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1/4/2023

INDEX OF SHEETS

CITY OFFICIALS

MAYOR
Daniel Alemán Jr.

DISTRICT 1
Jeff Casper

DISTRICT 2
Kenny Green

DISTRICT 3
Jennifer Vidler

DISTRICT 4
Tandy Boroughs

DISTRICT 5
B.W. Smith

DISTRICT 6
Debbie Anderson

CITY MANAGER
Cliff Keheley

DIRECTOR OF PUBLIC WORKS
Curt Cassidy, P.E.

FAITHON P. LUCAS, SR. BLVD.
FROM McKENZIE RD.
TO E. CARTWRIGHT RD.
PAVING AND DRAINAGE IMPROVEMENTS

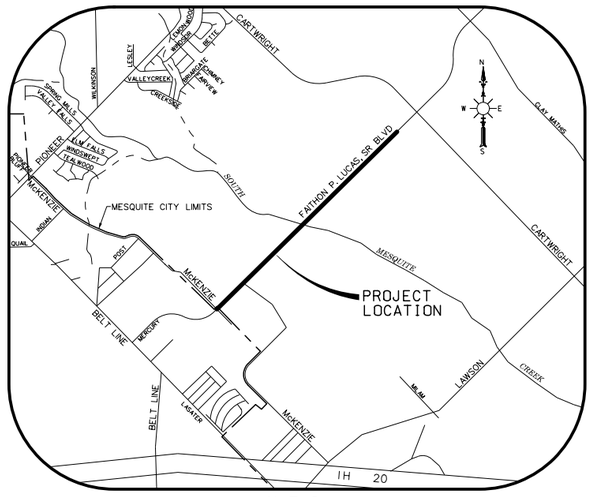
JANUARY 2023

CITY CONTRACT NO. 2023-029

CITY OF MESQUITE
DALLAS COUNTY, TEXAS

DESIGN SPEED = 45 MPH

PROJECT LOCATION



N.T.S.

MESQUITE
TEXAS
Real. Texas. Flavor.

Pacheco Koch
a Westwood company
7557 RAMBLER ROAD SUITE 1400
DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008000

STATE OF TEXAS
CHRISTOPHER J. CHA
112732
LICENSED
PROFESSIONAL ENGINEER
12/27/2022

APM & Associates, Inc.
Engineering . Planning . CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. •3091

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

Texas 811
Know what's below.
Call before you dig.

ROADWAY	=	7804.11 FT.	= 1.478 MI.
BRIDGE	=	600.00 FT.	= 0.114 MI.
TOTAL	=	8404.11 FT.	= 1.592 MI.

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-001	1 OF 252

j:\2021\21106 fp lucas blvd - pkce\SHEETS-MISC\21106COVER.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 Government (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. No franchise utility relocations have taken place in preparation for the project, and the location of existing utilities may not be shown on the plans. It is the CONTRACTOR's responsibility to notify utility companies to arrange for exact locations at least 48 hours prior to beginning construction. The CONTRACTOR is fully responsible to coordinate necessary utility relocation with the utility companies and will make all efforts to coordinate necessary relocation of utilities with the utility owner. The OWNER shall not be held responsible by the CONTRACTOR for any delays created by a franchise utility company relocating their facilities. The time of construction given for the project includes all necessary utility work involved with franchise utility companies. The OWNER will make an effort to assist the CONTRACTOR in coordinating relocations before and during the project.

Table Utility Coordination and Replace with:

Entity	Contact Information
Texas One Call system	811
City of Mesquite Water/Sewer Locates	972-216-6278 972-216-6973 972-216-8797
City of Mesquite: Record Drawings	GIShelpdesk@cityofmesquite.com
City of Mesquite Traffic Signal Conduit & Loop Detectors	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 •4 and •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 details, 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 details, refer to NCTCOG 106.5.

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 details, 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).

17. The CONTRACTOR shall schedule the work such that inconvenience to the public and adjoining property owner's shall be at a minimum. Access to all businesses shall be provided at all times during business hours.

