER TXDOT ITEM 247, GRADE 1, TYPE D) TO PREVENT FUTURE SETTLEMENT. ALL BACKFILL SHALL BE COMPACTED TO 95% STANDARD PROCTOR. PAVEMENT CUTS ON PAVEMENT LESS THAN 5-YEARS OLD SHALL REPLACE THE ENTIRE PANEL OR AS REQUIRED BY THE CITY PUBLIC WORKS CONSTRUCTION INSPECTOR. DETAILS FOR REPAIR OF PAVEMENT CUTS ARE AVAILABLE FROM THE CITY ENGINEERING DIVISION WEBSITE AT: HTTP://WWW.CITYOFMESQUITE.COM/ENGINEERING/FRANCHISEDUTILITY.PHP.

NOISE AND ALLOWABLE WORKING HOURS:
NOISE FROM CONSTRUCTION AND ALLOWABLE WORKING HOURS ARE REGULATED BY SECTIONS 10-66 TO 10-77 OF THE MESQUITE CITY CODE. ALLOWABLE WORKING HOURS ARE BETWEEN 7:00 AM AND 10:00 P.M., MONDAY THROUGH SATURDAY, NO WORK IS ALLOWED ON SUNDAY WITHOUT SPECIFIC WRITTEN PERMISSION OF THE CITY ENGINEER. PLEASE CONSULT THE CITY PUBLIC WORKS CONSTRUCTION INSPECTOR WITH ANY QUESTIONS ON THESE ISSUES.

CONSTRUCTION INSPECTION:
THE CITY PUBLIC WORKS CONSTRUCTION INSPECTOR SHOULD BE NOTIFIED PRIOR TO ANY TRENCH BACKFILLING OR PAVEMENT REPAIR WITHIN A CITY R.O.W. OR EASEMENT SO THAT A PROPER INSPECTION CAN BE MADE. IF CITY INSPECTION IS REQUIRED OUTSIDE NORMAL WORKING HOURS THE FRANCHISED UTILITY AND HIS SUBCONTRACTOR WILL BE RESPONSIBLE FOR PAYING THE CITY CONSTRUCTION INSPECTOR'S OVERTIME WAGE PLUS BENEFITS. THE CITY CONSTRUCTION PUBLIC WORKS INSPECTOR WILL BE HAPPY TO ANSWER ANY QUESTIONS CONCERNING CURRENT CITY STANDARDS AND REQUIREMENTS. **SEE PERMIT OR ATTACHED AREA MAP TO DETERMINE RESPONSIBLE INSPECTOR.**

RESTORATION OF PROPERTY:
PER THE MESQUITE CITY CODE, ANY PUBLIC OR PRIVATE PROPERTY OR PAVING DISTURBED BY THE FRANCHISED UTILITY AND HIS SUBCONTRACTOR (IF ANY) SHALL BE RESTORED TO A CONDITION AS GOOD OR BETTER THAN WHAT EXISTED PRIOR TO CONSTRUCTION. THIS INCLUDES REPLACING DISTURBED OR DAMAGED SOD IN PARKWAYS OR ALLEYS. REPAIR OF IRRIGATION SYSTEMS AND REPLACEMENT OF DAMAGED PAVEMENT.

EMERGENCY WORK (PERMIT REQUIRED WITHIN TWO WORKING DAYS):
PER THE MESQUITE CITY CODE, EMERGENCY WORK CAN PROCEED AS NEEDED TO MAINTAIN & RESTORE EXISTING SERVICE TO CUSTOMERS ON THE CONDITION THAT A PERMIT SHALL BE OBTAINED FROM THE CITY WITHIN TWO (2) WORKING DAYS AFTER THE **START** OF THE EMERGENCY WORK.

MESQUITE TEXAS Real. Texas. Service.	Public Works	FRANCHISE UTILITY GENERAL NOTES	GENERAL DESIGN STANDARDS STANDARD DETAILS SCALE: N.T.S REVISION DATE: 05/20/2019 SHEET: F-5B

FRANCHISE UTILITY - 1

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

CITY OF MESQUITE WATER SHEETS

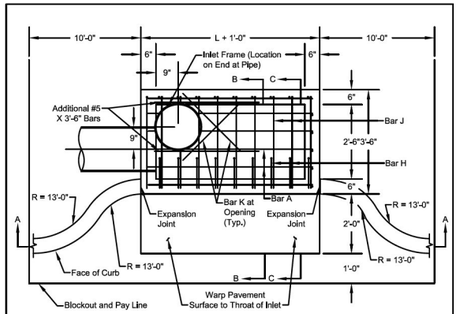
SCALE: N/A

SHEET 5 OF 5

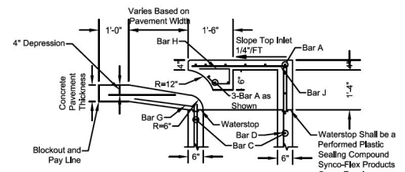
BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

CONTRACT NO. 2024-014

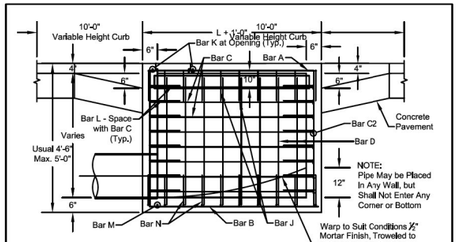
SHEET NO. 130



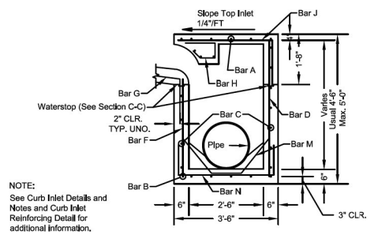
5 AND 10 FOOT RECESSED INLETS - PLAN VIEW



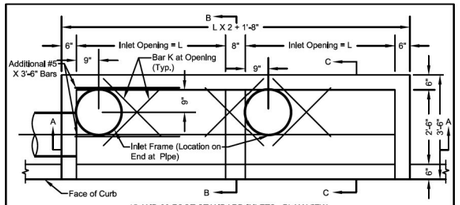
SECTION C-C - 5 AND 10 FOOT RECESSED INLETS



SECTION A-A - 5 AND 10 FOOT RECESSED INLETS

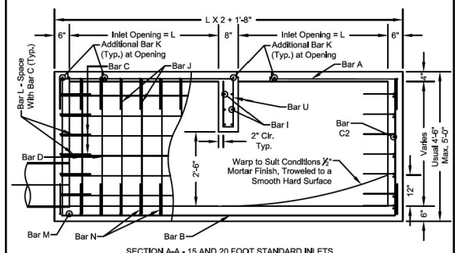


SECTION B-B - 5 AND 10 FOOT RECESSED INLETS

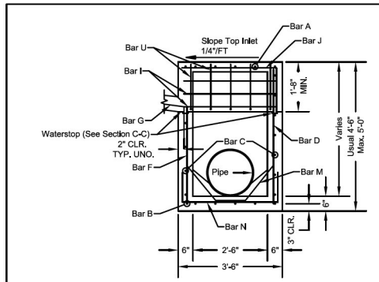


15 AND 20 FOOT STANDARD INLETS - PLAN VIEW

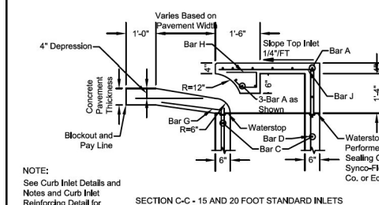
NOTES:
1. Reinforcement shown is additional for pipe openings, see sections for other reinforcing.
2. Bars J Shall be cut at opening to maintain 2" minimum clear cover. Additional #5 bars X 3'-6" shall be provided at each side of opening.



SECTION A-A - 15 AND 20 FOOT STANDARD INLETS

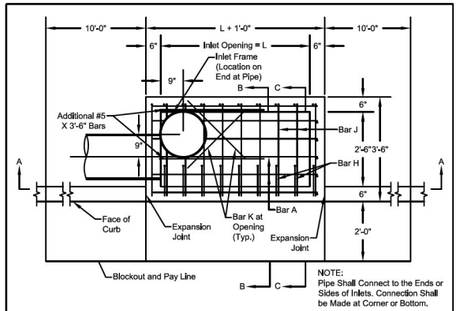


SECTION B-B - 15 AND 20 FOOT STANDARD INLETS

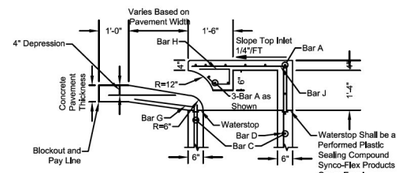


NOTE:
See Curb Inlet Details and Notes and Curb Inlet Reinforcing Detail for additional information.

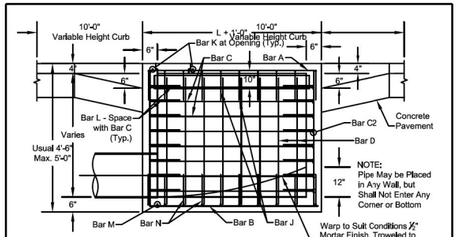
SECTION C-C - 15 AND 20 FOOT STANDARD INLETS



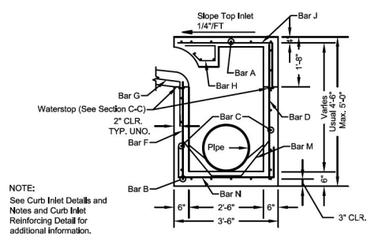
5' AND 10' STANDARD CURB INLET - PLAN VIEW



SECTION C-C - 5 AND 10 FOOT STANDARD INLETS

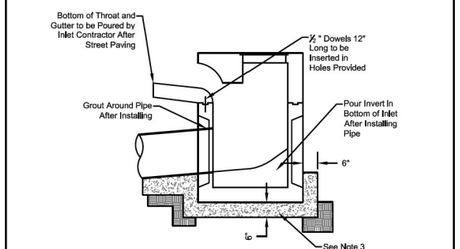


SECTION A-A - 5 AND 10 FOOT STANDARD INLETS



SECTION B-B - 5 AND 10 FOOT STANDARD INLETS

NOTE:
Precast Inlets Must be Approved by City Engineer.



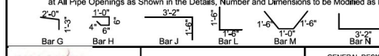
INSTALLATION DRAWING FOR PRECAST CURB INLETS

NOTES (APPLICABLE TO ALL CURB INLETS):
1. Precast inlets must be approved by owner.
2. The excavation must provide a firm, level bed for the base section to rest upon.
3. A minimum of 6 inches of 1" diameter (maximum rock or gravel shall be used to prepare the bedding to final grade.
4. Concrete to be 4,000 psi.
5. Locking device is required on all storm drain lids.
6. "No Dumping" warning plaque to be Installed on all standard and recessed Inlets.
7. Design shown for Inlets up to 5'-0" In depth. Special design will be required for Inlets greater than 5'-0" In depth.
8. Throat opening shall be 6 inches.
9. For all standard curb Inlets, see standard 30" Manhole Ring and Cover Detail.
10. Bars shall be adjusted or cut as necessary to maintain a minimum 2" clear at all openings.

Double Inlets	Inlet Opening "L"	Bar	Bar Size	Bar Length	Bar Spacing	Inlet Opening "L"	Bar	Bar Size	Bar Length	Bar Spacing
	7'-6"	A	#4	16'-4"	8" O.C. MAX.	10'-0"	A	#4	21'-4"	8" O.C. MAX.
		B	#4	16'-4"	8" O.C. MAX.		B	#4	21'-4"	8" O.C. MAX.
		C	#4	16'-4"	8" O.C. MAX.		C	#4	21'-4"	8" O.C. MAX.
		C2	#4	3'-2"	8" O.C. MAX.		C2	#4	3'-2"	8" O.C. MAX.
		D	#5	4'-6"	12" O.C. MAX.		D	#5	4'-6"	12" O.C. MAX.
		F	#5	3'-3"	12" O.C. MAX.		F	#5	3'-3"	12" O.C. MAX.
		G	#4	3'-6"	12" O.C. MAX.		G	#4	3'-6"	12" O.C. MAX.
		H	#4	2'-6"	12" O.C. MAX.		H	#4	2'-6"	12" O.C. MAX.
		I	#4	2'-0"	8" O.C. MAX.		I	#4	2'-0"	8" O.C. MAX.
		J	#5	4'-8"	12" O.C. MAX.		J	#5	4'-8"	12" O.C. MAX.
		K**	#4	3'-0"			K**	#4	3'-0"	
		L	#4	3'-0"	8" O.C. MAX.		L	#4	3'-0"	8" O.C. MAX.
		M**	#4	4'-0"			M**	#4	4'-0"	
		N	#5	6'-2"	8" O.C. MAX.		N	#5	6'-2"	8" O.C. MAX.
		U	#4	3'-4"	8" O.C. MAX.		U	#4	3'-4"	8" O.C. MAX.

Single Inlets	Inlet Opening "L"	Bar	Bar Size	Bar Length	Bar Spacing	Inlet Opening "L"	Bar	Bar Size	Bar Length	Bar Spacing
	5'-0"	A	#4	5'-0"	8" O.C. MAX.	10'-0"	A	#4	9'-0"	8" O.C. MAX.
		B	#4	5'-0"	8" O.C. MAX.		B	#4	9'-0"	8" O.C. MAX.
		C	#4	5'-0"	8" O.C. MAX.		C	#4	9'-0"	8" O.C. MAX.
		C2	#4	3'-2"	8" O.C. MAX.		C2	#4	3'-2"	8" O.C. MAX.
		D	#5	4'-6"	12" O.C. MAX.		D	#5	4'-6"	12" O.C. MAX.
		F	#5	3'-3"	12" O.C. MAX.		F	#5	3'-3"	12" O.C. MAX.
		G	#4	3'-6"	12" O.C. MAX.		G	#4	3'-6"	12" O.C. MAX.
		H	#4	2'-6"	12" O.C. MAX.		H	#4	2'-6"	12" O.C. MAX.
		J	#5	4'-8"	12" O.C. MAX.		J	#5	4'-8"	12" O.C. MAX.
		K**	#4	3'-0"			K**	#4	3'-0"	
		L	#4	3'-0"	8" O.C. MAX.		L	#4	3'-0"	8" O.C. MAX.
		M**	#4	4'-0"			M**	#4	4'-0"	
		N	#5	6'-2"	8" O.C. MAX.		N	#5	6'-2"	8" O.C. MAX.

* Bar Lengths Shown are for MAX. Height Inlets. Values Shall be Adjusted for Usual Height Inlets.
** Dimensions Shown for Top Slab Openings as Shown in the Details. Additional Bars Shall be Provided at All Pipe Openings as Shown in the Details. Number and Dimensions to be Modified as Needed.



DRAINAGE - 1

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

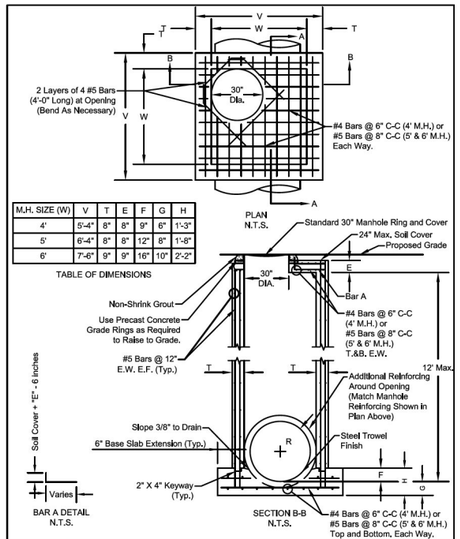
MESQUITE HERITAGE TRAIL, PHASE II

CITY OF MESQUITE STANDARD INLETS

SCALE: N/A SHEET 1 OF 2

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

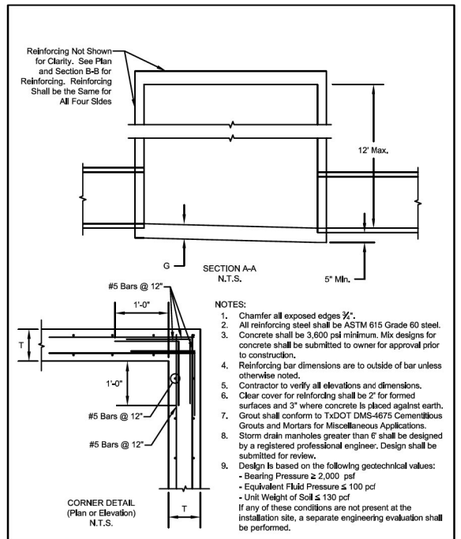
CONTRACT NO. 2024-014 SHEET NO. 131



M.H. SIZE (W)	V	T	E	F	G	H
4'	5'-4"	8"	8"	9"	6"	1'-3"
5'	6'-4"	8"	8"	12"	8"	1'-8"
6'	7'-6"	9"	9"	16"	10"	2'-2"

TABLE OF DIMENSIONS

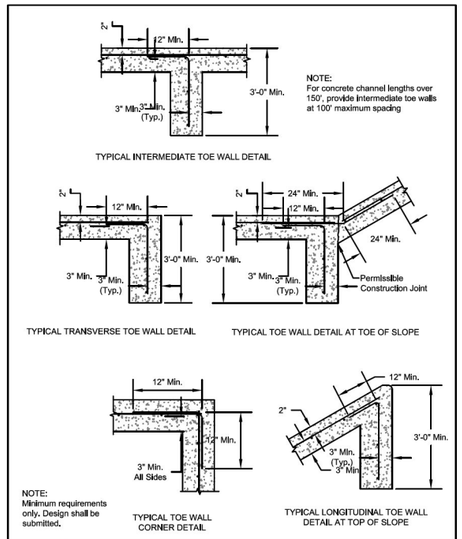
MESQUITE TEXAS Real. Texas. Service.	Public Works	STORM DRAIN MANHOLE 4', 5' OR 6' SQUARE (1 OF 2)	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: D-6



NOTES:
1. Chamfer all exposed edges ¾".
2. All reinforcing steel shall be ASTM 615 Grade 60 steel.
3. Concrete shall be 3,600 psi minimum. Mix designs for concrete shall be submitted to owner for approval prior to construction.
4. Reinforcing bar dimensions are to outside of bar unless otherwise noted.
5. Contractor to verify all elevations and dimensions.
6. Clear cover for reinforcing shall be 2" for formed surfaces and 3" where concrete is placed against earth.
7. Grout shall conform to TxDOT DMS-4675 Cementitious Grouts and Mortars for Miscellaneous Applications.
8. Storm drain manholes greater than 6' shall be designed by a registered professional engineer. Design shall be submitted for review.
9. Design is based on the following geotechnical values:
   - Bearing Pressure ≥ 2,000 psf
   - Equivalent Fluid Pressure ≤ 100 pcf
   - Unit Weight of Soil ≤ 130 pcf

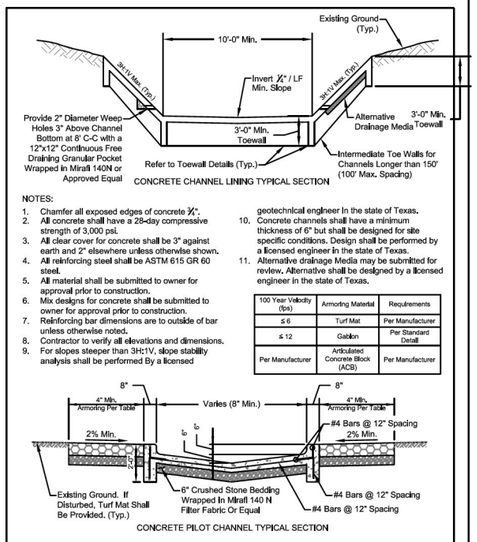
   If any of these conditions are not present at the installation site, a separate engineering evaluation shall be performed.

MESQUITE TEXAS Real. Texas. Service.	Public Works	STORM DRAIN MANHOLE 4', 5' OR 6' SQUARE (2 OF 2)	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: D-6B



NOTE: Minimum requirements only. Design shall be submitted.

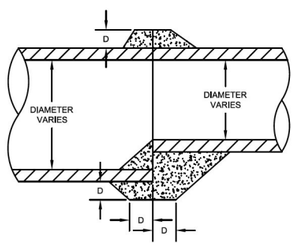
MESQUITE TEXAS Real. Texas. Service.	Public Works	CONCRETE CHANNEL DETAILS (1 OF 2)	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: D-7A



NOTES:
1. Chamfer all exposed edges of concrete ¾".
2. All concrete shall have a 28-day compressive strength of 3,000 psi.
3. All clear cover for concrete shall be 3" against earth and 2" elsewhere unless otherwise shown.
4. All reinforcing steel shall be ASTM 615 GR 60 steel.
5. All material shall be submitted to owner for approval prior to construction.
6. Mix designs for concrete shall be submitted to owner for approval prior to construction.
7. Reinforcing bar dimensions are to outside of bar unless otherwise noted.
8. Contractor to verify all elevations and dimensions.
9. For slopes steeper than 3H:1V, slope stability analysis shall be performed By a licensed geotechnical engineer In the state of Texas.
10. Concrete channels shall have a minimum thickness of 6" but shall be designed for site specific conditions. Design shall be performed by a licensed engineer in the state of Texas.
11. Alternative drainage Media may be submitted for review. Alternative shall be designed by a licensed engineer in the state of Texas.

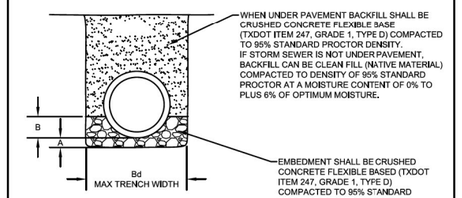
100 Year Velocity (fps)	Armoring Material	Requirements
≤ 6	Turf Mat	Per Manufacturer
≤ 12	Gabion	Per Standard Detail
Per Manufacturer	Articulated Concrete Block (ACB)	Per Manufacturer

MESQUITE TEXAS Real. Texas. Service.	Public Works	CONCRETE CHANNEL DETAILS (2 OF 2)	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 05/20/2019
			SHEET: D-7B



LARGER PIPE DIAMETER	D
>= 36"	6" MIN
> 36"	12" MIN

MESQUITE TEXAS Real. Texas. Service.	Public Works	CONCRETE COLLAR	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 11/11/2019
			SHEET: D-8



Pipe Dia (in)	Bd (in.)	A (in.)	B (in.)
15	35	4	5
18	39	4	6
21	42	4	7
24	46	4	7
27	49	5	8
30	53	5	9
33	57	5	10
36	68	5	11
39	72	6	12
42	75	6	13
45	78	6	14
48	82	7	15
51	85	7	15
54	89	8	16
60	96	8	18
66	102	8	20
72	108	8	22
78	114	8	23
84	120	8	25
90	126	8	27
96	132	8	29

MESQUITE TEXAS Real. Texas. Service.	Public Works	STORM DRAIN EMBEDMENT	GENERAL DESIGN STANDARDS STANDARD DETAILS
			SCALE: N.T.S.
			REVISION DATE: 11/11/2019
			SHEET: D-9

DRAINAGE - 2

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

STATE OF TEXAS
HOSSEIN M. HOSSEINY
118668
LICENSED
PROFESSIONAL ENGINEER
11/22/2023

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

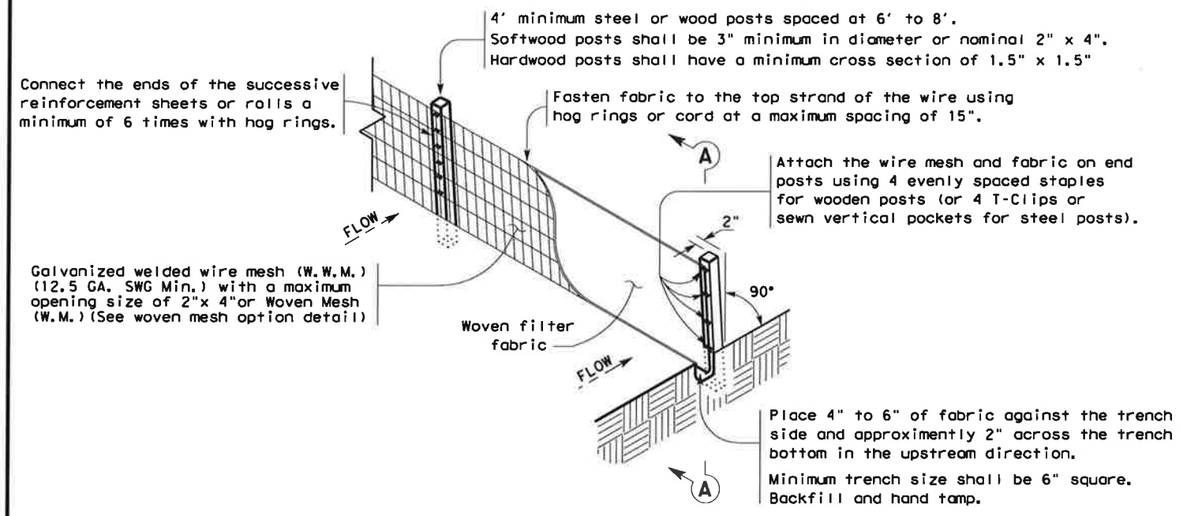
CITY OF MESQUITE STANDARD INLETS

SCALE: N/A SHEET 2 OF 2

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

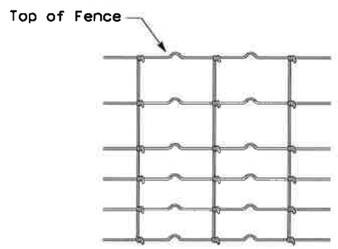
CONTRACT NO. 2024-014 SHEET NO. 132

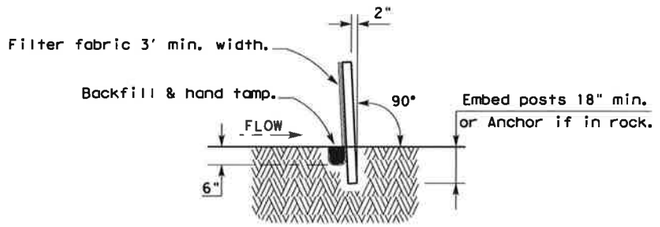
2163-01-DET-INLET01A.dgn



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

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

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

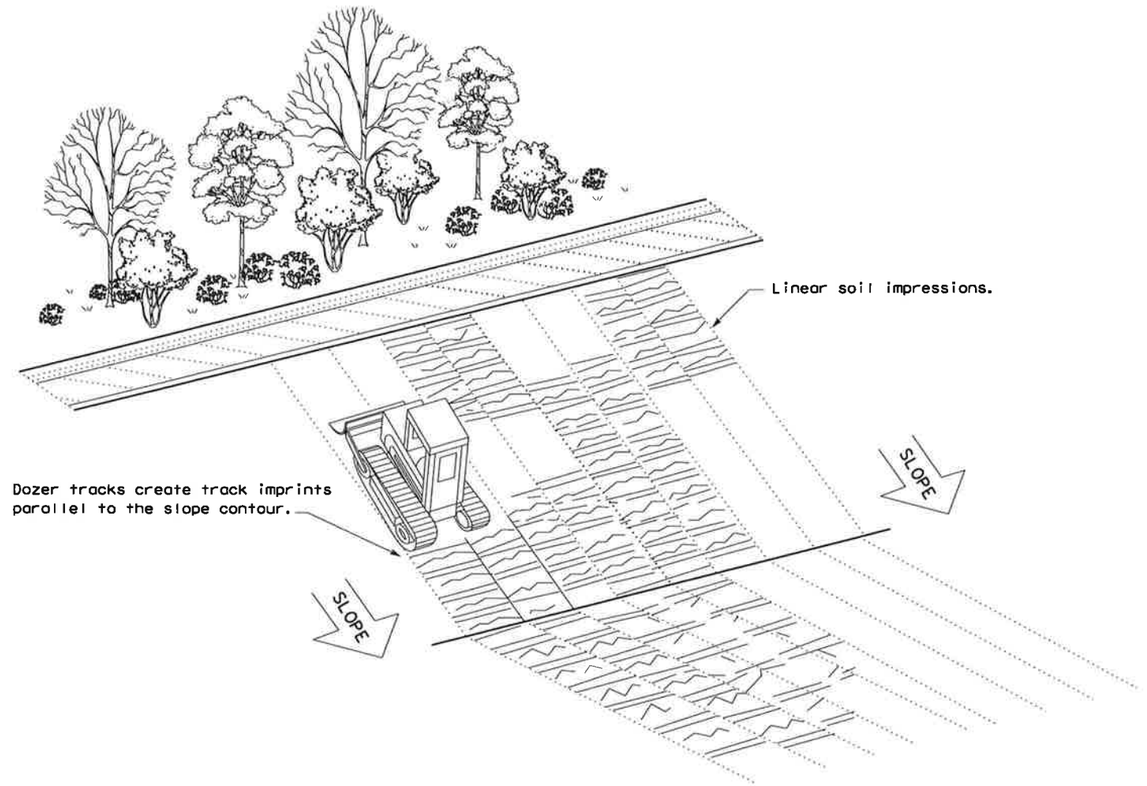
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

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



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

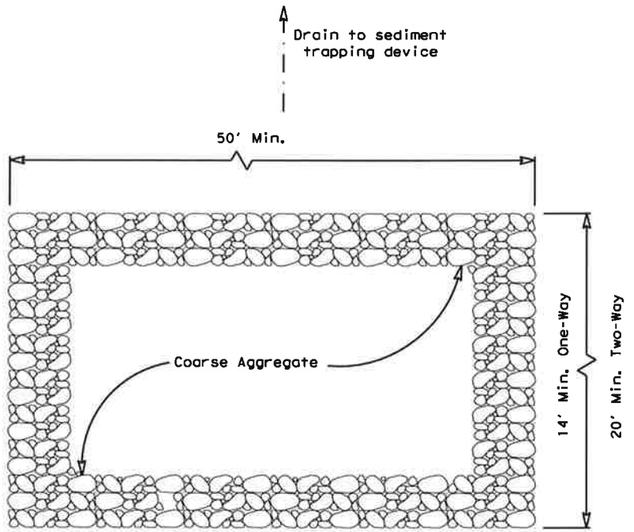
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

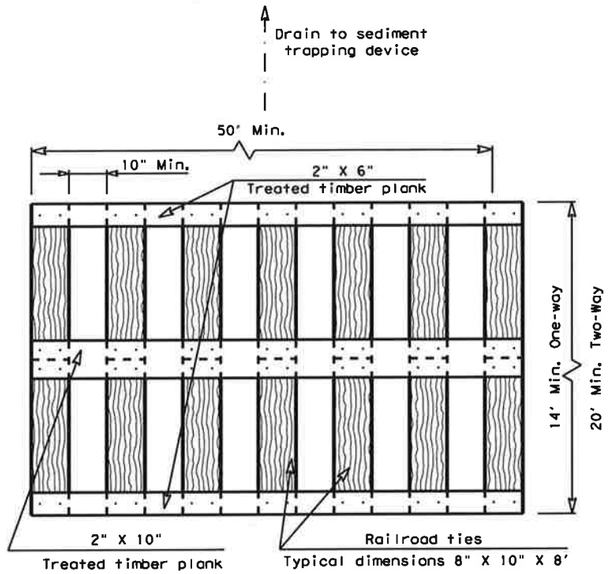
EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				133

DATE
FILE



PLAN VIEW



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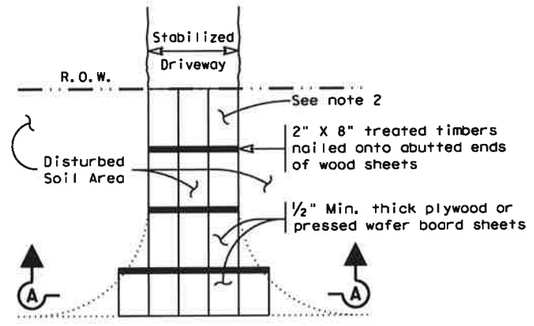

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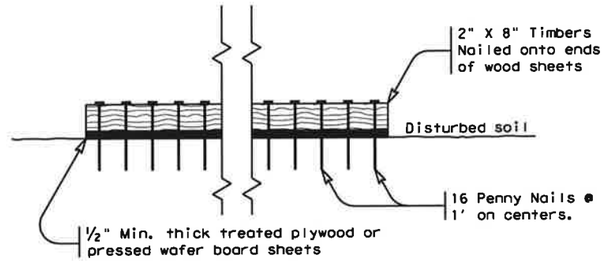
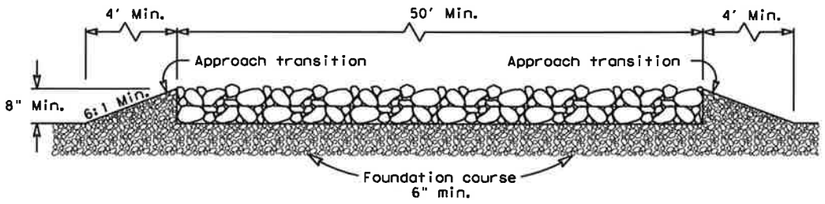


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

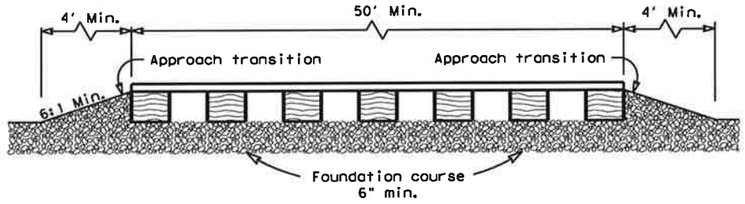
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO. 134

DATE: $DATE$
FILE: $FILE$

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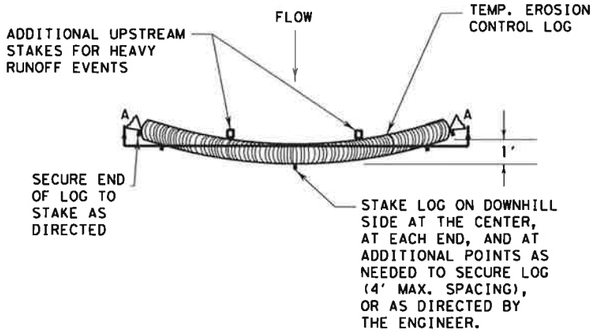
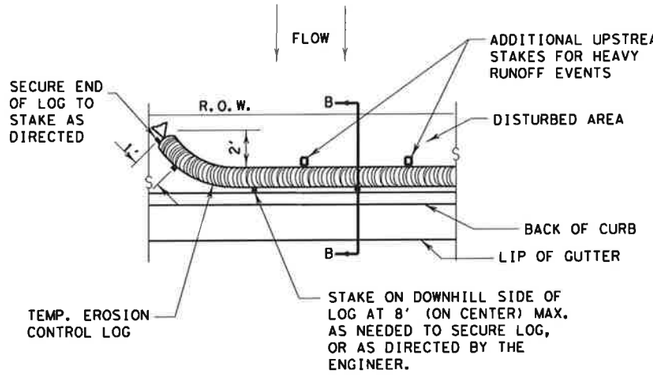
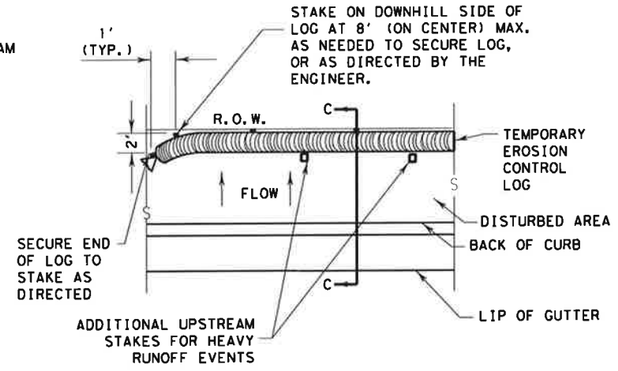


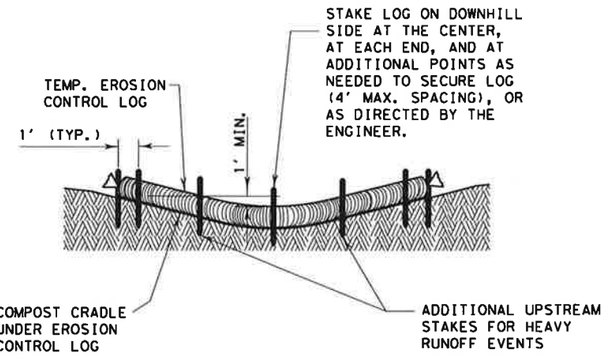
PLAN VIEW



PLAN VIEW



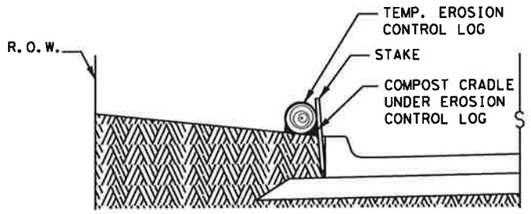
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

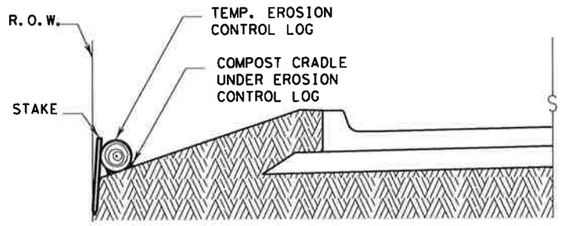
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

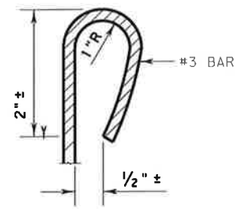
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

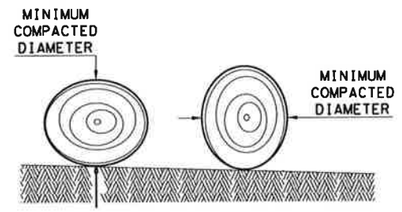
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation

Design Division Standard

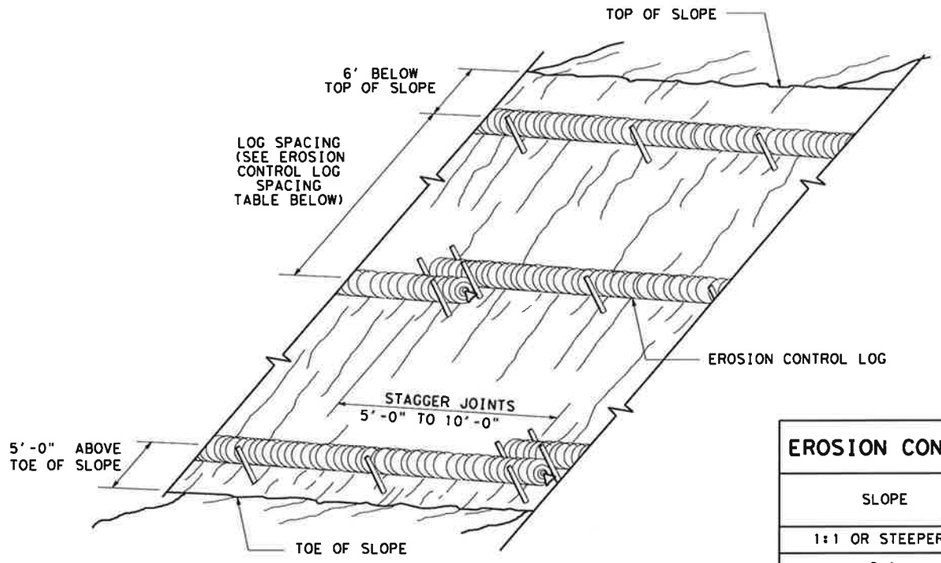
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

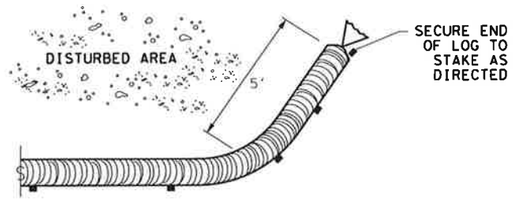
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS						
	DIST	COUNTY			SHEET NO.	
					135	

DATE:
FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

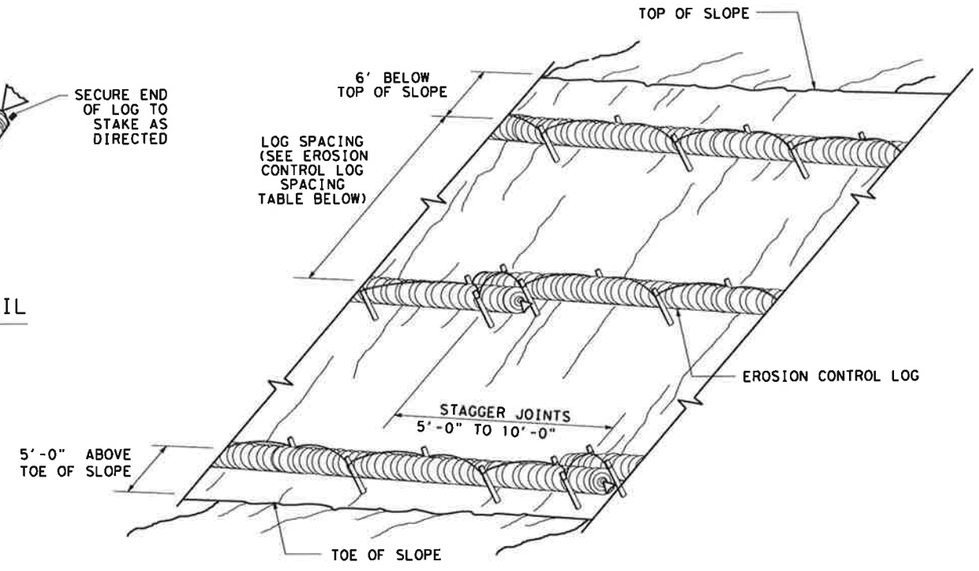
CL-SST



END SECTION RAP DETAIL

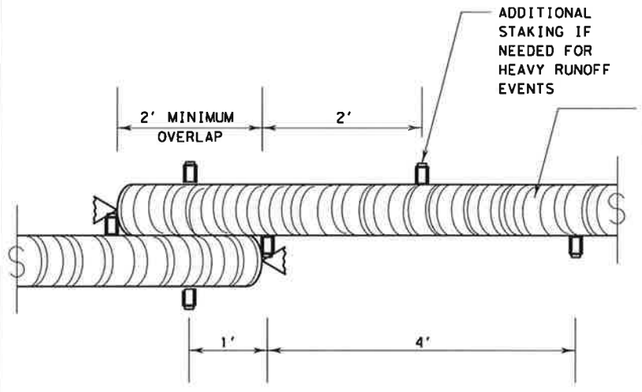
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

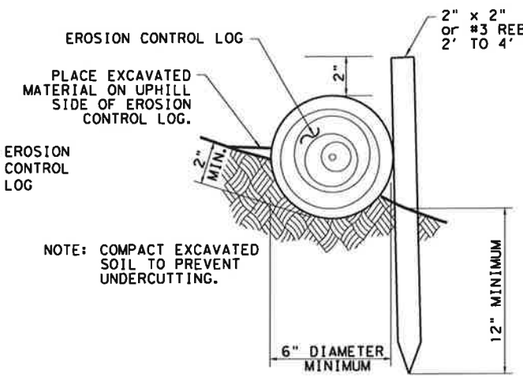
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

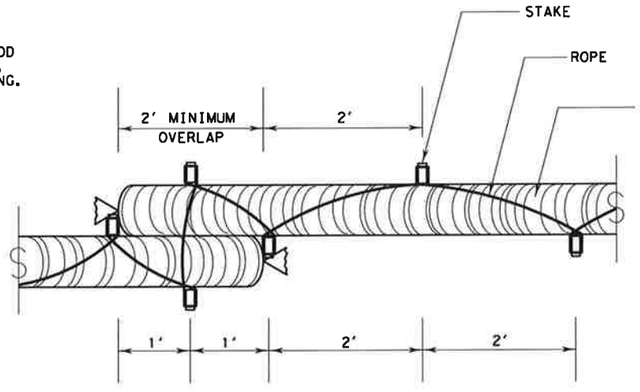


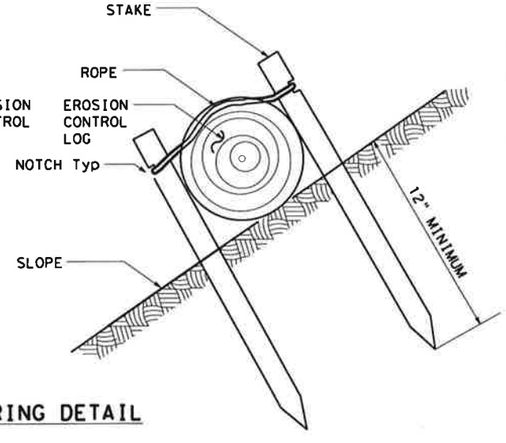


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

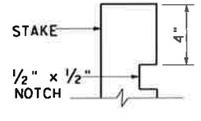
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

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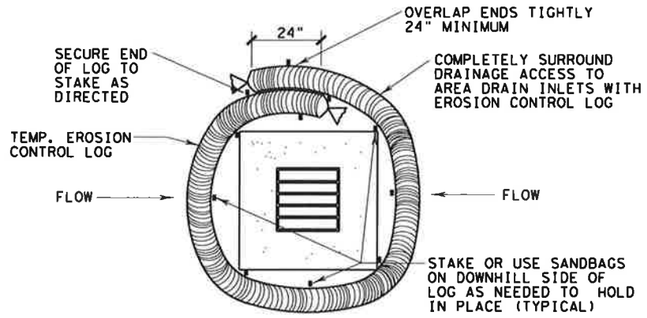
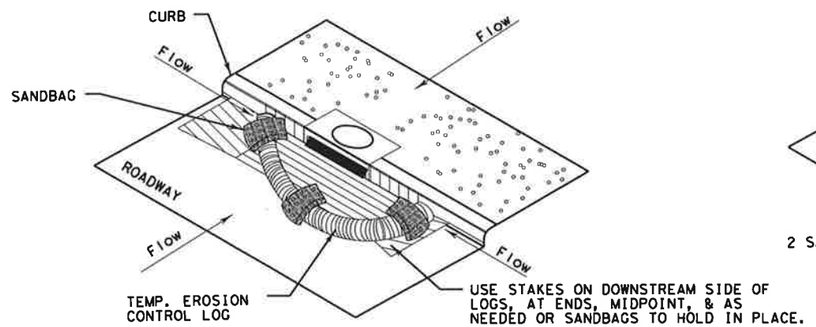
REVISIONS	DIST	COUNTY		SHEET NO. 136

DATE:
FILE:



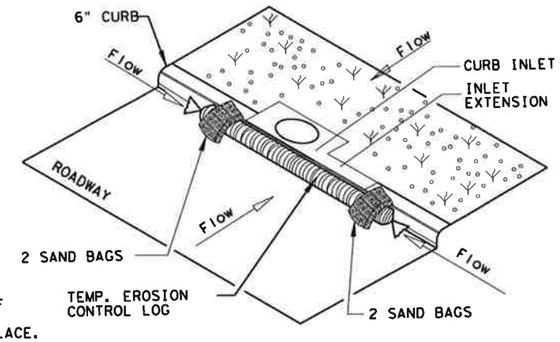
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

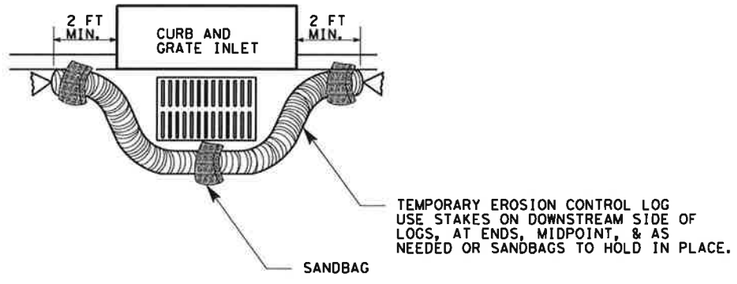
CL-CI



EROSION CONTROL LOG AT CURB INLET

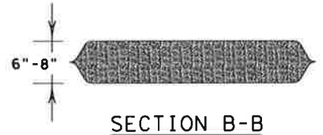
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

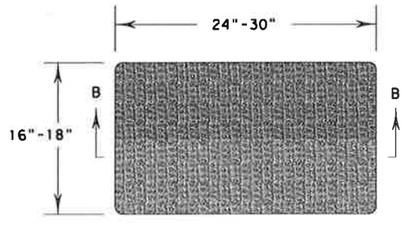


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS						
	DIST	COUNTY			SHEET NO.	
					137	

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

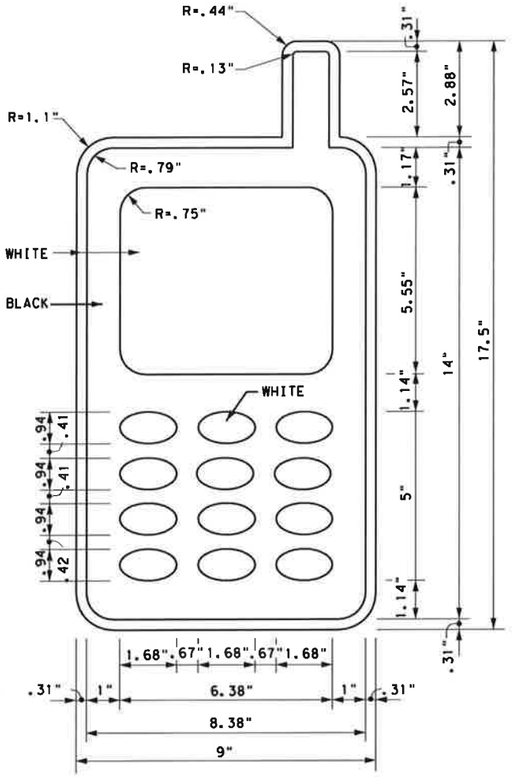
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

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

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

WORKER SAFETY APPAREL NOTES:

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



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

SIGN DETAIL (G20-10T)

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

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

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 7-13				138

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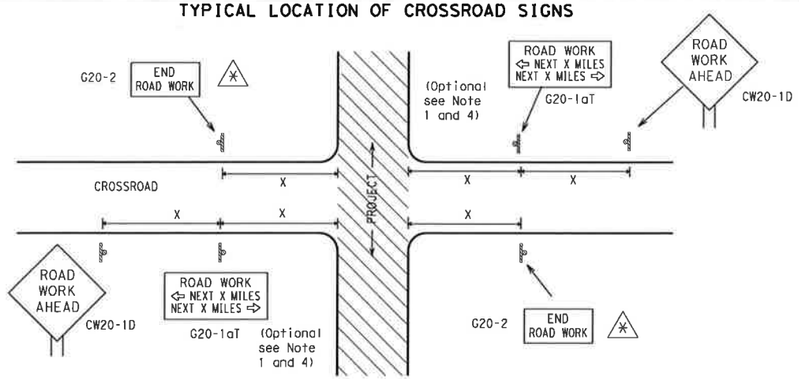
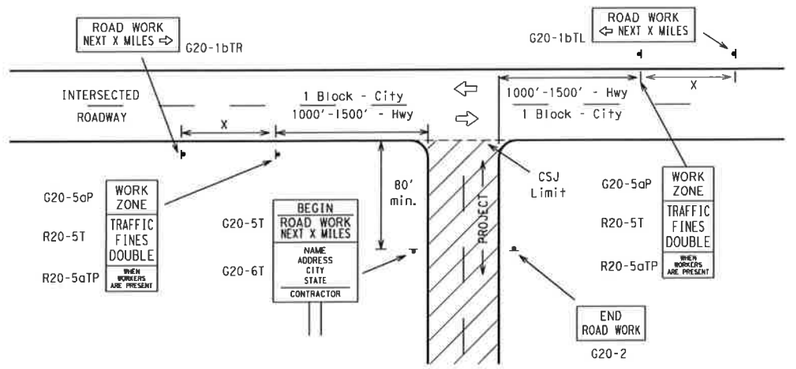
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

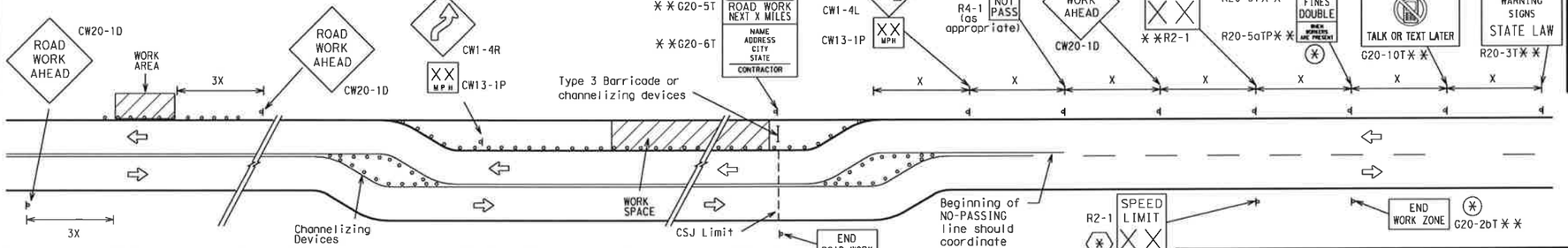
(*) For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