18. The CONTRACTOR will schedule work through residential areas in a manner that would expedite construction operations and will restore drive approach access at the end of each working day during execution of the project (except during paving operations of the specific residential drive approach). The CONTRACTOR shall maintain temporary drive approaches to the full satisfaction of the OWNER's Representative. Private drives to residences shall not be closed for more than 10 days at any one time during paving operations.

19. The CONTRACTOR will notify the OWNER's Representative Office in writing one (1) week prior to any street or driveway closure.

GENERAL NOTES FOR EROSION CONTROL/STORM WATER POLLUTION PREVENTIONS:

20. 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.

21. 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, debris tracked offsite shall be cleaned up by the contractor immediately.

22. All erosion control devices shown on the plans released for construction shall be installed in accordance with the SW3P 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 SW3P and Construction General Permit. The contractor shall inspect the site daily and keep the site free of trash and construction debris.

23. Contractor must execute and keep a copy of the Construction Site Notice (CSN) for those activities disturbing more than 1 acres and a Notice of Intent (NOI) for those activities disturbing 5 acres or more.

GENERAL NOTES FOR TRAFFIC CONTROL:

24. Contractor shall provide the Project Engineer with a traffic control plan at least 10 business days before any work on a City street. Traffic control measures shall conform to the latest revision of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

25. 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.

26. In the event the construction work requires the closure of an existing street, alley, or firelane, 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.

27. 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 TMUTCD. 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 martial shall be approved by the City Engineer and be an all-weather material of a color and texture distinctively different from the permanent sidewalk.

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
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REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

GENERAL NOTES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-002	2 OF 252

GENERAL NOTES FOR PAVING:

28. Absolutely no earthwork, lime application, or other preparation of the subgrade for paving of streets, alleys, sidewalks, trails, firelanes 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.

29. All sidewalks shall comply with the American with Disabilities Act and the Texas Architectural Barriers Act. The City of Mesquite has NOT reviewed these plans for compliance with the American 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.

30. 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.

31. 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.

32. 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 no 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.

33. Reinforcing shall conform to ASTM A 615 and be a minimum grade of 60 per ASTM A 370. 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.

34. 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.

35. No vehicle traffic shall be permitted on newly paved areas for seven days after concrete pour or until 3,000 psi is achieved.

36. 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:

37. 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.

38. 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.

39. All entry into confined spaces 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.

40. Payment for trench safety shall be by the lineal feet of trench regardless of depth.

GENERAL NOTES FOR UTILITIES:

41. 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.

42. Where CONTRACTOR desires to use City water in connection with any construction work, he shall make prior arrangements with the Mesquite Water Accounting Division for so doing. Where meters are used, the charge for water will be at the regular established rate; where no meters are used, the charge will be as prescribed by ordinance; or, where no ordinance applies, payment shall be made on estimates made by the Mesquite Engineering Division.

43. No person shall open, turn off, interfere with, attach any pipe or hose to, or connect anything with any fire hydrant, stop valve or stopcock, or tap any water main belonging to the City, unless duly authorized to do so by the Mesquite Utilities Division.

44. The locations, elevations and dimensions of existing utilities shown on the plans were obtained from available utility companies and are approximate. CONTRACTOR shall verify locations prior to construction and notify ENGINEER or OWNER of potential conflicts between utilities. It shall be the CONTRACTOR's responsibility to verify locations, elevations and dimensions of adjacent and/or conflicting utilities sufficiently in advance of construction in order that adjustments can be made to provide adequate clearances. The ENGINEER shall be notified when proposed facility grades conflict with existing utility grades.

45 Any damages to existing utilities resulting from CONTRACTOR's operations shall be repaired at CONTRACTOR's expense.

46. The CONTRACTOR shall preserve and protect public and private utilities at all times during construction. Any damage to utilities resulting from CONTRACTOR's operation shall be restored at CONTRACTOR's expense.

47. CONTRACTOR shall maintain existing wastewater flows and existing wastewater services at all times at no additional cost to the OWNER.

48. CONTRACTOR shall not take the existing water main out of service until the new water main is tested and ready to be connected.

49. Wastewater Lateral Locations shown are based on existing information or are unknown . The CONTRACTOR shall determine the location and number of existing active laterals and construct new laterals to the easement line/ROW by open cut methods unless otherwise. This includes installation of cleanouts which is included in the unit cost of the laterals.