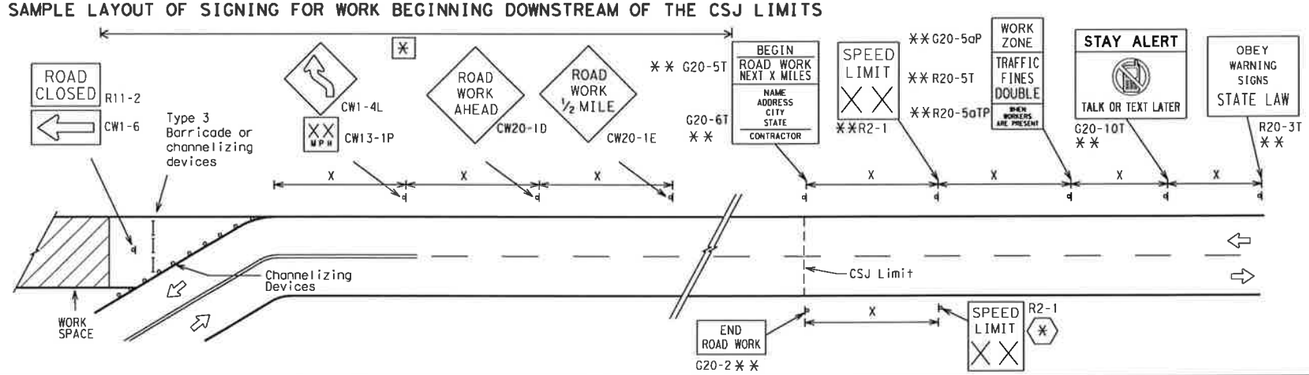
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

(*) Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

SHEET 2 OF 12

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13	DIST	COUNTY		SHEET NO. 139

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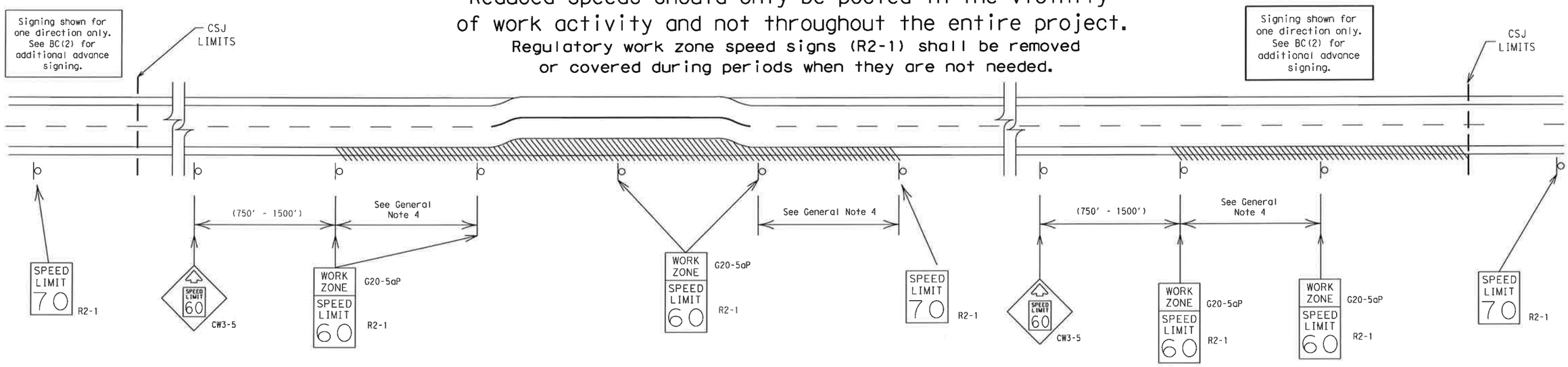
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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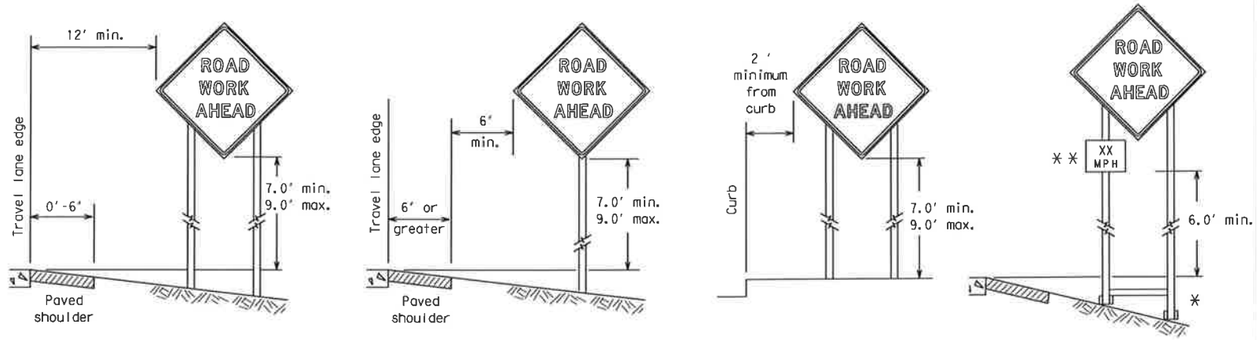
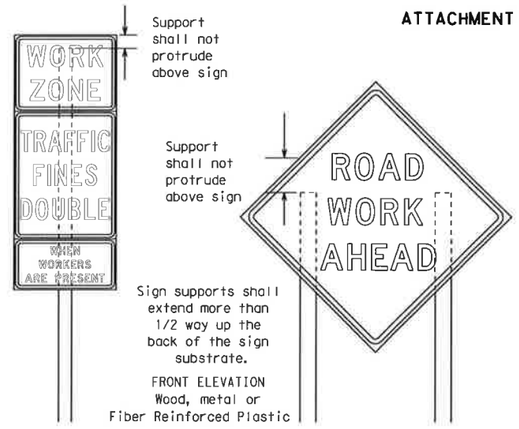
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



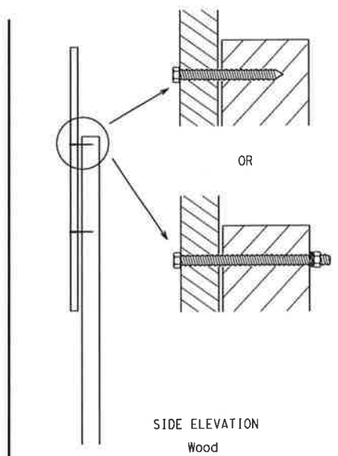
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



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

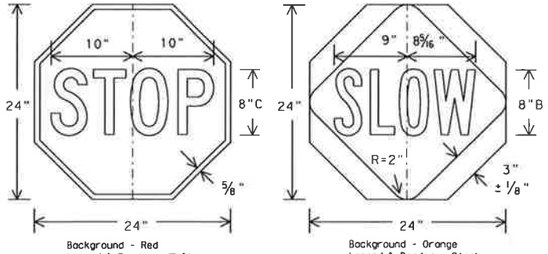


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

STOP/SLOW PADDLES

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



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

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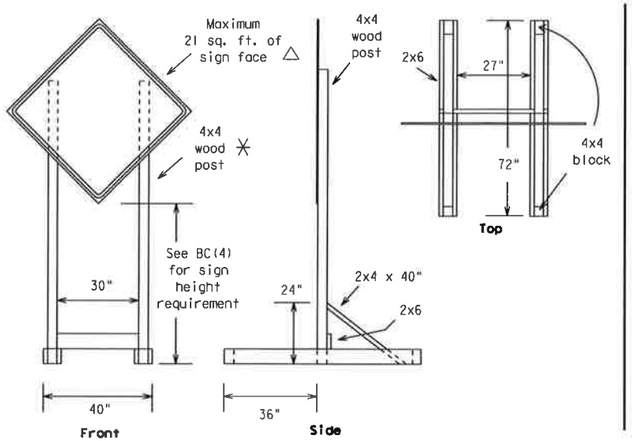
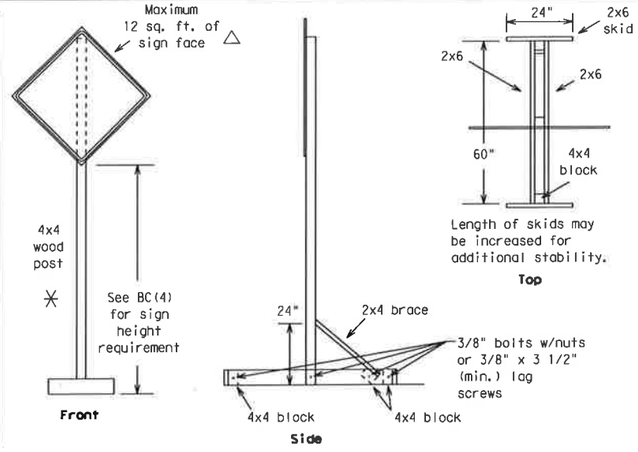
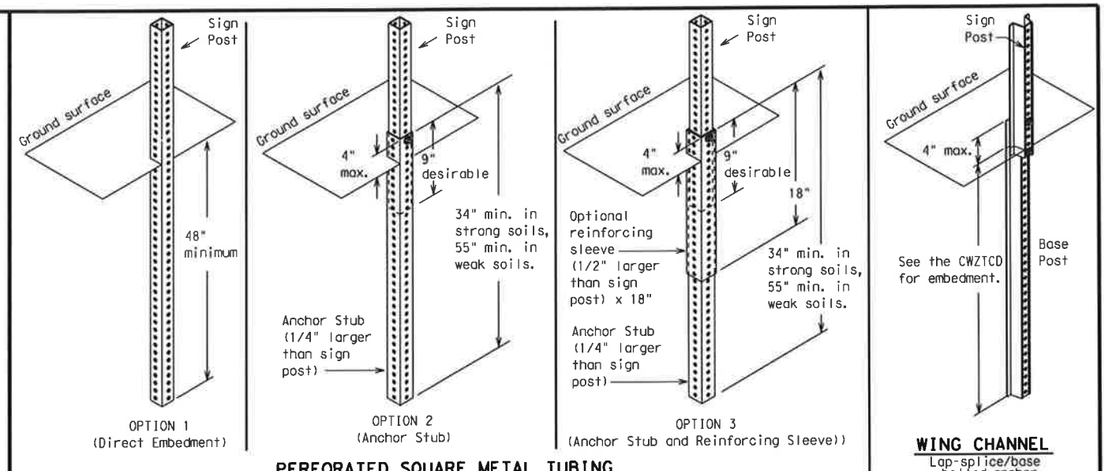




SKID MOUNTED WOOD SIGN SUPPORTS

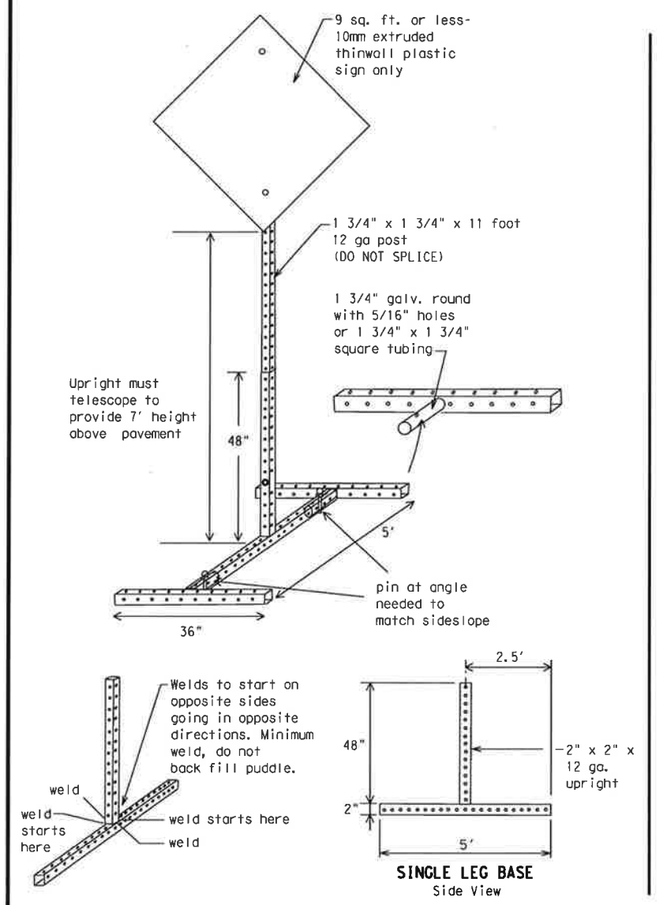
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

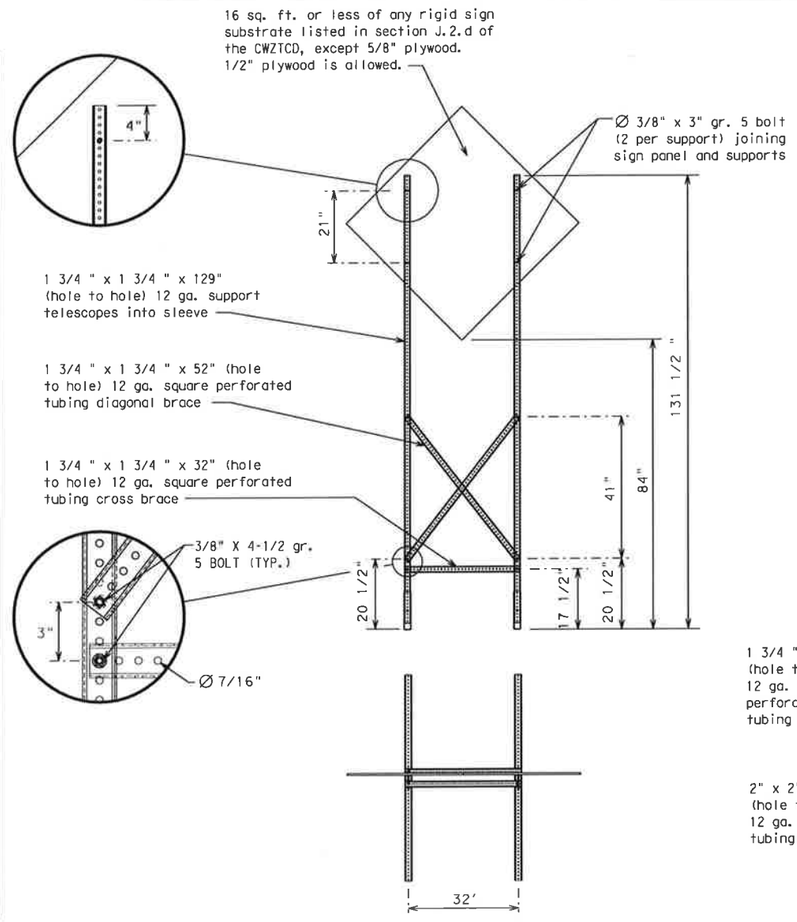


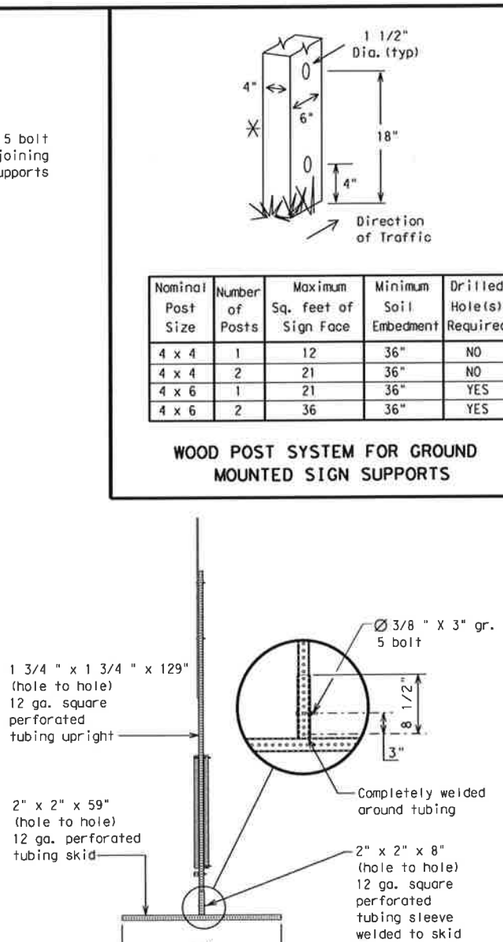
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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







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

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

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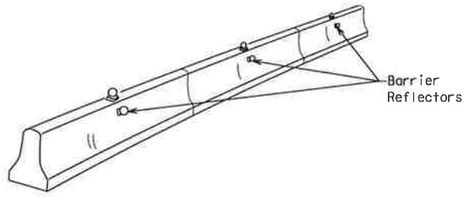
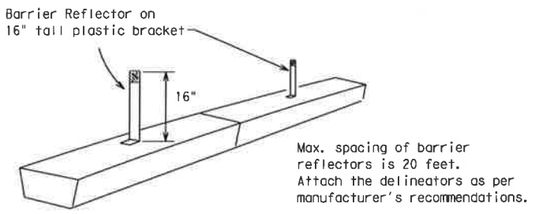
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

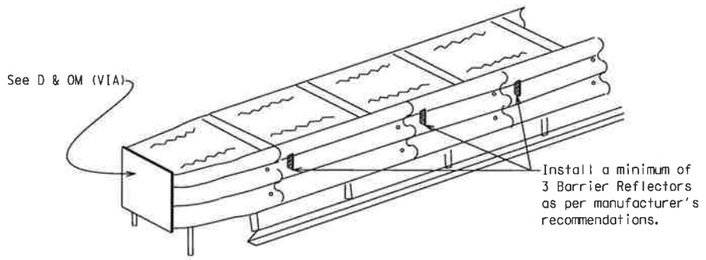


CONCRETE TRAFFIC BARRIER (CTB)

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



LOW PROFILE CONCRETE BARRIER (LPCB)

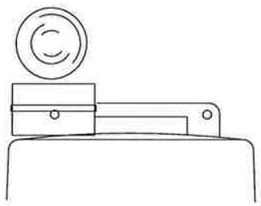


DELINEATION OF END TREATMENTS

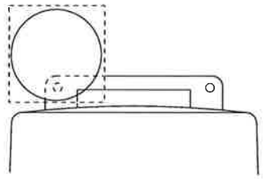
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

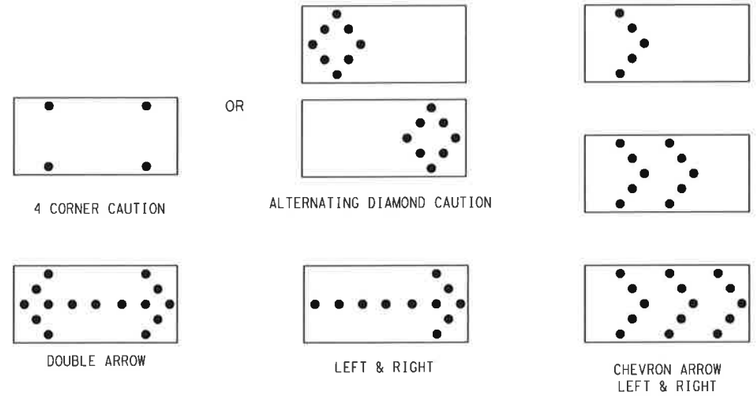
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

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

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Operations Division Standard

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

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

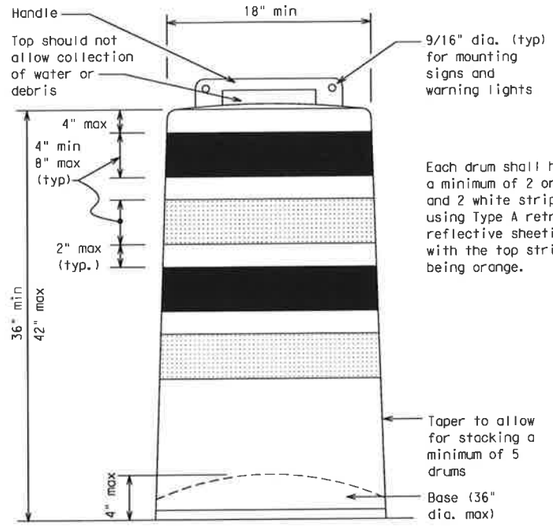
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

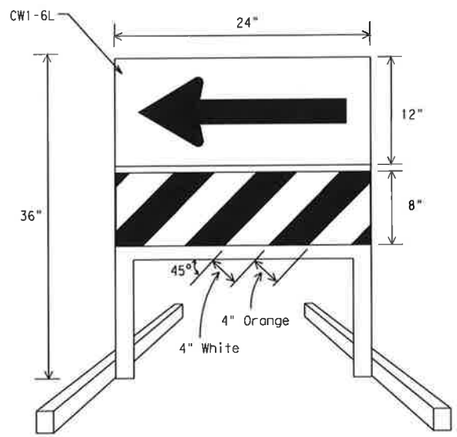
RETROREFLECTIVE SHEETING

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

BALLAST

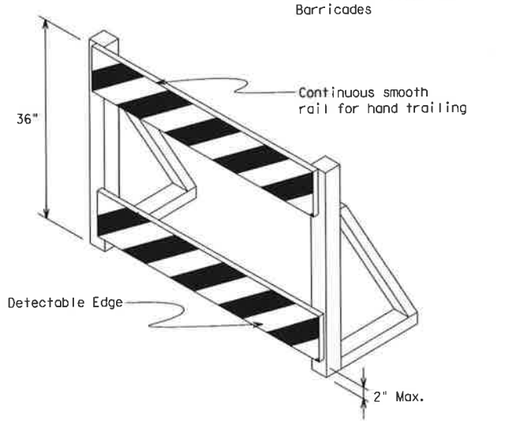
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other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





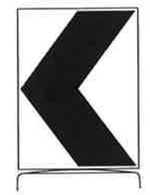
DIRECTION INDICATOR BARRICADE

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



DETECTABLE PEDESTRIAN BARRICADES

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



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

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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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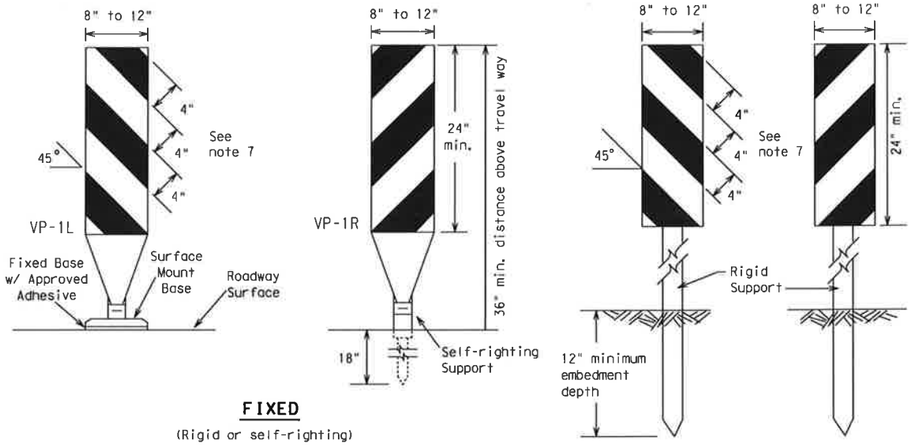
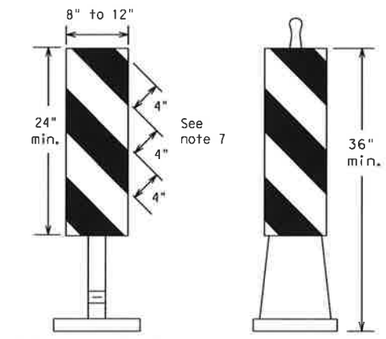


FIXED
(Rigid or self-righting)

DRIVEABLE

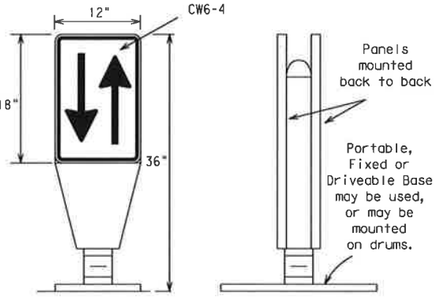


(Rigid or self-righting)

PORTABLE

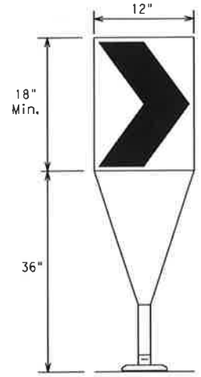
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



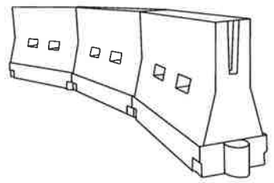
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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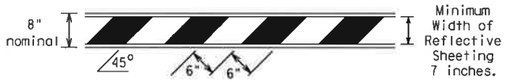
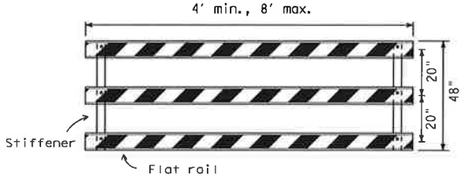
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



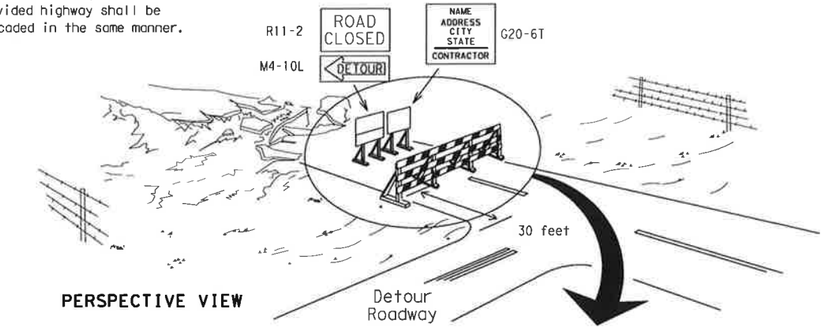
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

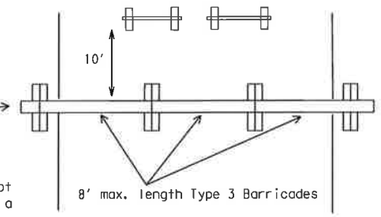
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

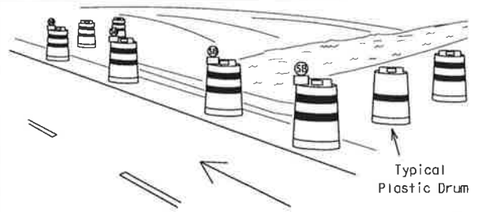
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

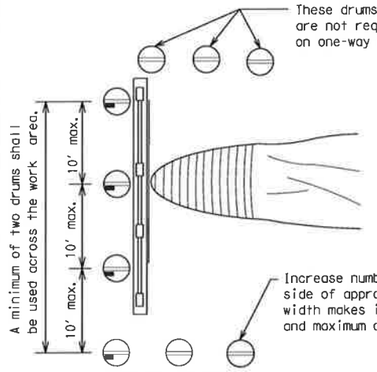
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

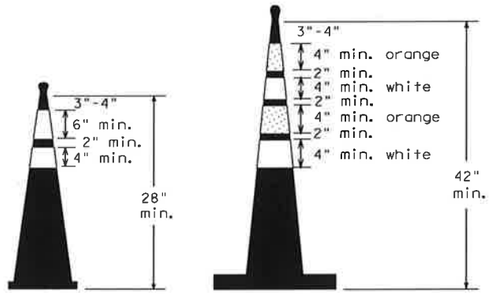
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

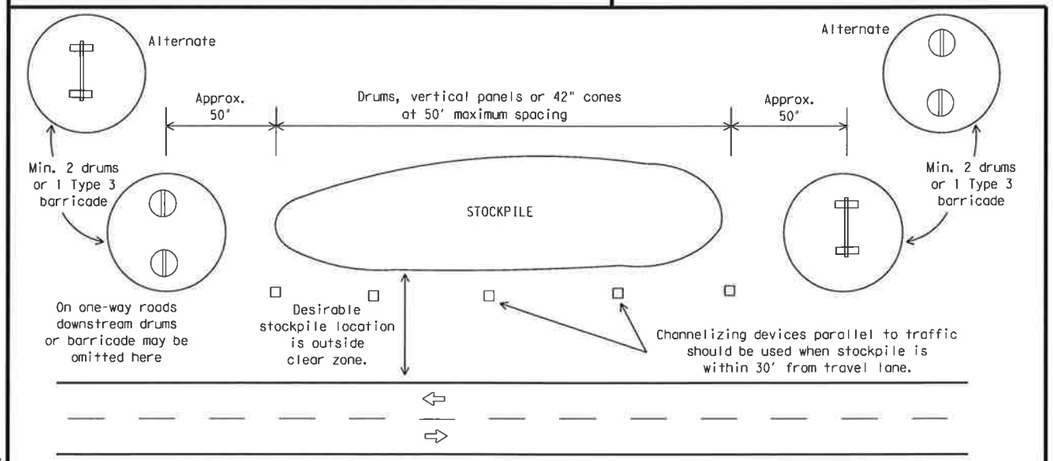


Two-Piece cones | One-Piece cones | Tubular Marker

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

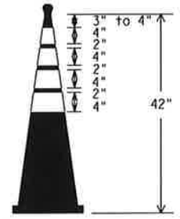
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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



EDGELINE CHANNELIZER

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

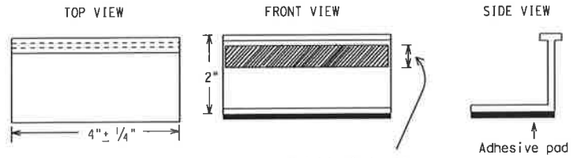
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

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11-02 8-14				

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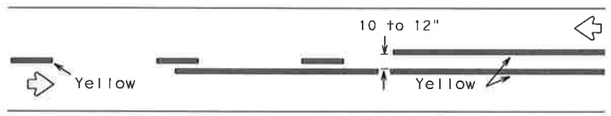
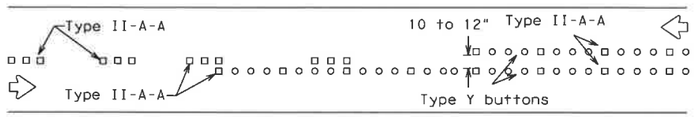
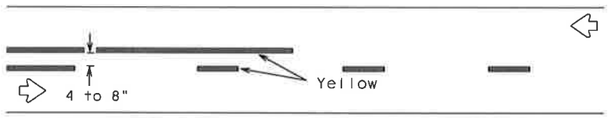
PAVEMENT MARKING PATTERNS



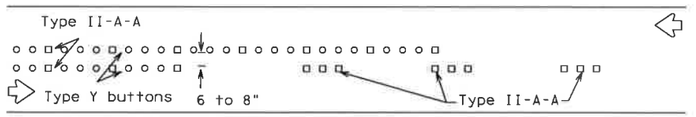
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



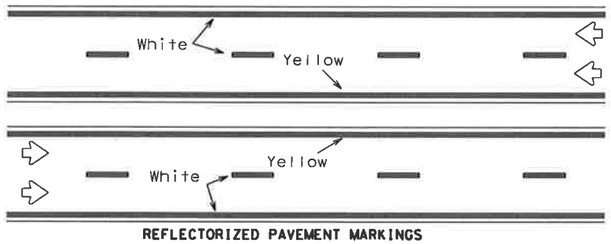
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



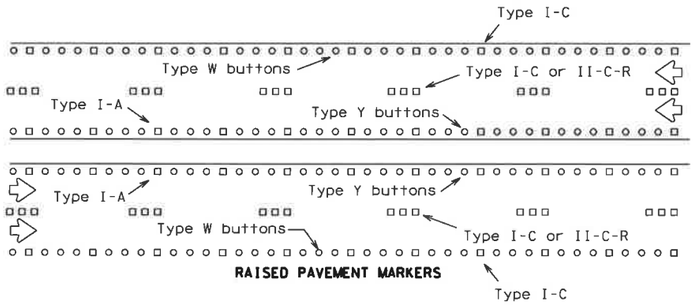
RAISED PAVEMENT MARKERS - PATTERN B

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

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



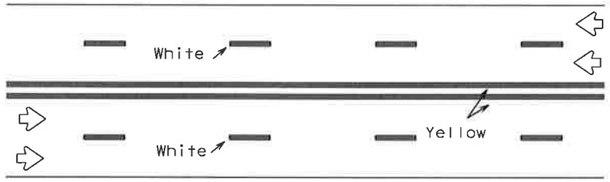
REFLECTORIZED PAVEMENT MARKINGS



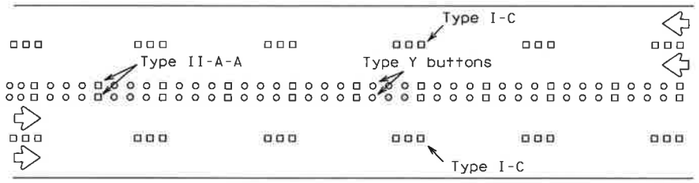
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



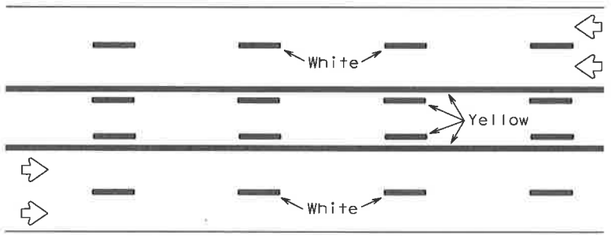
REFLECTORIZED PAVEMENT MARKINGS



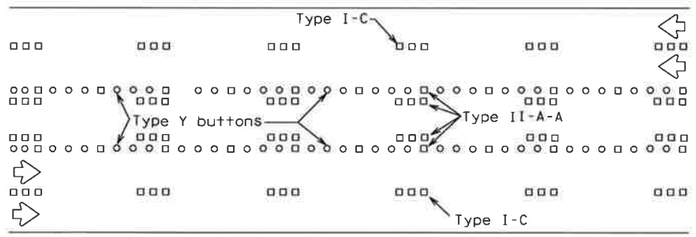
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

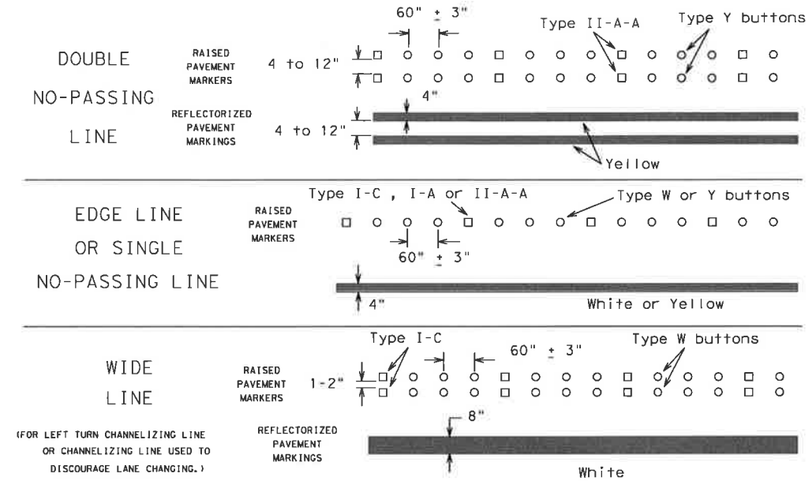


RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

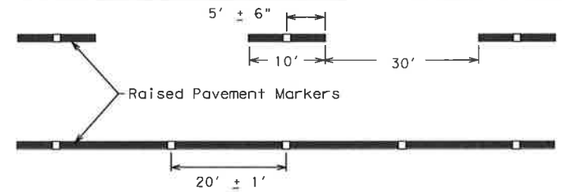
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

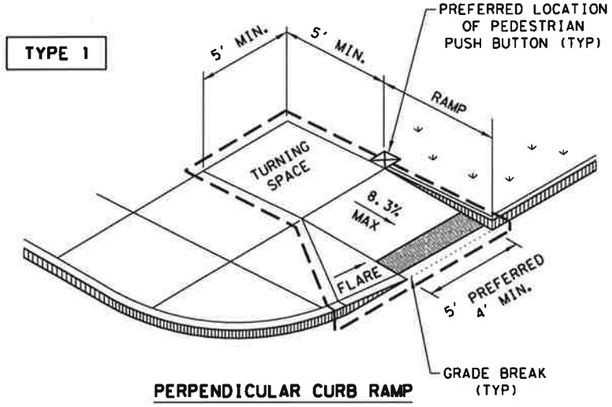
BC(12)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS				
1-97 9-07	DIST	COUNTY		SHEET NO.
2-98 7-13				149
11-02 8-14				

106

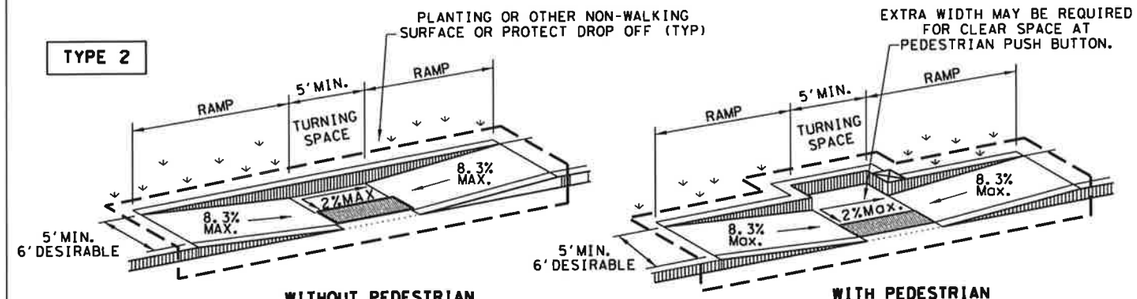
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

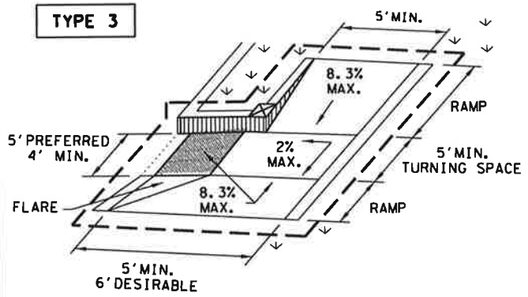


WITHOUT PEDESTRIAN PUSH BUTTON

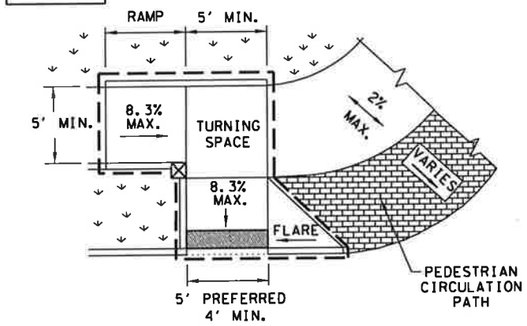
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

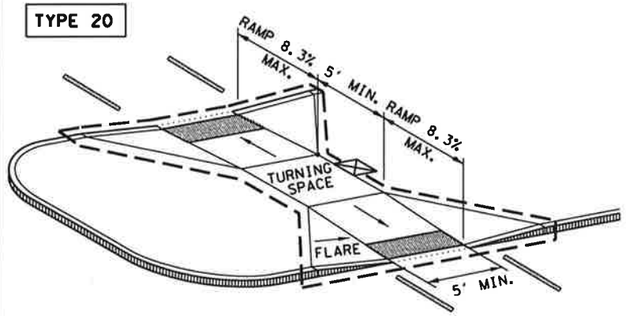


TYPE 6



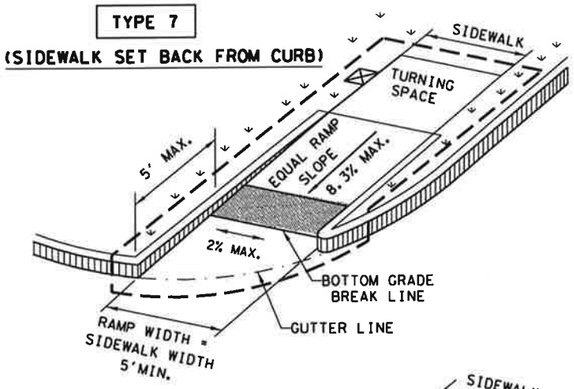
COMBINATION CURB RAMPS

TYPE 20

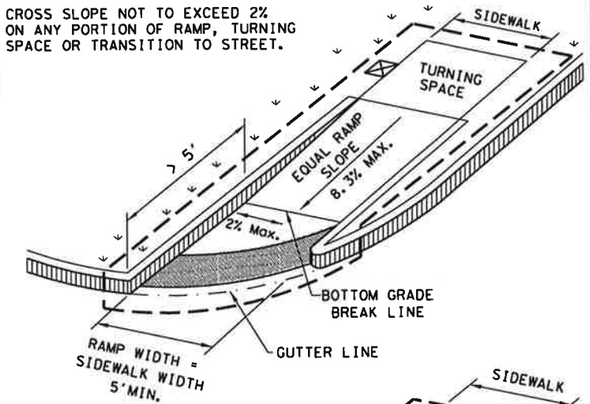


CURB RAMPS AT MEDIAN ISLANDS

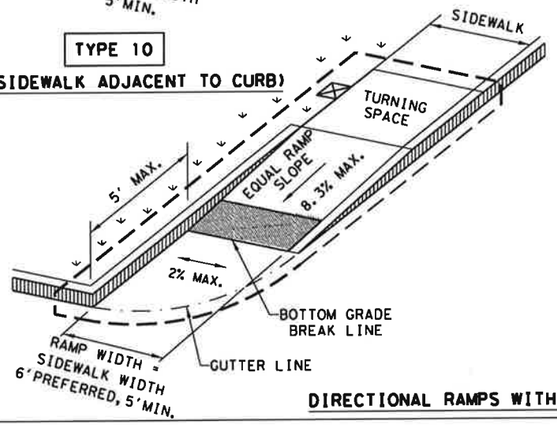
TYPE 7
(SIDEWALK SET BACK FROM CURB)



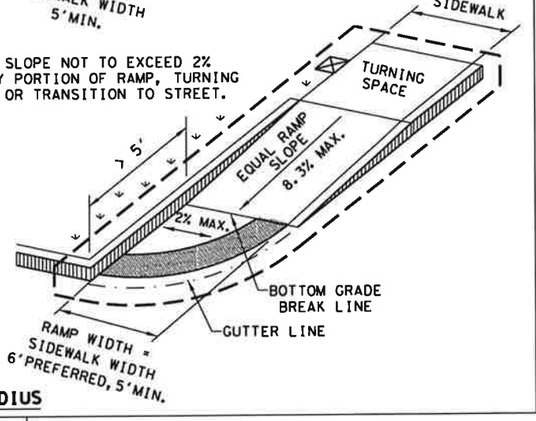
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

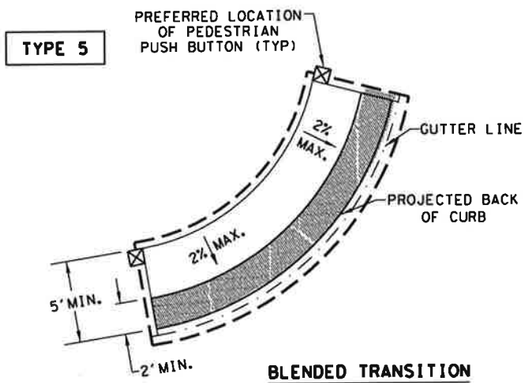


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

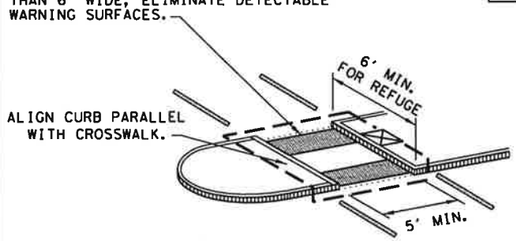
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

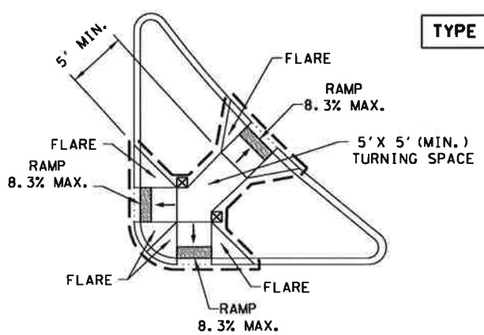
TYPE 21

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



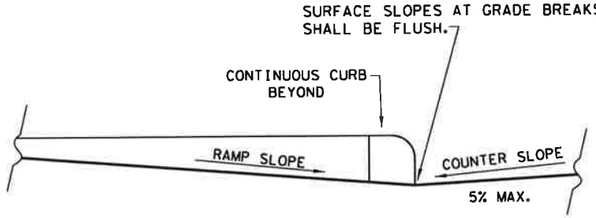
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				
REVISED 01,2018				150

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

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

DETECTABLE WARNING MATERIAL

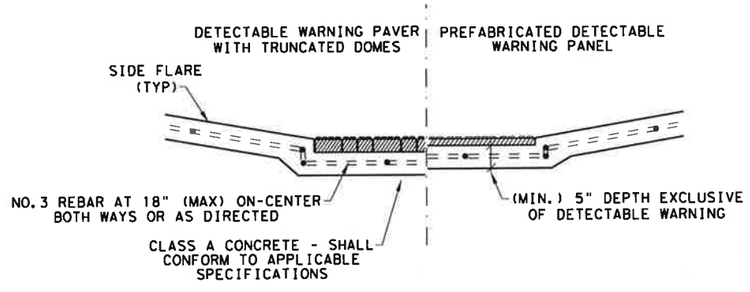
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

DETECTABLE WARNING PAVERS (IF USED)

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

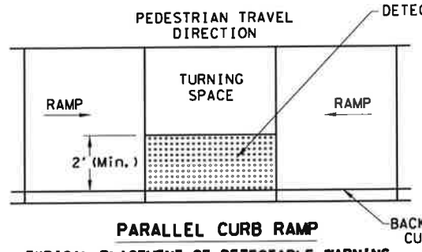
SIDEWALKS

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



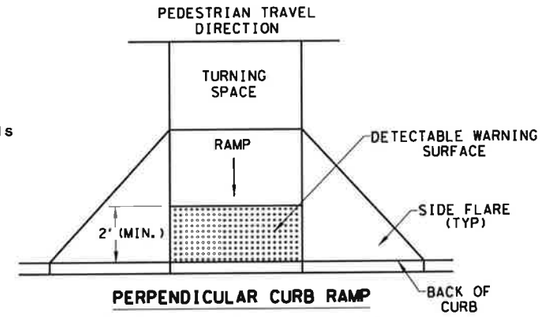
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



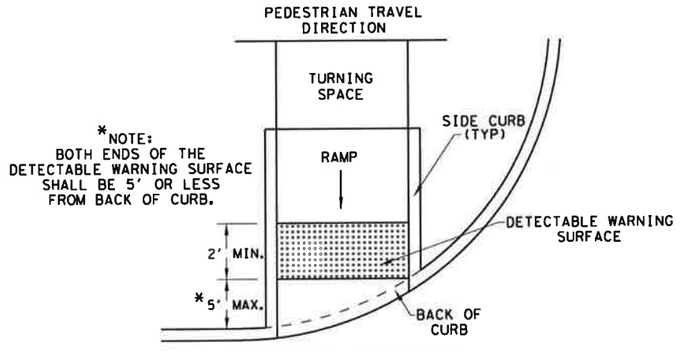
PARALLEL CURB RAMP

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



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JC	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
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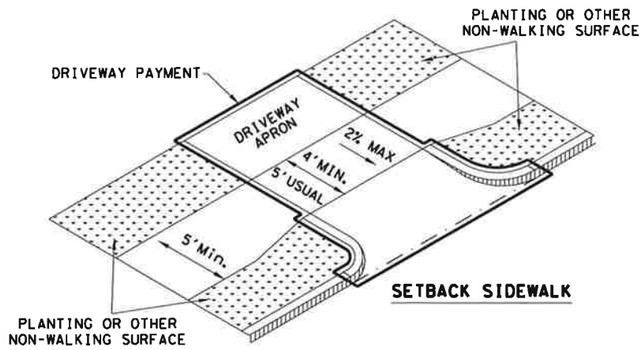
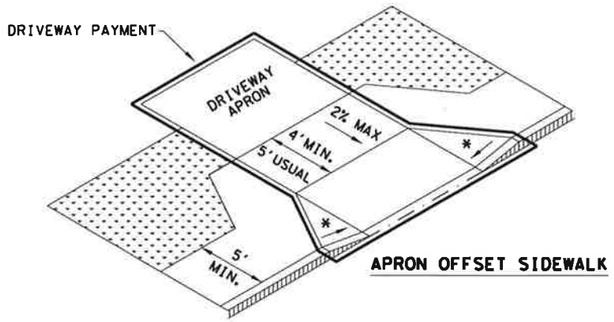
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
				151	

DATE:
FILE:

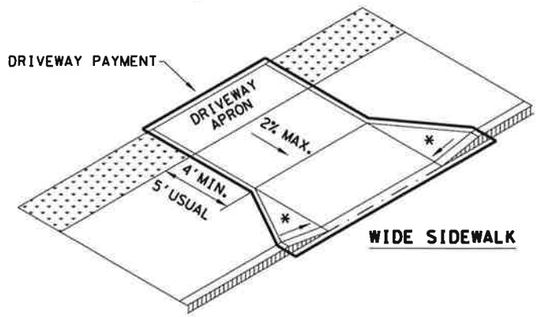
SIDEWALK TREATMENT AT DRIVEWAYS



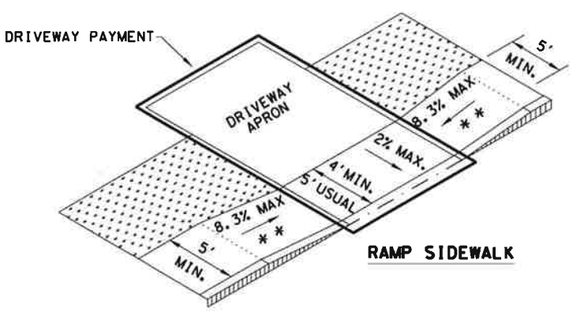
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

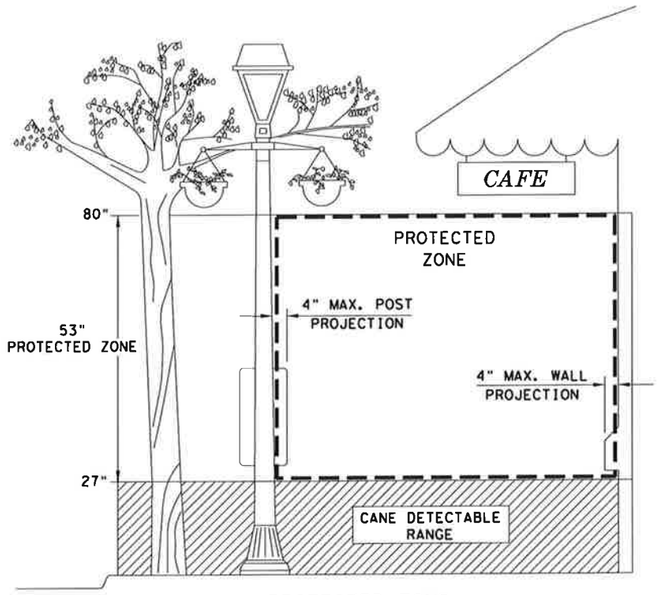


RAMP SIDEWALK

NOTES:

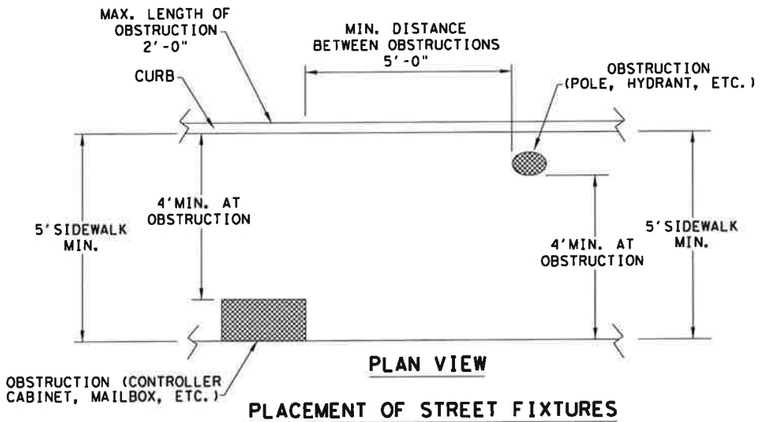
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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



PROTECTED ZONE

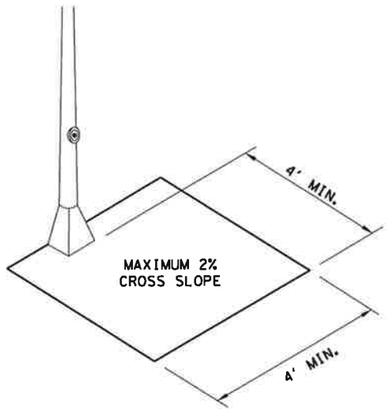
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