50. Casing Pipe shall be welded smooth steel meeting ASTM A36 specifications with a minimum yield strength of 36,000 psi.

51. Casing Pipe shall be sealed at each end with City approved end seals. Approved casing end seals are: Advanced Products & System, Inc. Model AW (wrap around) end seal, CCI Pipeline Systems Model ESW wrap around neoprene rubber end seal.

52. Carrier pipe shall be supported within the casing pipe with City approved spacers installed according to manufacturers recommendations. Spacers shall be made of High Density Polyethylene (HDPE) or Stainless Steel. Approved carrier pipe spacers are: "RACI" type protection spacers, Power Seal Model 4810, or approved equal.

53. All pipe joints within the casing are to be restrained with spacers.

54. All proposed water services shown are 3/4-inch minimum unless otherwise noted on the plans.

55. Length of Joint Restraints shown on the plans is the minimum required length and was obtained using the EBAA Restraint Length Calculator (See attached Results). It is the CONTRACTOR's responsibility to provide adequate restrained length for the pipe pressures indicated. Joint restraints may be either exterior (restrainer glands) or interior (locking gaskets). Concrete blocking of all fittings is required.

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

GENERAL NOTES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-003	3 OF 252

QUANTITY SUMMARY SHEET

ITEM NO.	DESCRIPTION	UNIT	PAVING SUMMARY																						ITEM NO.	EST. TOTAL
			44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	
P1	PREPARE RIGHT-OF-WAY	STA	4.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	2.5		1.4	4.6	4.6	4.6	4.6	2.0	2.4	2.0	1.6	1.9	P1	82.2
P2	EXCAVATION (ROADWAY)	CY	4430	4506	5701	10413	1286	2190	43		56		411	652		1476	6634	4656	2072	4733	1014	880	600	5	20	P2	51778
P3	EMBANKMENT (DENSITY CONTROL) (TY. D) (CL. 3)	CY	3			57	4021	668	9206	17154	10383		7976	899		70		6	371		31		5	156	400	P3	51406
P4	LIME TRT BS (TYPE A) (44 LBS/SY) (8")	SY	3001	2921	3221	3372	2877	2783	2902	2783	1766	6	2866	1500		759	2783	3049	3273	3185	1873		674	723	709	P4	47026
P5	LIME (TYPE A) (SLRY)	TON	67	65	71	75	64	62	64	62	39	1	63	33		17	62	67	72	70	41		15	16	16	P5	1041
P6	ASPH CONC (TY D) (2")	SY																				653				P6	653
P7	ASPH CONC (TY B) (4")	SY																				767				P7	767
P8	FL BS (COMPL IN PLAC) (TY D GR1 CL5) (6")	SY																				890				P8	890
P9	CONC PAV (REINF) (6")	SY																							673	P9	673
P10	CONC PAV (REINF) (8")	SY																						680		P10	680
P11	CONC PAV (REINF) (10")	SY	2815	2722	3030	3182	2664	2570	2702	2571	1650	6	2655	1389		703	2570	2860	3083	2972	1802					P11	41946
P12	UNDERCUT STREET HEADER	LF	166	31	37														25		103		27	42	31	P12	462
P13	CONC CURB (TY 1) (MONO) (6")	LF	1501	1745	1601	1648	1806	1808	1586	1717	1094	4	1771	1000		508	1797	1698	1704	1806	649		417	498	404	P13	26762
P14	MOBILIZATION	LS																								P14	1
P15	BARRICADES, SIGNS & TRAFFIC HANDLING	MO																								P15	18
P16	COLORED STAMPED CONCRETE	SY	16		29	217												67	64	70	26			12		P16	501
P17	DRVWYS (CONC) (6")	SY		222		124	90	161										236	66	53	74				21	P17	1047
P18	DRVWYS (CONC) (8")	SY																					630			P18	630
P19	CONCRETE SIDEWALK (4")	SY	247	309	263	135	287	239	257	272	207		317	167		85	305	229	204				192	136	182	P19	4033
P20	CONCRETE SIDEWALK (6")	SY	490	447	333	466	618	617	617	617	381	3	642	334		167	620	616	608	618	264					P20	8458
P21	CONCRETE SIDEWALK (VARIES)	SY		101	297	228												50					10			P21	686
P22	CURB RAMPS (TY 7)	EA	2	2	4	4	2		2	2									1							P22	19
P23	CURB RAMPS (TY 10)	EA						4																		P23	4
P24	CONC MEDIAN	SY		28	14	14			28									13	14					3		P24	114
P25	CATTLE GUARD (16')	EA					1																			P25	1