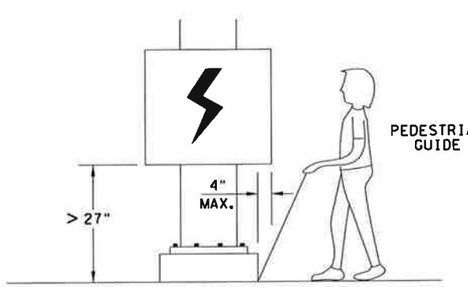
PLAN VIEW

PLACEMENT OF STREET FIXTURES

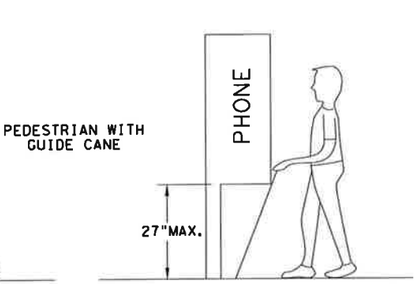
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

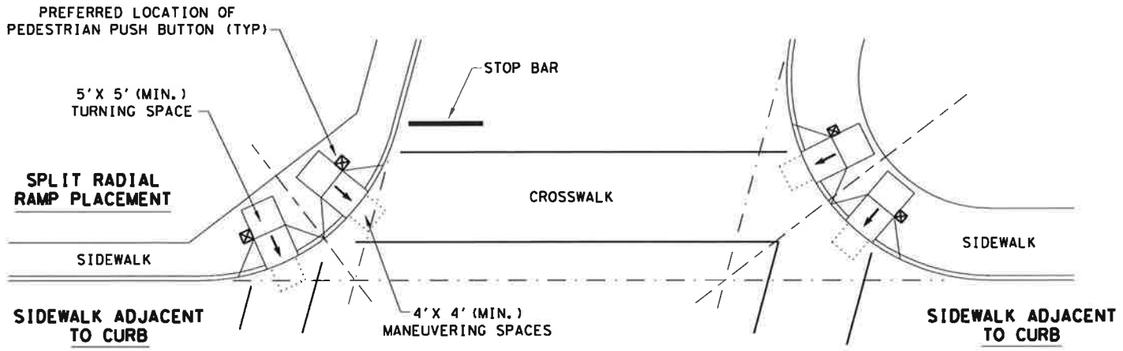
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				152
REVISED 01,2018				

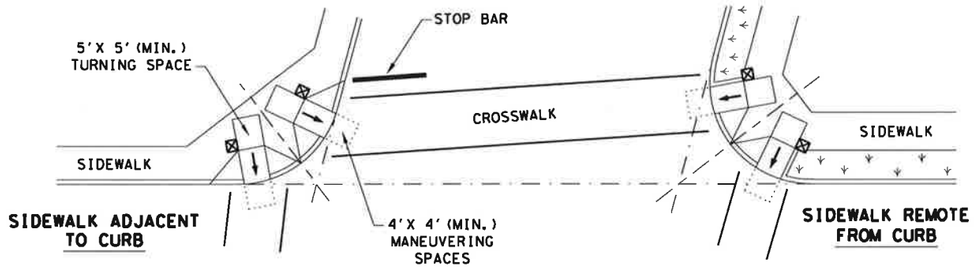
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

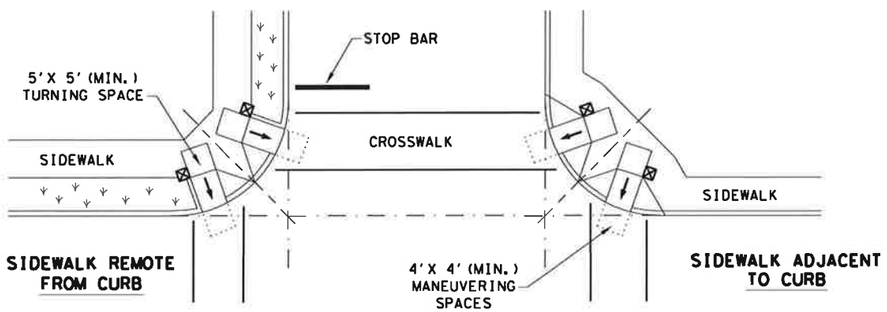
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



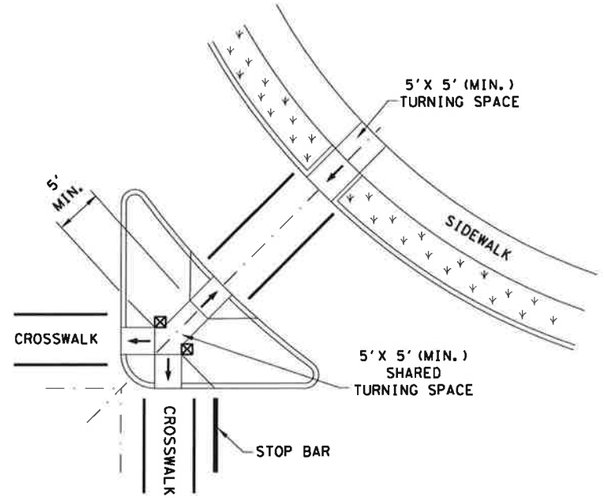
SKEWED INTERSECTION WITH "LARGE" RADIUS



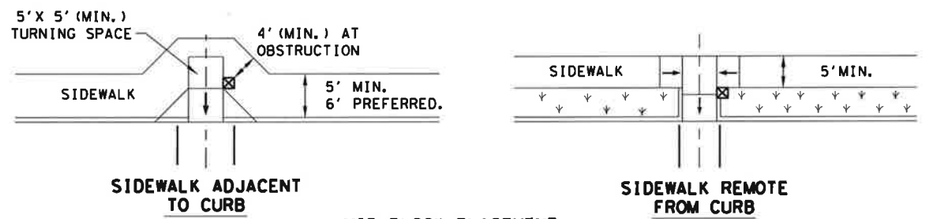
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
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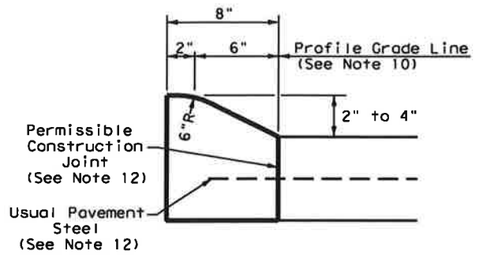
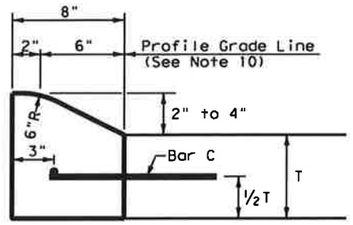
REVISIONS REVISED 08, 2009 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO. 153

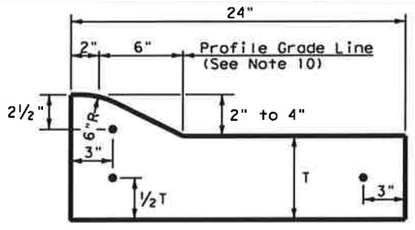
DATE:
FILE:



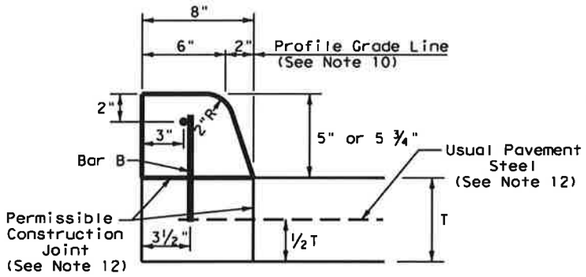
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



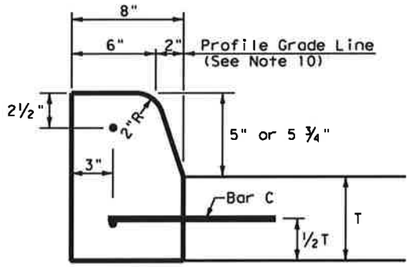
TYPE I CURB
2" - 4" HEIGHT



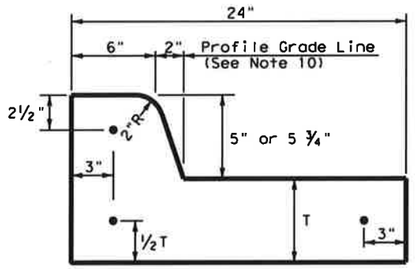
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



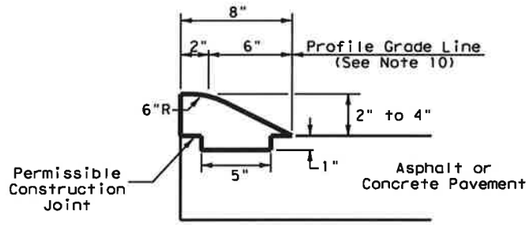
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



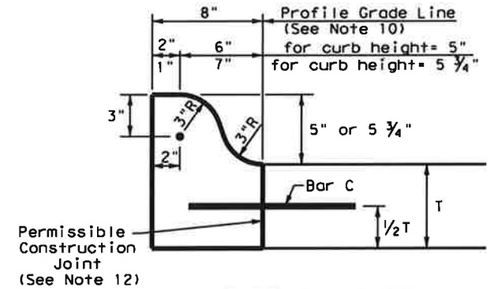
TYPE II CURB
5" - 5 ¾" HEIGHT



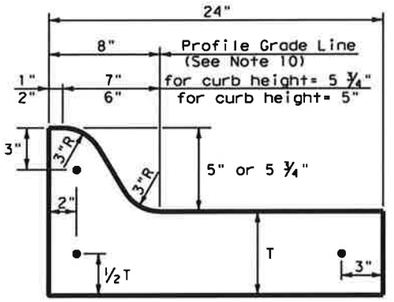
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



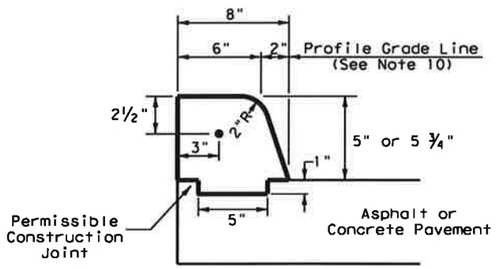
TYPE III CURB (KEYED)
2" - 4" HEIGHT



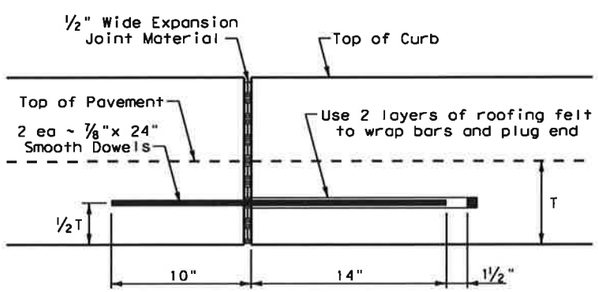
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

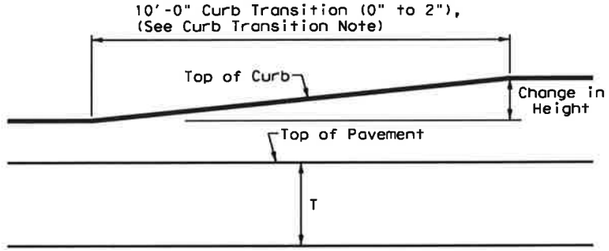


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

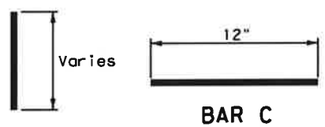
Curb Transition Note:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

General Notes

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No. 4 unless otherwise shown. The use of synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Producer List (MPL), maintained by TxDOT, Construction Division.
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is placed on existing concrete pavement, the pavement shall be drilled and the reinforcing bars grouted in place.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When vertical permissible construction joints are used, resulting in a longitudinal construction joint in the pavement, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans for longitudinal construction joints. Reinforcing steel for curb section shall then conform to that required for concrete curb.



BAR B

BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-12

FILE: cccg12.dgn	DN: TxDOT	CK: AM	DW: VP	CK: VP	
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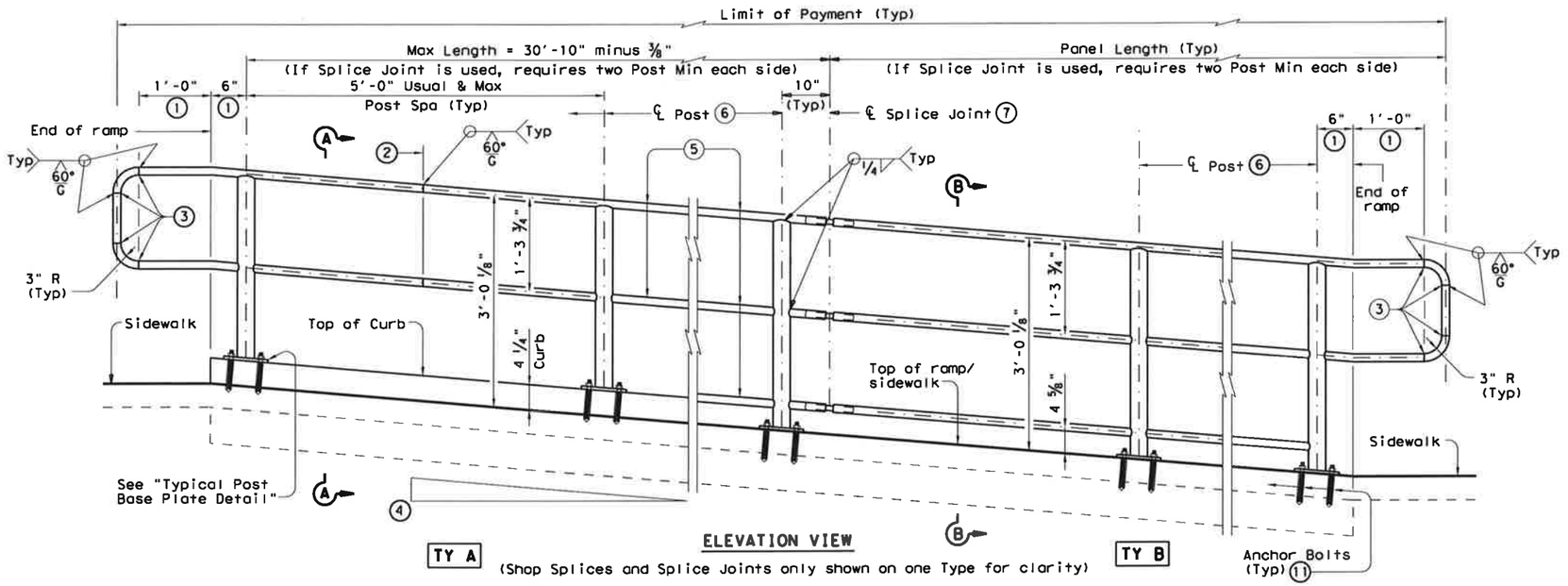
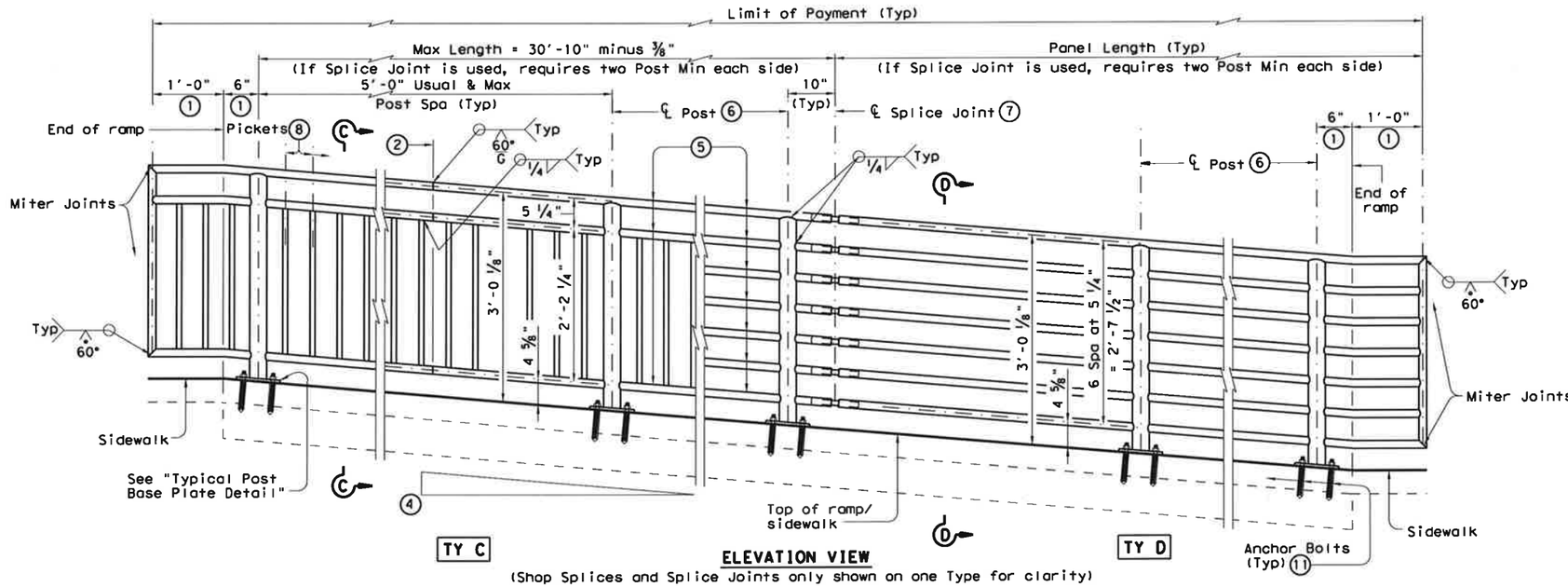
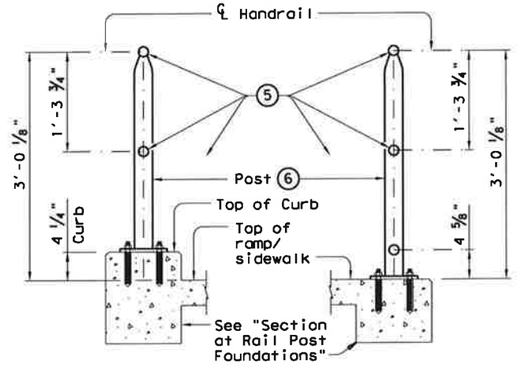
REVISIONS					
UPDATED 2012 - VP	DIST	COUNTY		SHEET NO.	
				154	

DATE:
FILE:



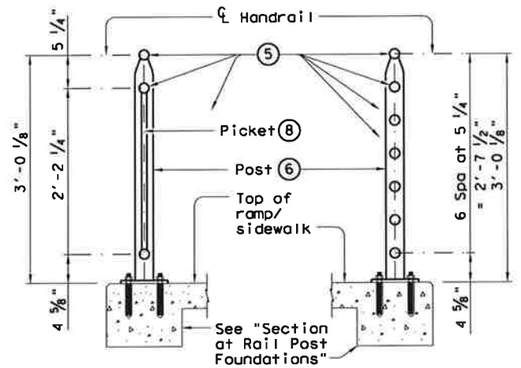


RECOMMENDED USAGE (9) (10)	
Dropoff Height/ Condition	Recommended Rail Options
<30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A
(Showing Handrail TY A)

SECTION B-B
(Showing Handrail TY B)



SECTION C-C
(Showing Handrail TY C)

SECTION D-D
(Showing Handrail TY D)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation | Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
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REVISIONS REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO. 155

DATE:
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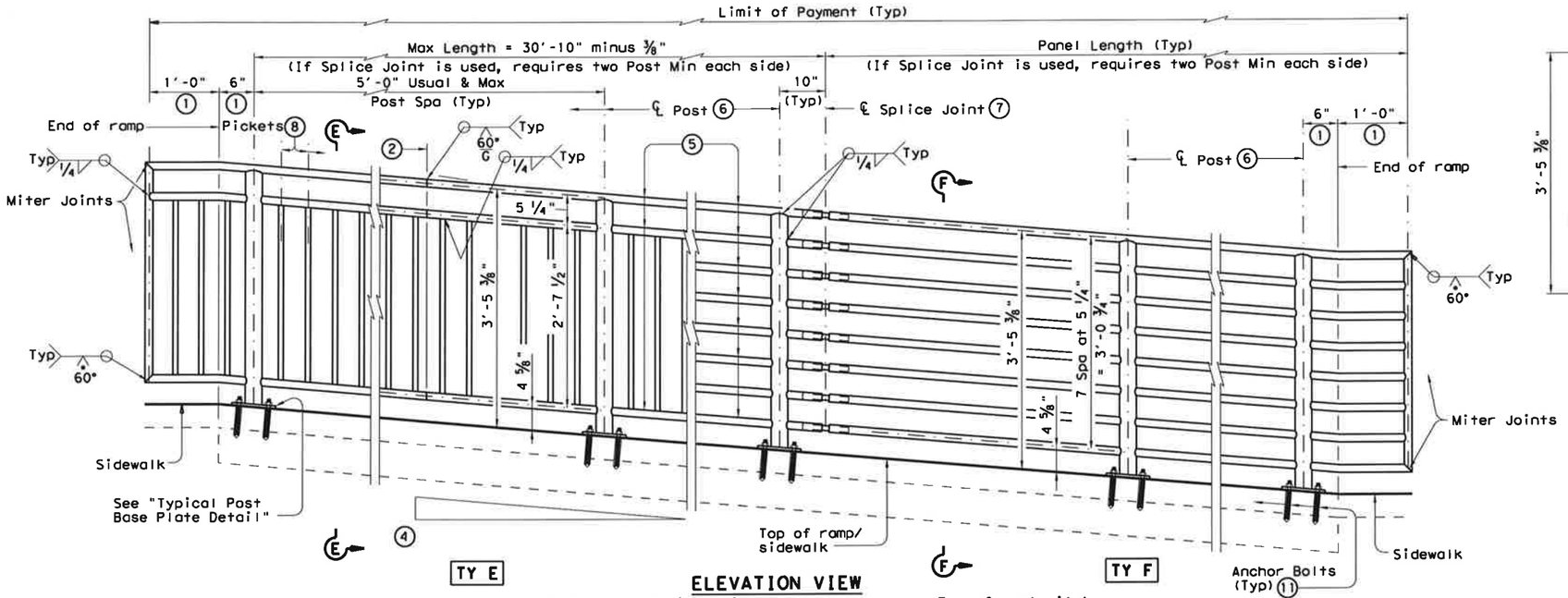
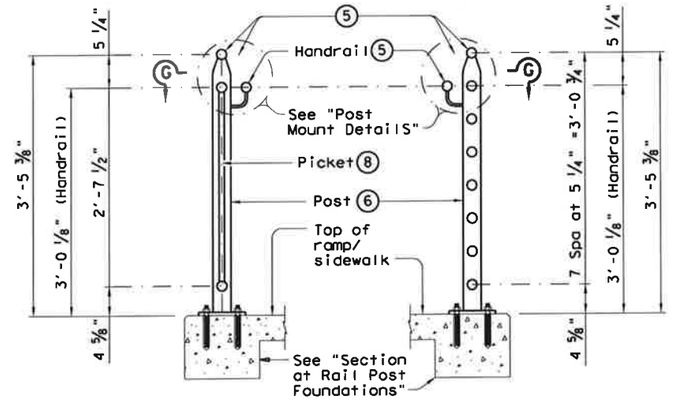


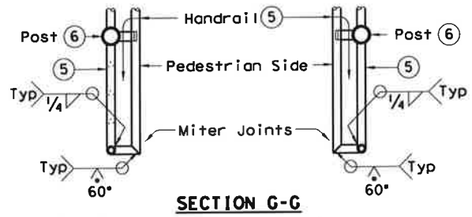
ELEVATION VIEW

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

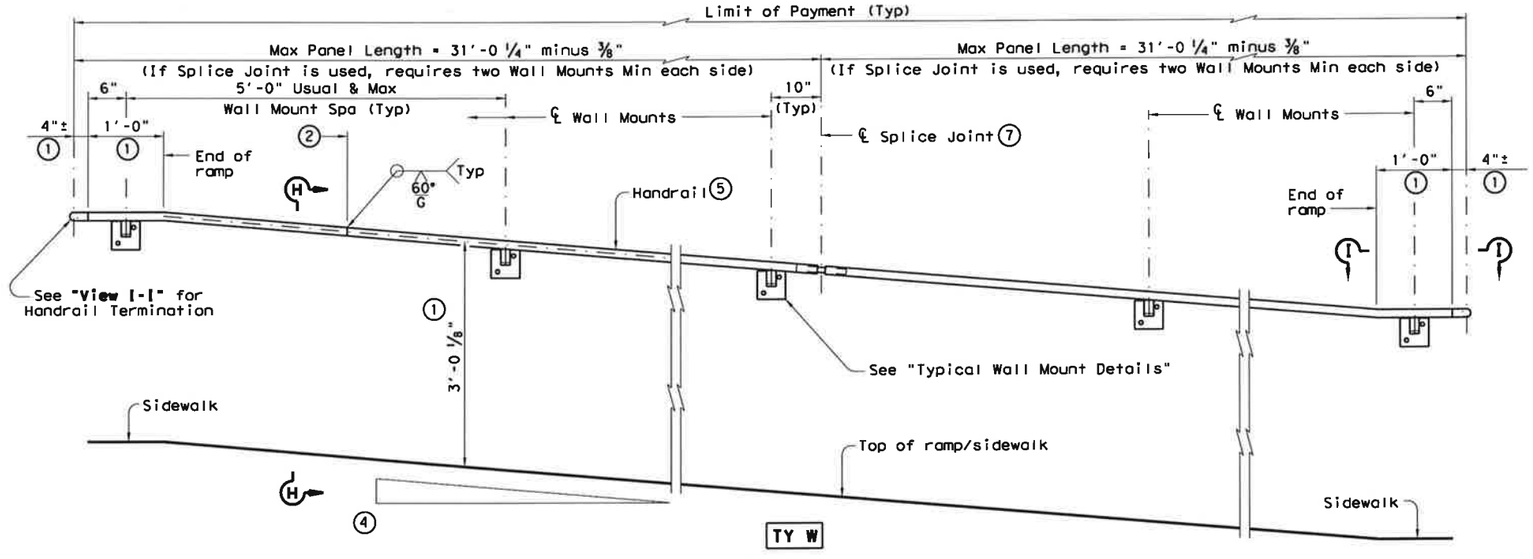


SECTION E-E
(Showing Handrail TY E)

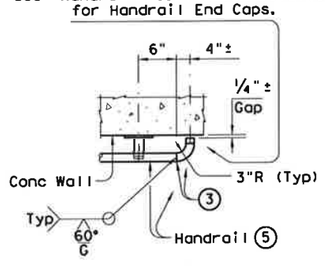
SECTION F-F
(Showing Handrail TY F)



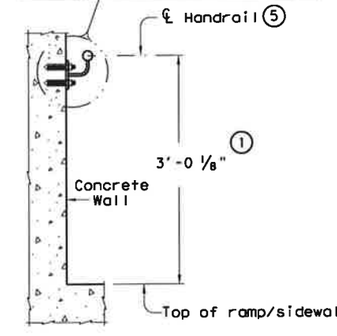
SECTION G-G
(Showing Handrail Termination)



ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail TY W)

① Parallel to ground.

② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.

③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.

④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.

⑤ 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

⑥ 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.

⑦ See "Handrail Fabrication Details" for Splice Joints.

⑧ ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.

⑪ See "General Notes" for anchor bolt information.

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Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
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REVISIONS REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO. 156

DATE:
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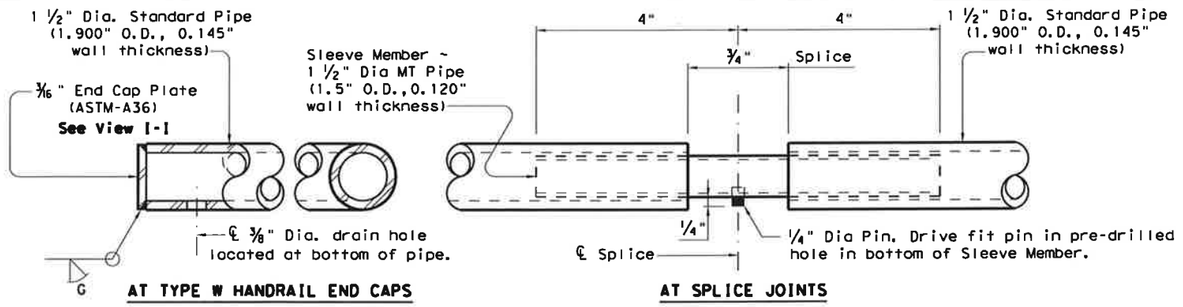
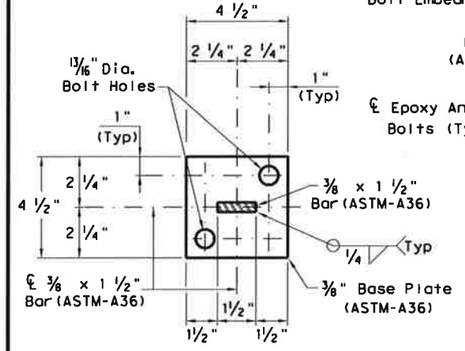


AT TYPE W HANDRAIL END CAPS

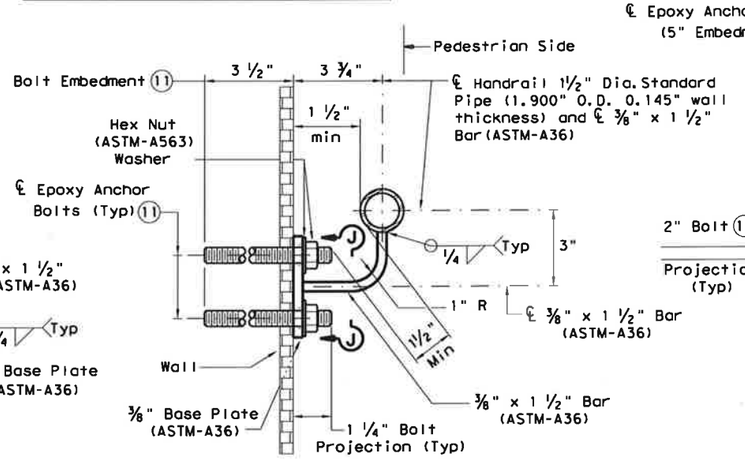
AT SPLICE JOINTS

HANDRAIL FABRICATION DETAILS



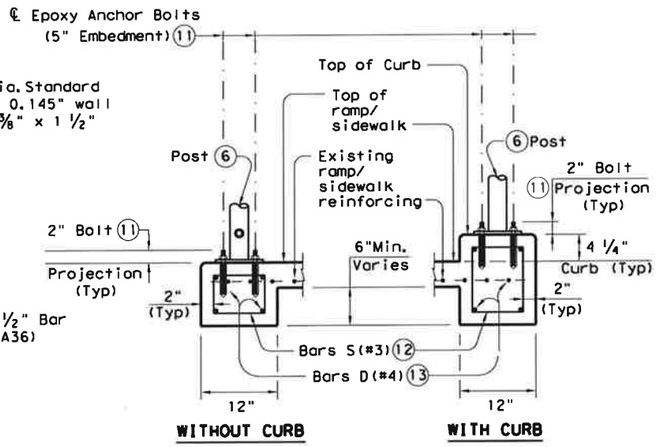
SECTION J-J

(Anchor Bolts not shown for clarity)



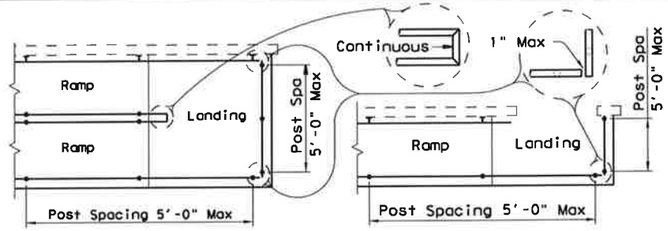
SECTION AT WALL MOUNT

TYPICAL WALL MOUNT DETAILS



SECTION AT RAIL POST FOUNDATIONS

RAMP INTERSECTION



MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

PLAN SHOWING RAIL AT RAMP CONDITIONS

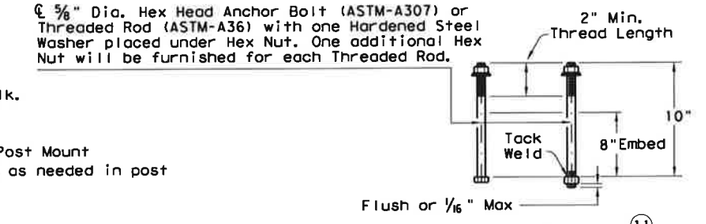
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

(11) See "General Notes" for anchor bolt information.

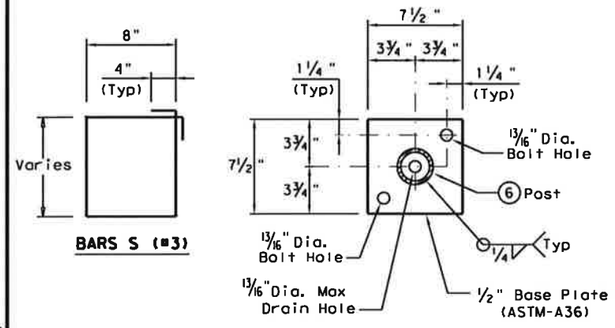
(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.

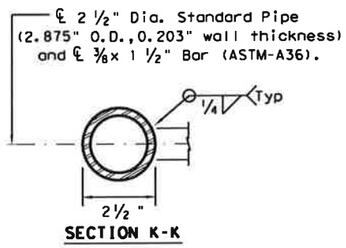


CAST-IN-PLACE ANCHOR BOLT OPTIONS (11)

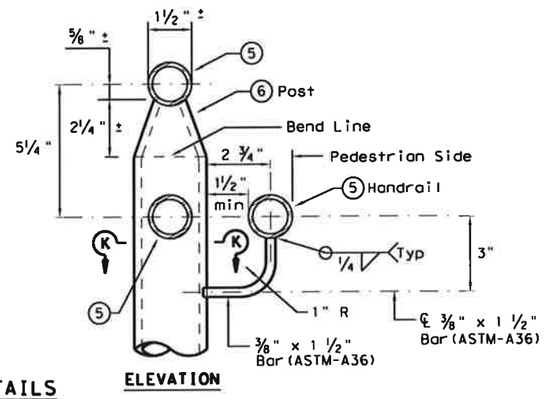
(Used for Post Base Plate only)



TYPICAL POST BASE PLATE DETAIL



SECTION K-K



ELEVATION

POST MOUNT DETAILS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

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

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

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PEDESTRIAN HANDRAIL DETAILS

PRD-13

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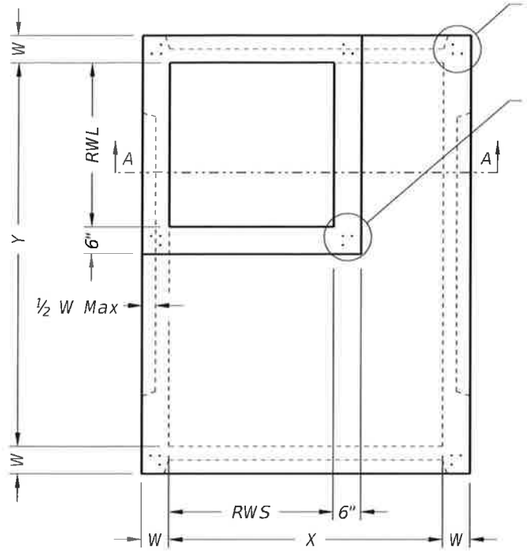
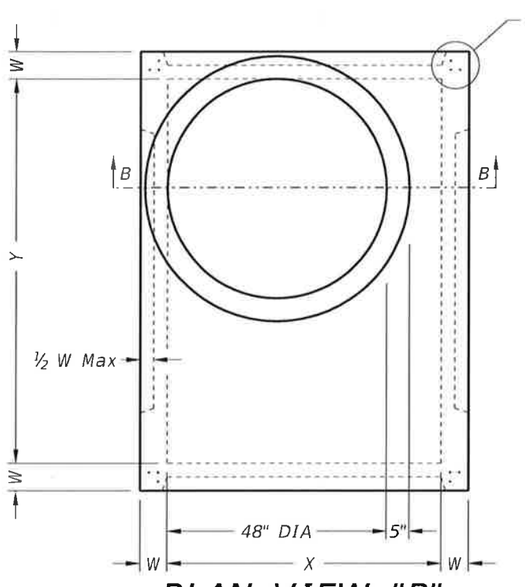
REVISIONS REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO. 157

DATE:
FILE:



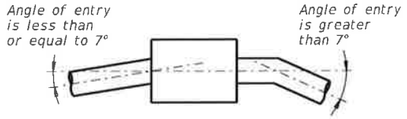
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



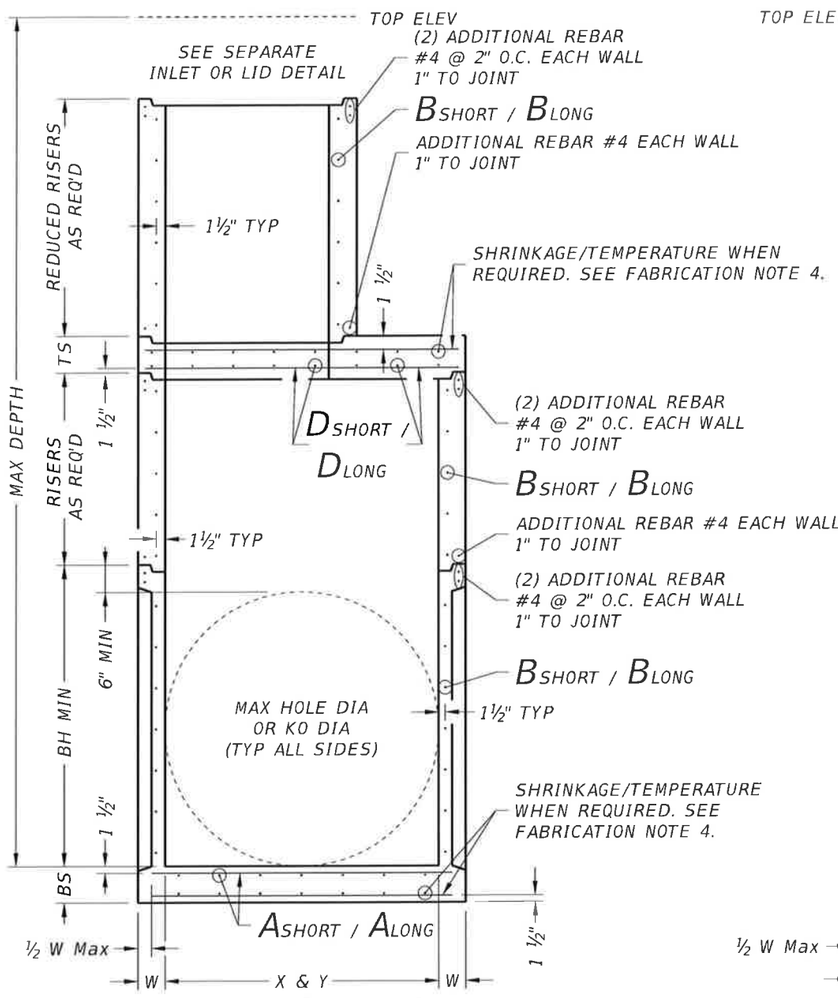
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



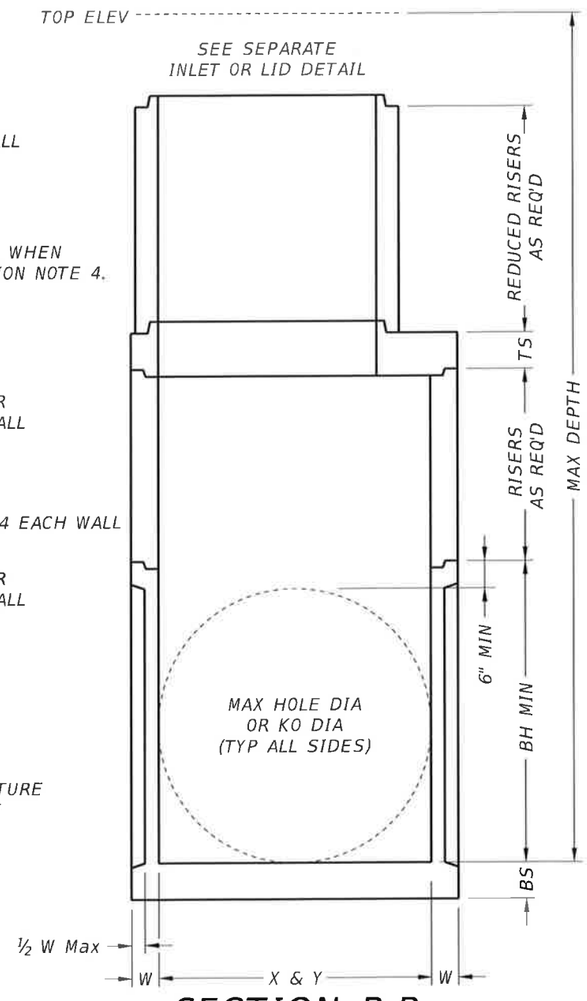
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

FILE: prestd01.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	DIST	COUNTY		SHEET NO. 158

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DATE:
FILE:

		MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB												
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
	Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

Texas Department of Transportation

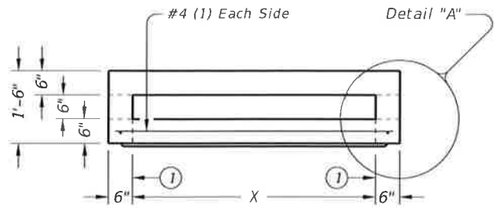
Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

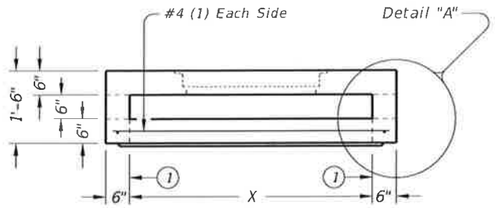
PDD

FILE: prestd10.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO. 159

DATE:
FILE:



ELEVATION VIEW



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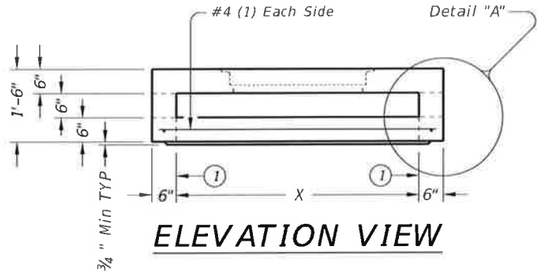

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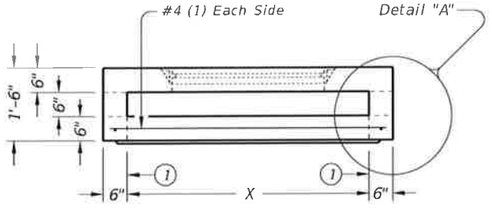
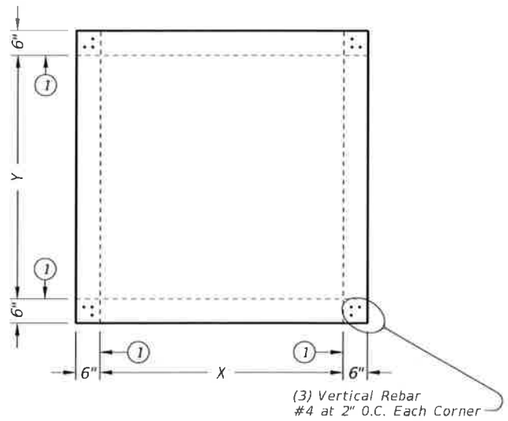
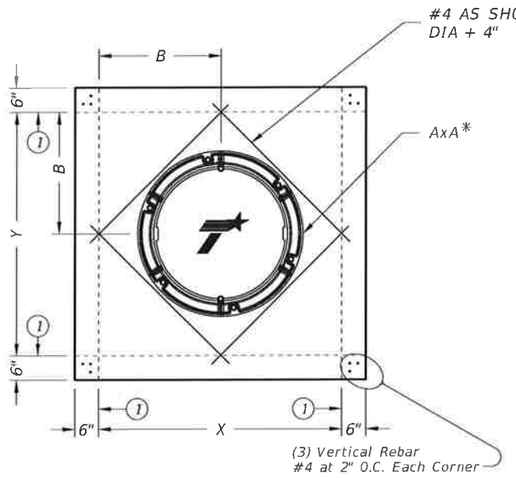


ELEVATION VIEW



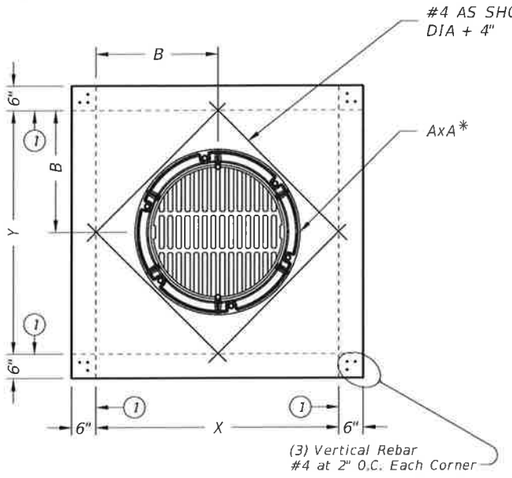
PLAN VIEW
NO OPENINGS

STYLE 'SL'



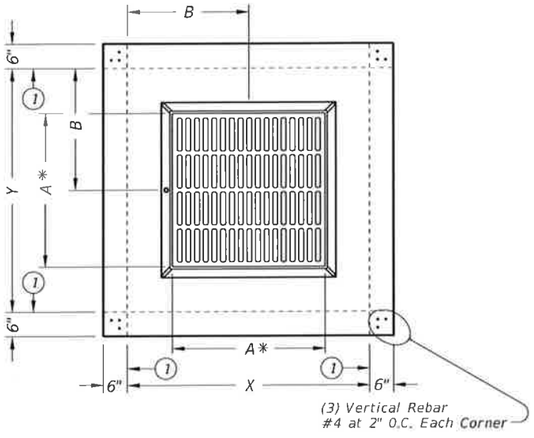
PLAN VIEW
32" DIA CAST-IN RING & COVER

STYLE 'RC'



PLAN VIEW
32" DIA CAST-IN RING & GRATE

STYLE 'RG'



PLAN VIEW
CAST-IN FRAME & GRATE

STYLE 'FG'

Style	Size (X x Y)	A x A *	B x B	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	n/a	n/a	0.37 in²/ft	0.37 in²/ft
RC,RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
SL	4'x4'	n/a	n/a	0.34 in²/ft	0.34 in²/ft
RC,RG	4'x4'	32" Dia	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	3'x3'	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	4'x4'	2'x2'	0.34 in²/ft	0.34 in²/ft
SL	5'x5'	n/a	n/a	0.43 in²/ft	0.43 in²/ft
RC,RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in²/ft	0.68 in²/ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft

* Nominal frame/grate or ring/cover size.

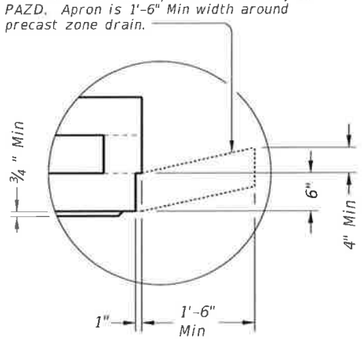
(1) Matches inside face of wall of precast base or riser below inlet.

FABRICATION NOTES:
1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide **Grade** 60 reinforcing **steel** or equivalent area of WWR.
3. Provide **clear** cover of ¾" to **reinforcing** from bottom of slab for structural reinforcement. Place short span reinforcing closest to surface.
4. No substitution is allowed for diagonal #4 bars around openings.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:
1. PAZD is for use in ditches and medians outside of the horizontal clearance (clear zone). Precast Area Zone Drain is not intended for direct traffic and may not be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. **Tongue** and groove joints may be grouted no more than 1" **between** each **section**, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:
1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Construct cast-in-place reinforced concrete apron when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PAZD. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"
(Reinforcing not shown for clarity)

When an apron is to be cast around PAZD, use detail above to create an apron ledge on all 4 sides.

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PRECAST AREA ZONE DRAIN

PAZD

FILE: prestd08.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	DIST	COUNTY		SHEET NO.
				160

DATE:
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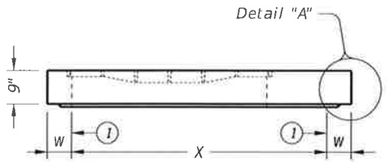
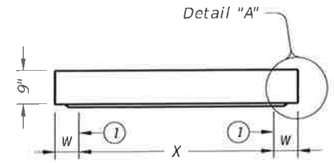
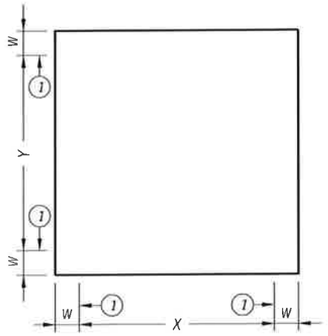


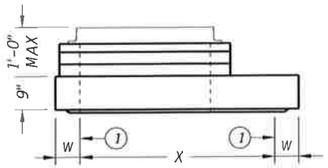
STYLE 'FG'



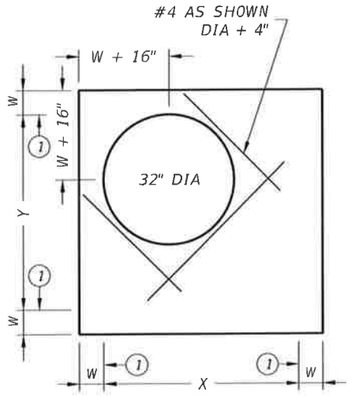
ELEVATION VIEW



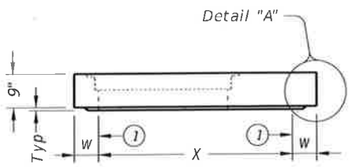
PLAN VIEW
NO OPENINGS
STYLE 'SL'



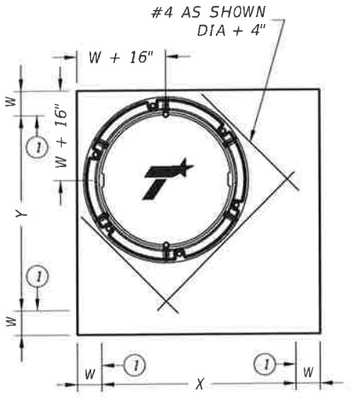
ELEVATION VIEW



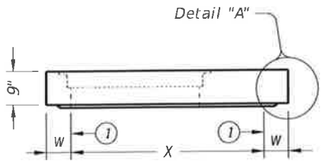
PLAN VIEW
SHIP LOOSE RING & COVER
STYLE 'RH'



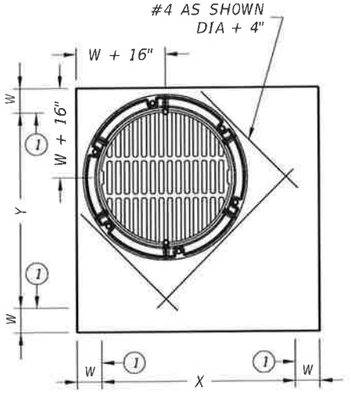
ELEVATION VIEW



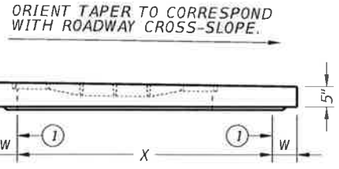
PLAN VIEW
32" DIA CAST-IN RING & COVER
STYLE 'RC'



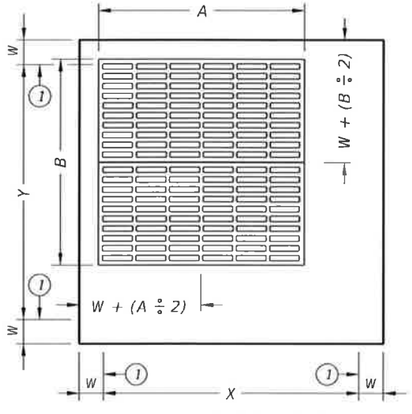
ELEVATION VIEW



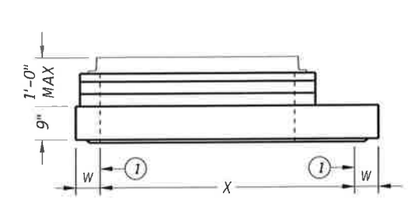
PLAN VIEW
32" DIA CAST-IN RING & GRATE
STYLE 'RG'



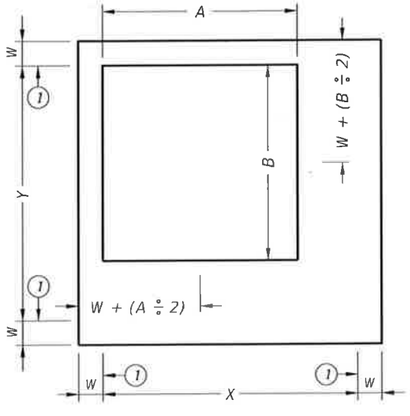
STYLE 'SFG'
ELEVATION VIEW



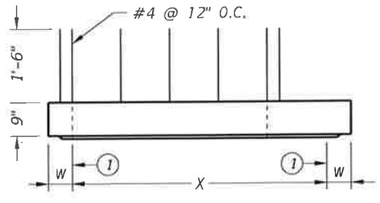
PLAN VIEW
CAST-IN FRAME & GRATE
STYLES 'FG' & 'SFG'



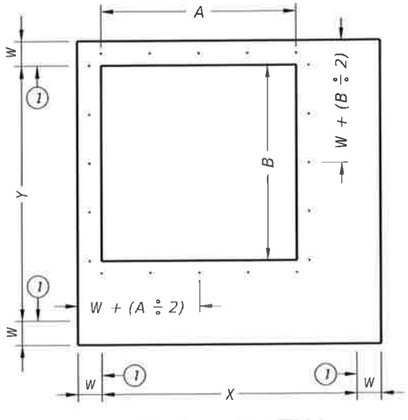
ELEVATION VIEW



PLAN VIEW
SHIP LOOSE FRAME & GRATE
STYLE 'SH'



ELEVATION VIEW



PLAN VIEW
EXPOSED REBAR
STYLE 'S1'

(1) Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

FILE: prestd05.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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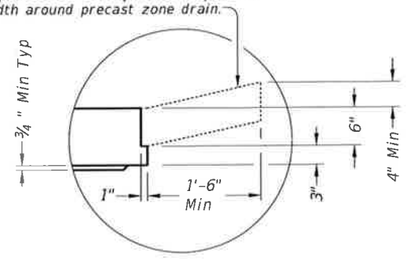
REVISIONS	DIST	COUNTY		SHEET NO. 161

DATE:
FILE:

Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in²/ft	0.37 in²/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in²/ft	0.37 in²/ft
SFG	3'x3'	6"	3'x3'	0.32 in²/ft	0.32 in²/ft
SL	4'x4'	6"	n/a	0.34 in²/ft	0.34 in²/ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in²/ft	0.41 in²/ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in²/ft	0.41 in²/ft
SFG	4'x4'	6"	4'x4'	0.32 in²/ft	0.32 in²/ft
SL	3'x5'	6"	n/a	0.39 in²/ft	0.39 in²/ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in²/ft	0.48 in²/ft
SFG	3'x5'	6"	3'x5'	0.32 in²/ft	0.32 in²/ft
SL	4'x5'	6"	n/a	0.42 in²/ft	0.42 in²/ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in²/ft	0.42 in²/ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in²/ft	0.66 in²/ft
SL	5'x5'	6"	n/a	0.36 in²/ft	0.36 in²/ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in²/ft	0.43 in²/ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in²/ft	0.63 in²/ft
SL	5'x6'	6"/8"	n/a	0.48 in²/ft	0.48 in²/ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in²/ft	0.60 in²/ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in²/ft	0.60 in²/ft
SL	6'x6'	6"/8"	n/a	0.43 in²/ft	0.43 in²/ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in²/ft	0.59 in²/ft
SL	8'x8'	8"/10"	n/a	0.45 in²/ft	0.45 in²/ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in²/ft	0.45 in²/ft

(2) See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)

When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of ¾" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

FILE: prestd05.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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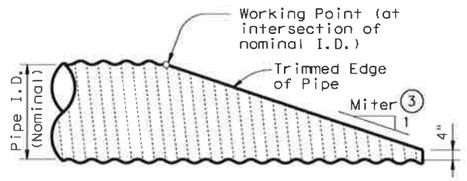
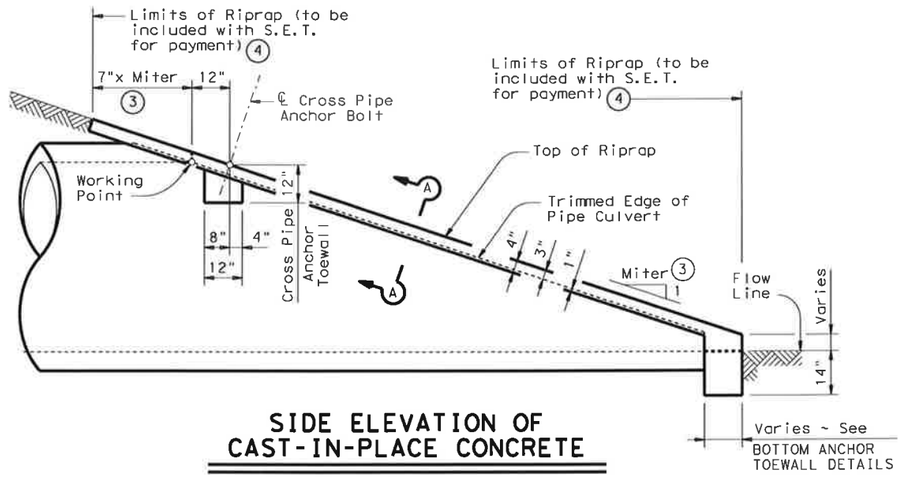
REVISIONS				
	DIST	COUNTY		SHEET NO.
				162



NOTE: All Pipe Runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

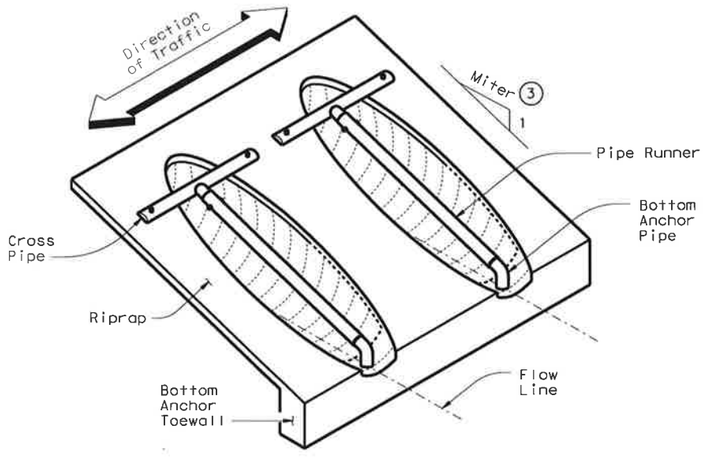
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert.
Details of Concrete Pipe Culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing Concrete Pipe Culvert.
Details of Corrugated Metal Pipe Culvert are similar.
Pipe Runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS & PIPE RUNNER LENGTHS (1)(2)

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length											
			3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
			0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
24"	1'- 7"	3'- 5"	N/A	N/A	N/A	5'-10"	N/A	N/A	N/A	8'- 1"	N/A	N/A	N/A	12'- 9"
27"	1'- 8"	3'- 8"	N/A	N/A	5'- 5"	6'-11"	N/A	N/A	7'- 7"	9'- 7"	N/A	N/A	11'-11"	14'-11"
30"	1'-10"	3'-11"	N/A	N/A	6'- 4"	8'- 0"	N/A	N/A	8'- 9"	11'- 0"	N/A	N/A	13'- 8"	17'- 0"
33"	1'-11"	4'- 2"	6'- 2"	6'- 5"	7'- 3"	9'- 1"	8'- 6"	8'-10"	10'- 0"	12'- 5"	13'- 3"	13'- 9"	15'- 5"	19'- 2"
36"	2'- 1"	4'- 5"	6'-11"	7'- 3"	8'- 2"	10'- 2"	9'- 6"	9'-11"	11'- 2"	13'-10"	14'- 9"	15'- 3"	17'- 2"	21'- 3"
42"	2'- 4"	4'-11"	8'- 6"	8'-10"	9'-11"	12'- 4"	11'- 7"	12'- 0"	13'- 6"	16'- 8"	17'- 9"	18'- 5"	20'- 8"	25'- 7"
48"	2'- 7"	5'- 5"	10'- 1"	10'- 5"	11'- 9"	N/A	13'- 7"	14'- 2"	15'-10"	N/A	20'- 9"	21'- 6"	24'- 2"	N/A
54"	3'- 0"	5'-11"	11'- 8"	12'- 1"	N/A	N/A	15'- 8"	16'- 3"	N/A	N/A	23'-10"	24'- 8"	N/A	N/A
60"	3'- 3"	6'- 5"	13'- 3"	N/A	N/A	N/A	17'- 9"	N/A	N/A	N/A	26'-10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (3)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (No Skew)	Always required
42" to 60"	Always required	Always required

STANDARD PIPE SIZES & MAX PIPE RUNNER LENGTHS (1)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10'- 0"
4" STD	4.500"	4.026"	19'- 8"
5" STD	5.563"	5.047"	34'- 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

(1) Size of Pipe Runner shall be as shown in the tables. Cross Pipe shall be the same size as the Pipe Runner. Cross Pipe Stub Out and Bottom Anchor Pipe shall be the next smaller size pipe as shown in the STANDARD PIPE SIZES table.

(2) This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT "Roadway Design Manual".

(3) Miter = Slope of Mitered Pipe Culvert End

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple Pipe Culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

DATE:
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Texas Department of Transportation

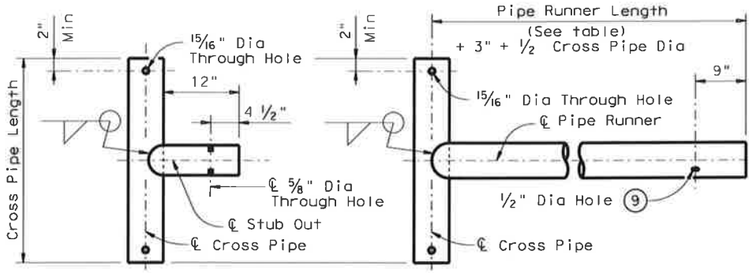
Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

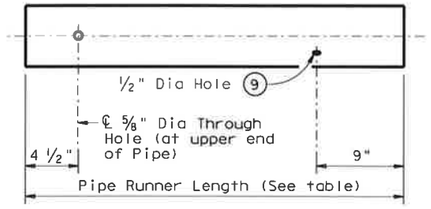
SETP-CD

FILE: selpcdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
11-10: Add note for synthetic fibers.				163



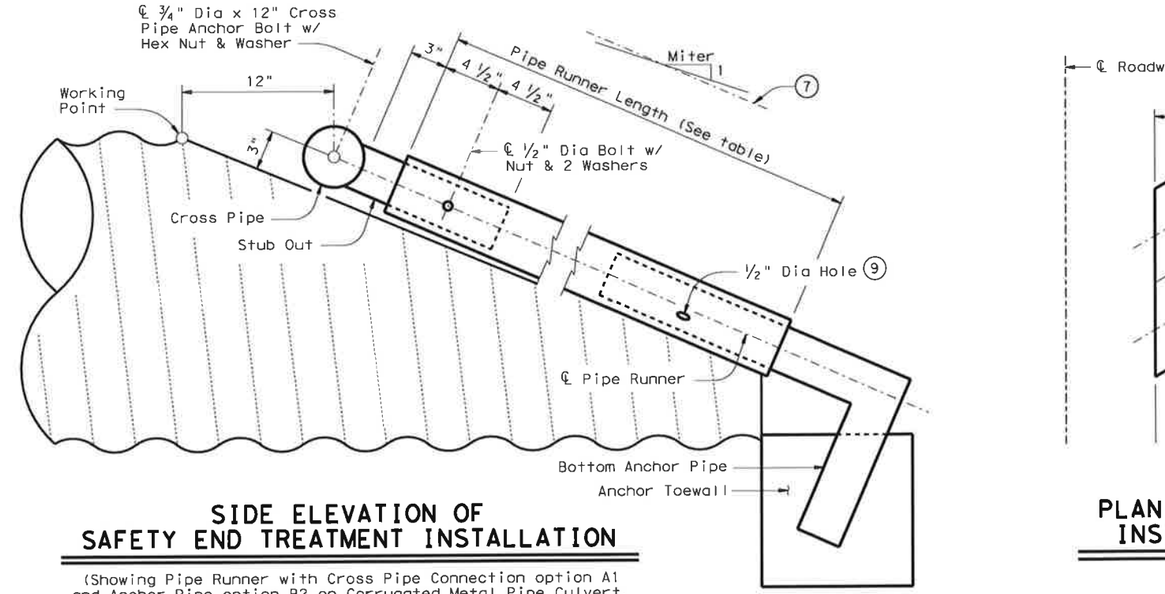
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



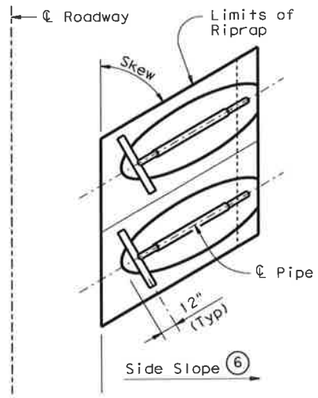
NOTE: The separate Pipe Runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

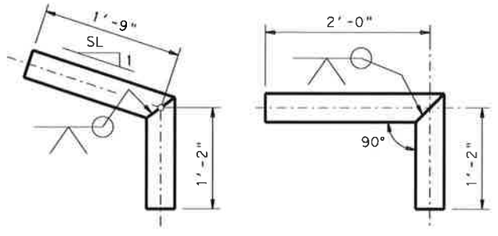


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing Pipe Runner with Cross Pipe Connection option A1 and Anchor Pipe option B2 on Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Riprap not shown for clarity)

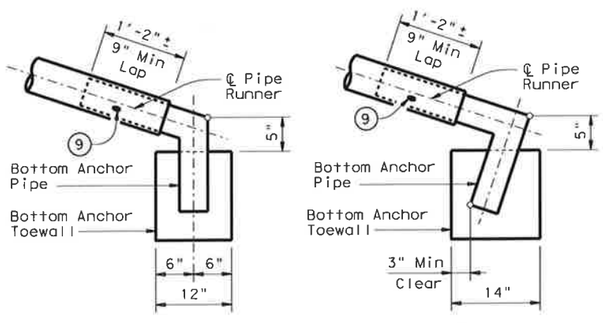


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

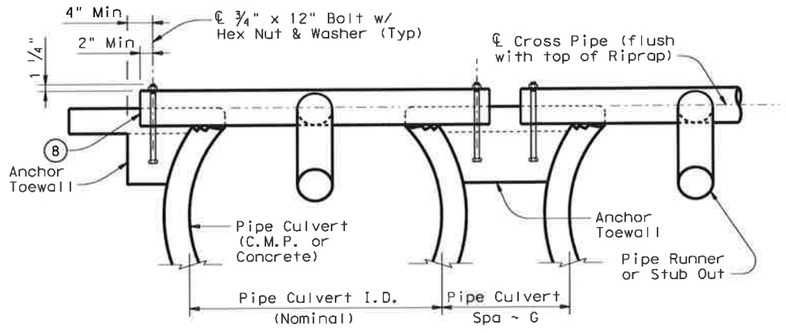
BOTTOM ANCHOR PIPE DETAILS (10)



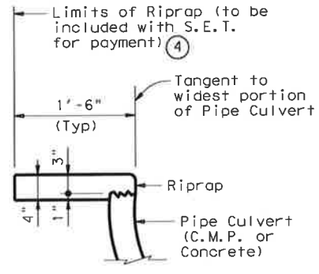
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert & Riprap not shown for clarity)



SHOWING CROSS PIPE & ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT & RIPRAP

SECTION A-A

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, & 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of Pipe Runner may vary slightly from Side Slope of Riprap and trimmed Culvert Pipe edge.

(8) Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, the 1/2" hole shall be inspected to ensure that the lap of the Pipe Runner with the Bottom Anchor Pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the Runner) may be substituted for the mitered and welded joint in the Bottom Anchor Pipe.

GENERAL NOTES:

Pipe Runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Pipe Runners.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Pipe Runners, Cross Pipes, and Anchor Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF	
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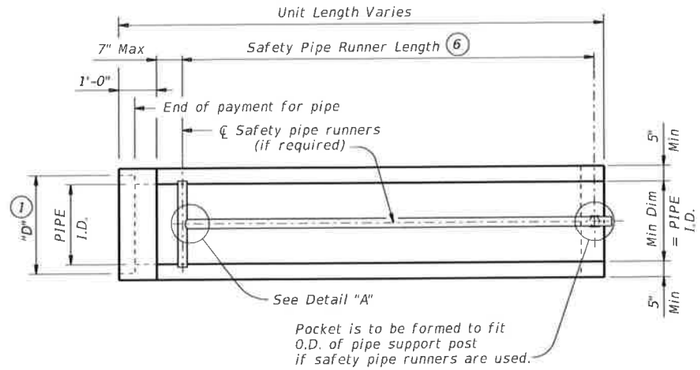
REVISIONS 11 10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO. 164	

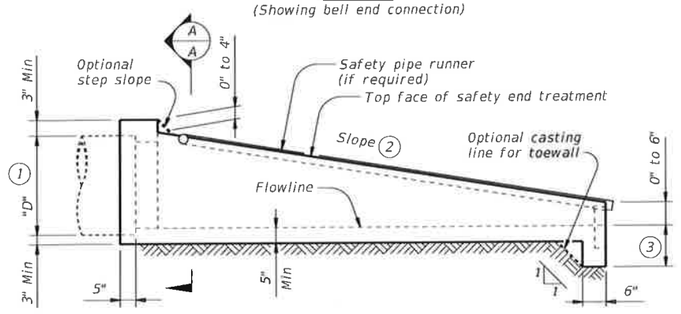
DATE:
FILE:

PIPE I.D.	RCP WALL "B" THICKNESS	TP WALL THICKNESS (8)	"D" (1)	SLOPE	MINIMUM LENGTH OF UNIT	SINGLE PIPE		MULTIPLE PIPE	
						SKEW	PIPE RUNNERS REQUIRED	SKEW	PIPE RUNNERS REQUIRED
12"	2"	1.15"	17"	3:1	2'-11"	<=45 deg	No	<=45 deg	No
				4:1	3'-6"				
				6:1	4'-9"				
15"	2.25"	1.30"	20.50"	3:1	3'-8"	<=45 deg	No	<=45 deg	No
				4:1	4'-7"				
				6:1	6'-5"				
18"	2.50"	1.60"	24"	3:1	4'-6"	<=45 deg	No	<=45 deg	No
				4:1	5'-8"				
				6:1	8'-0"				
24"	3"	1.95"	31"	3:1	6'-2"	<=45 deg	No	<=30 deg	No
				4:1	7'-10"			>30 deg	Yes
				6:1	11'-3"				
30"	3.50"	2.65"	38.50"	3:1	7'-10"	<=15 deg	No	<=15 deg	No
				4:1	10'-1"				
				6:1	14'-8"	>15 deg	Yes	>15 deg	Yes
36"	4"	2.75"	45.50"	3:1	9'-5"	=0 deg	No	=>0 deg	Yes
				4:1	12'-3"				
				6:1	17'-11"	>0 deg	Yes		
42"	4.50"	N/A	52.50"	3:1	11'-1"	=>0 deg	Yes	=>0 deg	Yes
				4:1	14'-5"				
				6:1	21'-2"				



PLAN

(Showing bell end connection)



LONGITUDINAL ELEVATION

(Showing bell end connection)

Maximum Safety Pipe Runner Length	Required Pipe Runner Size		
	Pipe Size	Pipe O.D.	Pipe I.D.
11'- 2"	3" STD	3.500"	3.068"
15'- 6"	3 ½" STD	4.000"	3.548"
20'-10"	4" STD	4.500"	4.026"
35'- 4"	5" STD	5.563"	5.047"

(1) Dimension "D" is based on Reinforced Concrete Pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For Thermoplastic Pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in plans. Slope of 3:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item "Safety End Treatment".

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Measured along slope.

(7) Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(8) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

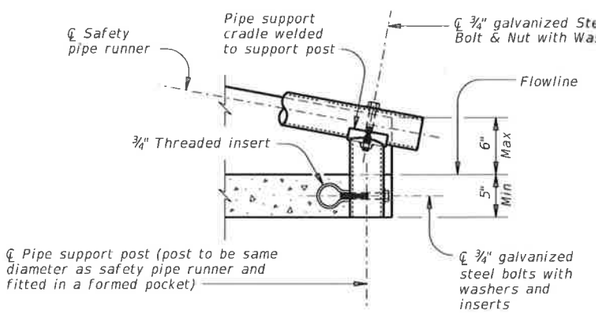
At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Provide safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

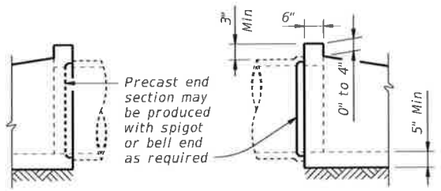
Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464 "Reinforced Concrete Pipe". Connect TP by grouting. See PBGC standard for grouted connections with TP and precast safety end treatment.



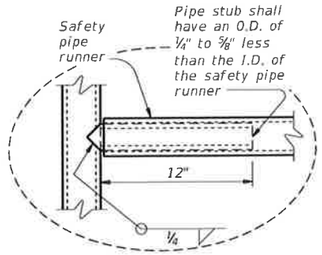
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

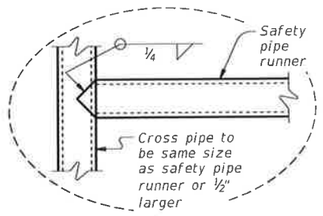


OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment)



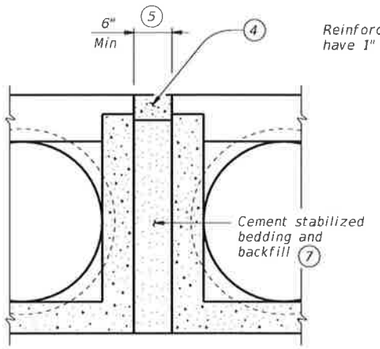
OPTION A



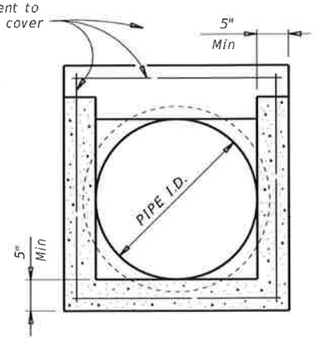
OPTION B

DETAIL A

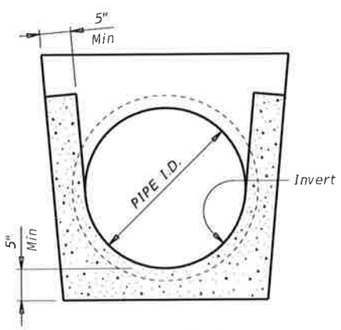
(If required)



MULTIPLE PIPE INSTALLATION

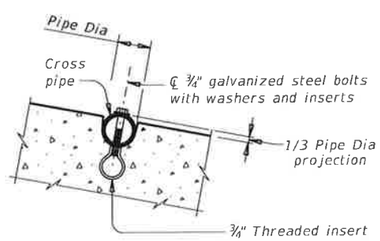


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ CROSS DRAINAGE

PSET-SC

FILE: psetscss-18.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
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REVISIONS	DIST	COUNTY		SHEET NO.
11-10: Add note for synthetic fibers 09-18: Added Thermoplastic Pipe in table				165

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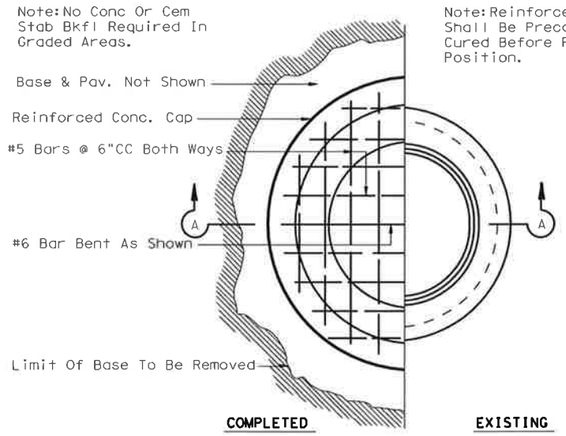
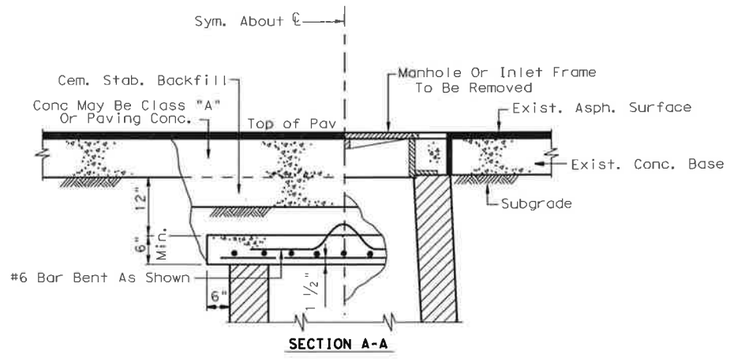
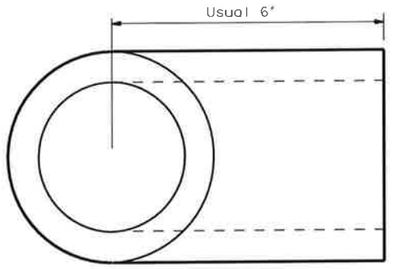


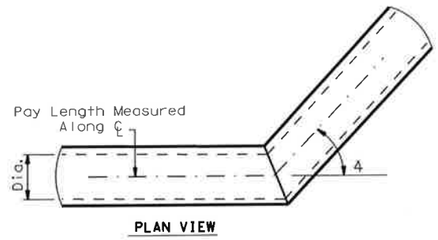


DETAIL SHOWING METHOD OF CAPPING ABANDONED MANHOLES OR INLETS (GRADED OR PAVED AREAS)



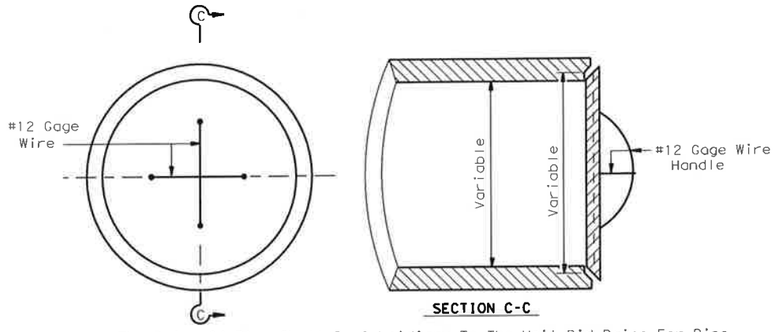
Note: Jointing Material Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Material For Tees Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Payment For Tee To Be In Accordance With Item "Reinforced Concrete Pipe."

PRECAST STORM SEWER TEE



BENDING DETAIL

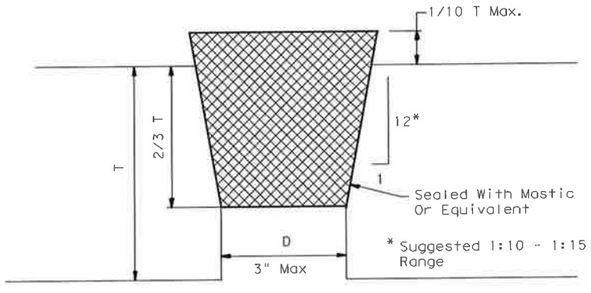
Note: Bending Of Proposed Pipe Sewer Or RCP In A Vertical & /Or Horizontal Plane Shall Be Accomplished By The Use Of A "Pipe Collar" Or A "Precast Elbow", As Approved By The Engineer.
Price Of "Pipe Collar" Or, "Precast Elbow" Shall Be Subsidiary To The Unit Prices Bid For Item Reinforced Concrete Pipe.
Pay Length Measurement To Be Along Horizontal ℄ & Horizontal Plane Of Pipes.



Note: The Price Of Plug Shall Be Subsidiary To The Unit Bid Price For Pipe Sewer Or RCP. Mortar Joints To Be Used As Directed By The Engineer. Removal Of The Existing Plugs For Storm Sewer Or RCP Conns. Shall Be Considered Incidental To Item "Excavation And Backfill For Structures."

Concrete Plug For End Of Pipe Culvert Or Sewer

CONCRETE PLUG FOR PIPE

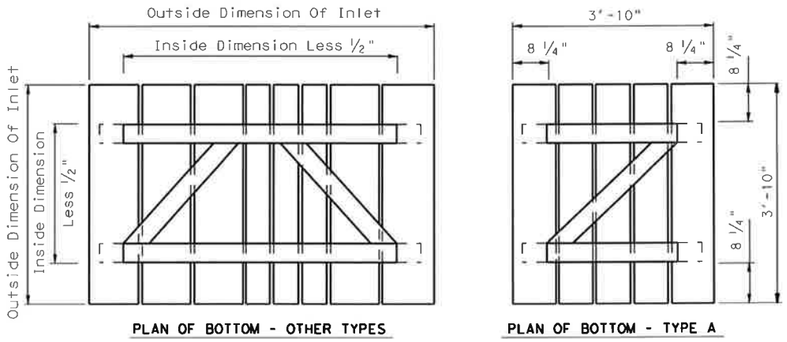


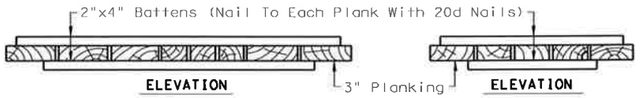
T = Wall Thickness On Top Of Box Or Pipe
D = Diameter Of Lifting Hole

Minimum Length Of Plug Is 2/3 T +/-
Minimum Diameter At Bottom Of Plug = D - 1/8"
Maximum 1/10 T Of Plug Not Seated In Lifting Hole

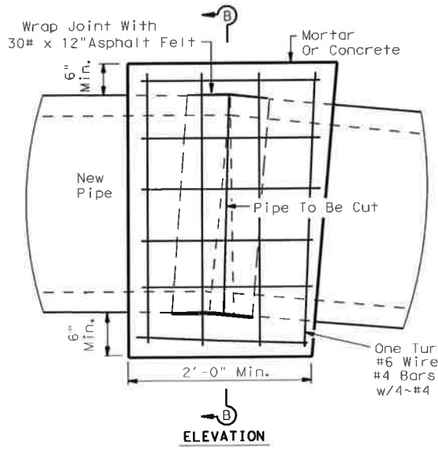
Note: The Plug Shall Be Cast With The Same Taper As The Lifting Hole.

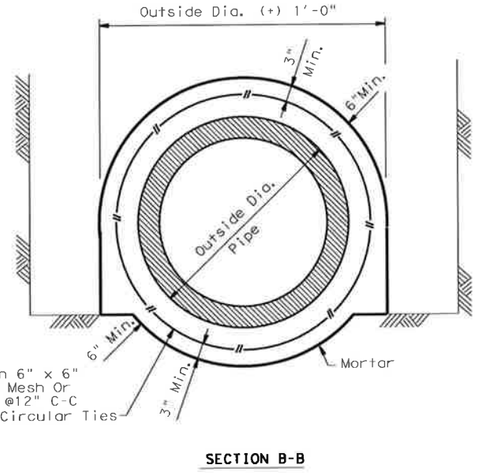
DETAIL OF PLUG FOR LIFTING HOLES IN RCB AND RCP





TEMPORARY COVERS FOR ALL TYPES OF INLETS





PIPE COLLAR DETAIL

For Horizontal Or Vertical Placement

d = Diameter
R = Radius

Texas Department of Transportation
Houston District (Bridge)

MISCELLANEOUS SEWER DETAILS

MSD

FILE: STDD11.DGN	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK:	
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REVISIONS 3/2015 2014 Specs	HOU	6			166
	COUNTY		CONTROL	SECT	JOB	HIGHWAY

STDD11.DGN

DATE:
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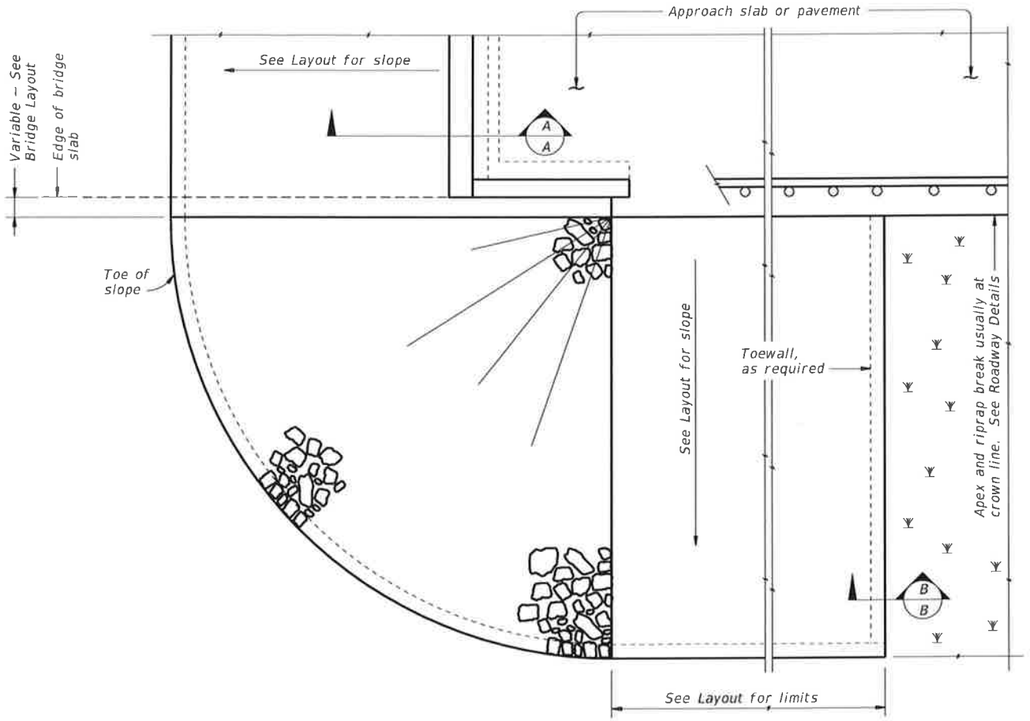
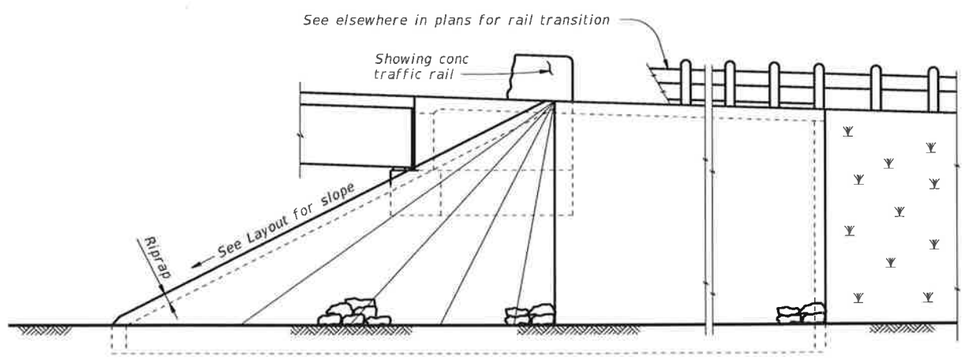
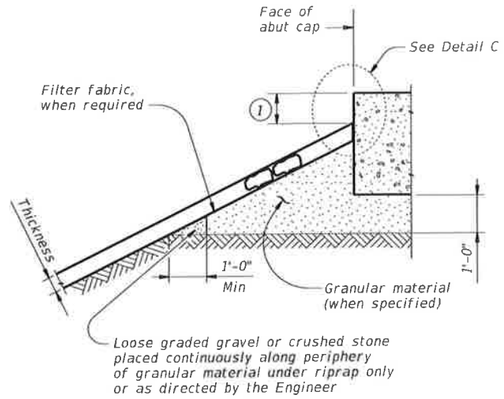


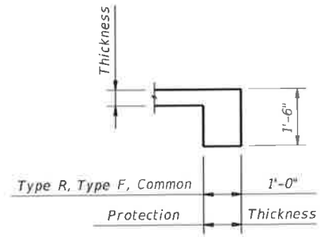
PLAN



ELEVATION

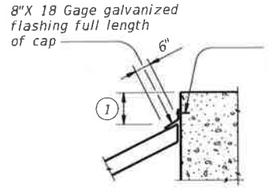


SECTION A-A AT CAP

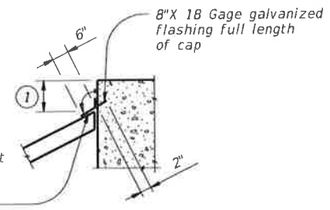


SECTION B-B

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".



CAP OPTION A



CAP OPTION B

DETAIL C

(1) Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

GENERAL NOTES:
Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
See elsewhere in plans for locations and details of shoulder drains.

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
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REVISIONS	DIST	COUNTY		SHEET NO. 167

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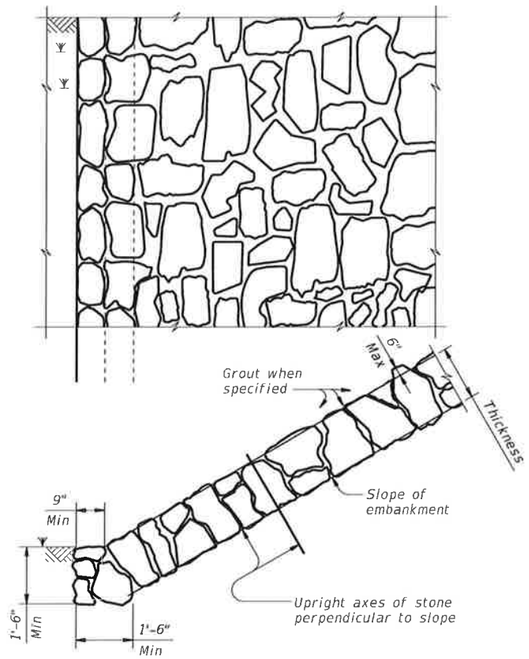


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

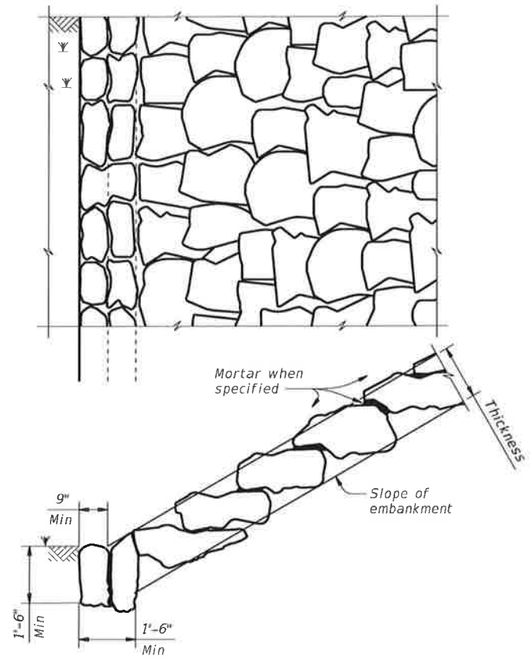


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

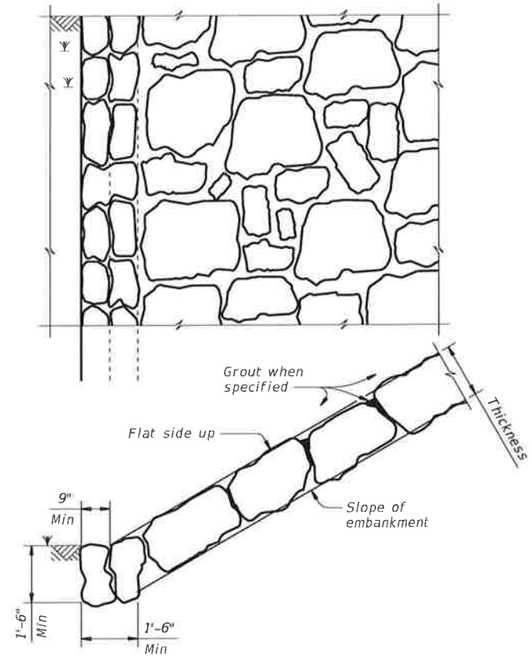


FIGURE 3 ~ TYPE F STONE RIPRAP

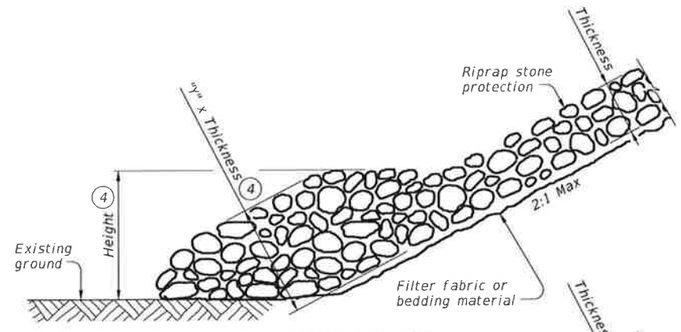
grouted

(2) Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.

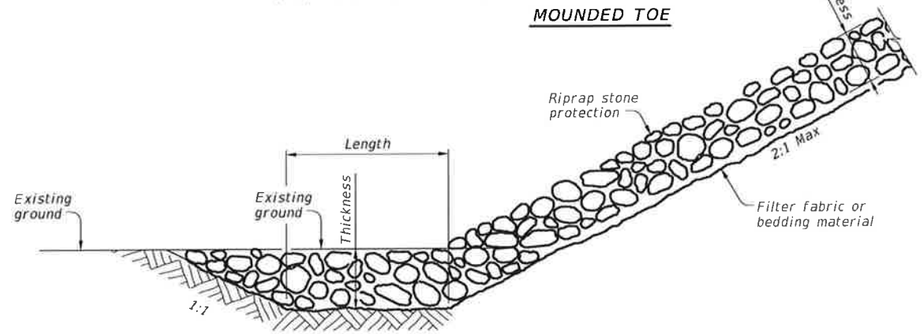
(3) Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

(4) "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.

(5) List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

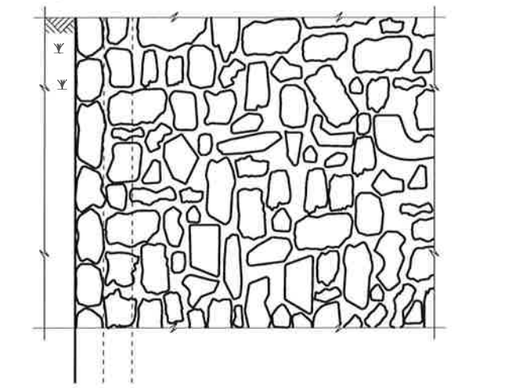


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

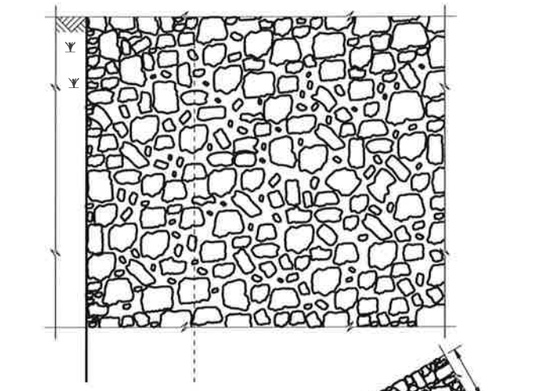


FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstdel-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES	
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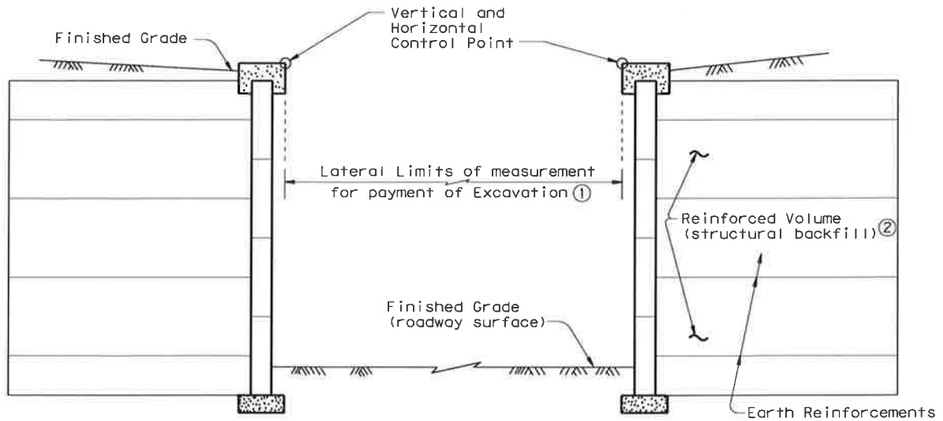
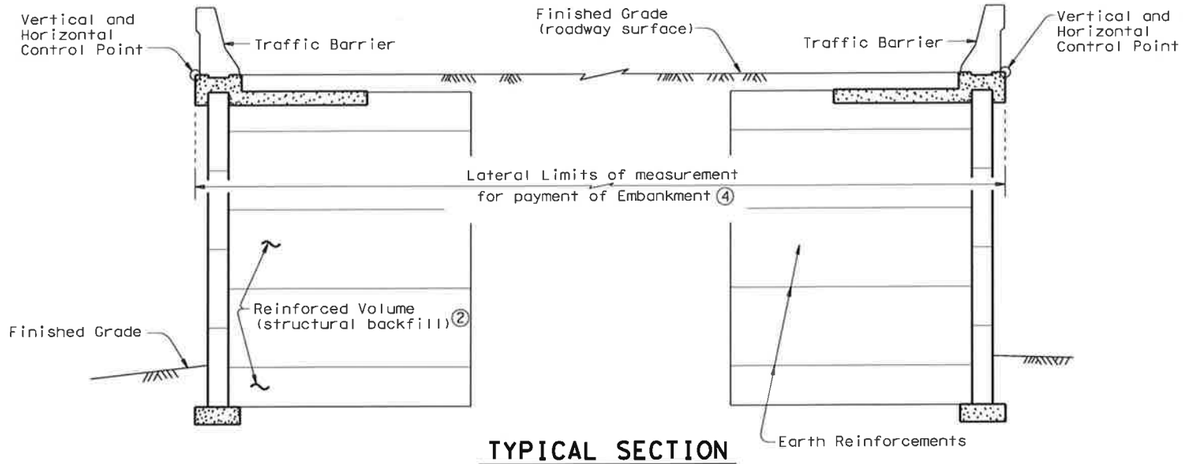
REVISIONS	DIST	COUNTY		SHEET NO.	
				168	

DATE:
FILE:



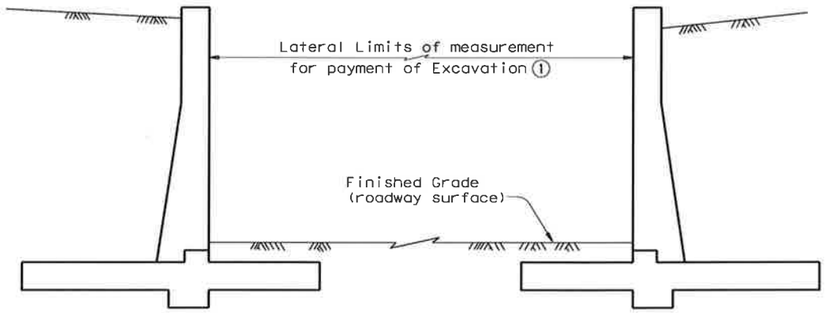
TYPICAL SECTION

Excavation Between MSE Retaining Walls ③



TYPICAL SECTION

Embankment Between MSE Retaining Walls ③



TYPICAL SECTION

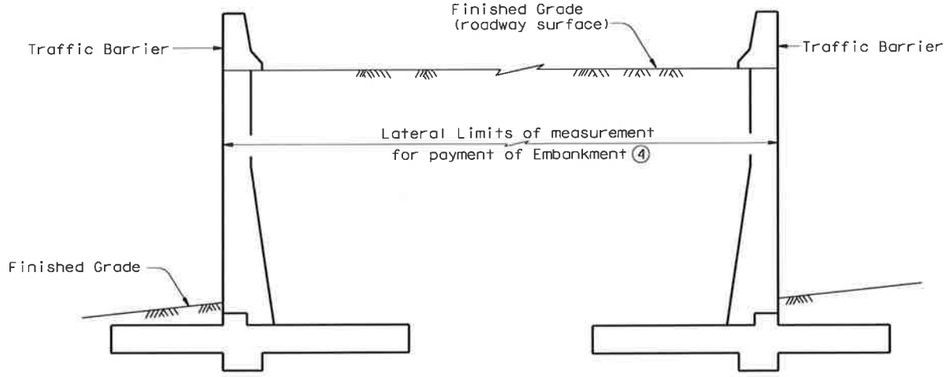
Excavation Between Conventional Retaining Walls

① Only the Excavation above the proposed subgrade elevation will be measured for payment.

② Meeting requirements of Retaining-Wall Item.

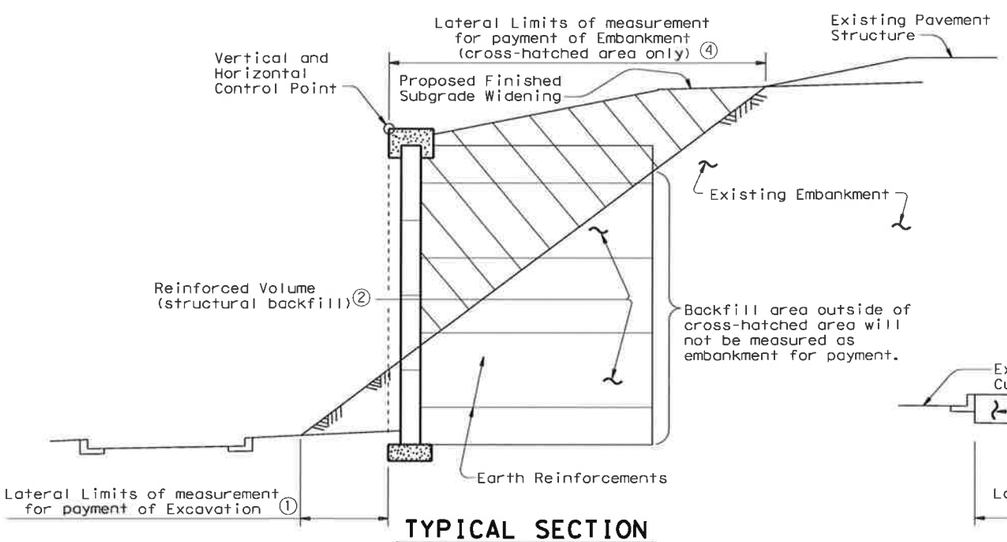
③ Earthwork measurement with other designs of retaining walls will be made to the outside finished face in the same manner.

④ Only the Embankment above the existing ground line will be measured for payment.



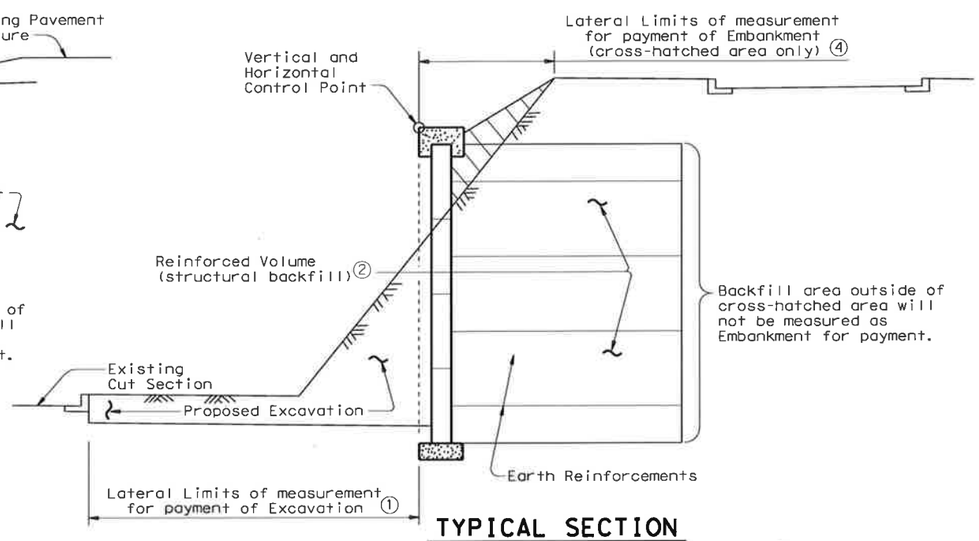
TYPICAL SECTION

Embankment Between Conventional Retaining Walls



TYPICAL SECTION

Widening Embankment with MSE Retaining Walls ③



TYPICAL SECTION

Widening Cut Section with MSE Retaining Walls ③

Texas Department of Transportation

Bridge Division Standard

EARTHWORK MEASUREMENT AT RETAINING WALLS

RW(EM)

FILE: rwstde12.dgn	DN: TxDOT	CK: TxDOT	DW: BWH	CK: JMH
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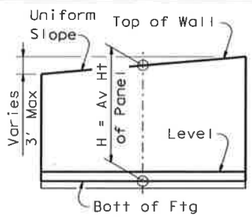
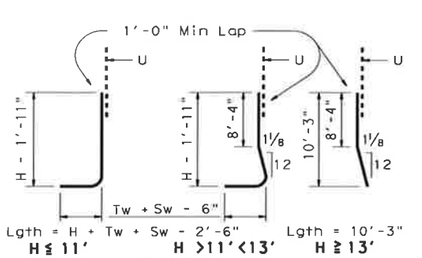
	DIST	COUNTY		SHEET NO.
				169

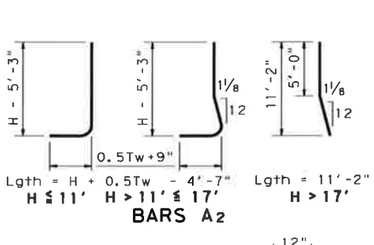


H DEFINITION

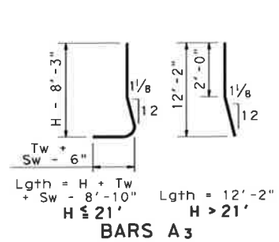
Wall Height "H"	PROPERTIES							REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)																												QUANTITY FOR ONE 32' PANEL		Wall Height "H"
	WALL DIMENSIONS						Max Soil Press	A_1 ~ 26 #5 at 15" c-c		A_2 ~ 25 #6 at 15" c-c		A_3 ~ 25 #7 at 15" c-c		A_4 ~ 26 #8 at 15" c-c		A_5 ~ 25 #9 at 15" c-c		A_6 ~ 25 #11 at 15" c-c		A_7 ~ 26 #11 at 15" c-c		B ~ 26 #5 at 15" c-c		C						D (#5) at 12" c-c		Dowel F at 12" c-c		H (#5) at 12" c-c		T (#5) at 12" c-c		U ~ 26 #5 at 15" c-c		CONC (CY)	REINF (LB)	
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	T/SF	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Size	No	Spa	Lgth	Wt	No	Wt	No	Wt	No	Wt	No	Wt	Lgth	Wt			(Ft)
2	3'-6"	1'-9"	1'-0"	9"	1'-0"	9"	0.14																	#4	26	15"	2'-3"	39	4	131	4	32	2	66	3	99	3'-4"	90	6.0	458	2
3	4'-3"	2'-2"	1'-0"	1'-1"	1'-0"	9"	0.17																	#4	26	15"	2'-8"	46	6	197	5	40	3	99	3	99	5'-4"	145	8.1	626	3
4	5'-0"	2'-6"	1'-0"	1'-6"	1'-0"	9"	0.20	5'-0"	136													3'-6"	95	#4	26	15"	3'-0"	52	8	263	6	48	3	99	3	99	7'-4"	199	10.1	991	4
5	5'-8"	2'-10"	1'-0"	1'-10"	1'-0"	9"	0.24	6'-4"	172													4'-6"	122	#4	26	15"	3'-4"	58	10	329	7	56	3	99	4	131	8'-4"	226	12.1	1193	5
6	6'-4"	3'-2"	1'-0"	2'-2"	1'-0"	9"	0.28	7'-8"	208													5'-6"	149	#4	26	15"	3'-8"	64	12	394	8	64	3	99	4	131	8'-4"	226	14.1	1336	6
7	7'-0"	3'-6"	1'-0"	2'-6"	1'-0"	9"	0.32	9'-0"	244	4'-2"	156											6'-6"	176	#4	38	10"	4'-0"	102	14	460	9	72	4	131	4	131	8'-4"	226	16.1	1698	7
8	7'-9"	3'-10"	1'-0"	2'-11"	1'-0"	9"	0.35	10'-4"	280	5'-4"	200											7'-6"	203	#6	38	10"	4'-4"	247	16	526	10	80	4	131	5	164	8'-4"	226	18.1	2056	8
9	8'-6"	4'-3"	1'-0"	3'-3"	1'-0"	9"	0.37	11'-9"	319	6'-7"	247											8'-6"	231	#6	38	10"	4'-9"	271	18	591	11	88	4	131	5	164	8'-4"	226	20.2	2268	9
10	9'-2"	4'-7"	1'-0"	3'-7"	1'-0"	9"	0.41	13'-1"	355	7'-8"	288	6'-9"	345									9'-6"	258	#7	38	10"	5'-1"	395	20	657	12	96	5	164	6	197	8'-4"	226	22.2	2981	10
11	9'-10"	4'-11"	1'-0"	3'-11"	1'-0"	1'-0"	0.44	14'-5"	391	8'-11"	335	8'-1"	413									10'-6"	285	#8	38	10"	5'-5"	550	22	723	13	104	5	164	6	197	8'-4"	226	24.7	3382	11
12	10'-6"	5'-3"	1'-1 1/8"	4'-1 1/8"	1'-0"	1'-0"	0.45	15'-10"	429	10'-1"	379	9'-6"	485									11'-6"	312	#9	38	10"	5'-9"	743	24	789	14	112	6	197	6	197	8'-4"	226	26.7	3868	12
13	11'-2"	5'-7"	1'-2"	4'-5"	1'-3"	1'-3"	0.54	10'-3"	278	11'-2"	419	10'-11"	558	8'-5"	584							12'-6"	339	#9	38	10"	6'-1"	786	26	854	15	120	6	197	7	230	8'-4"	226	32.5	4591	13
14	11'-10"	5'-11"	1'-3 1/8"	4'-7 7/8"	1'-3"	1'-3"	0.57	10'-3"	278	12'-5"	466	12'-4"	630	9'-10"	683							13'-6"	366	#9	38	10"	6'-5"	829	28	920	16	128	7	230	7	230	8'-4"	226	34.9	4986	14
15	12'-6"	6'-3"	1'-4"	4'-11"	1'-6"	1'-3"	0.63	10'-3"	278	13'-7"	510	13'-9"	703	11'-2"	775							14'-6"	393	#9	38	10"	6'-9"	872	28	920	16	128	7	230	8	263	8'-4"	226	40.8	5298	15
16	13'-3"	6'-7"	1'-5"	5'-3"	1'-6"	1'-6"	0.66	10'-3"	278	14'-9"	554	15'-2"	775	12'-8"	879							15'-6"	420	#9	38	10"	7'-2"	926	30	986	17	136	7	230	8	263	8'-4"	226	44.5	5672	16
17	13'-10"	6'-11"	1'-6 1/4"	5'-4 3/4"	1'-6"	1'-6"	0.70	10'-3"	278	15'-11"	598	16'-7"	847	14'-1	978							16'-6"	447	#10	38	10"	7'-5"	1213	32	1051	18	144	8	263	8	263	8'-4"	226	47.3	6308	17
18	14'-6"	7'-3"	1'-7"	5'-8"	1'-9"	1'-6"	0.76	10'-3"	278	11'-2"	419	18'-0"	920	15'-5"	1070	9'-7"	815					17'-6"	475	#10	38	10"	7'-9"	1267	34	1117	19	152	8	263	9	296	8'-4"	226	54.2	7298	18
19	15'-2"	7'-7"	1'-8 1/8"	5'-10 7/8"	1'-9"	1'-6"	0.79	10'-3"	278	11'-2"	419	19'-5"	992	16'-11"	1174	10'-11"	928					18'-6"	502	#10	38	10"	8'-1"	1322	36	1183	20	160	8	263	9	296	8'-4"	226	57.5	7743	19
20	16'-0"	8'-0"	1'-9 1/4"	6'-2 3/4"	1'-9"	1'-6"	0.80	10'-3"	278	11'-2"	419	20'-11"	1069	18'-5"	1278	12'-4"	1048					19'-6"	529	#8	76	5"	8'-6"	1725	38	1248	21	168	9	296	10	329	8'-4"	226	61.3	8613	20
21	16'-6"	8'-3"	1'-10 1/8"	6'-4 7/8"	2'-0"	1'-6"	0.88	10'-3"	278	11'-2"	419	22'-3"	1137	19'-9"	1371	13'-7"	1155					20'-6"	556	#8	76	5"	8'-9"	1776	40	1314	22	176	9	296	10	329	8'-4"	226	68.8	9033	21
22	17'-3"	8'-7"	1'-11 1/4"	6'-8 3/4"	2'-0"	1'-6"	0.91	10'-3"	278	11'-2"	419	12'-2"	622	21'-2"	1469	15'-0"	1275	6'-1"	808			21'-6"	583	#8	76	5"	9'-2"	1860	42	1380	23	184	9	296	10	329	8'-4"	226	72.8	9729	22
23	18'-0"	9'-0"	2'-0 1/8"	6'-11 1/8"	2'-3"	1'-6"	0.95	10'-3"	278	11'-2"	419	12'-2"	622	22'-8"	1574	16'-4"	1388	7'-1"	941			22'-6"	610	#8	76	5"	9'-6"	1928	44	1446	24	192	10	329	11	361	8'-4"	226	81.7	10314	23
24	18'-6"	9'-4"	2'-1 1/4"	7'-0 3/4"	2'-3"	1'-6"	0.99	10'-3"	278	11'-2"	419	12'-2"	622	24'-1"	1672	17'-8"	1502	8'-1"	1074			23'-6"	637	#9	76	5"	9'-10"	2541	46	1511	25	200	10	329	11	361	8'-4"	226	85.4	11372	24
25	19'-3"	9'-7"	2'-2 3/8"	7'-5 5/8"	2'-3"	1'-9"	1.03	10'-3"	278	11'-2"	419	12'-2"	622	25'-5"	1764	19'-0"	1615	9'-1"	1206			24'-6"	664	#9	76	5"	10'-1"	2606	48	1577	26	208	10	329	12	394	8'-4"	226	91.0	11909	25
26	20'-0"	10'-0"	2'-3 1/2"	7'-8 1/2"	2'-3"	1'-9"	1.05	10'-3"	278	11'-2"	419	12'-2"	622	27'-0"	1874	20'-5"	1735	10'-1"	1339			25'-6"	692	#9	76	5"	10'-5"	2692	50	1643	27	217	11	361	12	394	8'-4"	226	95.6	12491	26
27	20'-6"	10'-4"	2'-4 5/8"	7'-9 3/4"	2'-3"	1'-9"	1.09	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	21'-9"	1849	11'-1"	1472	17'-0"	2348	26'-6"	719	#10	76	5"	10'-9"	3516	52	1708	28	225	11	361	12	394	8'-4"	226	99.7	15132	27
28	21'-3"	10'-7"	2'-5 3/4"	8'-2 1/4"	2'-3"	1'-9"	1.13	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	23'-0"	1955	12'-1"	1605	18'-4"	2533	27'-6"	746	#10	76	5"	11'-2"	3652	54	1774	29	233	11	361	13	427	8'-4"	226	104.6	15825	28
29	22'-0"	11'-0"	2'-6 1/2"	8'-5 1/2"	2'-6"	1'-9"	1.17	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	24'-5"	2075	13'-1"	1738	19'-10"	2740	28'-6"	773	#10	76	5"	11'-6"	3761	54	1774	29	233	12	394	13	427	8'-4"	226	115.3	16454	29



BARS A_1



BARS A_2



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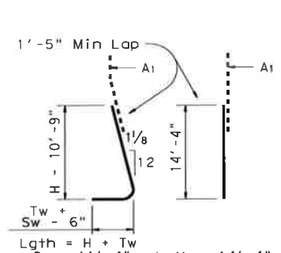
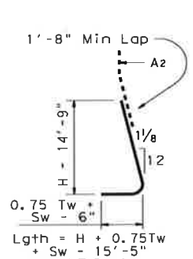
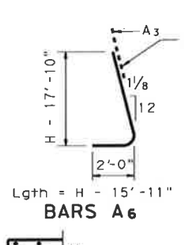


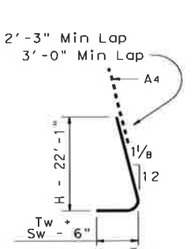
BARS A_4



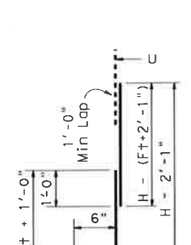
BARS A_5



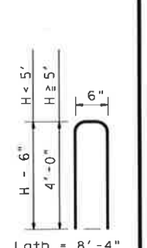
BARS A_6



BARS A_7

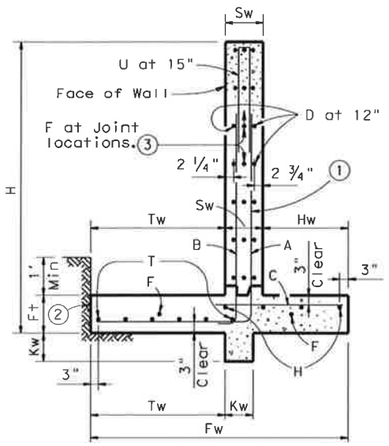


BARS B

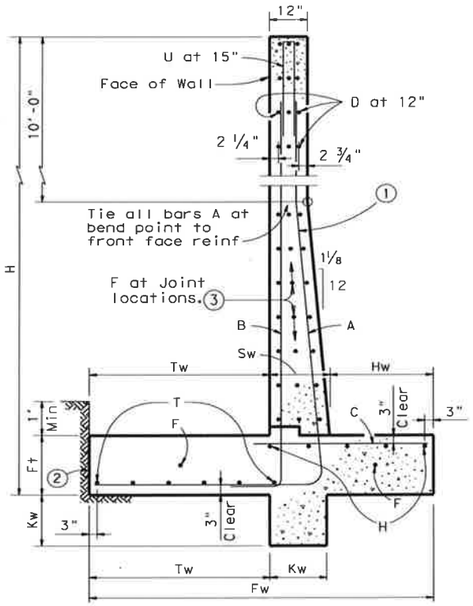


BARS U

1. Place vertical bars inside of horizontal bars (Typ both faces).
2. Place footing toe against undisturbed soil.
3. See standard RW 2 for size.



H ≤ 11'



H > 11'

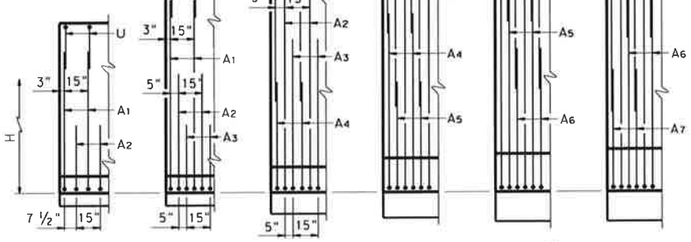
SECTIONS

Panel Length minus 6"

BARS D, H, T

3'-0"

BARS F ③



PARTIAL WALL ELEVATIONS

(Showing vertical reinforcing pattern in back face)

GENERAL NOTES:

All concrete to be Class "C".
All reinforcing steel to be Grade 60.
For notes and details not shown on this sheet see sheet RW2.
Quantities are based on "H" being average height of panel.
Retaining Walls are designed to be coded as follows on Retaining Wall Layout Sheets.

HC - 21 - 28
LA - 28 - 32

- Panel Length ~ 32' is standard; 28' requires special quantities
- Average Height "H" of panel
- Design - A = no surcharge or slope above wall; B = slopes up to 4:1; C = traffic surcharge and/or slopes up to 2.5:1
- Footing pressure design ~ L = low, H = high

Texas Department of Transportation | Bridge Division Standard

RETAINING WALLS

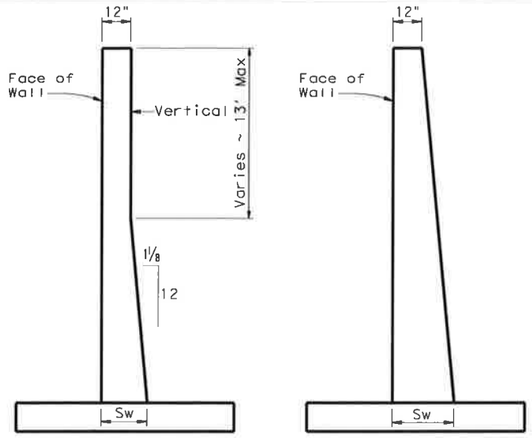
RW 1(L)C

FILE: rwstde07.dgn	DN: TxDOT	CK: TxDOT	DW: GHO	CK: MPM
©TxDOT March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO. 170

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

DATE:
FILE:

DATE:
FILE:

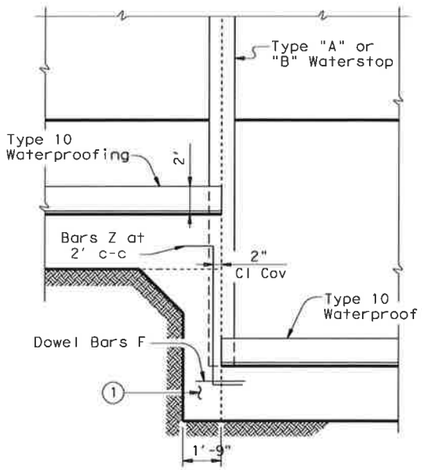


AS DETAILED ALL HEIGHTS
(Basis for payment)

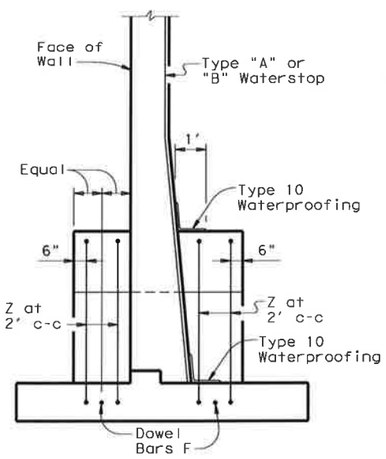
FRONT FACE VERTICAL BACK FACE SLOPED

ALTERNATE STEM SLOPE DETAILS

Walls with slopes other than those shown may be used after approval by the Engineer. Sw shall not be less than shown in Table on Sheet 1. No payment will be made for excess concrete due to changing of slope of wall stem.



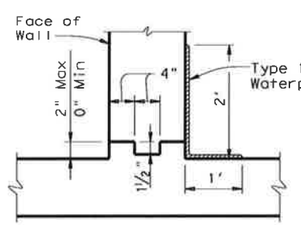
PARTIAL ELEVATION



PARTIAL SECTION

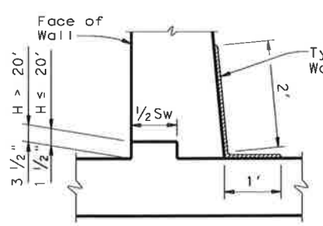
SHOWING WATERSTOP AT FOOTING JOINT

① Unreinforced Class "C" Concrete when difference in top of footing elevations is less than 6'. Omit when Dowel Bars F can be placed between adjacent footings with 4" cover top and bottom.



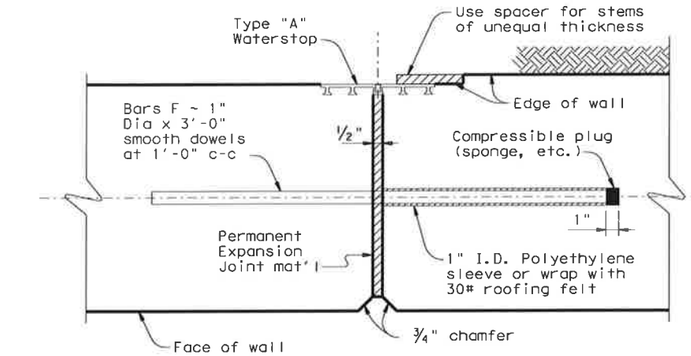
H ≤ "X"

DESIGN	"X"
A	14'
B	12'
C	11'

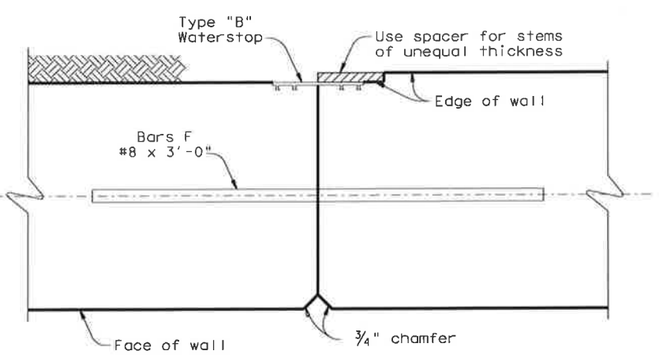


H > "X"

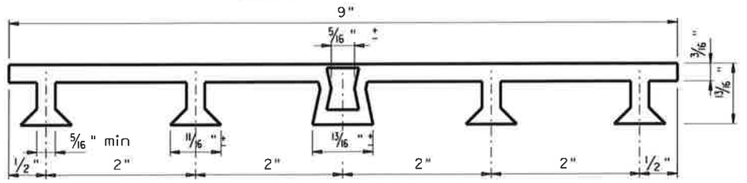
JOINT AND WATERSTOP DETAILS



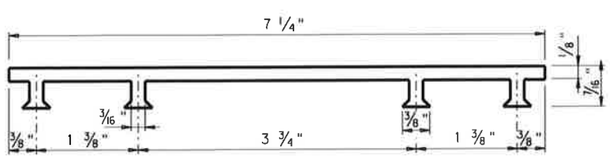
EXPANSION JOINT



CONSTRUCTION JOINT

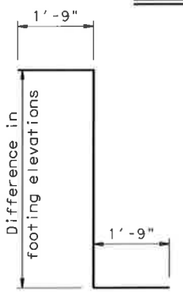


PVC WATERSTOP TYPE "A"



PVC WATERSTOP TYPE "B"

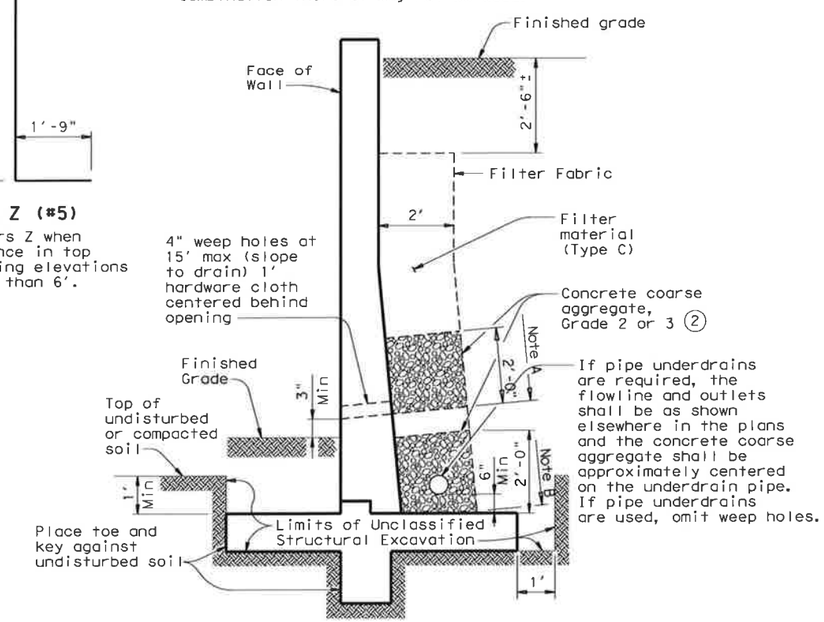
Note: Dimensions and shapes may vary slightly depending on manufacturer.



BARS Z (#5)

Omit Bars Z when difference in top of footing elevations is less than 6'.

② Crushed blast furnace slag, recycled crushed hydraulic cement concrete or combination there of may not be used.



DRAINAGE DETAILS AND EXCAVATION DIAGRAM

Note A: Stop coarse aggregate at this level when weep holes are used.

Note B: Use coarse aggregate to here with filter material above when underdrains are used.

GENERAL NOTES:

Walls are designed assuming unit weight of soil = 120 pcf, and coefficient of horizontal earth pressure = 0.33.

Walls are designed to provide a minimum factor of safety against sliding of 1.5. The undisturbed or compacted soil depth in front of walls, from bottom of Key up, shall not be less than Kw + Ft + 1'.

Retaining walls are detailed to be placed on grades up thru 10% with footing level, with no changes in reinforcing steel. Steeper grades can be accommodated by shortening Bars A1 and B and increasing length of legs of Bars U by the same amount. No change in Quantities will be involved.

Retaining walls may be placed on Horizontal Curves by adjusting lengths of footing Bars T and H. Minor revisions of Concrete Quantities may be required.

Designed in accordance with current AASHTO Standard and Interim Specifications.

All concrete to be Class "C".

All reinforcing steel to be Grade 60.

Texas Department of Transportation

Bridge Division Standard

RETAINING WALL MISCELLANEOUS DETAILS

RW 2

FILE: rwstdet1.dgn	DN: TxDOT	CK: TxDOT	DW: JGD	CK: MJG
©TxDOT March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
04-11: Added Note 2.	DIST	COUNTY		SHEET NO.
				171

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

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

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

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

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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71A

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.
12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

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

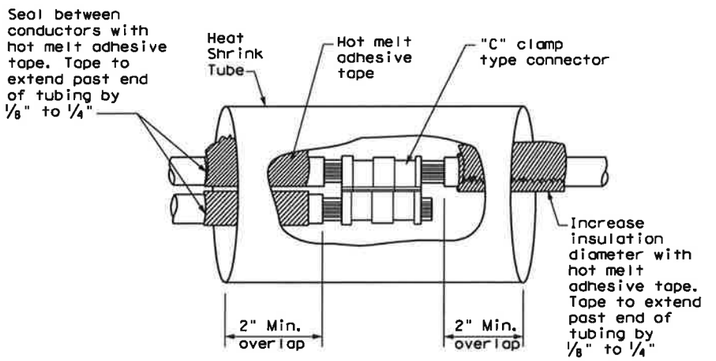
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

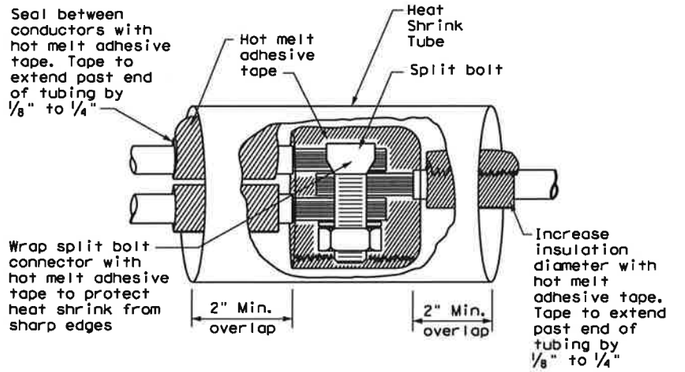
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in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

B. CONSTRUCTION METHODS

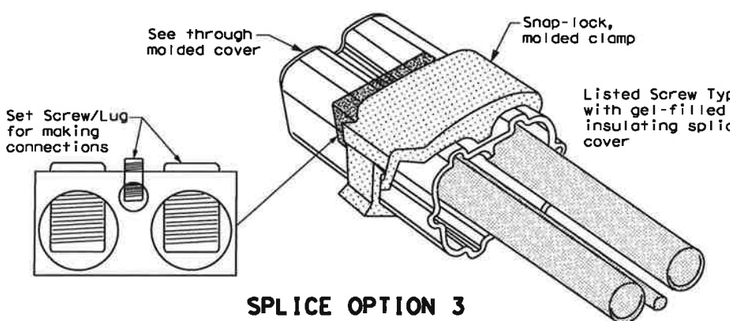
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil,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



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

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Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

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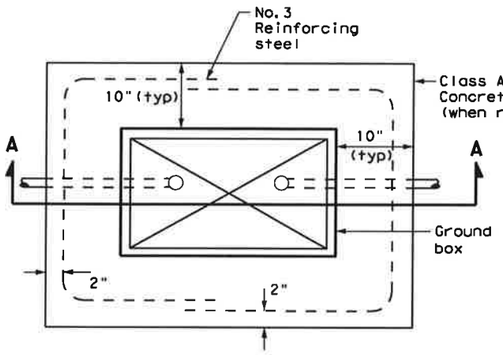
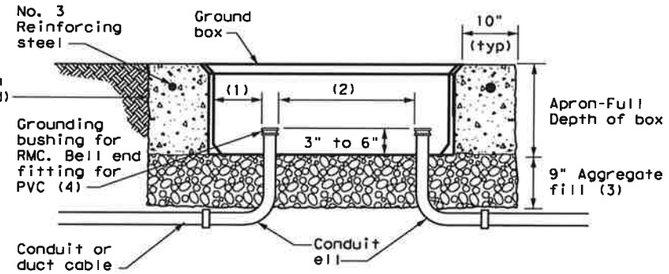


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

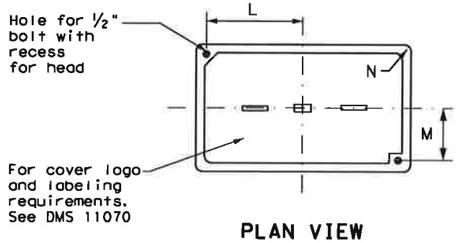
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

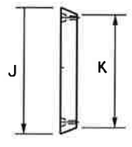
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

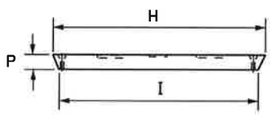
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services," DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

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

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

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

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

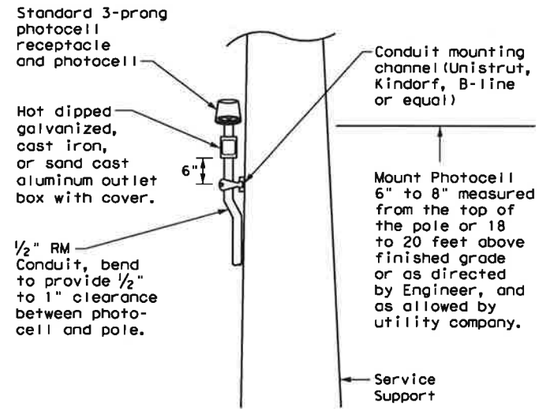
(SS)= Safety Switch Ahead of Meter-Check with Utility
(NS)= No safety Switch Ahead of Meter-Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

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

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

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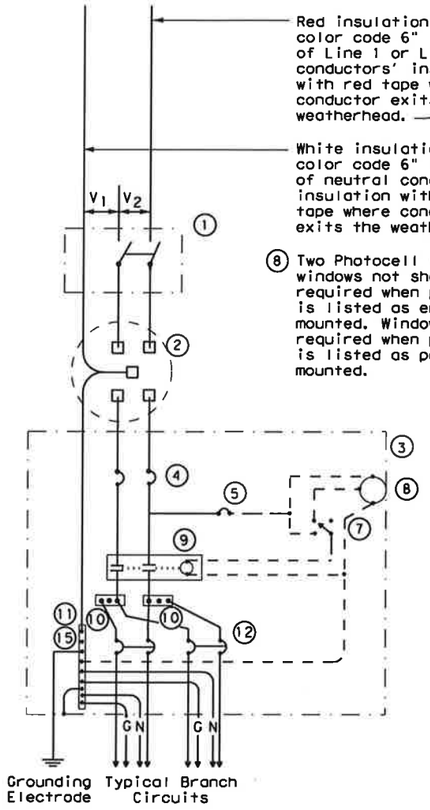
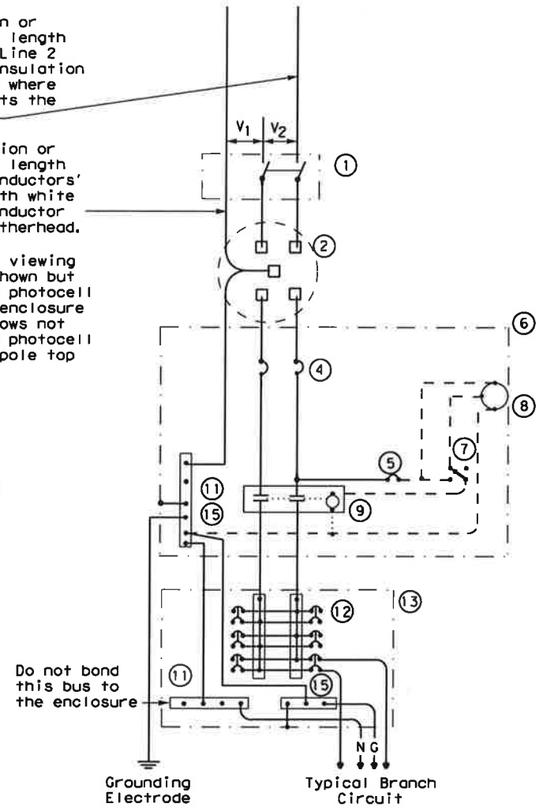
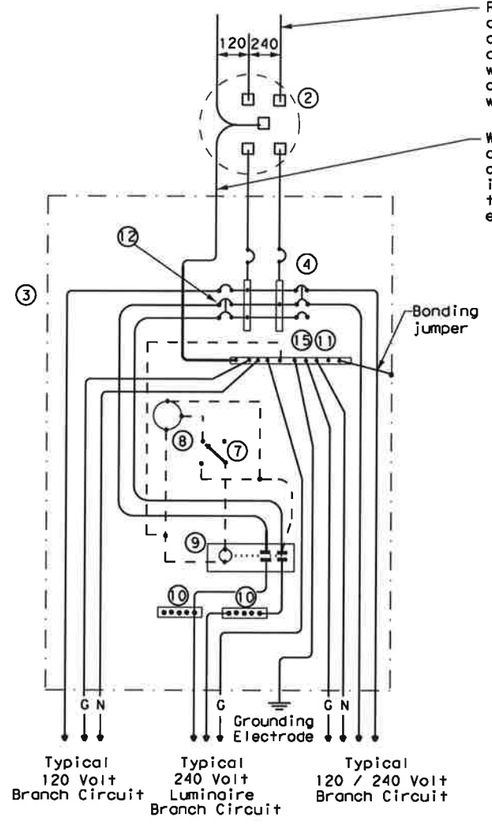
				175



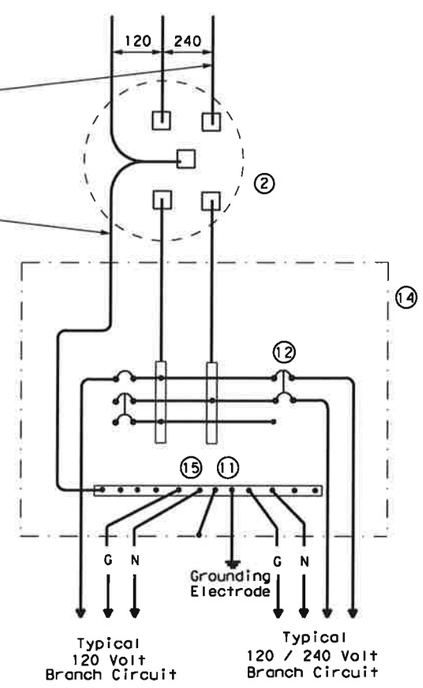
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



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



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

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

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

FILE: ed6-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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				176

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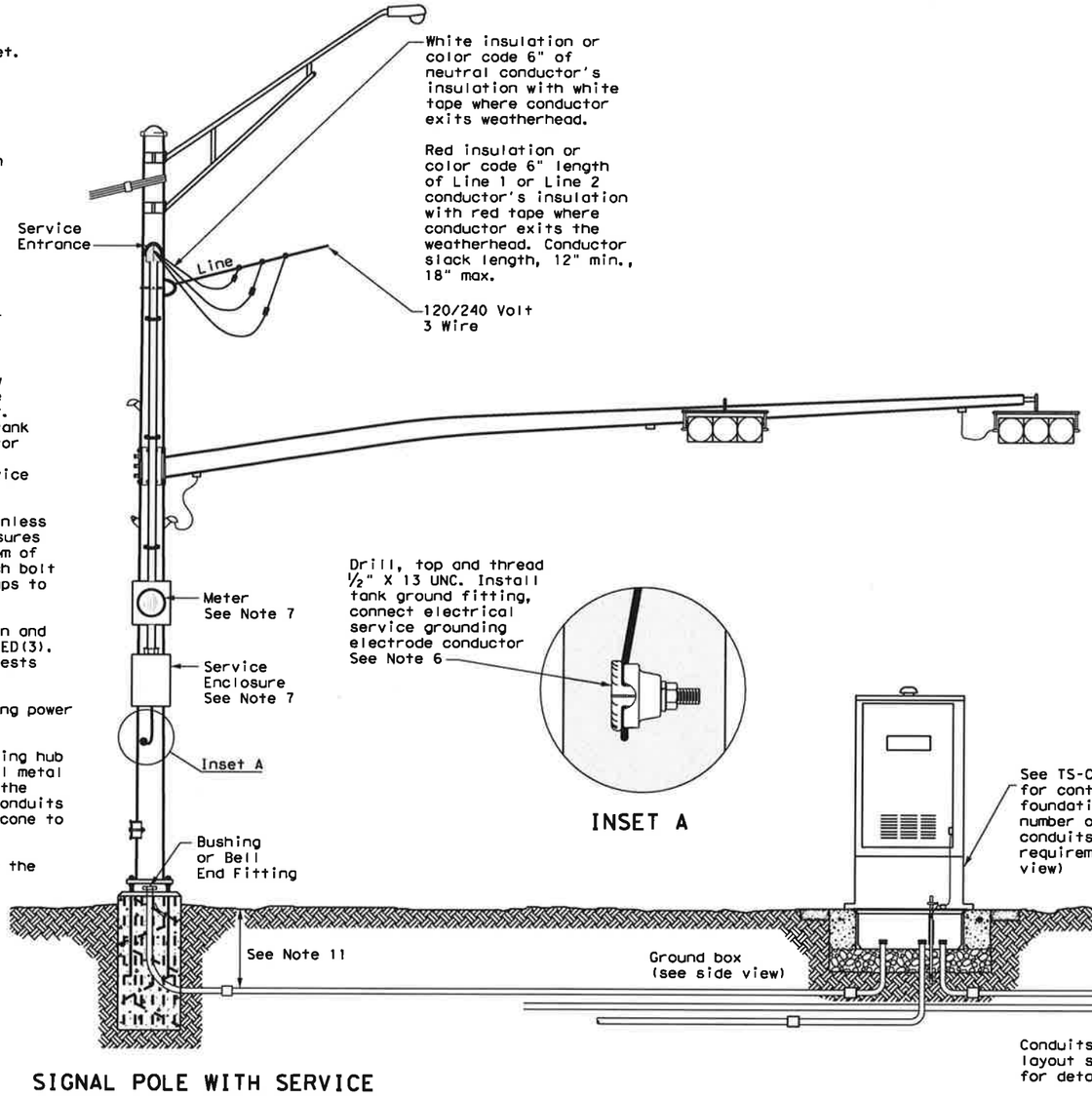
TRAFFIC SIGNAL NOTES

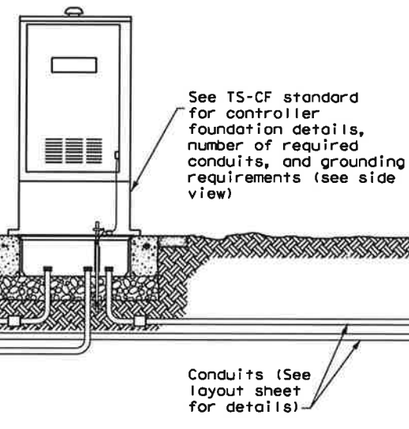
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



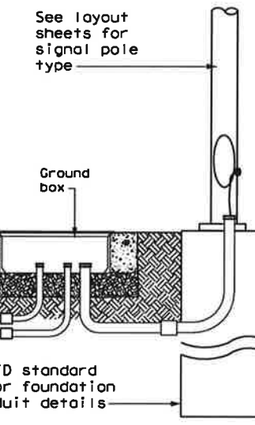
SIGNAL POLE WITH SERVICE

Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

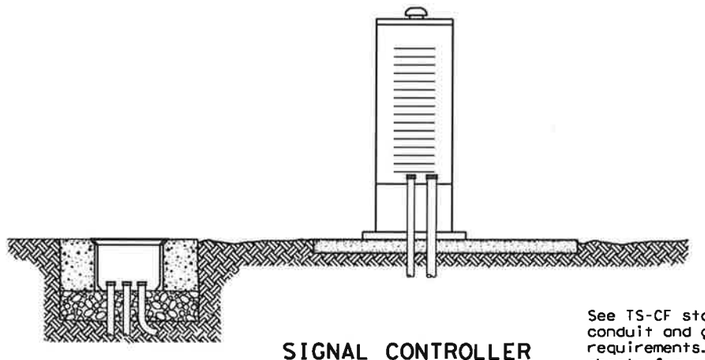
INSET A



SIGNAL CONTROLLER FRONT VIEW



SIGNAL POLE



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

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PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

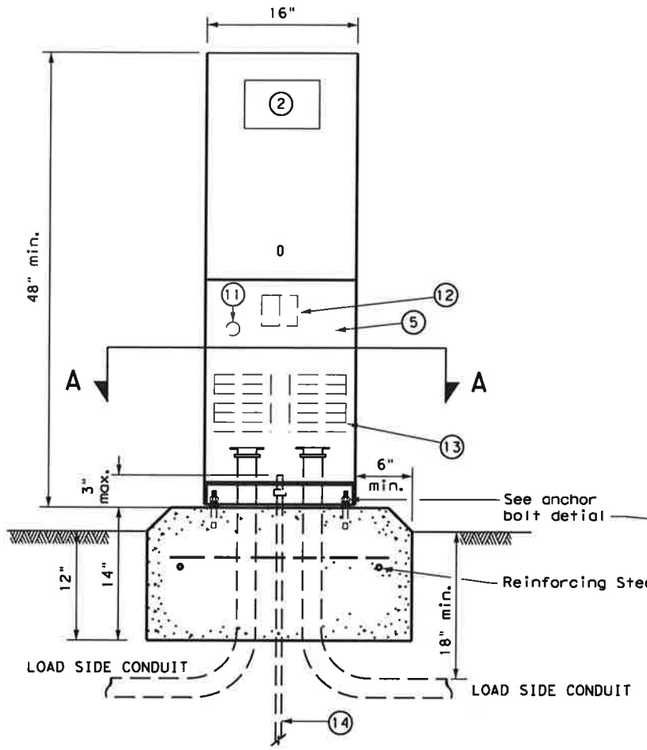
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ 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 ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

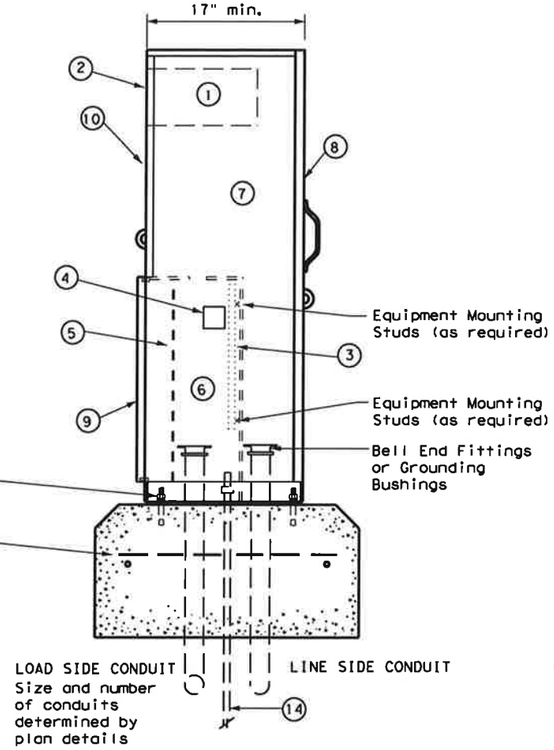
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ 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.

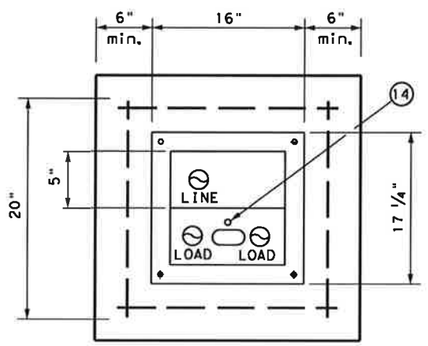


FRONT VIEW

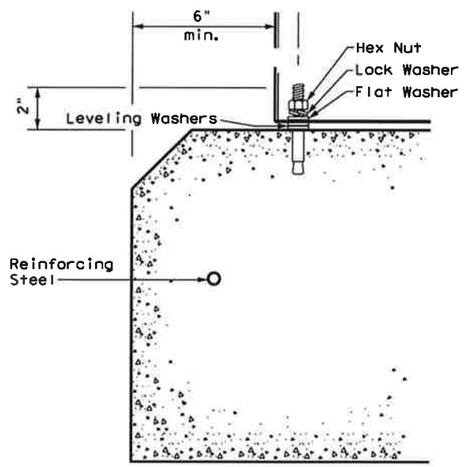


SIDE VIEW

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'

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

ED(9)-14

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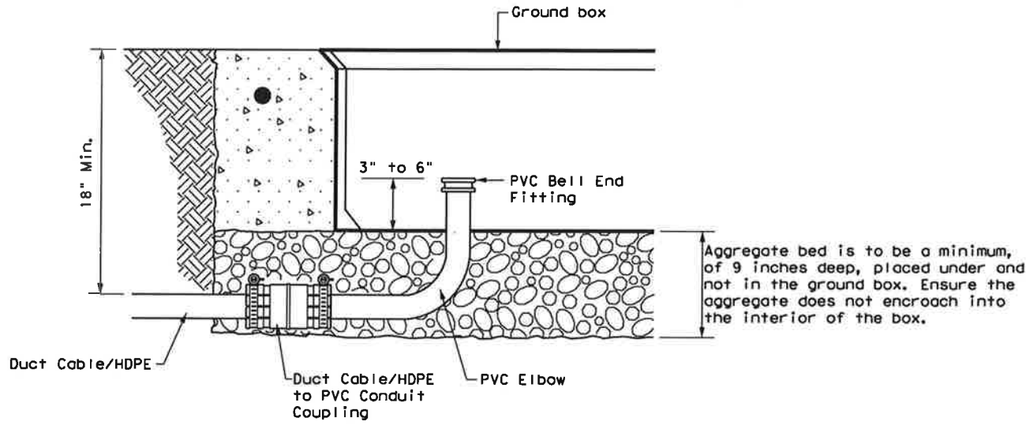
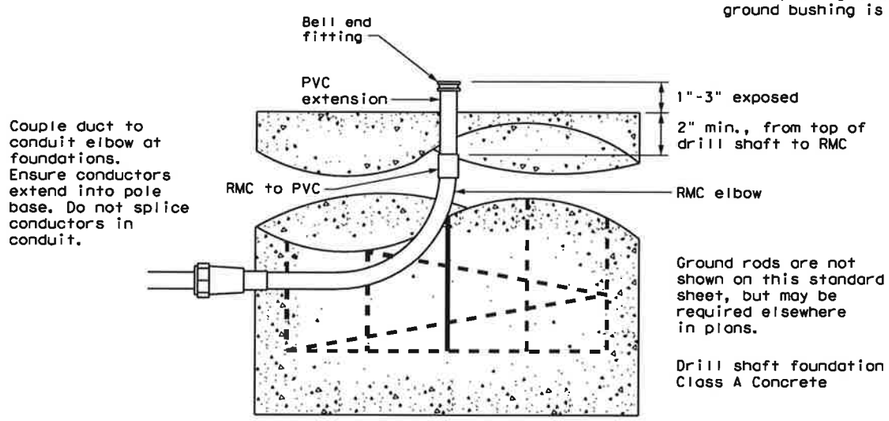
DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.
2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.
3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.
4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."
6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.
7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.
8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.
9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

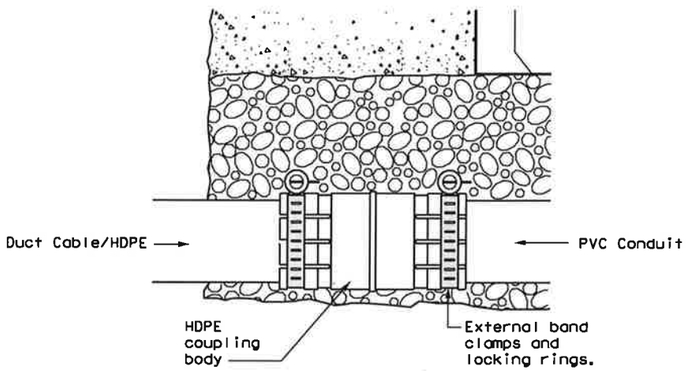


DUCT CABLE/HDPE AT GROUND BOX

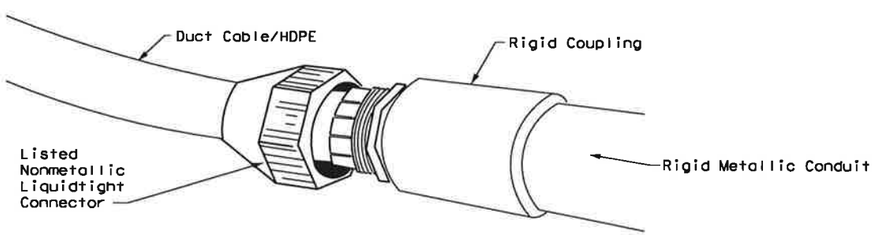
When the upper end of an RMC Ell does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



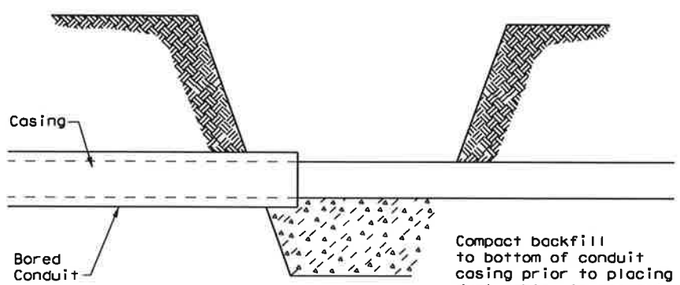
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



BORE PIT DETAIL

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS DUCT CABLE/ HDPE CONDUIT

ED(11)-14

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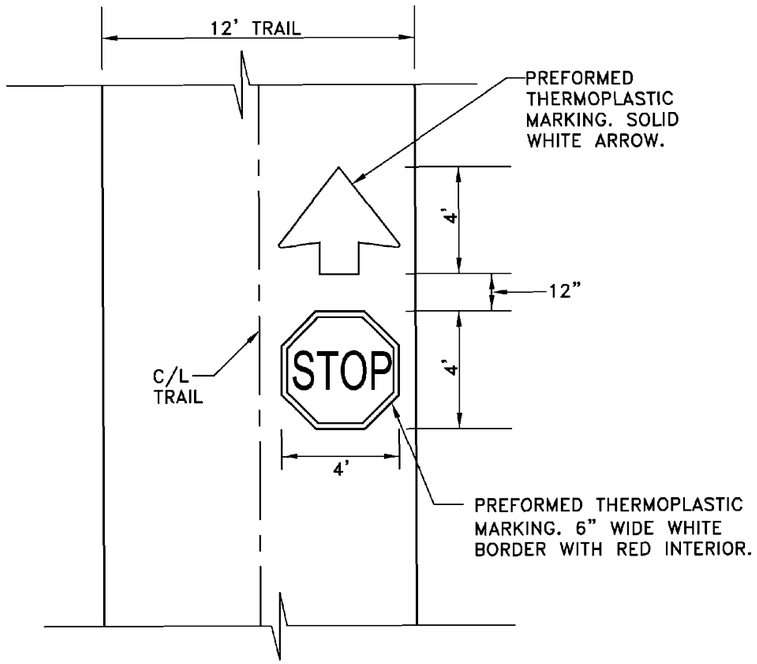
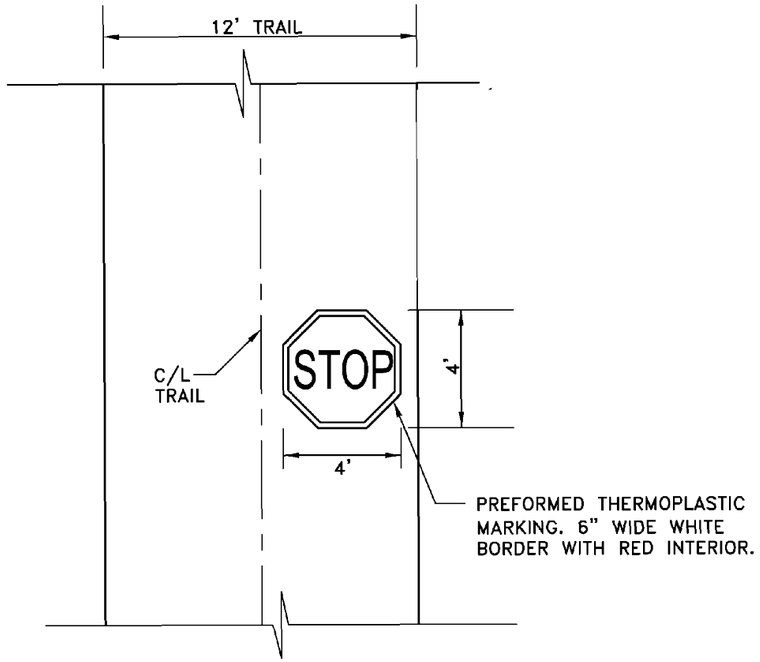


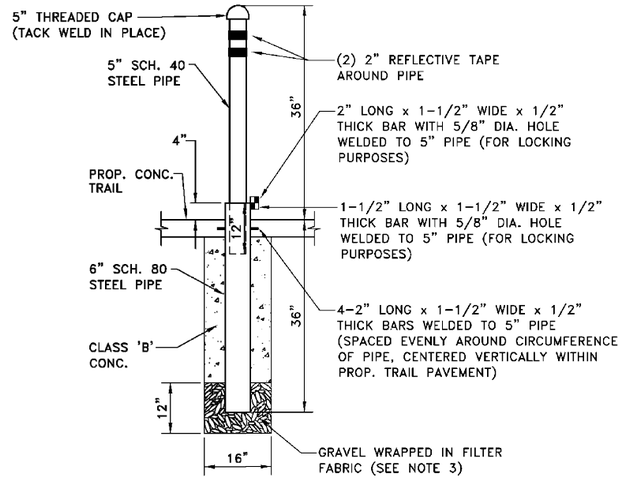
"STOP AHEAD"
PAVEMENT MARKING
NOT TO SCALE



"STOP"
PAVEMENT MARKING
NOT TO SCALE

BOLLARD NOTES:

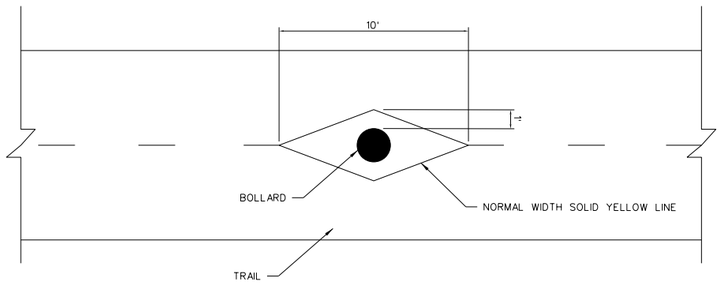
1. EXPOSED SURFACES OF PIPE BOLLARD SHALL BE POWDER COATED SAFETY YELLOW.
2. ORIENT LOCKING MECHANISM PARALLEL TO TRAIL TO MINIMIZE INTERFERENCE WITH TRAFFIC.
3. GRAVEL AND FILTER FABRIC ARE SUBSIDIARY TO "PIPE BOLLARD" PAY ITEM.



LOCKABLE/REMOVABLE PIPE BOLLARD
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS (CATALOG SHEETS) OF PROPOSED PAVEMENT MARKINGS.
2. MARKINGS SHALL BE THERMOPLASTIC AND REFLECTIVE
3. MARKINGS TO BE CENTERED WITHING HALF OF TRAIL AS SHOWN.
4. ALL PAVEMENT MARKINGS SHALL BE PER LATEST EDITION OF TMUTCD.



BOLLARD PAVEMENT MARKING

City of Mesquite

Approved Detectable Warning Materials

Updated: March 19, 2015

Product	Manufacture	Approved Color	TXDOT Approval
(Wet Set) Replaceable Tactile Warning Surface Unit (glass and carbon fiber reinforced composite)	ADA Solutions, Inc.	Brick Red or Clay Red	YES
Cast-In-Place Composite Tactile Warning Tile Units (glass and carbon fiber reinforced composite)	ADA Solutions, Inc.	Brick Red or Clay Red	YES
Tech-Way® Dome-Tiles (precast polymer concrete tiles) 24" x 24" or 24" x 30" or 24" x 36" With Stainless Steel Anchoring System	Strong Go Industries, LLC	Terracotta	YES
Armor Tile Cast in Place Tile (vitrified polymer composite)	Engineered Plastics, Inc	Brick Red or Colonial Red	YES

DATE	BY	REV	REVISION

MESQUITE TEXAS Real. Texas. Service.

MESQUITE HERITAGE TRAIL, PHASE II

PAVEMENT MARKING DETAILS

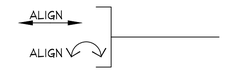
SCALE: N/A

BGE, Inc.
2595 Dallas Parkway, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

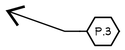
CONTRACT NO. 2024-014 SHEET NO. 180

GENERAL LEGEND

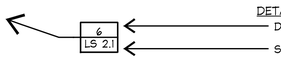
SIM.	SIMILAR
P.O.B	POINT OF BEGINNING
P.O.T	POINT OF TANGENCY
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
PA	PLANTING AREA
BOC	BACK OF CURB
FOW	FACE OF WALL
℄	CENTERLINE CALLOUT
	POINT OF BEGINNING
NB	NORTHBOUND
SB	SOUTHBOUND
EB	EASTBOUND
WB	WESTBOUND



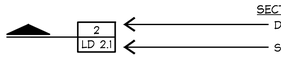
ALIGN ELEMENTS



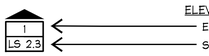
HARDSCAPE / MATERIAL CALLOUT



DETAIL REFERENCE
DETAIL NUMBER
SHEET NUMBER



SECTION REFERENCE
DETAIL NUMBER
SHEET NUMBER



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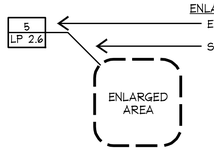
SHEET NUMBER



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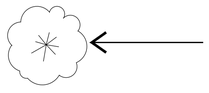
ENLARGEMENT NUMBER
SHEET NUMBER


EXISTING TREE

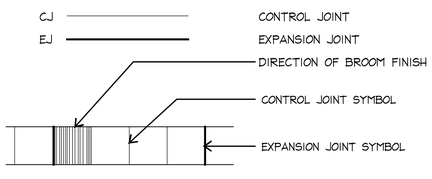
SHEET MATCHLINE

PROPERTY LINE

LIMIT OF CONSTRUCTION

CENTERLINE

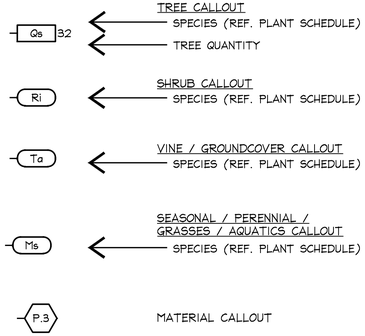
SITEWORK LEGEND



CONTROL JOINT

EXPANSION JOINT

PLANTING LEGEND



STEEL EDGE

ROOT BARRIER

GRADING LEGEND

PROPOSED SPOT ELEVATION (BY LANDSCAPE ARCHITECT)

PROPOSED SPOT ELEVATION (BY CIVIL ENGINEER)

EXISTING MINOR CONTOUR

EXISTING MAJOR CONTOUR

PROPOSED MINOR CONTOUR

PROPOSED MAJOR CONTOUR

SURFACE FLOW LINE (SWALE)

GRADE BREAKLINE

PERFORATED DRAIN LINE

DRAIN LINE

GENERAL NOTES:

1) THE CONTRACTOR SHALL BE FAMILIAR WITH EXISTING SITE CONDITIONS AND UNDERGROUND UTILITIES,SMALL PIPES AND STRUCTURES. THE CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED DUE TO BODILY INJURY AND/OR DAMAGE TO OWNER'S PROPERTY OR SAID UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING UTILITY COMPANIES BEFORE EXCAVATION.

2) THE CONTRACTOR SHALL LOCATE AND VERIFY THE CONDITION OF UTILITIES PRIOR TO ANY EXCAVATION. EXTREME CARE SHALL BE EXERCISED IN EXCAVATING AND WORKING NEAR EXISTING UTILITIES. THE CONTRACTOR SHALL HAND DIG PLANTING PITS AND HAND RAKE LAWN AREAS AS REQUIRED.

3) ALL CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE CITY.

4) THE CONTRACTOR SHALL NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED WHEN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY HAVE NOT BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CITY. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION WITH HIS SUBCONTRACTORS TO ACCOMPLISH HIS SCOPE OF WORK. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES WORKING ON THE SITE SIMULTANEOUSLY.

6) THE CONTRACTOR SHALL NOTIFY THE CITY 48 HOURS PRIOR TO THE COMMENCEMENT OF WORK TO COORDINATE PROJECT INSPECTION SCHEDULES.

7) 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. THE CONTRACTOR SHALL CONTACT THE CITY SHOULD EXISTING CONDITIONS BE DIFFERENT FROM THE DESIGN DRAWINGS FOR THIS PROJECT. ALL CONFLICTS ARISING DUE TO LACK OF COORDINATION SHALL BE THE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR.

8) ANY REQUIRED CHANGES TO THE DRAWINGS RESULTING FROM THE ACCEPTANCE OF THE CONTRACTOR'S ALTERNATES AND/OR SUBSTITUTIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED TO THE CITY FOR APPROVAL.

9.) THE CONTRACTOR SHALL COORDINATE THE STORAGE OF MATERIALS, PARKING OF VEHICLES AND RESTRICTIONS OF WORK AND ACCESS WITH THE CITY. UNDER NO CIRCUMSTANCES SHALL ANY CONTRACTOR STORE MATERIALS OR PARK VEHICLES UNDER THE CANOPY OF EXISTING TREES.

10) THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS, ORDINANCES & CODE REQUIREMENTS. REQUIRED PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.

11) THE CONTRACTOR SHALL PROVIDE UNIT PRICES BASED UPON THE QUANTITIES SHOWN WITHIN THE DOCUMENTS. FIELD CONDITIONS MAY REVISE ACTUAL LOCATION, INCREASING OR DECREASING THE EXTENT OF WORK PERFORMED. CHANGES TO THE EXTENT OF WORK RESULTING IN AN INCREASE OR DECREASE WILL BE BASED ON UNIT PRICES AND PERFORMED SUBJECT TO APPROVAL OF THE CITY IN THE FORM OF A CHANGE ORDER.

12) UNIT PRICES SHALL NOT ONLY INCLUDE THE COST OF THE ITEM BUT ALSO ALL LABOR, EQUIPMENT, AND OTHER MATERIALS (I.E. BACKFILL MIX, MULCH, STEEL EDGING, ETC.) ASSOCIATED WITH AND NECESSARY TO DELIVER THE ITEM COMPLETE AS DOCUMENTED IN THE DRAWINGS AND SPECIFICATIONS.

13) THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND SUPERVISION NECESSARY TO ACCOMPLISH THE WORK AS SHOWN AND NOTED ON THE DRAWINGS, UNLESS OTHERWISE NOTED.

14) ALL CONTRACTORS AND SUBCONTRACTORS ARE RESPONSIBLE FOR REMOVAL OF TRASH AND REPAIR OF HAZARDOUS CONDITIONS (I.E. TOOLS, OPEN HOLES, ETC.) ON A DAILY BASIS BY END OF WORK DAY.

15) UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL APPROVAL, THE CONTRACTOR SHALL THOROUGHLY CLEAN UP THE PROJECT SITE OF ALL TRASH, SCRAPS, BRICK, ROCKS, MORTAR, ETC. REPAIR ALL DAMAGE TO FINISH GRADE INCLUDING TAILINGS FROM EXCAVATIONS, WHEEL RUTS OR ANY SETTLING OR EROSION OCCURRING PRIOR TO COMPLETION.

LANDSCAPE AND IRRIGATION GENERAL NOTE:
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY IRRIGATION AND GRASS ESTABLISHMENT TO MATCH THE ADJACENT GRASS TYPES FOR ALL AREAS DISTURBED OR IMPACTED DURING CONSTRUCTION.

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
[214] 744-0757 tbgpartners.com

100% SUBMITTAL

FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT 3078 STATE OF TEXAS
03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LC 1.1
LANDSCAPE LEGENDS AND NOTES

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

DESIGNED: JC, SA	DATE	SCALE	PROJECT NO.	Sheet
DRAWN: JC, XY, SK	SEP. 2023		D13785	181 of 207
CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. ETC

MATERIALS SCHEDULE

CONCRETE

KEY	DESCRIPTION /MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
C.1	CONCRETE TRAIL AND SLABS	STD. GREY	MEDIUM BROOM		REF. CIVIL SHEETS 48-50 FOR DETAILS AND SPECIFICATIONS.
C.2	INTEGRAL COLORED CONCRETE C-34	DARK GREY	MEDIUM BROOM	COMPANY: SCOFIELD SYSTEMS PHONE: (800) 800-9900	CONTRACTOR TO PROVIDE MINIMUM 16 SQUARE FOOT MOCKUP FOR LANDSCAPE ARCHITECTS AND CITY APPROVAL ON SITE. EQUAL THICKNESS, REINFORCING AND STRENGTH AS SPECIFIED IN CIVIL DRAWINGS

EDGING

KEY	DESCRIPTION /MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
E.1	3/16" X 4" STEEL EDGING: ALONG CURVED RUNS OF EDGING	BLACK	POWDERCOAT	COMPANY: JD RUSSEL CO. PHONE: (800) 888-6872	OR APPROVED EQUAL

GRANITE

KEY	DESCRIPTION /MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
G.1	DECOMPOSED GRANITE	NATURAL			PROVIDE 1 GAL. SAMPLE FOR APPROVAL.
G.2	CRUSHED GRANITE 3/4"-1"	TEJAS BLACK			PROVIDE 1 GAL. SAMPLE FOR APPROVAL.
G.3	#57 DRAINAGE GRAVEL				FOR GENERAL DRAINAGE, CRUSHED GRANITE SUB BASE, AND BACKFILL

METAL

KEY	DESCRIPTION / MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
MT.1	3/8" THICK CARBON STEEL LETTER	BLACK	POWDERCOAT		LETTER TO BE PINNED ONTO STONE; LETTERS TO BE 8" HEIGHT WITH 3/4" WIDTH HORIZONTAL BAR ADJACENT TO THE LETTERS TO BE LASER OR PLASMA CUT AS ONE PIECE.
MT.2	METAL ARBOR-CARBON STEEL 2" X 6" TUBING	SIMULATED WEATHERING STEEL (CORTEN)	POWDERCOAT		SUBMIT COLOR SAMPLES FROM PREFERRED MANUFACTURER'S FULL COLOR RANGE OF SIMULATED WEATHERING STEEL FINISHES.
MT.3	METAL ARBOR- CARBON STEEL 2" X 2" TUBING	SIMULATED WEATHERING STEEL (CORTEN)	POWDERCOAT		SUBMIT COLOR SAMPLES FROM PREFERRED MANUFACTURER'S FULL COLOR RANGE OF SIMULATED WEATHERING STEEL FINISHES.

PAVERS

KEY	DESCRIPTION /MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
P.1	1 1/4"X11 5/8"x3 5/8" THIN CLAY PAVER/ SAWCUT IN RANDOM LENGTH 3" TO 11 5/8" LONG/COURSED PATTERN WITH VERTICAL JOINTS NOT ALIGNED	MEDIUM IRONSPOT 77#	"DARK KHAKI" MORTAR AT CONSISTENT 3/8" WIDTH	COMPANY: ENDICOTT CLAY PRODUCT PHONE: (402) 729-3315 OR EQUAL	

SITE FURNISHINGS

KEY	DESCRIPTION /MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
SF.1	DUMOR TRASH RECEPTACLE MODEL: #428-32-FTO	BLACK	POWDERCOAT	COMPANY: DUMOR CONTACT: PAUL E. ALLEN CO., PHONE: (972) 724-1110	SURFACE MOUNTED; INSTALLATION PER MANUFACTURER'S INSTRUCTION
SF.2	#4420DB BI-LEVEL ENDURA II TUBULAR PEDESTAL (DOUBLE BOWL WITH PET FOUNTAIN)	EVERGREEN	POWDERCOAT	COMPANY: HALSEY TAYLOR PHONE: (800) 223-5529	SURFACE MOUNTED; INSTALLATION PER MANUFACTURER'S RECOMMENDATION; WASTE TO DRAIN CONNECTION AS SHOWN ON DRAWINGS. INSTALL COMPLETED AND OPERATIONAL.
SF.3	ARCH BIKE RACK WITH STANDARD MEDALLION MODEL: LBCBR2	BLACK	POWDERCOAT	COMPANY: ANOVA CONTACT: PAUL E. ALLEN CO., PHONE: (972) 724-1110	SURFACE MOUNTED; INSTALLATION PER MANUFACTURER'S INSTRUCTION
SF.4	DUMOR BENCH MODEL: #137-60	BLACK	POWDERCOAT	COMPANY: DUMOR CONTACT: PAUL E. ALLEN CO., PHONE: (972) 724-1110	SURFACE MOUNTED; INSTALLATION PER MANUFACTURER'S INSTRUCTION

STONE

KEY	DESCRIPTION / MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
S.1	"RATTLESNAKE" STONE ONE-PIECE CAP STONE SAWCUT PER DIMENSIONS SHOWN ON DETAIL	RATTLESNAKE	HONED	COMPANY: ALLIANCE MATERIALS PHONE: (817) 379-0727 OR EQUAL	
S.2	"RATTLESNAKE" STONE SAWCUT PER DIMENSIONS SHOWN ON DETAIL	RATTLESNAKE	HONED	COMPANY: ALLIANCE MATERIALS PHONE: (817) 379-0727 OR EQUAL	
S.3	"CHOPPED OKLAHOMA" STONE/ COURSED PATTERN AT WIDTH 3" TO 7" AND RANDOM LENGTH 6" TO 18" LONG, HIDDEN JOINT PATTERN	NATURAL	ROCK PITCH FACE	COMPANY: ALLIANCE MATERIALS PHONE: (817) 379-0727 OR EQUAL	
S.4	LEUDERS 'ROUGHBACK' BOULDER +/-12' THICK/ ROCK PITCH EXPOSED EDGES WITH NO DRILL MARKS.	NATURAL	ROCK PITCH	COMPANY: MEZGER ENTERPRISES PHONE: (254) 547-8207 OR EQUAL	
S.5	LEUDERS CUT LIMESTONE SEAT BLOCK - 6'L X 24" WIDE X 17"-19" TALL	NATURAL	NATURAL, BOTH ENDS TO BE CHOPPED, LONG EDGES TO BE SAWN	COMPANY: MEZGER ENTERPRISES PHONE: (254) 547-8207 OR EQUAL	

NOTES:

TEMPORARY BENCHMARKS:

TBG

landscape architects, planners & designers

2001 bryan street
suite 1450
dallas, tx 75201

[214] 744-0757 tbgpartners.com

100%
SUBMITTAL

FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT
3075
STATE OF TEXAS
05/23/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE
TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LC 1.2
LANDSCAPE MATERIALS

BGE

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

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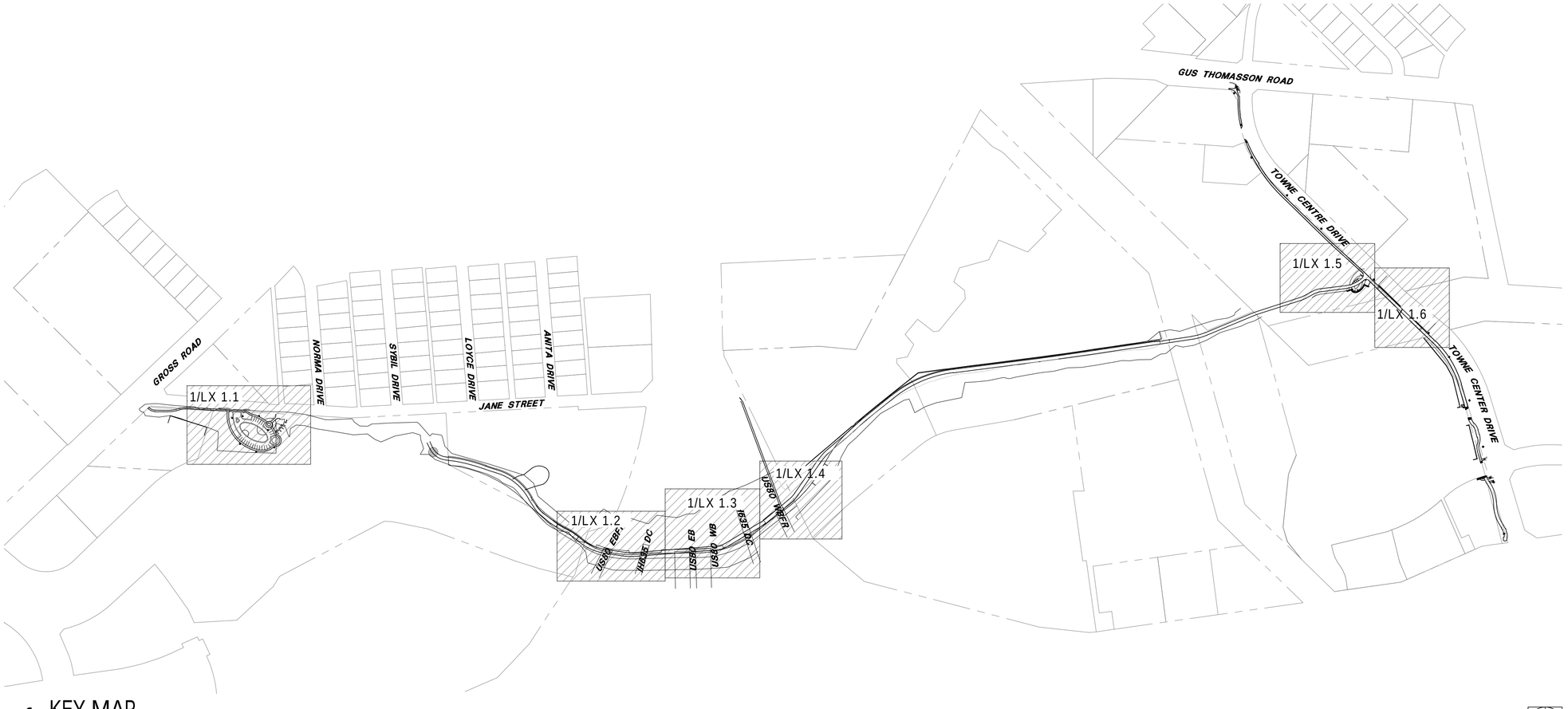
HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. ETC



1 KEY MAP
PLAN

NOT TO SCALE

NORTH

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
[214] 744-0757 tbgpartners.com

100% SUBMITTAL

FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT 3079 STATE OF TEXAS
03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LC 1.3
KEY MAP

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

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CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO..ETC

GENERAL NOTES:

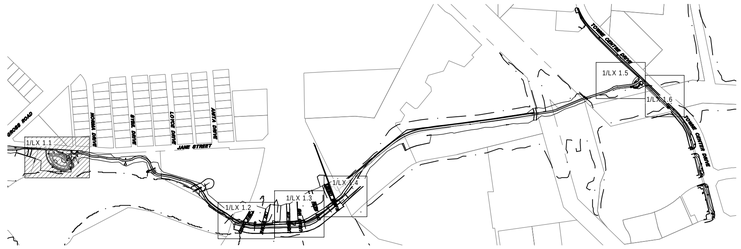
REFER TO CIVIL SHEETS 48-50 FOR TYPICAL TRAIL SECTIONS AND SPECIFICATIONS.

LANDSCAPE DRAWINGS SHOW AREAS OF LANDSCAPE IMPROVEMENTS AND SITE FURNISHINGS ONLY. REFER TO CIVIL DRAWINGS FOR FULL TRAIL LAYOUT.

REFER TO CIVIL SHEETS 113-114 FOR LIGHTING.

ELECTRONIC FILES WILL BE PROVIDED FOR ALL SURVEYING & STAKING OF WALKS, GRADE & WALL EXTENTS. CONTRACTOR IS RESPONSIBLE FOR A BID ALLOWANCE TO INCLUDE STAKING BY A LICENSED SURVEYOR. WALKS TO BE STAKED WITH 10' OFFSETS ON 20' CENTERS FOR SMOOTH CURVES.

WALKS AND DECORATIVE GRAVEL AREAS SHALL PROVIDE A 1.5% (MAXIMUM 2%) CROSS SLOPE FOR POSITIVE DRAINAGE ACROSS TO NEAREST ADJACENT STREET, PARKING OR DRAINAGE SWALE.



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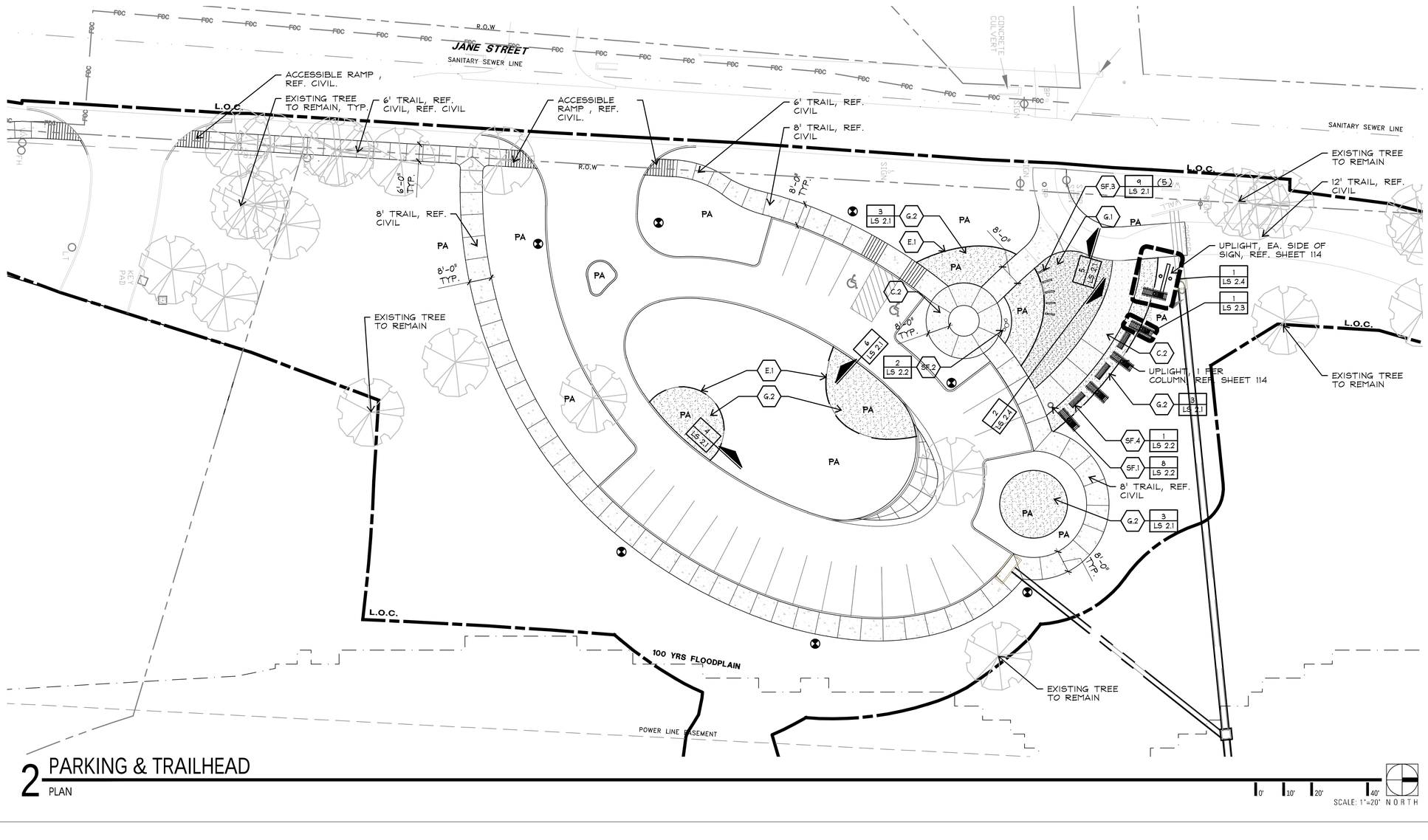

2 PARKING & TRAILHEAD PLAN

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

NOTES:

TEMPORARY BENCHMARKS:

TBG

landscape architects, planners & designers

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dallas, tx 75201

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FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT SETH ATKINSON 3075 STATE OF TEXAS
03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 1.1
LANDSCAPE SITEWORK PLAN

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
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HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC

GENERAL NOTES:

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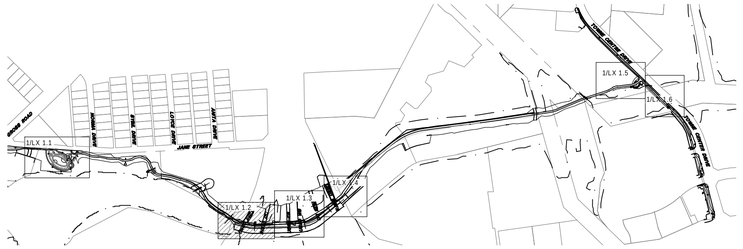

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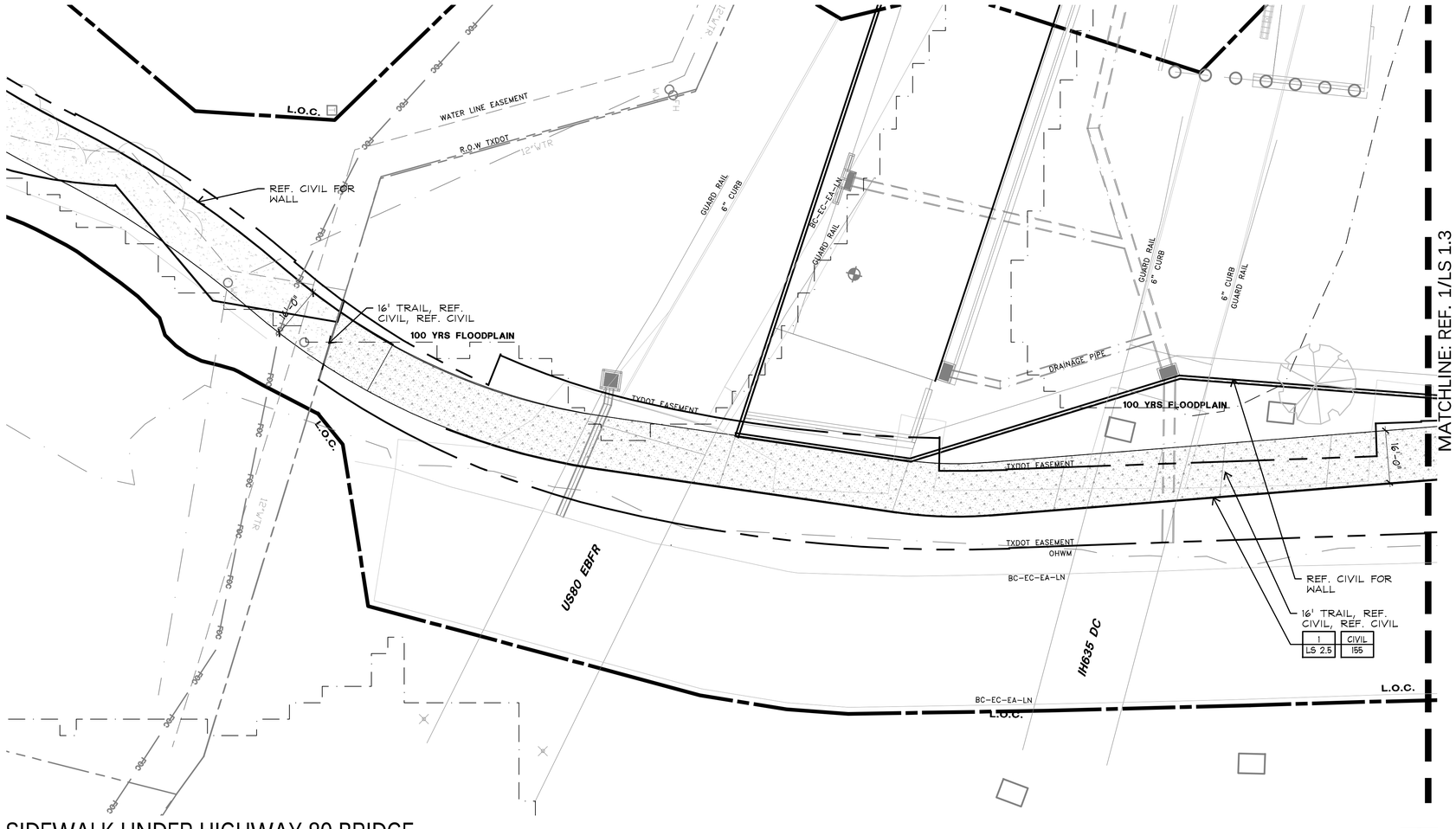

1 SIDEWALK UNDER HIGHWAY 80 BRIDGE
PLAN

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
[214] 744-0757 tbgpartners.com

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REGISTERED LANDSCAPE ARCHITECT 3079 STATE OF TEXAS
03/23/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 1.2
LANDSCAPE SITEWORK PLAN

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

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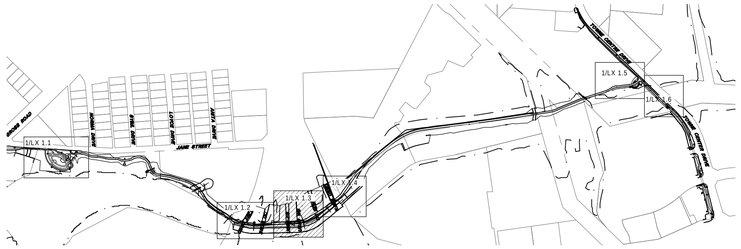
CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO..ETC



KEY MAP

GENERAL NOTES:

REFER TO CIVIL SHEETS 48-50 FOR TYPICAL TRAIL SECTIONS AND SPECIFICATIONS.

LANDSCAPE DRAWINGS SHOW AREAS OF LANDSCAPE IMPROVEMENTS AND SITE FURNISHINGS ONLY. REFER TO CIVIL DRAWINGS FOR FULL TRAIL LAYOUT.

REFER TO CIVIL SHEETS 113-114 FOR LIGHTING.

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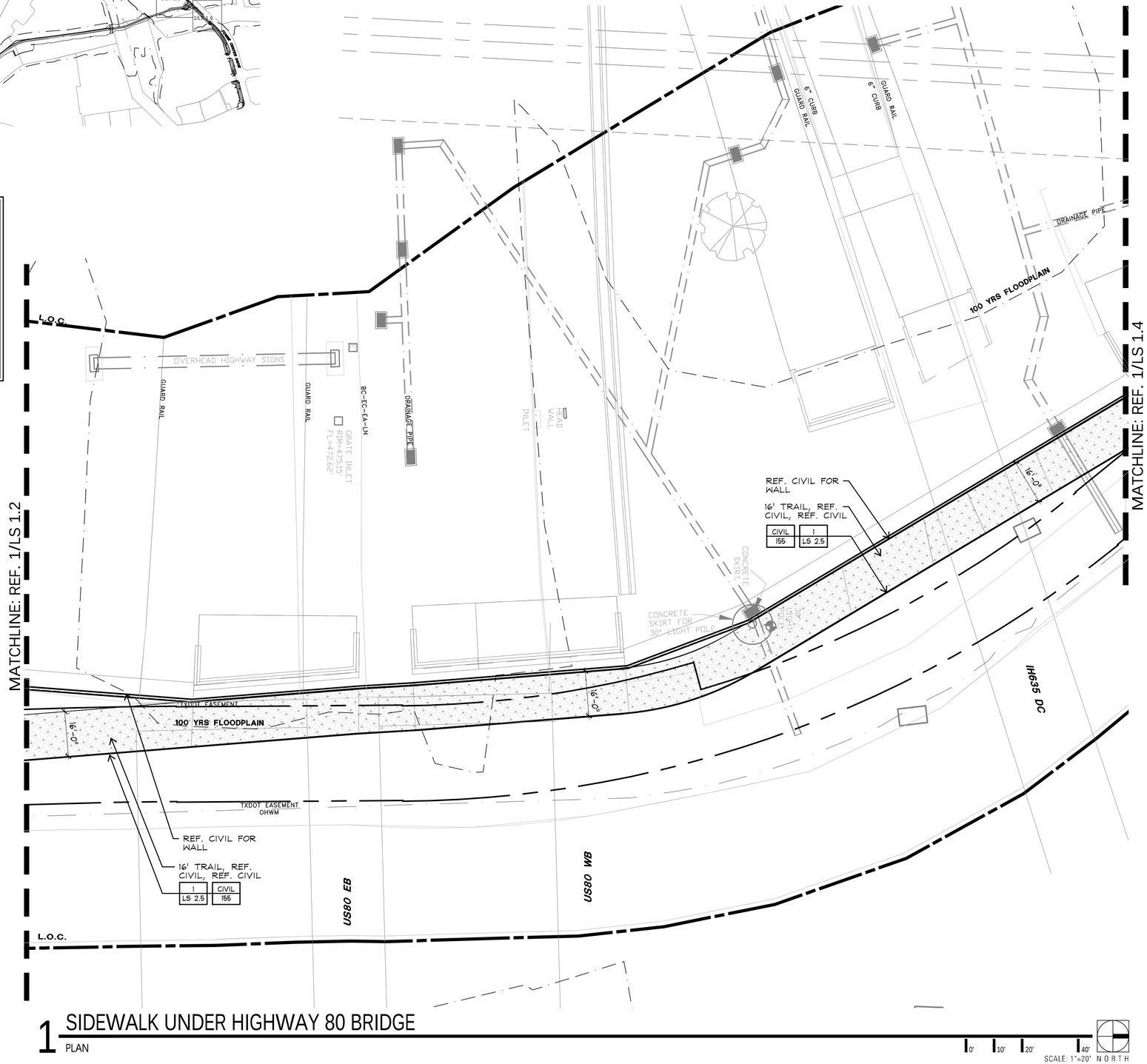
WALKS AND DECORATIVE GRAVEL AREAS SHALL PROVIDE A 1.5% (MAXIMUM 2%) CROSS SLOPE FOR POSITIVE DRAINAGE ACROSS TO NEAREST ADJACENT STREET, PARKING OR DRAINAGE SWALE.



1 SIDEWALK UNDER HIGHWAY 80 BRIDGE

PLAN

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

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
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FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT SETH ATTEBERRY 3079 STATE OF TEXAS
05/12/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 1.3
LANDSCAPE SITEWORK PLAN

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
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HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC

GENERAL NOTES:

REFER TO CIVIL SHEETS 48-50 FOR TYPICAL TRAIL SECTIONS AND SPECIFICATIONS.

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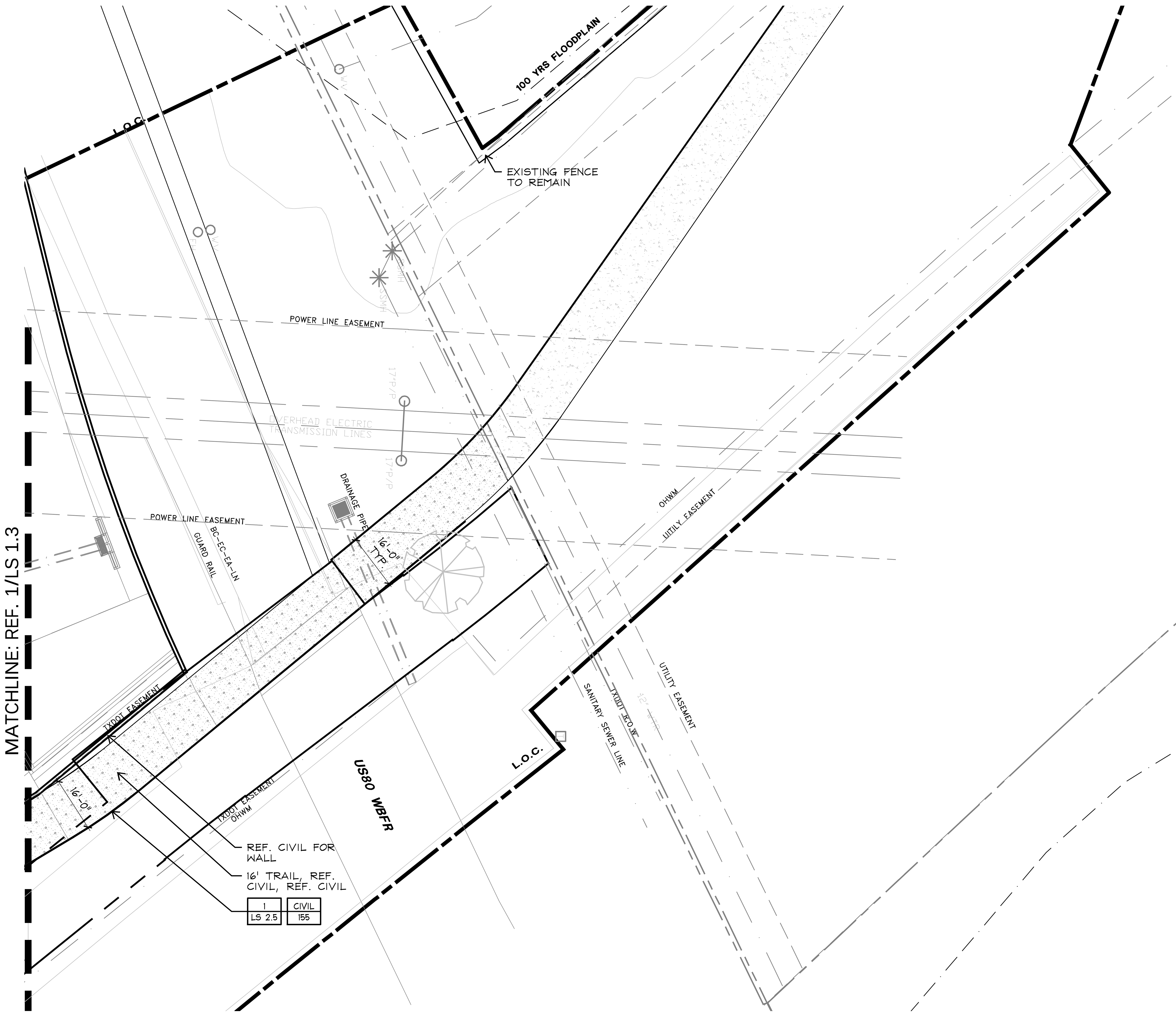
KEY MAP



1 SIDEWALK UNDER HIGHWAY 80 BRIDGE

PLAN

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

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
[214] 744-0757 tbgpartners.com

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FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT SETH ATWILL 3078 STATE OF TEXAS
09/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 1.4
LANDSCAPE SITEWORK PLAN

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

	DATE	SCALE	PROJECT NO.	Sheet
DESIGNED: JC, SA DRAWN: JC, XY, SK CHECKED: MM, BP	SEP. 2023		D13785	187 of 207

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. ETC

GENERAL NOTES:

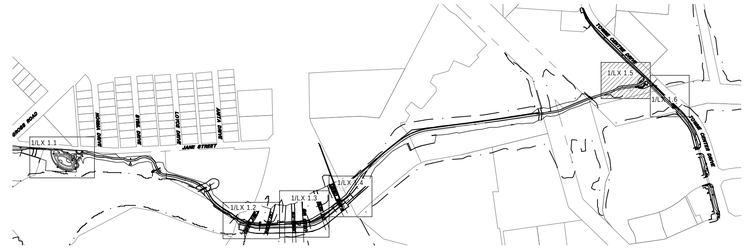
REFER TO CIVIL SHEETS 48-50 FOR TYPICAL TRAIL SECTIONS AND SPECIFICATIONS.

LANDSCAPE DRAWINGS SHOW AREAS OF LANDSCAPE IMPROVEMENTS AND SITE FURNISHINGS ONLY. REFER TO CIVIL DRAWINGS FOR FULL TRAIL LAYOUT.

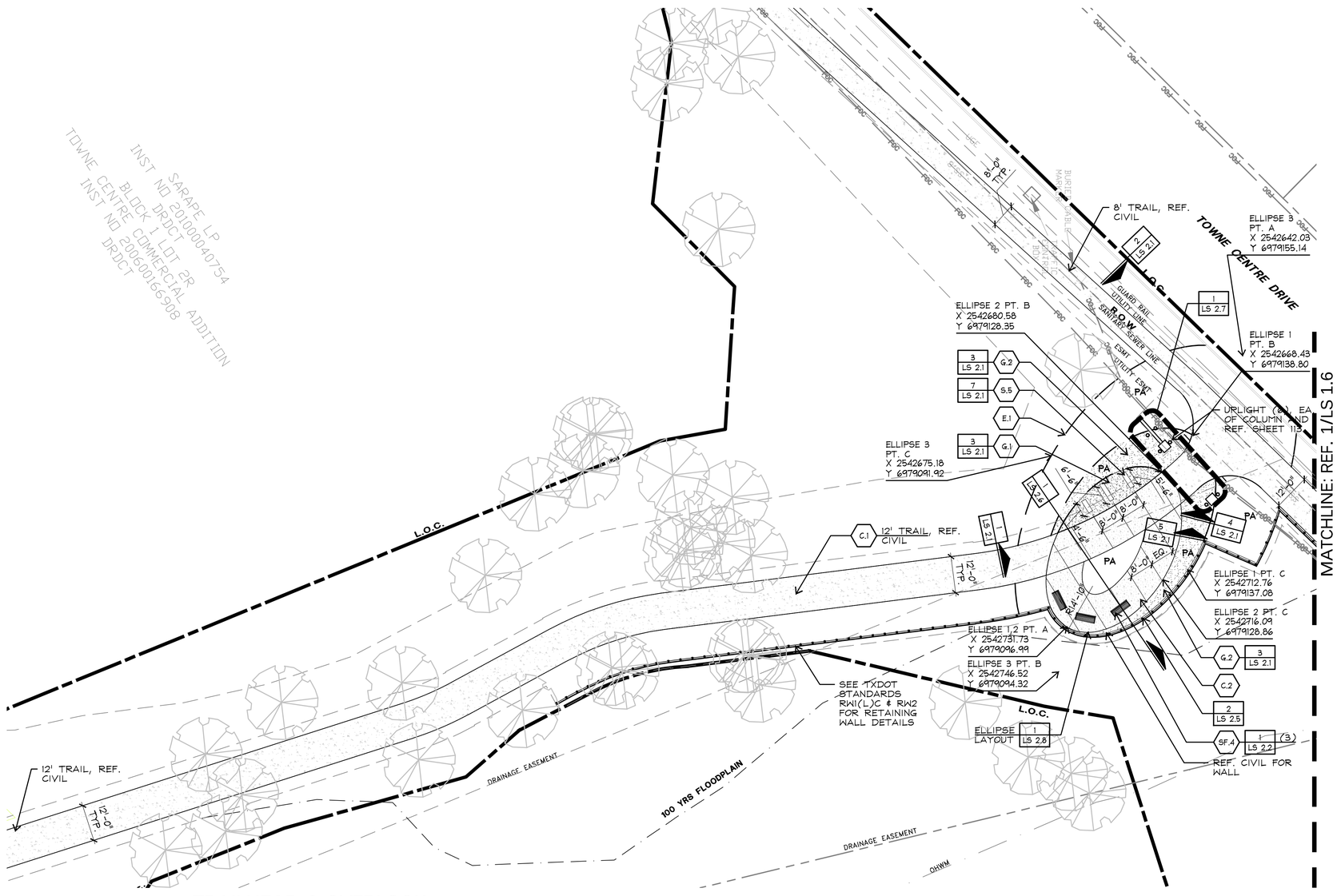
REFER TO CIVIL SHEETS 113-114 FOR LIGHTING.

ELECTRONIC FILES WILL BE PROVIDED FOR ALL SURVEYING & STAKING OF WALKS, GRADE & WALL EXTENTS. CONTRACTOR IS RESPONSIBLE FOR A BID ALLOWANCE TO INCLUDE STAKING BY A LICENSED SURVEYOR. WALKS TO BE STAKED WITH 10' OFFSETS ON 20' CENTERS FOR SMOOTH CURVES.

WALKS AND DECORATIVE GRAVEL AREAS SHALL PROVIDE A 1.5% (MAXIMUM 2%) CROSS SLOPE FOR POSITIVE DRAINAGE ACROSS TO NEAREST ADJACENT STREET, PARKING OR DRAINAGE SWALE.



KEY MAP



1 TRAILHEAD & OVERLOOK
PLAN

SCALE: 1"=20' NORTH

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
[214] 744-0757 tbgpartners.com

100% SUBMITTAL

FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT 3079 STATE OF TEXAS
05/12/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 1.5
LANDSCAPE SITEWORK PLAN

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HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC

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KEY MAP

1 TRAILHEAD & OVERLOOK

PLAN

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

NOTES:

TEMPORARY BENCHMARKS:

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SETH ATWELL
3078
09/22/2023

REV.	DESCRIPTION	BY	DATE

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TEXAS
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HERITAGE TRAIL PHASE II

LS 1.5A
LANDSCAPE SITEWORK PLAN

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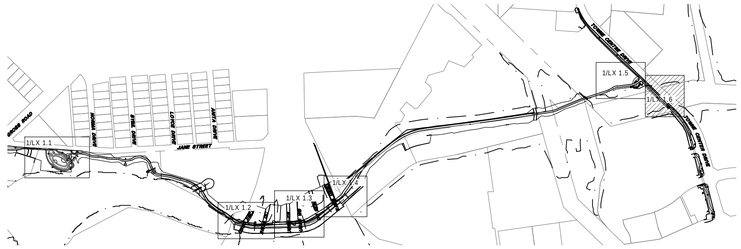
	SEP. 2023		D13785	189 of 207

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC



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KEY MAP

1 BRIDGE

PLAN

NOTES:

TEMPORARY BENCHMARKS:

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3078
09/22/2023

REV.	DESCRIPTION	BY	DATE

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HERITAGE TRAIL PHASE II

LS 1.6
LANDSCAPE SITEWORK PLAN

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HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC

LBCBR

LBCBR-CUST

LBCBR
LBCBR-CUST
ARCH BIKE RACK
316/316L stainless steel arch bike rack with standard medallion design or custom medallion design, surface mount

Material
The bike rack is composed of 2.38" O.D. schedule 10, 316/316L stainless steel pipe support sections. The 16" diameter stainless steel center medallion is welded in place.

316/316L stainless steel derives its advantage through an addition of at least 2% molybdenum. Molybdenum provides increased resistance to corrosion including sea water and deicing salt environments.

The bike rack is 39.50" wide and 32.22" tall. Bicycles may attach to either side of the rack. The bike rack feet have pre drilled .5" diameter holes to allow for surface mounting to prevent movement.

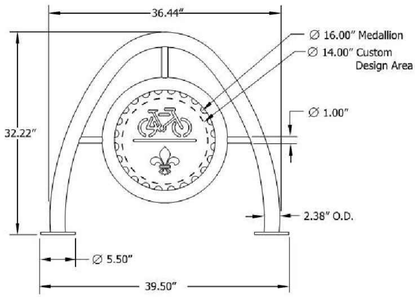
The LBCBR features a bicycle design with sprocket cut-out edges. The LBCBR-CUST may be ordered with sprocket cut-out edges or solid edge. Customers can create a unique design for the medallion that fits within the 14" diameter design area.

Finish/Color
316/316L stainless steel is highly resistant to salt corrosion, rusting, pitting, and cracking. It remains clean and rust-free without paint or alternative finish.

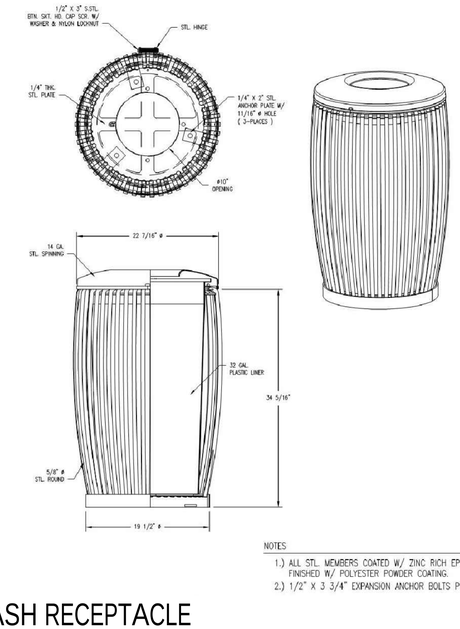
Assembly
The bike rack arrives assembled and ready to be installed. Hardware is not included.

Maintenance
Clean periodically, as conditions dictate (see ANOVA™ stainless steel care guide) using fresh water and non-abrasive powder and Scotch-Brite™ pad. Remove stains by rubbing with the finish grain. Rinse with clean water and dry, then apply a common spray wax or car polish fit for stainless steel, then buff.

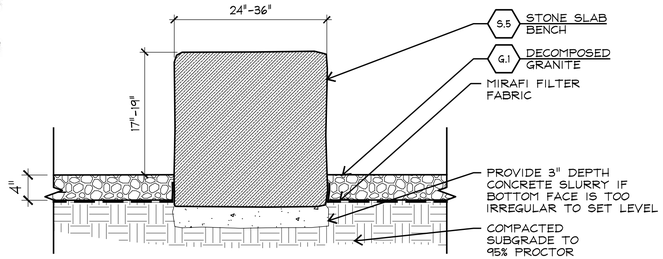
Warranty
20-year limited structural warranty with 7-year finish warranty from the date of purchase.



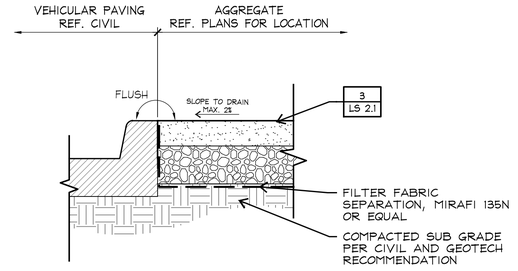
9 BIKE RACK
SECTION — SCALE: 1"=1'-0"



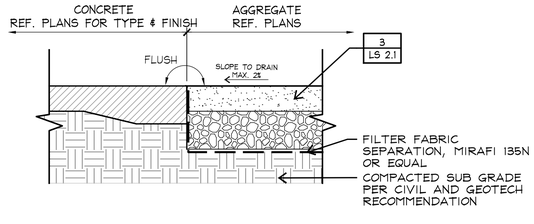
8 TRASH RECEPTACLE
SECTION — SCALE: 1"=1'-0"



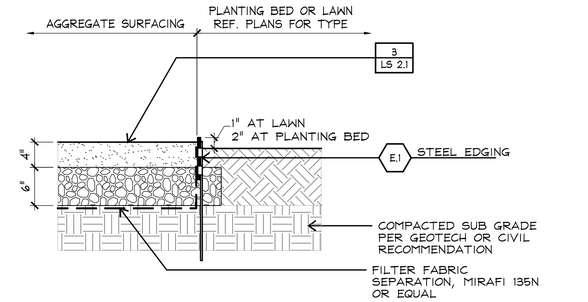
7 LIMESTONE SEATING BLOCK
SECTION — SCALE: 1"=1'-0"



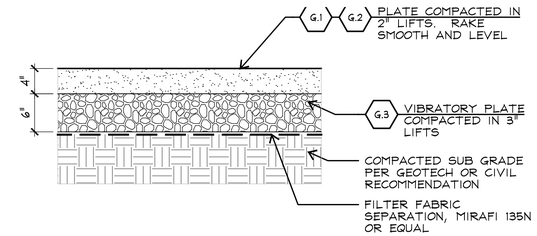
6 DECOMPOSED GRANITE AT BACK OF CURB
SECTION — SCALE: 1"=1'-0"



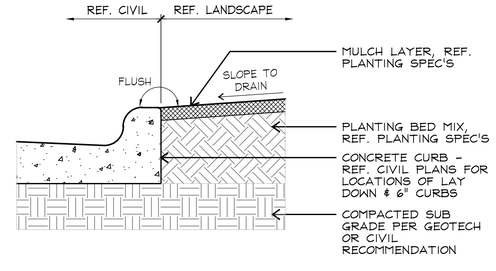
5 DECOMPOSED GRANITE AT CONCRETE SIDEWALK
SECTION — SCALE: 1"=1'-0"



4 DECOMPOSED GRANITE AT PLANTING
SECTION — SCALE: 1"=1'-0"



3 DECOMPOSED GRANITE
SECTION — SCALE: 1"=1'-0"



2 PLANTING AT BACK OF CURB
SECTION — SCALE: 1"=1'-0"

REFER TO CIVIL SHEETS 48-50

1 CONCRETE SIDEWALK AT PLANTING
SECTION — SCALE: 1"=1"

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
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[214] 744-0757 tbgpartners.com

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FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT 3078 STATE OF TEXAS
03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 2.1
LANDSCAPE SITEWORK DETAILS

BGE
BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
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TBPE Registration No. F-1046

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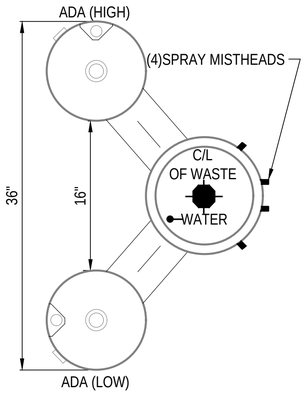
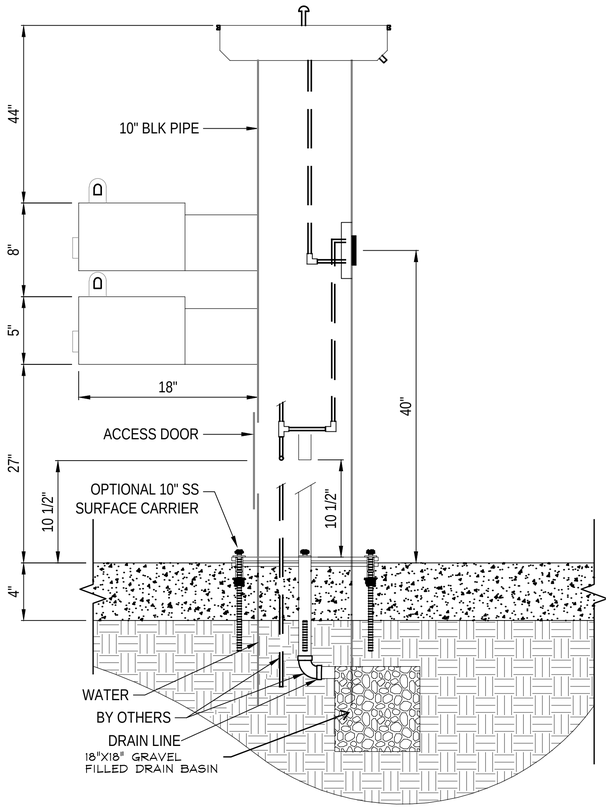
DRAWN: JC, XY, SK	SEP. 2023		D13785	191 of 207
CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. ETC



TOP VIEW



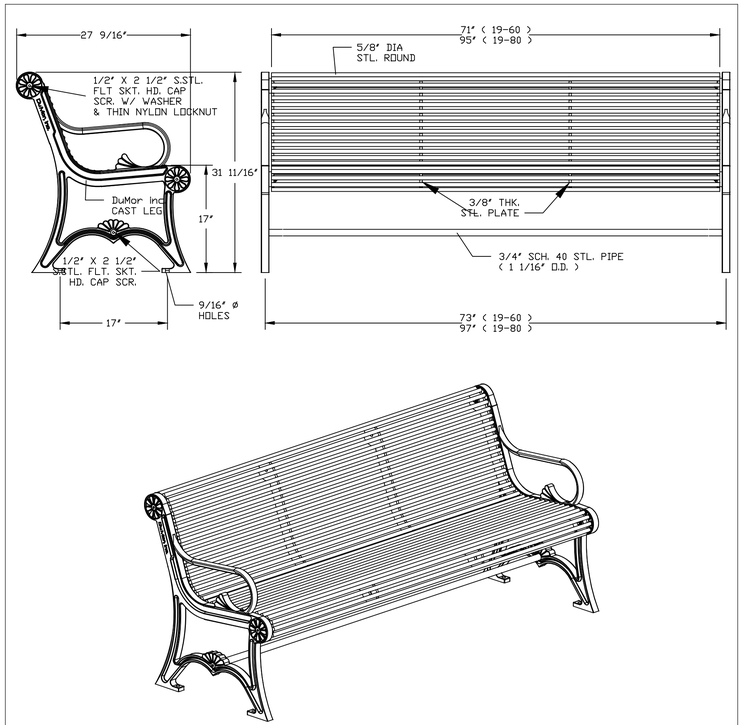
NOTES:

1. DRINKING FOUNTAIN MEETS ADA REGULATIONS.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
6. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 3354-11.5.

2 DRINKING FOUNTAIN

SECTION/ PLAN

SCALE: 3/4"=1'-0"



☐ CUSTOM LETTERING (37 SPACES) _____

NOTES

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

LENGTH OPTIONS

■ 6' BENCH
☐ 8' BENCH

DuMor, inc.	BENCH	DATE DRAWN : 03/22/94 DRAWN BY : AH DATE REV. : 03/11/05 REV. BY : AWH	REV. E	DRAWING NUMBER 19 SERIES	SHEET 1 OF 2

1 BENCH

PLAN / SECTION

SCALE: 1"=1'-0"

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
[214] 744-0757 tbgpartners.com

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FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT 3076 STATE OF TEXAS
03/13/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 2.2
LANDSCAPE SITEWORK DETAILS

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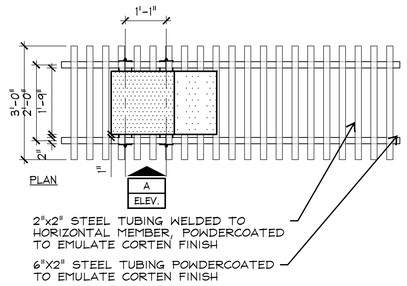
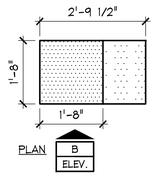
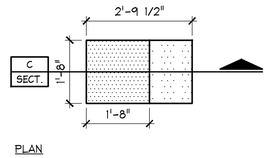
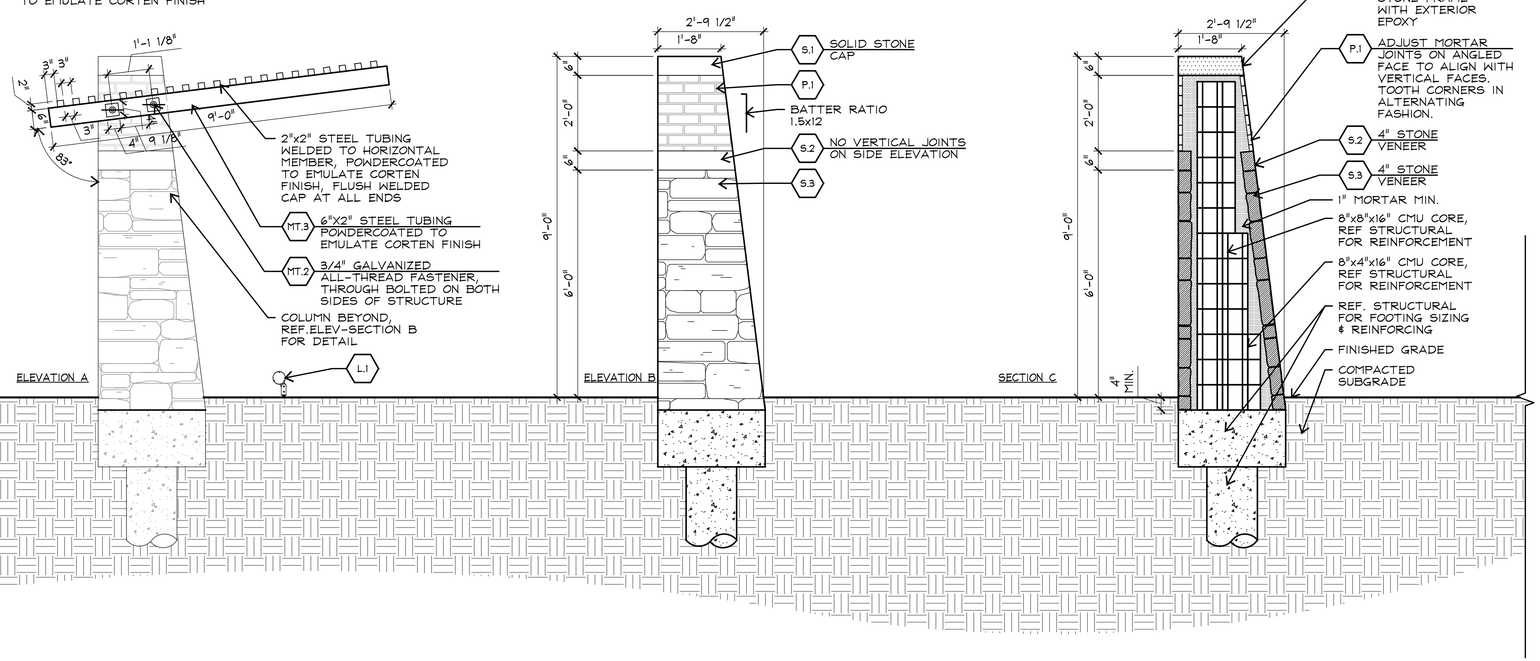
CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC









1 COLUMN @ PARKING & TRAILHEAD

SECTION/PLAN

SCALE: 1/2"=1'-0"

NOTES:

TEMPORARY BENCHMARKS:

TBG

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HERITAGE TRAIL PHASE II

LS 2.3
LANDSCAPE SITEWORK DETAILS

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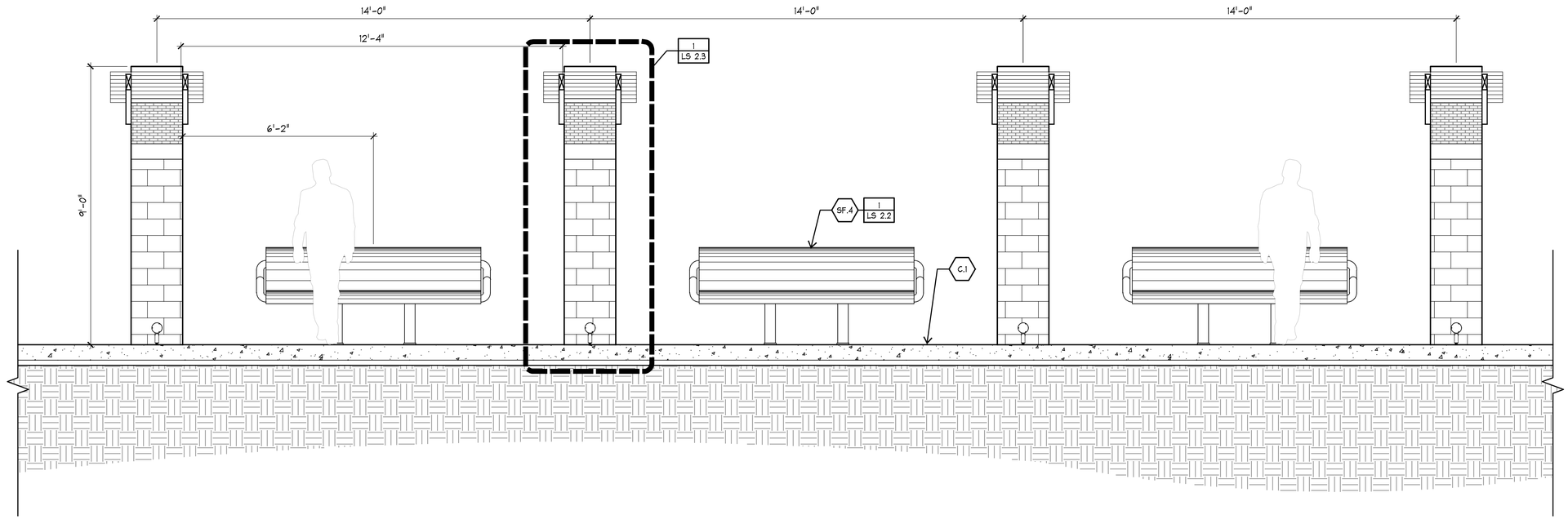
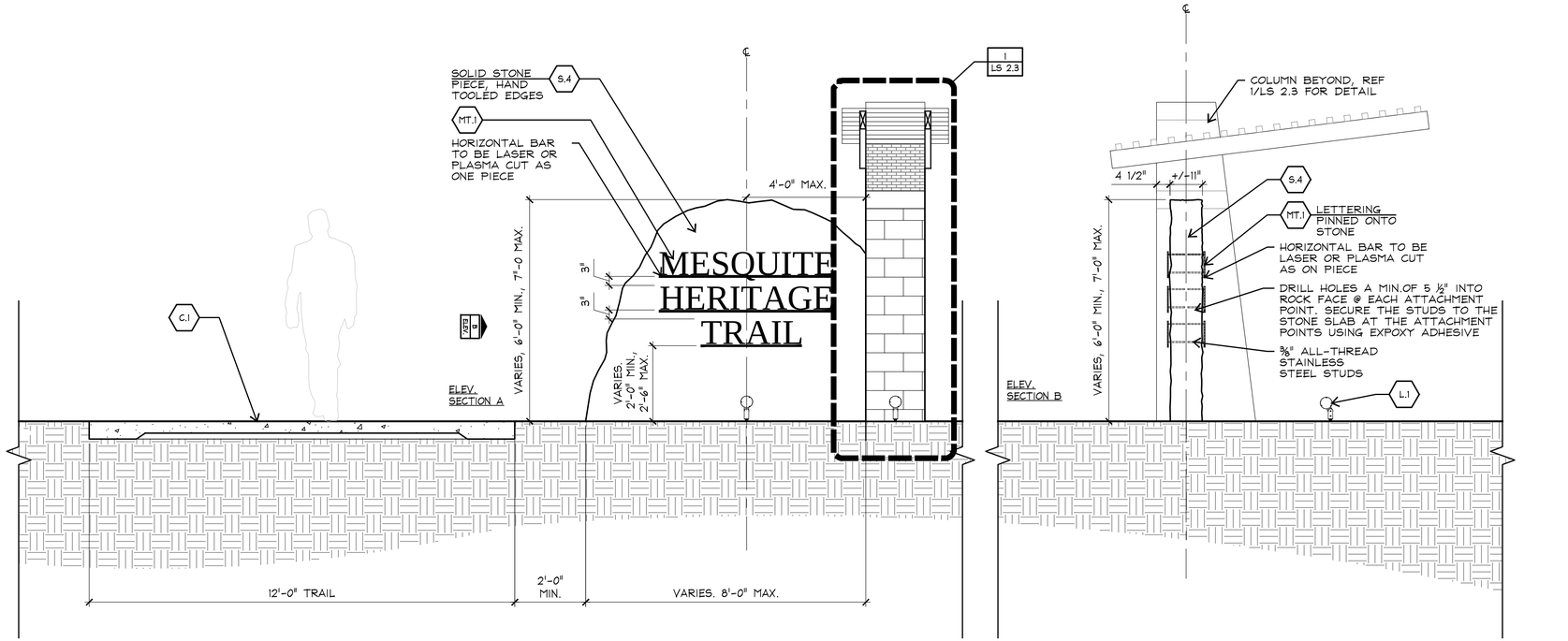
HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. ETC



2 COLUMN @ PARKING & TRAILHEAD

SECTION

SCALE: 1/2"=1'-0"



1 SIGN @ PARKING & TRAILHEAD

SECTION

SCALE: 1/2"=1'-0"

NOTES:

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REGISTERED LANDSCAPE ARCHITECT 3075 STATE OF TEXAS
03/12/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 2.4
LANDSCAPE SITEWORK DETAILS

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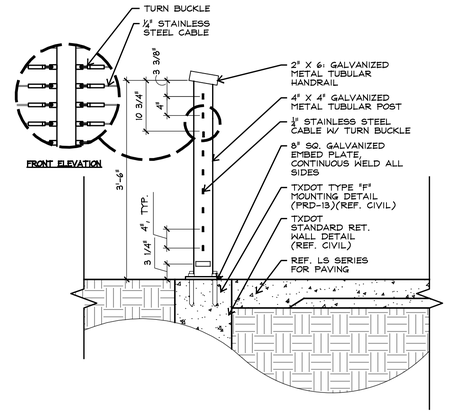
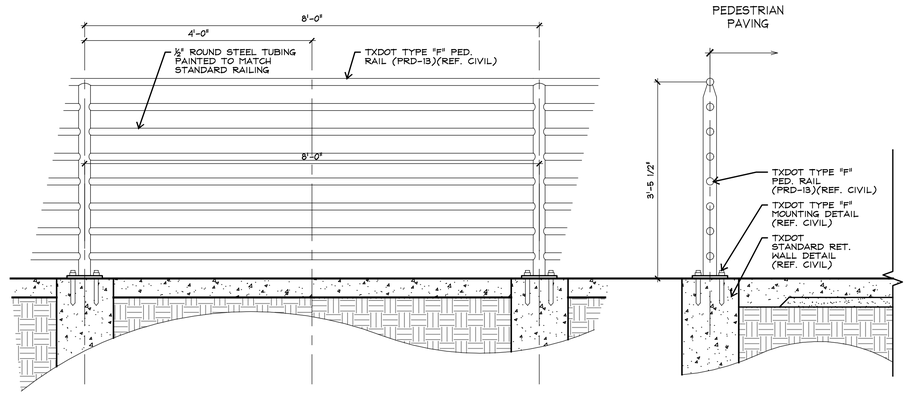


2 GUARDRAIL @ OVERLOOK

SECTION SCALE: 3/4"=1'-0"



1 GUARDRAIL

SECTION SCALE: 3/4"=1'-0"

NOTES:

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REGISTERED LANDSCAPE ARCHITECT 3078 STATE OF TEXAS

03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 2.5
LANDSCAPE SITEWORK DETAILS

BGE

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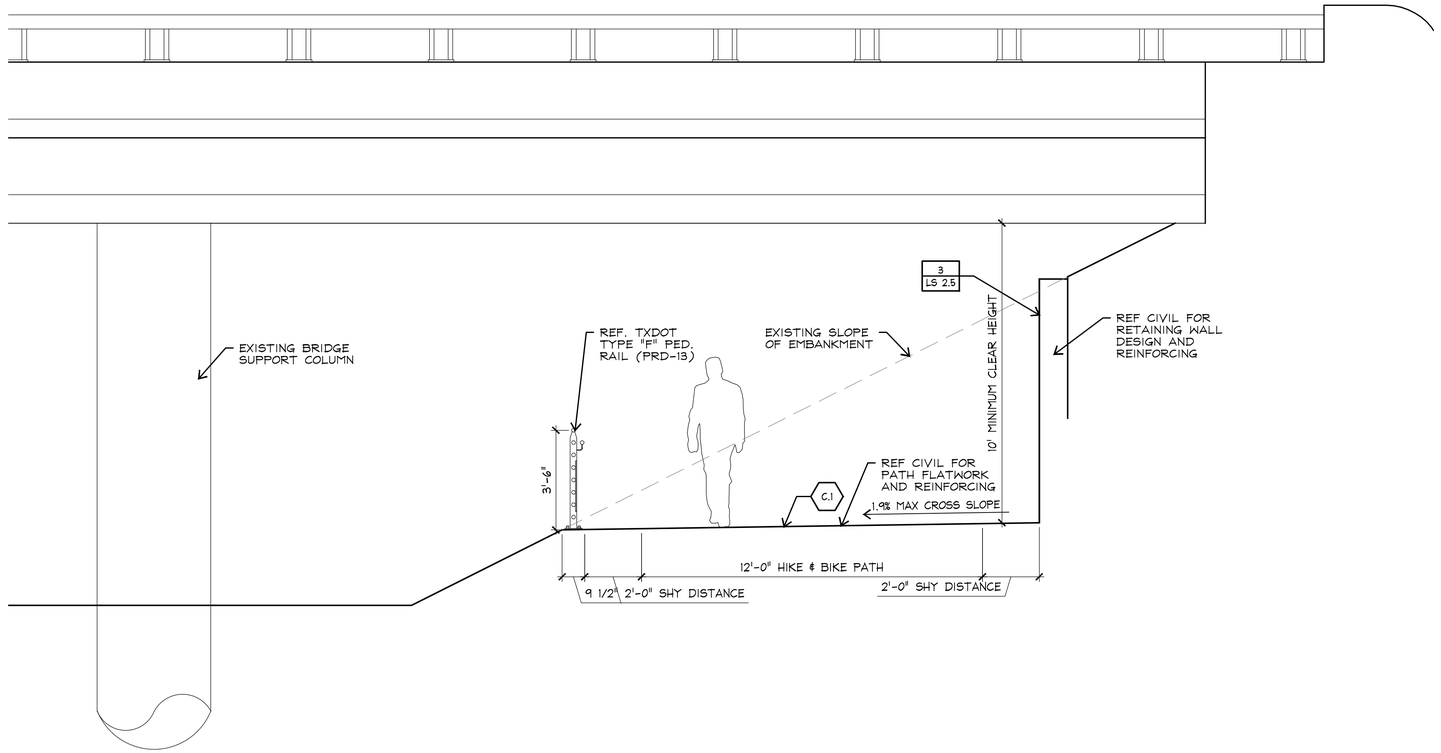
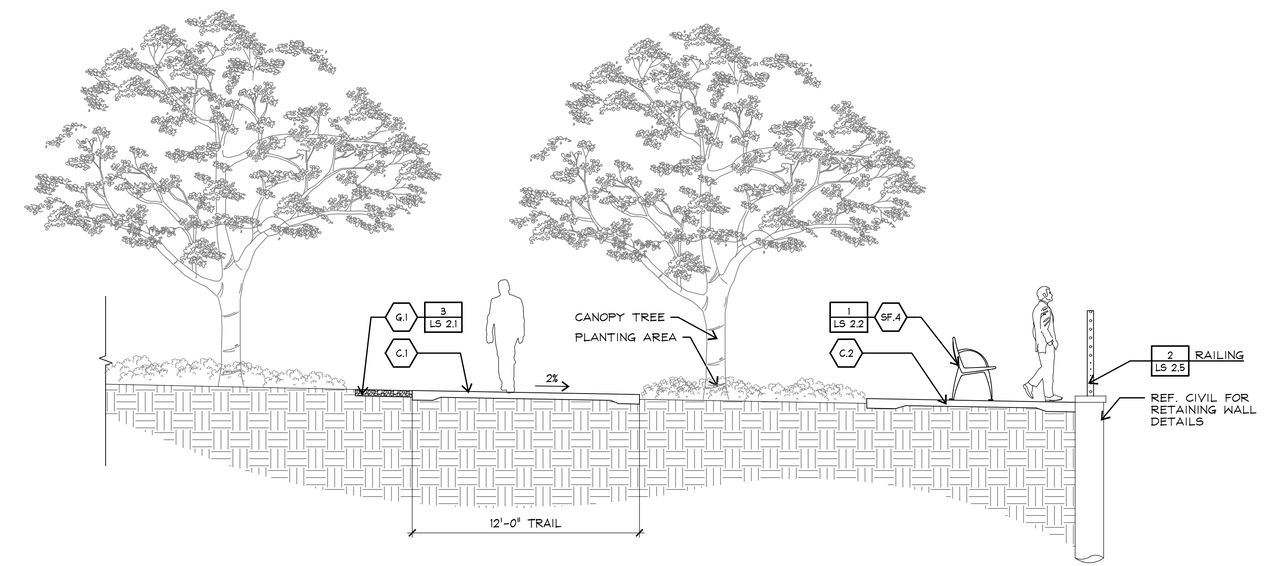
HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.ETC



2 CUT IN SIDEWALK@HWY UNDERPASS

SECTION

SCALE: 3/8"=1'-0"



1 TRAIL OVERLOOK

SECTION

SCALE: 1/4"=1'-0"

NOTES:

TEMPORARY BENCHMARKS:

TBG

landscape architects, planners & designers

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suite 1450
dallas, tx 75201

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HERITAGE TRAIL PHASE II

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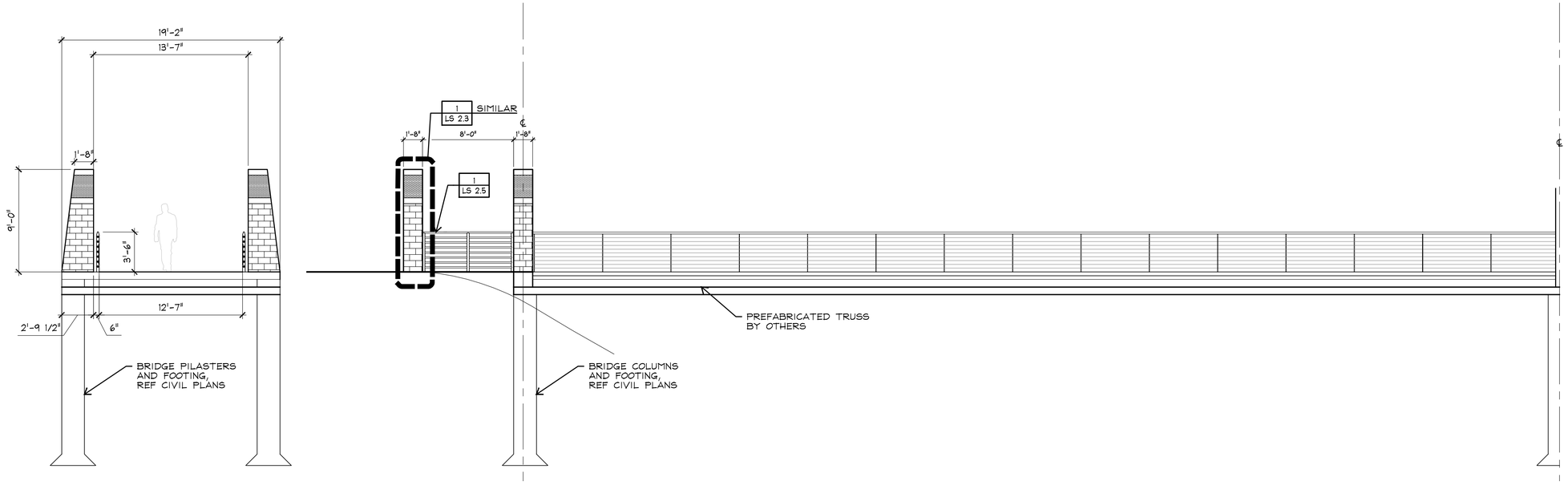
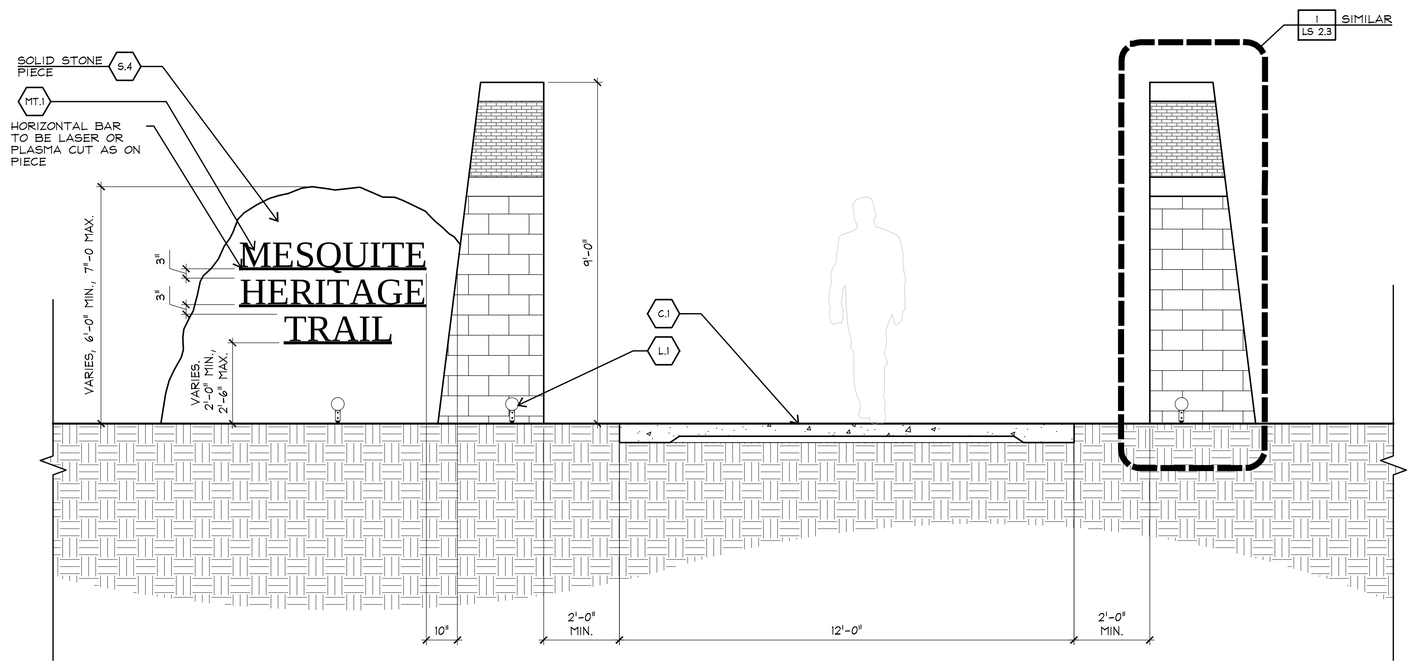
HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC



2 BRIDGE

SECTION

SCALE: 3/16"=1'-0"



1 SIGN @ TRAILHEAD

SECTION

SCALE: 1/2"=1'-0"

NOTES:

TEMPORARY BENCHMARKS:

TBG

landscape architects, planners & designers

2001 bryan street
suite 1450
dallas, tx 75201

[214] 744-0757 tbgpartners.com

100% SUBMITTAL

FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT JOSEPH ATWELL 3078 STATE OF TEXAS

03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

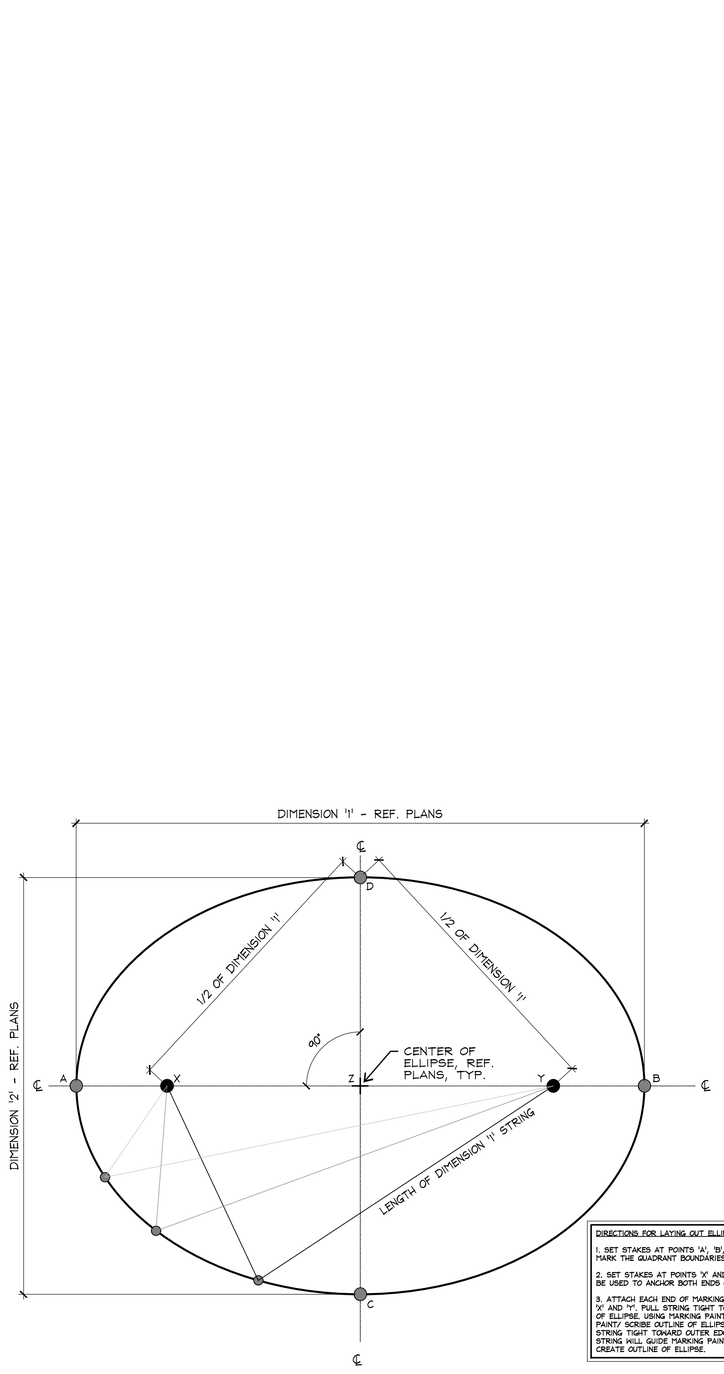
LS 2.7
LANDSCAPE SITEWORK DETAILS

BGE

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

DESIGNED: JC, SA	DATE	SCALE	PROJECT NO.	Sheet
DRAWN: JC, XY, SK	SEP. 2023		D13785	197 of 207
CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO., ETC



DIRECTIONS FOR LAYING OUT ELLIPSE

1. SET STAKES AT POINTS 'A', 'B', 'C', AND 'D' TO MARK THE QUADRANT BOUNDARIES OF THE ELLIPSE.

2. SET STAKES AT POINTS 'X' AND 'Y'. THESE WILL BE USED TO ANCHOR BOTH ENDS OF MARKING STRING.

3. ATTACH EACH END OF MARKING STRING TO STAKES 'X' AND 'Y'. PULL STRING TIGHT TOWARD OUTER EDGE OF ELLIPSE. USING MARKING PAINT CAN OR STAKE, PAINT/ SCRIBE OUTLINE OF ELLIPSE WHILE KEEPING STRING TIGHT TOWARD OUTER EDGE OF ELLIPSE. STRING WILL GUIDE MARKING PAINT CAN OR STAKE TO CREATE OUTLINE OF ELLIPSE.

1 ELLIPSE LAYOUT

PLAN

SCALE: 1/4"=1'-0"

NOTES:

TEMPORARY BENCHMARKS:

TBG

landscape architects, planners & designers

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suite 1450
dallas, tx 75201

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REGISTERED LANDSCAPE ARCHITECT JOSEPH ATWELL 3078 STATE OF TEXAS

03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LS 2.8
LANDSCAPE SITEWORK DETAILS

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

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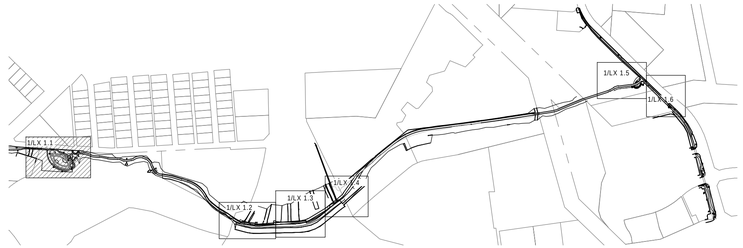
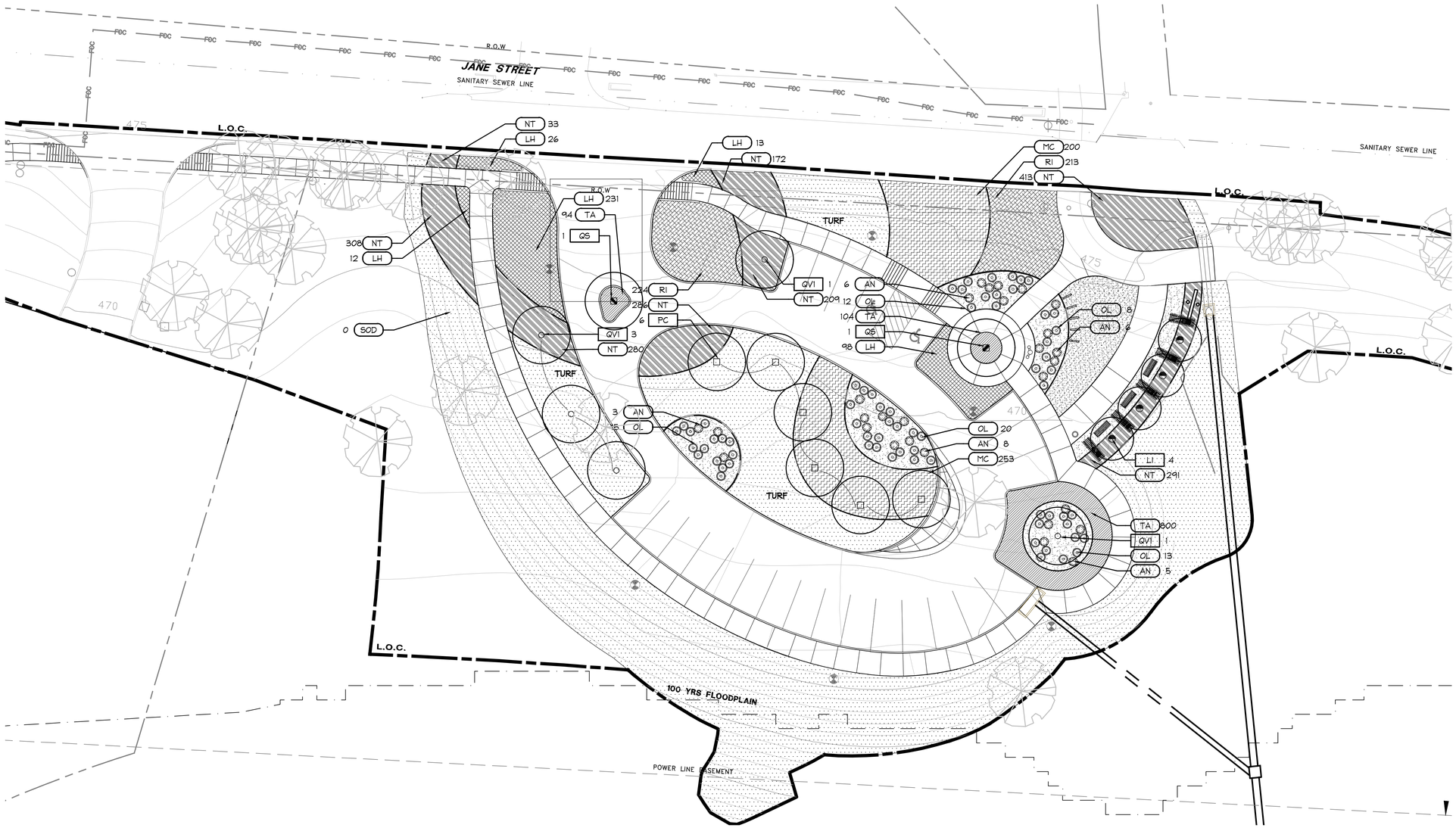
HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. ETC



KEY MAP



1 PARKING & TRAILHEAD
PLAN

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

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
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suite 1450
dallas, tx 75201
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FOR PRE-ADVERTISEMENT REVIEW

REGISTERED LANDSCAPE ARCHITECT 3075 STATE OF TEXAS
05/12/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LP 1.1
LANDSCAPE PLANTING PLAN

BGE, Inc.
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Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

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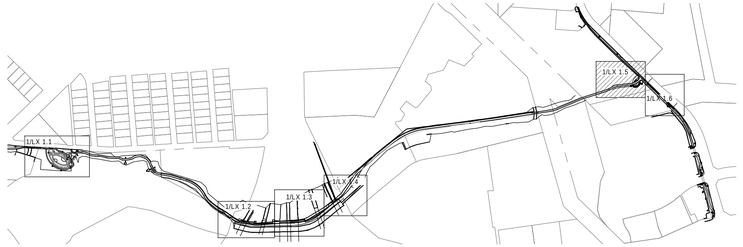
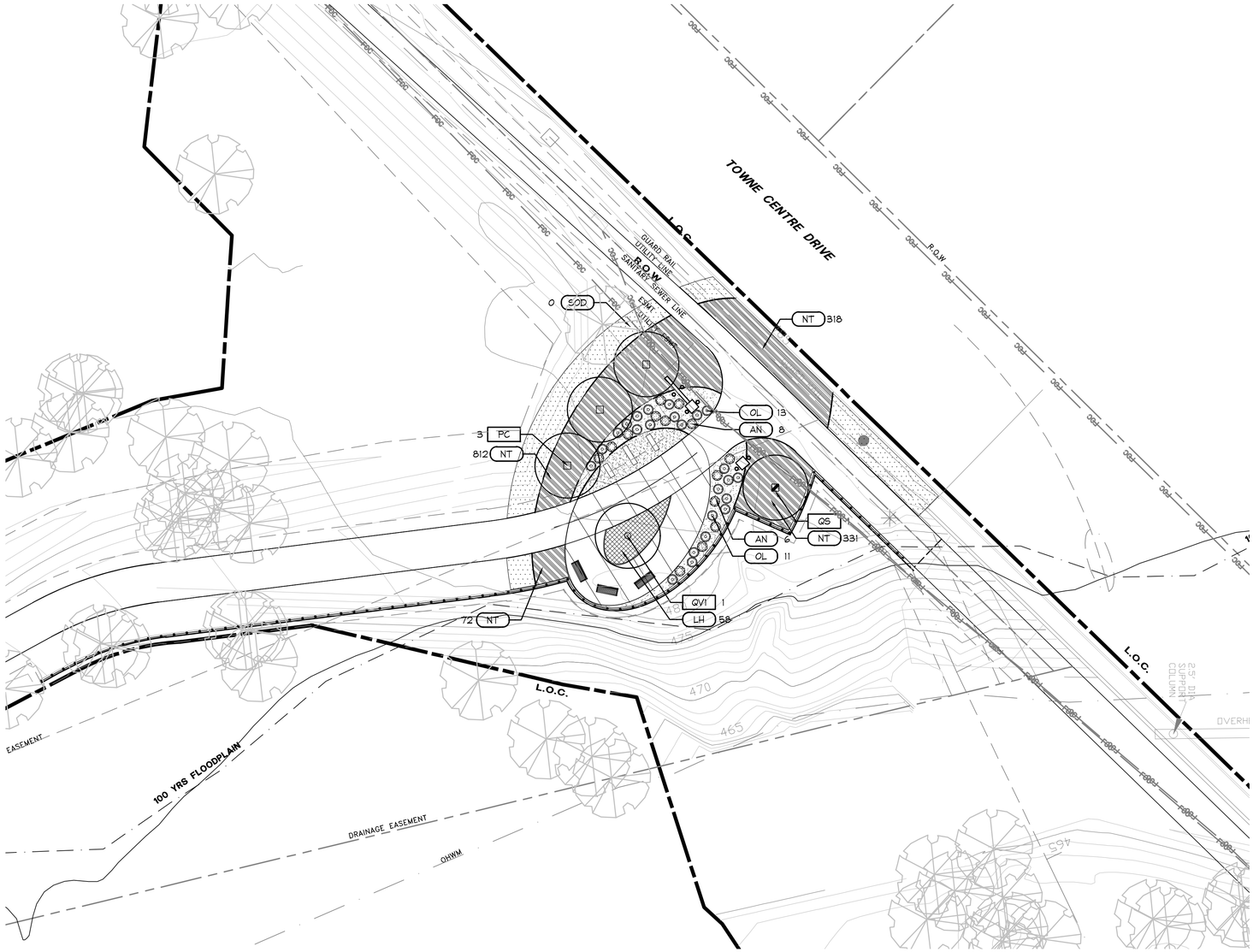
HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC



KEY MAP



1 TRAILHEAD & OVERLOOK

PLAN

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

NOTES:

TEMPORARY BENCHMARKS:

TBG
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suite 1450
dallas, tx 75201
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REGISTERED LANDSCAPE ARCHITECT 3078 STATE OF TEXAS
03/12/2025

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LP 1.5
LANDSCAPE PLANTING PLAN

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HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.ETC

PLANT LIST

SHADE TREES

QTY	GRAPHIC	KEY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
9		PC	CHINESE PISTACHE	*PISTACIA CHINENSIS*	3" CAL. MIN; 12'-14' HT. MIN; 7' CLEAR HT; 5'-6' SPRD	SINGLE TRUNK 200 GAL. CONTAINER; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY
3		QS	SHUMMARD RED OAK	*QUERCUS SHUMARDII*	3" CAL. MIN; 12'-14' HT. MIN; 7' CLEAR HT; 5'-6' SPRD	SINGLE TRUNK 200 GAL. CONTAINER; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY
6		QVI	LIVE OAK	*QUERCUS VIRGINIANA*	3" CAL. MIN; 14' HT. MIN; 7' CLEAR HT; 6'-8' SPRD	SINGLE TRUNK 200 GAL. CONTAINER; STRAIGHT TRUNK WITH FULL AND UNIFORM CANOPY

ORNAMENTAL TREES

QTY	GRAPHIC	KEY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
4		LI	NATCHEZ CRAPE MYRTLE	*LAGERSTROEMIA INDICA ' NATCHEZ'*	2.5-3" CAL. MIN; 12' HT. MIN; 6'8" CLEAR HT; 7' SPRD	SINGLE TRUNK, B#B

SHRUBS, ORNAMENTAL GRASSES, AND VINES

QTY	GRAPHIC	KEY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
42		AN	AGAVE NEOMEXICANA	*AGAVE NEOMEXICANA*	15 GAL	SPACE AS SHOWN ON PLANS
92		OL	THORNLESS PRICKLY PEAR	*OPUNTIA ELLISIANA*	5 GAL, 36" BOX	SPACE AS SHOWN ON PLANS

PERENNIALS, GROUNDCOVERS, AND ANNUALS

QTY	GRAPHIC	KEY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
438		LH	NEW GOLD LANTANA, DALLAS RED LANTANA	*LANTANA X HYBRID 'GOLD', LANTANA X HYBRID ' DALLAS RED'*	1 GAL., 10" HT MIN; 10" MIN, SPRD	50-50 MIX, 24" O.C., 0.28 PLANTS/SF. CONTAINER GROWN
453		MC	REGAL MIST GULF MUHLY	*MUHLENBERIA CAPILLARIS 'REGAK MIST'*	3 GAL.	PLANT 30" O.C., 0.18 PLANTS/SF, FULL PLANT, CONTAINER GROWN
3525		NT	MEXICAN FEATHER GRASS	*NASSELLA TENUISSIMA*	1 GAL.	PLANT 15" O.C., 0.74 PLANTS/SF, FULL PLANT, CONTAINER GROWN
437		RI	INDIAN HAWTHORN "PINKIE"	*RHAPHIOLEPIS INDICA 'PINKIE'*	3 GAL., 18" HT, 18" SPRD	PLANT 24" O.C., 0.28 PLANTS/SF, FULL PLANT, CONTAINER GROWN
0		SOD	BERMUDA 'CELEBRATION'	*CYNODON DACTYLON 'CELEBRATION'*	SOD	SOLID SOD, WEED AND PEST FREE
998		TA	ASIAN JASMINE	*TRACHELOSPERMUM ASIATICUM*	4" POT	PLANT 12" O.C., 1.15 PLANTS/SF

NOTE: CONTRACTOR TO VERIFY QUANTITIES REQUIRED TO CARRY OUT DESIGN INTENT AS SHOWN ON PLANS

REFER TO CIVIL DRAWINGS FOR FULL EXTENTS OF GRADING AND SODDING ADJACENT TO TRAIL. REFER TO LP 1.1 AND 1.5 FOR LIMITS OF SOD IN ALT 1 AND ALT 2 SUBMITTAL ALTERNATES.

NOTES:

TEMPORARY BENCHMARKS:

TBG

landscape architects, planners & designers

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REGISTERED LANDSCAPE ARCHITECT 3079 STATE OF TEXAS

03/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LP 2.1
LANDSCAPE PLANTING SCHEDULE

BGE

BGE, Inc.
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TBPE Registration No. F-1046

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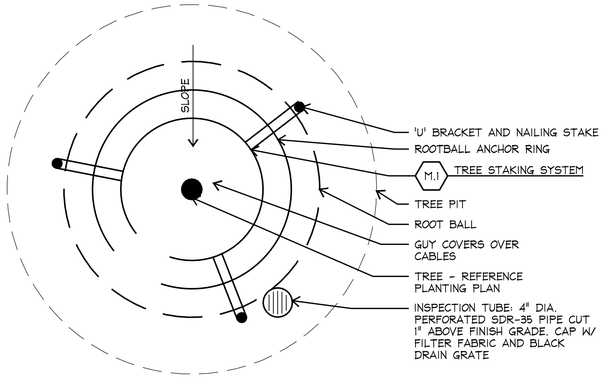
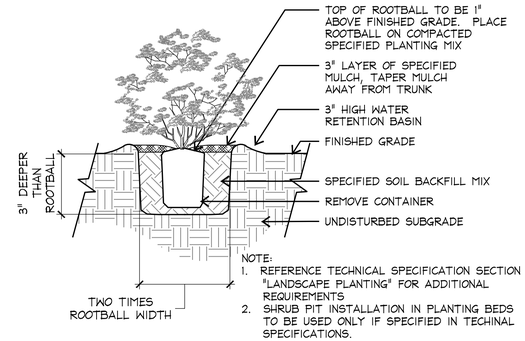
HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. .ETC



7 TREE PLANTING

PLAN — NOT TO SCALE



4 SHRUB PIT PLANTING

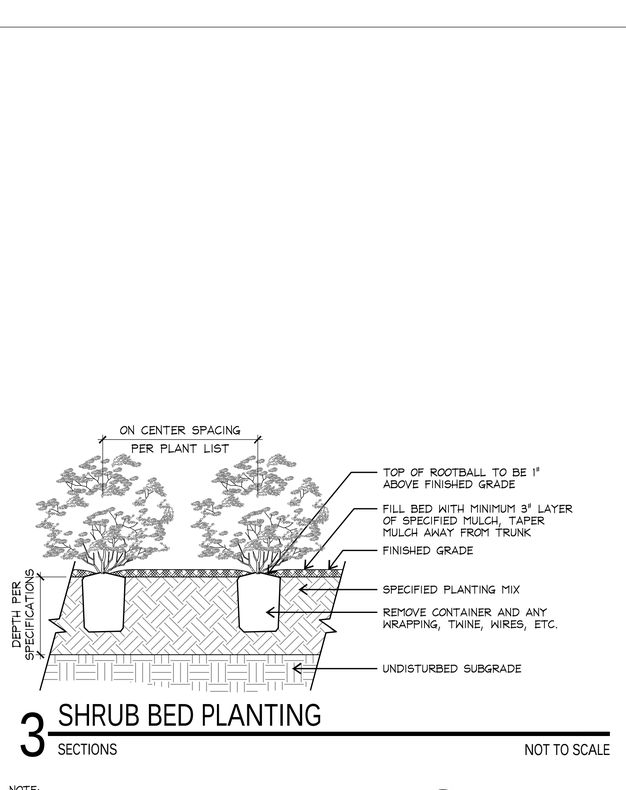
SECTIONS — NOT TO SCALE

3 SHRUB BED PLANTING

SECTIONS — NOT TO SCALE

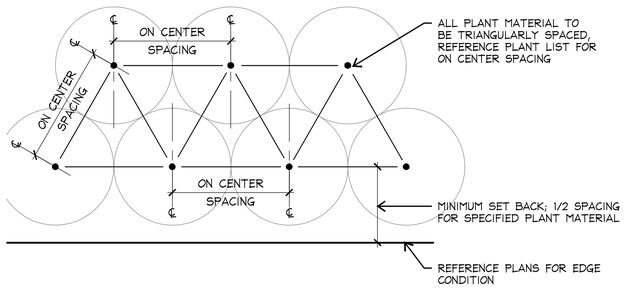
5 METAL EDGING AT PLANTING & LAWN

PLAN — NOT TO SCALE



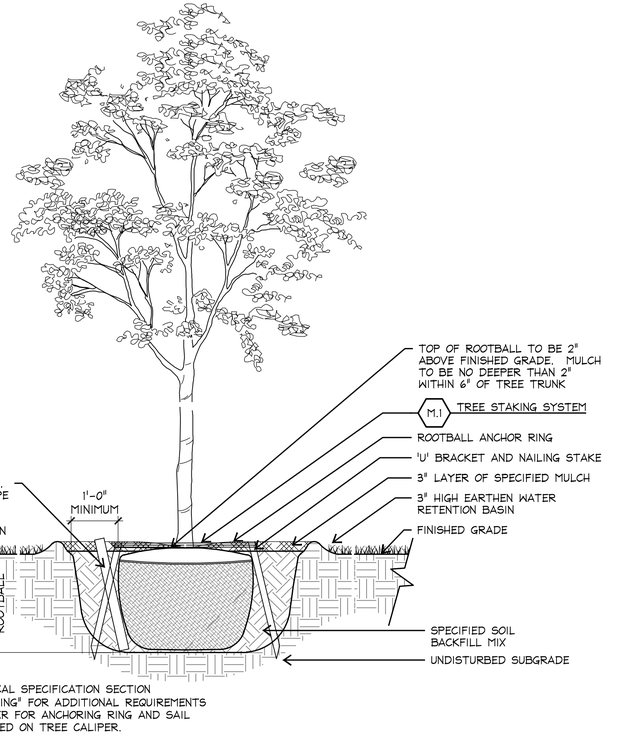
2 CURVED BED LAYOUT

PLAN — NOT TO SCALE



1 PLANT SPACING DIAGRAM

PLAN — NOT TO SCALE



6 TREE PLANTING

SECTION — NOT TO SCALE

NOTES:

TEMPORARY BENCHMARKS:

TBG
landscape architects, planners & designers
2001 bryan street
suite 1450
dallas, tx 75201
[214] 744-0757 tbgpartners.com

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REGISTERED LANDSCAPE ARCHITECT 3078 STATE OF TEXAS
05/22/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

HERITAGE TRAIL PHASE II

LP 2.2
LANDSCAPE PLANTING DETAILS

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 • www.bgeinc.com
TBPE Registration No. F-1046

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HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO..ETC

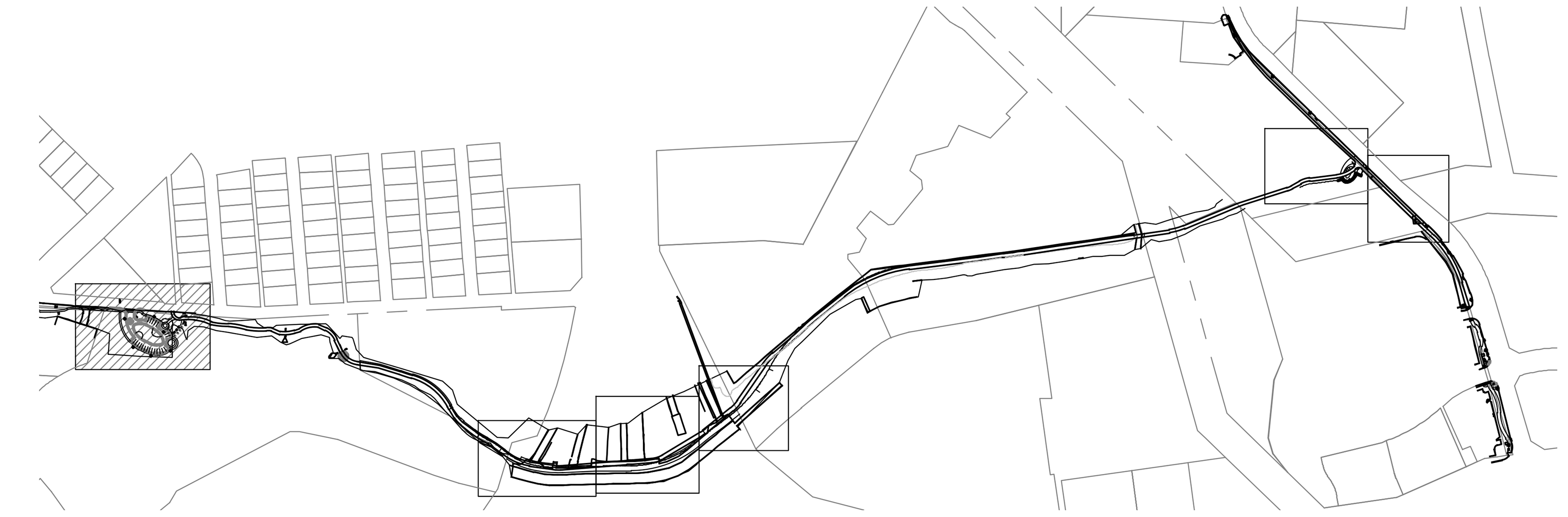
LEGEND

- ~~RAINBIRD #1401 PRESSURE COMPENSATING SHRUB BUBBLER NOZZLE.~~ SEE CHANGE ALT. NOTE #1
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- RAINBIRD RWS-M-B-1402 SERIES ROOT WATERING SYSTEM (TWO PER TREE).
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- ~~RAINBIRD 1800-SAM-PRS SERIES POP UP SPRAY HEAD WITH RAINBIRD MPR SERIES NOZZLE AS NOTED BELOW~~
  SEE CHANGE ALT. NOTE #2
- NETAFIM TECHLINE TLHCVXR5-12 SERIES DRIP TUBE IN SHRUB BED INSTALLED AT 2" DEPTH
  SEE INSTALLATION NOTE #16 REGARDING DRIP TUBE LAYOUT IN SHRUB BEDS.
- RAINBIRD 5004 PRS SERIES, ADJUSTABLE 4" POP UP ROTARY HEAD, PART CIRCLE, #2.0 AT 35 P.S.I.
- WEATHERMATIC 11000 SERIES ELECTRIC REMOTE CONTROL VALVE WITH SAME SIZE PVC BALL VALVE
- WEATHERMATIC 11000 SERIES ELECTRIC, "TREE BUBBLER ZONE" VALVE WITH SAME SIZE PVC BALL VALVE
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- NETAFIM LVCZ SERIES DRIP VALVE ASSEMBLY WITH 42 PSI REGULATOR , 140 MESH FILTER, AND PVC BALL VALVE
  USE MODEL LVCZS8010075-LF FOR DRIP ZONES WITH .25 TO 4 GPM FLOW RATE
  USE MODEL LVCZS8010075-HF FOR DRIP ZONES WITH 5 TO 12 GPM FLOW RATE
  USE MODEL LVCZ-150 FOR DRIP ZONES WITH 13 TO 35 GPM FLOW RATE
- RAINBIRD 44-NP QUICK COUPLING VALVE WITH LOCKING PURPLE COVER AND 1" PVC BALL VALVE
- FEBCO MODEL 860 R.P.Z. BACKFLOW DEVICE INSTALLED PER CITY CODE WITH HOT BOX HB-1 ENCLOSURE,
  WITH SAME SIZE WILKINS 850 SERIES BRONZE BALL VALVE.
- IRRIGATION WATER METER AND TAP, SIZE AS NOTED ON THE PLAN
- WEATHERMATIC SL4800-SOLAR SERIES AUTOMATIC CONTROLLER IN SLPED-ENC BASE AND SLPED-ENC ENCLOSURE
  WITH SLW5 WIRELESS WEATHER STATION, SL-AIRCARD1 WITH FLOW. SOLAR PANEL SHALL BE WEATHERMATIC
  SOLARPAN-50. LOCATE SENSOR AS FIELD DIRECTED BY THE LANDSCAPE ARCHITECT
- MASTER ELECTRIC VALVE (SAME SIZE AS WATER METER) AND DATA INDUSTRIAL FLOW METER DEVICE
- CLASS 200 PVC MAINLINE PIPE
- CLASS 200 (EXCEPT 1/2 INCH #315) PVC LATERAL PIPE
- 1 X 4" SCHEDULE 40 SLEEVE PIPE UNLESS NOTED OTHERWISE
- 2 X 4" SCHEDULE 40 SLEEVE PIPES UNLESS NOTED OTHERWISE

L.I.C. SHALL SELECT PRO-SPRAY SPRAY NOZZLES FOR "HEAD-TO-HEAD" COVERAGE, ADJUSTED FOR NO OVERSPRAY ONTO WALLS AND WALKS. NO OVERSPRAY INTO STREETS IS PERMITTED.

CHANGE ALTERNATES:

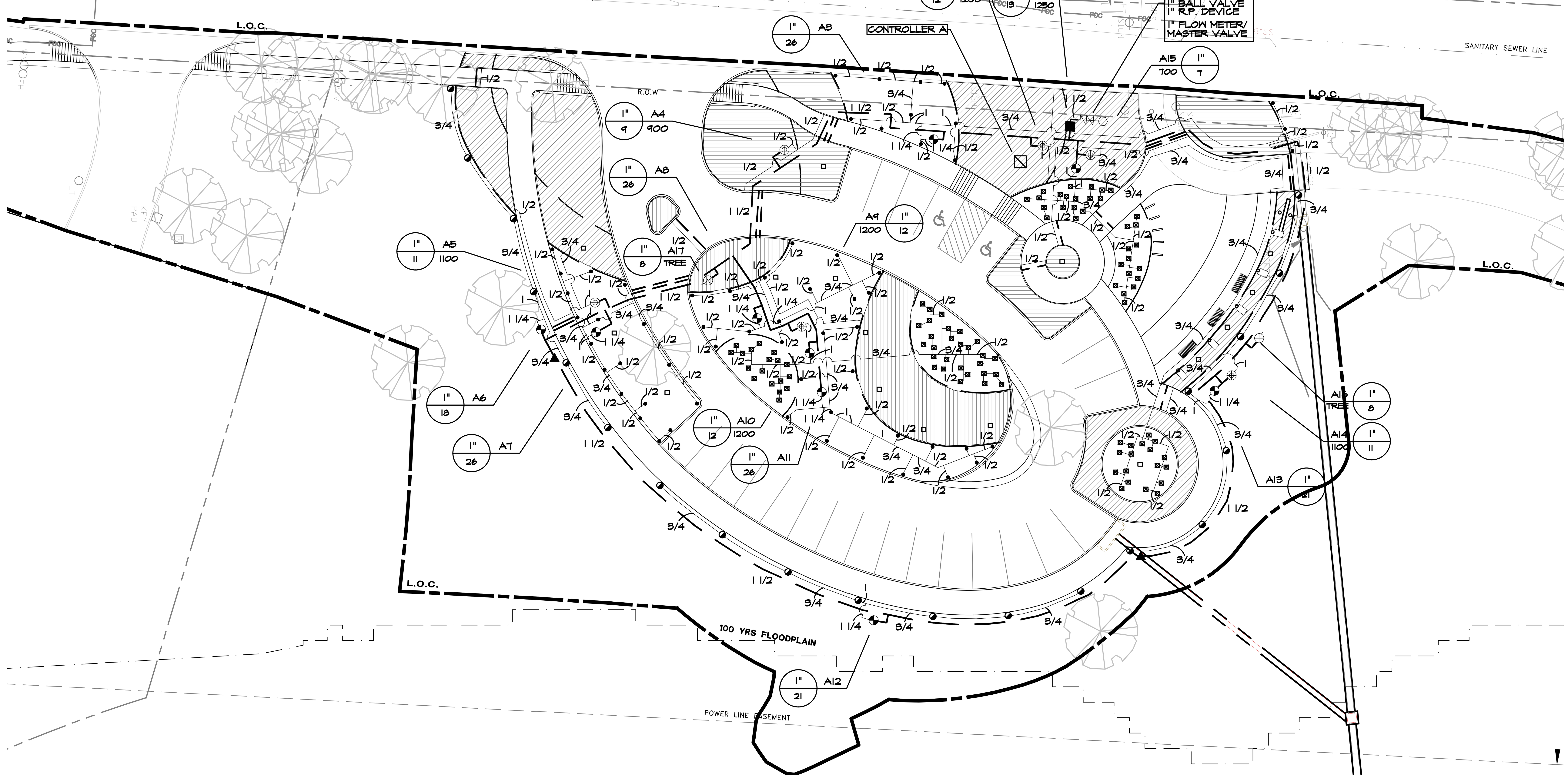
1. THE CONTRACTOR SHALL REPLACE EACH PROPOSED RAINBIRD #1401 PRESSURE COMPENSATING BUBBLER NOZZLE WITH TWO NETAFIM WPC .5 GPM TECHFLOW DRIP EMITTERS. SET EMITTERS ON OPPOSITE SIDES OF EACH PLANT, WITHIN ROOT ZONE, 1" ABOVE GRADE. LATERAL PIPE SHALL BE 1/2" POLYETHYLENE, SET 4" BELOW grade. CONNECT EMITTERS TO LATERAL PIPE WITH 1/4" DISTRIBUTION TUBE, NOT EXCEEDING 4 LINEAR FEET EACH. ELECTRIC VALVES SERVING THESE DRIP EMITTERS SHALL BE NETAFIM LCVZS80-LF SERIES.
2. THE CONTRACTOR SHALL REPLACE PROPOSED RAINBIRD MPR SPRAY NOZZLES WITH RAINBIRD R-VAN17-24 NOZZLES, ADJUSTING HEAD SPACING TO ALLOW A MAXIMUM OF 20 FEET BETWEEN HEADS. MAINTAIN HEAD-TO-HEAD COVERAGE WITH NO OVERSPRAY.



KEY MAP

EPA WaterSense PARTNER

IRRIGATION IN TEXAS IS REGULATED BY THE TEXAS COMMISION ON ENVIRONMENTAL QUALITY (TCEQ) (MC-178) P.O. BOX 13087 T.C.E.Q.'S WEB SITE IS: WWW.TCEQ.STATE.TX.US



1 PARKING & TRAILHEAD
PLAN

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

NOTES:

James Pole
IRRIGATION CONSULTANTS
IRRIGATION DESIGN, CONSULTING, AND LANDSCAPE WATER MANAGEMENT
TEXAS L.I.C. #658
100 N. LOCUST ST., SUITE 3
DENTON, TEXAS 76201
PHONE: 940.243.2364
FAX: 940.382.2475
james@jamespoleirrigation.com

TEMPORARY BENCHMARKS:

TBG
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2001 bryan street
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dallas, tx 75201
(214) 744-0757 tbgpartners.com

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REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LI 1.1
LANDSCAPE IRRIGATION PLAN

BGE, Inc.
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Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

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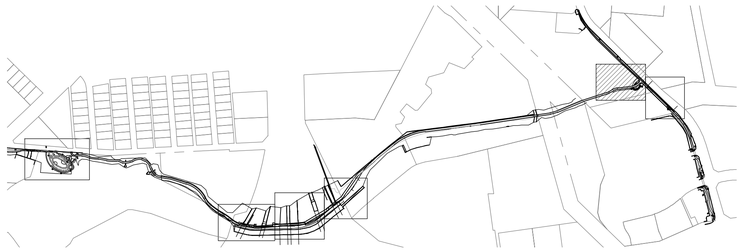
	SEP. 2023		D13785	203 of 207

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO. ETC



KEY MAP

LEGEND

- ~~RAINBIRD #1401 PRESSURE COMPENSATING SHRUB BUBBLER NOZZLE.~~ SEE CHANGE ALT. NOTE #1
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- RAINBIRD RWS-M-B-1402 SERIES ROOT WATERING SYSTEM (TWO PER TREE).
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- ~~RAINBIRD 1800-SAM-PRS SERIES POP-UP SPRAY HEAD WITH RAINBIRD MPR SERIES NOZZLE AS NOTED BELOW~~
  SEE CHANGE ALT. NOTE #2
- NETAFIM TECHLINE TLHCVXR5-12 SERIES DRIP TUBE IN SHRUB BED INSTALLED AT 2" DEPTH
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  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
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  USE MODEL LVCZS80100T5-LF FOR DRIP ZONES WITH .25 TO 4 GPM FLOW RATE
  USE MODEL LVCZS80100T5-HF FOR DRIP ZONES WITH 5 TO 12 GPM FLOW RATE
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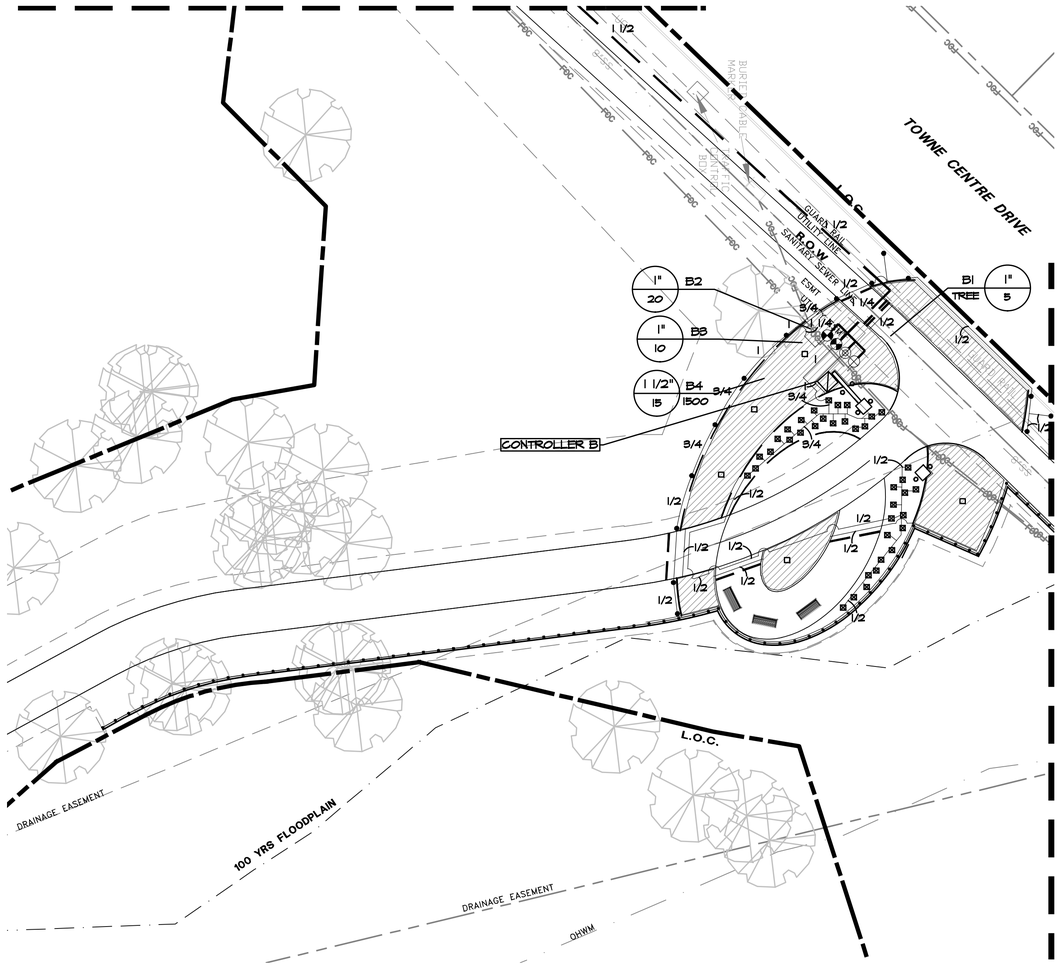
- RAINBIRD 44-NP QUICK COUPLING VALVE WITH LOCKING PURPLE COVER AND 1" PVC BALL VALVE
- FEBCO MODEL 860 R.P.Z. BACKFLOW DEVICE INSTALLED PER CITY CODE WITH HOT BOX HB-1 ENCLOSURE, WITH SAME SIZE WILKINS 850 SERIES BRONZE BALL VALVE.
- IRRIGATION WATER METER AND TAP, SIZE AS NOTED ON THE PLAN
- WEATHERMATIC SL4800-SOLAR SERIES AUTOMATIC CONTROLLER IN SLPED-ENC BASE AND SLPED-ENC ENCLOSURE WITH SLWS WIRELESS WEATHER STATION, SL-AIRCARD1 WITH FLOW. SOLAR PANEL SHALL BE WEATHERMATIC SOLARPAN-50. LOCATE SENSOR AS FIELD DIRECTED BY THE LANDSCAPE ARCHITECT
- MASTER ELECTRIC VALVE (SAME SIZE AS WATER METER) AND DATA INDUSTRIAL FLOW METER DEVICE
- CLASS 200 PVC MAINLINE PIPE
- CLASS 200 (EXCEPT 1/2 INCH #315) PVC LATERAL PIPE
- 1 X 4" SCHEDULE 40 SLEEVE PIPE UNLESS NOTED OTHERWISE
- 2 X 4" SCHEDULE 40 SLEEVE PIPES UNLESS NOTED OTHERWISE

L.I.C. SHALL SELECT PRO-SPRAY SPRAY NOZZLES FOR "HEAD-TO-HEAD" COVERAGE, ADJUSTED FOR NO OVERSPRAY ONTO WALLS AND WALKS. NO OVERSPRAY INTO STREETS IS PERMITTED.

CHANGE ALTERNATES:
1. THE CONTRACTOR SHALL REPLACE EACH PROPOSED RAINBIRD #1401 PRESSURE COMPENSATING BUBBLER NOZZLE WITH TWO NETAFIM WPC .5 GPM TECHFLOW DRIP EMITTERS. SET EMITTERS ON OPPOSITE SIDES OF EACH PLANT, WITHIN ROOT ZONE, 1" ABOVE GRADE. LATERAL PIPE SHALL BE 1/2" POLYETHYLENE, SET 4" BELOW grade. CONNECT EMITTERS TO LATERAL PIPE WITH 1/4" DISTRIBUTION TUBE, NOT EXCEEDING 4 LINEAR FEET EACH. ELECTRIC VALVES SERVING THESE DRIP EMITTERS SHALL BE NETAFIM LCVZS80-LF SERIES.
2. THE CONTRACTOR SHALL REPLACE PROPOSED RAINBIRD MPR SPRAY NOZZLES WITH RAINBIRD R-VAN17-24 NOZZLES, ADJUSTING HEAD SPACING TO ALLOW A MAXIMUM OF 20 FEET BETWEEN HEADS. MAINTAIN HEAD-TO-HEAD COVERAGE WITH NO OVERSPRAY.



1 TRAILHEAD & OVERLOOK
PLAN

EPA WaterSense PARTNER

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NOTES:

James Pole
IRRIGATION CONSULTANTS
IRRIGATION DESIGN, CONSULTING, AND LANDSCAPE WATER MANAGEMENT
TEXAS L.I.C. #658
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TEMPORARY BENCHMARKS:

TBG
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100% SUBMITTAL

FOR PRE-ADVERTISEMENT REVIEW

STATE OF TEXAS — JAMES POLE — 658 — LICENSED IRRIGATION CONSULTANT — 11/17/2023

11/17/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS Real. Texas. Service.

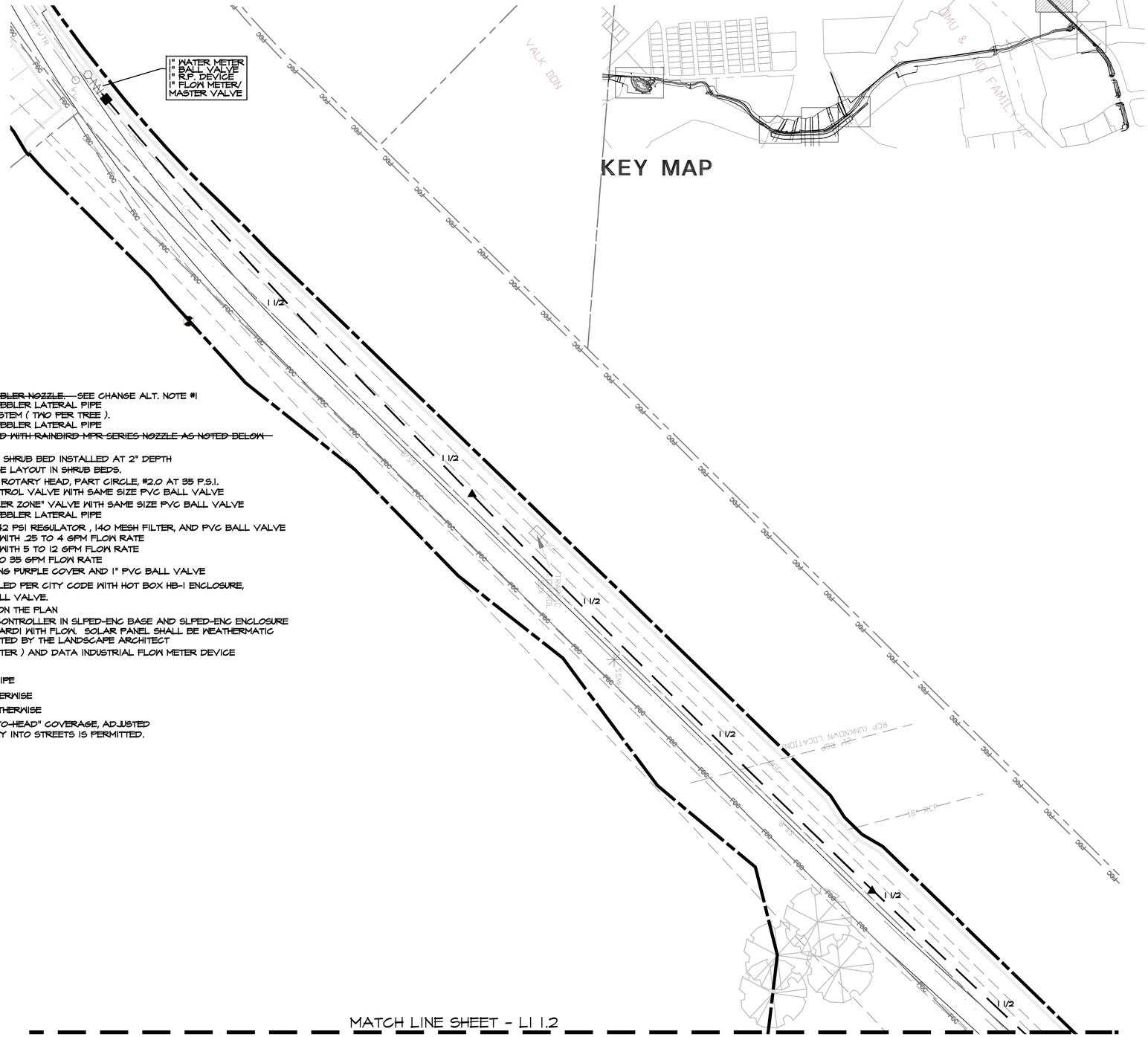
HERITAGE TRAIL PHASE II

LI 1.2
LANDSCAPE IRRIGATION PLAN

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

DESIGNED: JC, SA	DATE	SCALE	PROJECT NO.	Sheet
DRAWN: JC, XY, SK	SEP. 2023		D13785	204 of 207
CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC



KEY MAP

LEGEND

- ~~RAINBIRD #1401 PRESSURE COMPENSATING SHRUB BUBBLER NOZZLE.~~ SEE CHANGE ALT. NOTE #1
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- RAINBIRD RWS-M-B-1402 SERIES ROOT WATERING SYSTEM (TWO PER TREE).
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- ~~RAINBIRD 1800-SAM-PRS SERIES POP UP SPRAY HEAD WITH RAINBIRD MPR SERIES NOZZLE AS NOTED BELOW~~
  SEE CHANGE ALT. NOTE #2
- NETAFIM TECHLINE TLHCVXR5-12 SERIES DRIP TUBE IN SHRUB BED INSTALLED AT 2" DEPTH
  SEE INSTALLATION NOTE #16 REGARDING DRIP TUBE LAYOUT IN SHRUB BEDS.
- RAINBIRD 5004 PRS SERIES, ADJUSTABLE 4" POP UP ROTARY HEAD, PART CIRCLE, #2.0 AT 35 P.S.I.
- WEATHERMATIC 11000 SERIES ELECTRIC REMOTE CONTROL VALVE WITH SAME SIZE PVC BALL VALVE
- WEATHERMATIC 11000 SERIES ELECTRIC, "TREE BUBBLER ZONE" VALVE WITH SAME SIZE PVC BALL VALVE
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- NETAFIM LVCZ SERIES DRIP VALVE ASSEMBLY WITH 42 PSI REGULATOR , 140 MESH FILTER, AND PVC BALL VALVE
  USE MODEL LVCZS8010075-LF FOR DRIP ZONES WITH .25 TO 4 GPM FLOW RATE
  USE MODEL LVCZS8010075-HF FOR DRIP ZONES WITH 5 TO 12 GPM FLOW RATE
  USE MODEL LVCZ-150 FOR DRIP ZONES WITH 13 TO 35 GPM FLOW RATE
- RAINBIRD 44-NP QUICK COUPLING VALVE WITH LOCKING PURPLE COVER AND 1" PVC BALL VALVE
- FEBCO MODEL 860 R.P.Z. BACKFLOW DEVICE INSTALLED PER CITY CODE WITH HOT BOX HB-1 ENCLOSURE,
  WITH SAME SIZE WILKINS 850 SERIES BRONZE BALL VALVE.
- IRRIGATION WATER METER AND TAP, SIZE AS NOTED ON THE PLAN
- WEATHERMATIC SL4800-SOLAR SERIES AUTOMATIC CONTROLLER IN SLPED-ENC BASE AND SLPED-ENC ENCLOSURE
  WITH SLWB WIRELESS WEATHER STATION, SL-AIRGARD1 WITH FLOW. SOLAR PANEL SHALL BE WEATHERMATIC
  SOLARPAN-50. LOCATE SENSOR AS FIELD DIRECTED BY THE LANDSCAPE ARCHITECT
- MASTER ELECTRIC VALVE (SAME SIZE AS WATER METER) AND DATA INDUSTRIAL FLOW METER DEVICE
- CLASS 200 PVC MAINLINE PIPE
- CLASS 200 (EXCEPT 1/2 INCH #315) PVC LATERAL PIPE
- 1 X 4" SCHEDULE 40 SLEEVE PIPE UNLESS NOTED OTHERWISE
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L.I.C. SHALL SELECT PRO-SPRAY SPRAY NOZZLES FOR "HEAD-TO-HEAD" COVERAGE, ADJUSTED FOR NO OVERSPRAY ONTO WALLS AND WALKS. NO OVERSPRAY INTO STREETS IS PERMITTED.

CHANGE ALTERNATES:

1. THE CONTRACTOR SHALL REPLACE EACH PROPOSED RAINBIRD #1401 PRESSURE COMPENSATING BUBBLER NOZZLE WITH TWO NETAFIM NPC .5 GPM TECHFLOW DRIP EMITTERS. SET EMITTERS ON OPPOSITE SIDES OF EACH PLANT, WITHIN ROOT ZONE, 1" ABOVE GRADE. LATERAL PIPE SHALL BE 1/2" POLYETHYLENE, SET 4" BELOW grade. CONNECT EMITTERS TO LATERAL PIPE WITH 1/4" DISTRIBUTION TUBE, NOT EXCEEDING 4 LINEAR FEET EACH. ELECTRIC VALVES SERVING THESE DRIP EMITTERS SHALL BE NETAFIM LCVZS80-LF SERIES.
2. THE CONTRACTOR SHALL REPLACE PROPOSED RAINBIRD MPR SPRAY NOZZLES WITH RAINBIRD R-VAN17-24 NOZZLES, ADJUSTING HEAD SPACING TO ALLOW A MAXIMUM OF 20 FEET BETWEEN HEADS. MAINTAIN HEAD-TO-HEAD COVERAGE WITH NO OVERSPRAY.

EPA WaterSense PARTNER

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1 TRAILHEAD & OVERLOOK
PLAN

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

NOTES:

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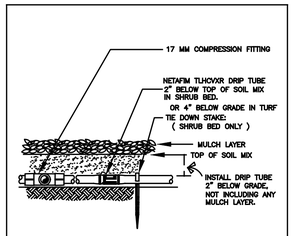
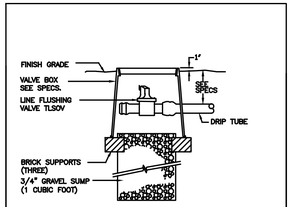
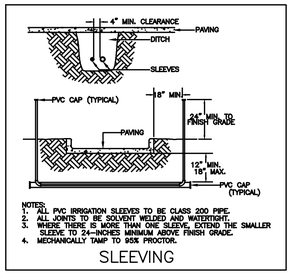


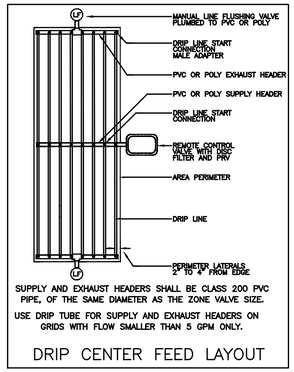
DRIP TUBE



MANUAL LINE FLUSH VALVE



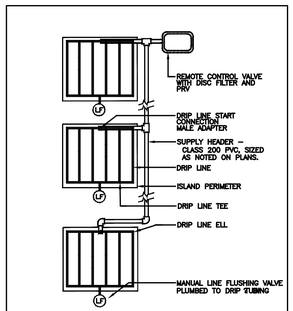
SLEEVING



SUPPLY AND EXHAUST HEADERS SHALL BE CLASS 200 PVC PIPE, OF THE SAME DIAMETER AS THE ZONE VALVE SIZE.

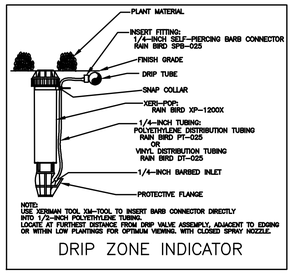
USE DRIP TUBE FOR SUPPLY AND EXHAUST HEADERS ON GRIDS WITH FLOW SMALLER THAN 5 GPM ONLY.

DRIP CENTER FEED LAYOUT

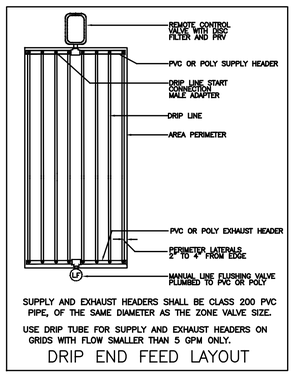


USE DRIP TUBE FOR SUPPLY AND EXHAUST HEADERS ON GRIDS WITH FLOW SMALLER THAN 5 GPM ONLY.

DRIP ISLAND LAYOUT



DRIP ZONE INDICATOR



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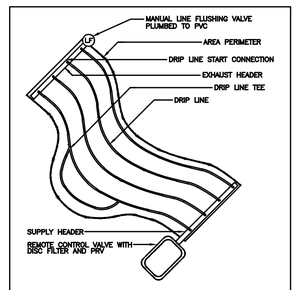
USE DRIP TUBE FOR SUPPLY AND EXHAUST HEADERS ON GRIDS WITH FLOW SMALLER THAN 5 GPM ONLY.

DRIP END FEED LAYOUT



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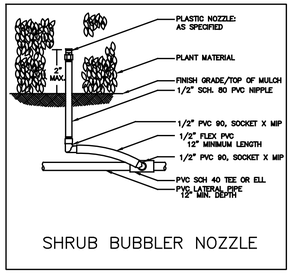
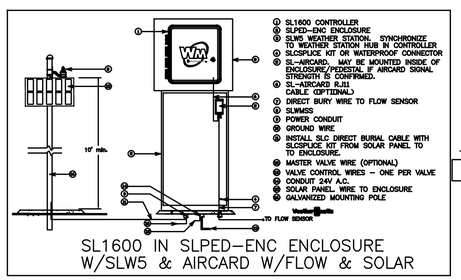
CURVED AREA DRIP LAYOUT

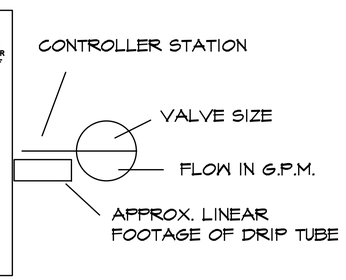


SHRUB BUBBLER NOZZLE

REFERENCE SHEET LI 1.5 FOR REMAINING CITY OF MESQUITE STANDARD INSTALLATION DETAILS.



SL1600 IN SLPED-ENC ENCLOSURE W/SLW5 & AIRCARD W/FLOW & SOLAR



DESIGN PRESSURE = 60 PSI
MIN. STATIC PRESSURE = 65 PSI

EPA WaterSense PARTNER

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INSTALLATION NOTES

1. COORDINATE IRRIGATION INSTALLATION WITH PLANTING PLAN AND SITE CONDITIONS TO PROVIDE COMPLETE COVERAGE WITH MINIMUM OVERSPRAY. THE IRRIGATION CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS TO ENSURE PROPER COVERAGE AT NO ADDITIONAL COST TO THE OWNER.
   THE IRRIGATION CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE MANDATED IRRIGATION ORDINANCES AND CODES, AND WILL SECURE ALL REQUIRED PERMITS. L.I.C. SHALL PAY ANY ASSOCIATED FEES UNLESS OTHERWISE NOTED. ALL LOCAL CODES SHALL PREVAIL OVER ANY DISCREPANCIES HEREIN AND SHALL BE ADDRESSED BEFORE ANY CONSTRUCTION BEGINS.
2. NO MACHINE TRENCHING SHALL BE PERMITTED WITHIN THE ROOT ZONE OF EXISTING TREES. HAND-DIG ONLY, WITHIN THE ROOT ZONES OF EXISTING TREES. NO ROOTS OVER 1" DIAMETER SHALL BE CUT. STAKE ALL PROPOSED TRENCH ROUTES NEAR EXISTING TREES FOR APPROVAL BY THE LANDSCAPE ARCHITECT BEFORE DIGGING BEGINS.
3. CONFIRM MINIMUM STATIC WATER PRESSURE OF 65 PSI AT THE HIGHEST ELEVATION OF THE SYSTEM LIMITS, AND MAXIMUM STATIC WATER PRESSURE OF 90 P.S.I. AT THE LOWEST ELEVATION OF THE SYSTEM LIMITS AT LEAST 7 DAYS BEFORE BEGINNING WORK. IF STATIC WATER PRESSURE IS OUTSIDE THE RANGE STATED ABOVE, DO NOT PROCEED UNTIL DIRECTED BY THE LANDSCAPE ARCHITECT.
4. LATERAL PIPE SHALL BE INSTALLED AT A MINIMUM DEPTH OF 12 INCHES. MAINLINE PIPE AND WIRES SHALL BE INSTALLED AT A MINIMUM DEPTH OF 18 INCHES. NO MACHINE TRENCHING SHALL BE PERMITTED WITHIN EXISTING TREE ROOT ZONES. WHEN HAND - TRENCHING WITHIN EXISTING TREE ROOT ZONES, NO ROOTS LARGER THAN 1" DIAMETER SHALL BE CUT.
5. UNSLEEVED PIPES MAY BE SHOWN UNDER PAVEMENT FOR GRAPHIC CLARITY ONLY. INSTALL THESE PIPES IN ADJACENT LANDSCAPED AREAS.
6. ELECTRIC POWER SHALL BE PROVIDED WITHIN FIVE FEET OF CONTROLLER LOCATION BY GENERAL CONTRACTOR. L.I.C. TO PROVIDE FINAL HARD-WIRE TO CONTROLLER.
7. 24 VOLT VALVE WIRE SHALL BE A MINIMUM OF #14 GAUGE, U.F. APPROVED FOR DIRECT BURIAL, SINGLE CONDUCTOR "IRRIGATION WIRE". WIRE SPLICES SHALL INCLUDE DBY CONNECTORS AS MANUFACTURED BY 3M COMPANY. ALL FIELD SPLICES SHALL BE LOCATED IN A ROUND VALVE BOX OF SUFFICIENT SIZE TO ALLOW INSPECTION.
8. VALVE BOXES SHALL BE INSTALLED FLUSH WITH GRADE, SUPPORTED BY BRICKS IF NEEDED, WITH 3 INCHES OF CLEAN PEA GRAVEL LOCATED BELOW THE VALVE. USE 12" x 17" RECTANGULAR VALVE BOXES WITH PURPLE LID FOR QUICK COUPLING VALVES AND WITH GREEN LIDS FOR ELECTRIC VALVES UNLESS NOTED OTHERWISE.
9. USE RIGID SCH. 80 PVC SWING JOINT ASSEMBLIES TO CONNECT ALL ROTARY HEADS AND QUICK COUPLERS AS DETAILED.
10. ALL SPRAY HEADS SHALL BE CONNECTED WITH A 1/2" X 6" POLYETHYLENE NIPPLE AS DETAILED.
11. PROVIDE ONE QUICK COUPLER KEY WITH SWIVEL HOSE ELL FOR EVERY SIX Q.C. VALVES. (MINIMUM ONE SET).
12. CONTRACTOR IS TO CONTACT APPROPRIATE AUTHORITIES AND LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
13. LATERAL PIPE TO ROOT WATERING SYSTEM BUBBLERS IS OMITTED FOR GRAPHIC CLARITY. CONNECT TREE BUBBLER HEADS TO VALVES AS SHOWN WITH CLASS 200 PVC PIPE SIZED TO ALLOW A MAXIMUM FLOW VELOCITY OF 5 FEET PER SECOND
14. THE PROPOSED LOCATIONS OF ALL ABOVE- GROUND EQUIPMENT INCLUDING BACKFLOW PREVENTORS, CONTROLLERS AND WEATHER SENSORS SHALL BE STAKED BY THE CONTRACTOR FOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE BEFORE THESE ITEMS ARE INSTALLED.
15. ALL HEADS SHALL BE INSTALLED A MINIMUM OF 4" FROM PAVEMENT EDGES. (6" OR GREATER WHERE REQUIRED BY LOCAL CODE)
    FINAL HEAD ADJUSTMENTS BY THE CONTRACTOR SHALL INCLUDE THE ADDITION OF CHECK VALVES WHERE NEEDED TO PREVENT EXCESSIVE LOW HEAD DRAINAGE. THE CONTRACTOR SHALL BUDGET FOR, AND INSTALL CHECK VALVES FOR UP 10 % OF THE TOTAL NUMBER OF HEADS WHEN NEEDED, WITH NO ADDITIONAL COST TO THE OWNER.
16. WHERE SHOWN ON THE PLANS, MASS SHRUB / GROUNDCOVER BEDS SHALL INCLUDE NETAFIM TECHLINE TLHCVXR SERIES DRIP TUBE WITH PRE-INSTALLED .55 GPH DRIP EMITTERS AT 12" INTERVALS (TLHCVXR5-12), INSTALLED IN CENTER-FED GRIDS WITH ROWS SPACED 18" APART. INDIVIDUAL DRIP TUBE RUNS SHALL NOT EXCEED 150 L.F. PVC LATERAL "TRUNK" LINES SHALL BE INSTALLED 10" DEEP. DRIP TUBE SHALL BE SET 2" BELOW FINISHED SOIL GRADE (NOT INCLUDING MULCH LAYER), SECURELY STAKED EVERY 18". NETAFIM #TLOSOMFV-I FLUSH VALVES SHALL BE INSTALLED AT THE FARTHEST POINTS FROM THE ZONE VALVE. USE 17 MM BARBED FITTINGS FOR DRIP LINE CONNECTIONS, SET THE MAXIMUM OPERATING PRESSURE AT 30 PSI. TECHLINE CV SHALL BE INSTALLED PERPENDICULAR TO SLOPE FACE. INSTALL TLCV IN-LINE CHECK VALVES FOR EVERY 4.5 FEET OF DRIP LINE ELEVATION CHANGE WITHIN THE ZONE. USE NETAFIM STAPLES (#TLS6) TO SECURE TUBING EVERY 18" EACH DRIP ZONE SHALL INCLUDE ONE MAINTENANCE "FLAG" WHICH SHALL CONSIST OF A 12" POP-UP SPRAY HEAD AND COMPLETELY CLOSED SPRAY NOZZLE. THE POP-UP HEAD SHALL BE CONNECTED TO THE DRIP ZONE PIPE, SET FLUSH WITH GRADE, AND LOCATED AT THE FARTHERST DISTANCE FROM THE DRIP VALVE ASSEMBLY. INSTALL THE "FLAG" HEAD ADJACENT TO EDGING OR IN LOW PLANTINGS FOR EASE OF VIEWING.

LEGEND

- ⊠ ~~RAINBIRD #1401 PRESSURE COMPENSATING SHRUB BUBBLER NOZZLE.~~ SEE CHANGE ALT. NOTE #1
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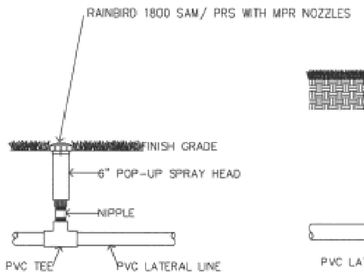
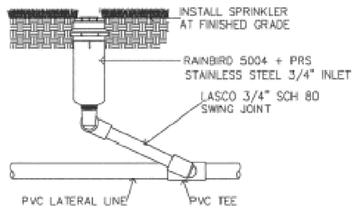
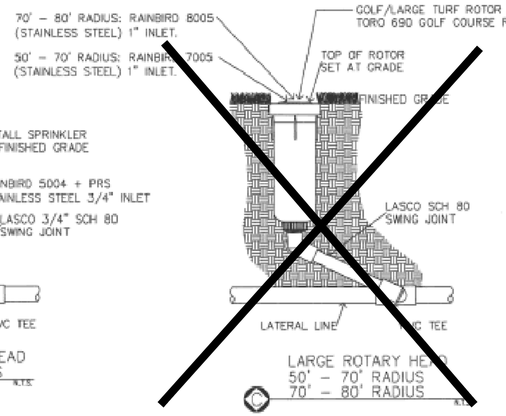


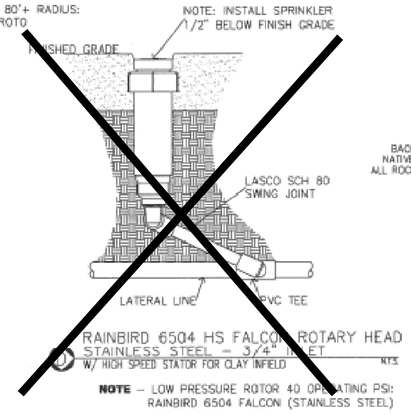
POP-UP SPRAY HEAD
VARIOUS RADIUSES
N.T.S.



SMALL ROTARY HEAD
20' – 50' RADIUS
N.T.S.

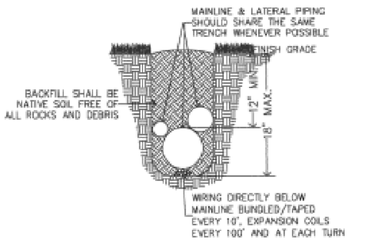


LARGE ROTARY HEAD
50' – 70' RADIUS
70' – 80' RADIUS
N.T.S.

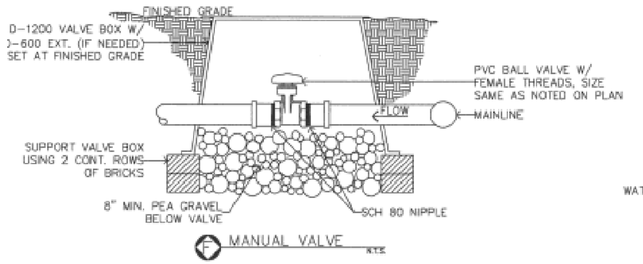


RAINBIRD 6504 HS FALCON ROTARY HEAD
STAINLESS STEEL – 3/4" INLET
W/ HIGH SPEED STATOR FOR CLAY INFIELD
N.T.S.

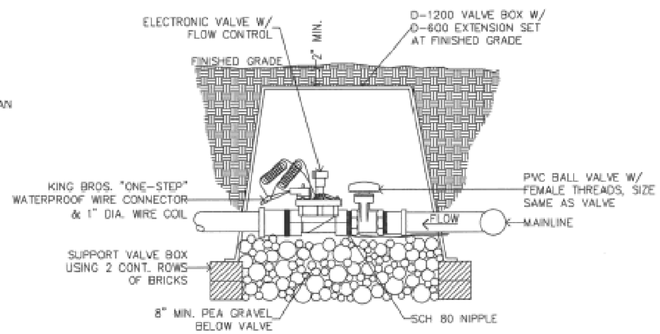
NOTE – LOW PRESSURE ROTOR 40 OPERATING PSI:
RAINBIRD 6504 FALCON (STAINLESS STEEL)



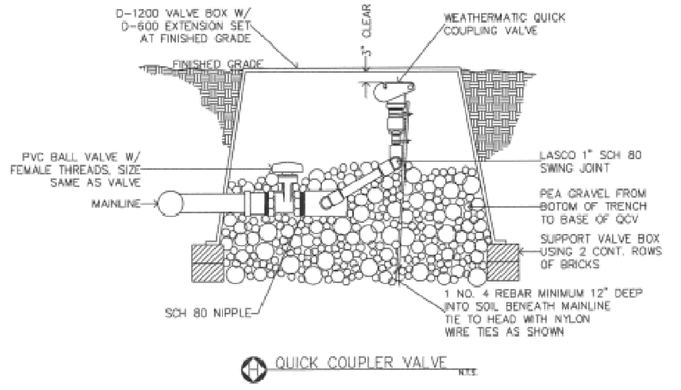
TYPICAL TRENCH SECTION
N.T.S.



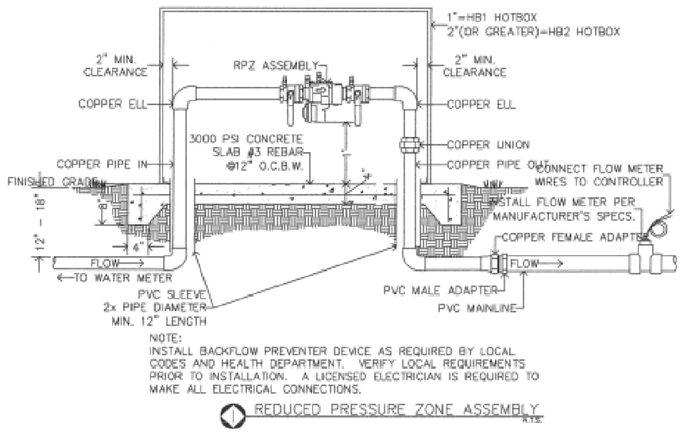
MANUAL VALVE
N.T.S.



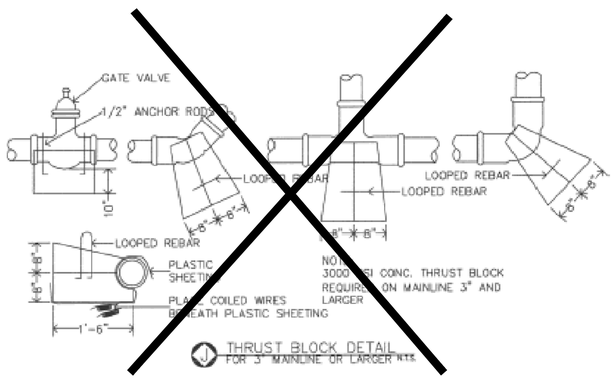
SECTION VALVE
N.T.S.



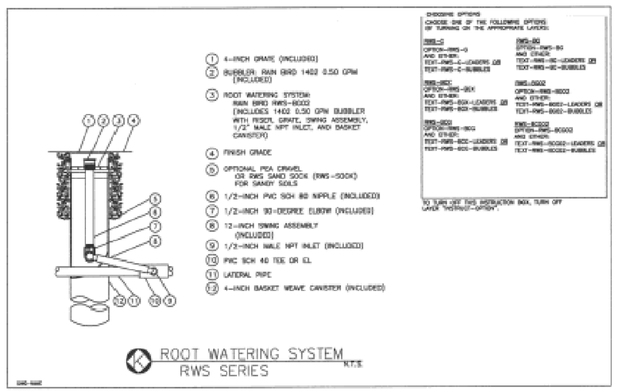
QUICK COUPLER VALVE
N.T.S.



REDUCED PRESSURE ZONE ASSEMBLY
N.T.S.



THRUST BLOCK DETAIL
FOR 3" MAINLINE OR LARGER N.T.S.



ROOT WATERING SYSTEM
RWS SERIES
N.T.S.

NOTE: THESE DETAILS ARE FOR USE ON CITY OF MESQUITE PROJECTS ONLY.

NOTES:

James Pole
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100% SUBMITTAL

FOR PRE-ADVERTISEMENT REVIEW

11/1/2023

REV.	DESCRIPTION	BY	DATE

MESQUITE TEXAS
Real. Texas. Service.

HERITAGE TRAIL PHASE II

LI 1.5
LANDSCAPE IRRIGATION NOTES AND DETAILS

BGE, Inc.
2595 Dallas Pkwy, Suite 101, Frisco, TX 75034
Tel: 972-464-4800 ● www.bgeinc.com
TBPE Registration No. F-1046

DESIGNED: JC, SA	DATE	SCALE	PROJECT NO.	Sheet
DRAWN: JC, XY, SK	SEP. 2023		D13785	207 of 207
CHECKED: MM, BP				

HERITAGE TRAIL PHASE II PROJECT - CITY PROJECT NO.,ETC