ROUNDABOUT

ITEM NO.	DESCRIPTION	UNIT	BRIDGE SUMMARY				ITEM NO.	EST. TOTAL
			EXISTING BRIDGE	ABUTMENTS 1 & 7	BENTS 2 - 6	SPANS 1 - 6		
B1	DRILL SHAFT (36")	LF		400	494		B1	894
B2	CLASS C CONCRETE	CY		64.4	187.6		B2	252.0
B3	REINF. CONC. SLAB	SF				27600	B3	27600
B4	PRESTR. CONC. BEAMS (Tx46)	LF				3582	B4	3582
B5	CONC. SURFACE TREATMENT	SY				2961	B5	2961
B6	RIPRAP (CL. B CONC.)	CY				103	B6	103
B7	SDWK COVER PLATE	LB				210	B7	210
B8	RAILING (TYPE C411 (MOD)	LF	1305			1305	B8	2610
B9	DECORATIVE HANDRAIL	LF	653			653	B9	1306
B10	SEJ-M (4 IN)	LF				116	B10	116
B11	STRUCTURE APPROACH SLAB	CY				255	B11	255

ITEM NO.	DESCRIPTION	UNIT	REMOVAL SUMMARY											ITEM NO.	EST. TOTAL
			33	34	35	36	37	38	39	40	41	42	43		
R1	REMOVE CONCRETE (PAV)	SY	5714	3502	1506						932		1353	R1	13007
R2	REMOVE CONCRETE (RIPRAP)	SY			42	380	136	8				33		R2	599
R3	REMOVE CONCRETE (MOW STRIP)	SY				67	90							R3	157
R4	REMOVE CONCRETE (SDWLK)	SY									125		240	R4	365
R5	REMOVE CONCRETE (DRVWY)	SY	207	288	97					12	730		21	R5	1355
R6	REMOVE CONCRETE (CURB)	LF	3861	2129	1022					8	708			R6	7728
R7	REMOVE BRICK PAVERS	SY	54								31			R7	85
R8	REMOVE ASPHALT (DRVWY)	SY			82					254				R8	336
R9	REMOVE INLET	EA	5	2	1									R9	8
R10	REMOVE HEADWALL	EA		2	5	2		4						R10	12
R11	REMOVE RCP	LF	1093	112	858			18	92	59	14			R11	2246
R12	REMOVE RCB	LF			276	220		61						R12	557
R13	REMOVE RAIL (EXISTING BRIDGE)	LF				228	1076							R13	1304
R14	REMOVE HANDRAILRAIL (EXISTING BRIDGE)	LF				114	538							R14	652
R15	REMOVE METAL BEAM GUARD FENCE	LF	27	29		150	232							R15	438
R16	ADJUST WATER VALVE STACK TOP	EA	3	3	1	1	1	1		2	2			R16	14
R17	ADJUST MANHOLE TOP	EA	3	5	2	1								R17	11
R18	REMOVE CATTLE GUARD	EA		1										R18	1
R19	REMOVE ODOR ELIMINATOR	EA		1										R19	1

ITEM NO.	DESCRIPTION	UNIT	SWPPP SUMMARY						ITEM NO.	EST. TOTAL
			148	149	150	151	152	153		
E1	ROCK FILTER DAMS (TYPE 2)	LF	50		150	25			E1	225
E2	TEMP SEDMT CONT FENCE (INLET PROTECTION)	LF	139	170	44	100	60		E2	513
E3	TEMP SEDMT CONT FENCE	LF	1587	3280	1003	3154	1178	427	E3	10629
E4	CONSTRUCT EXIT (TY 1)	SY	78				78	78	E4	234

ITEM NO.	DESCRIPTION	UNIT	SUGGESTED CONSTRUCTION SEQUENCING ITEMS																	ITEM NO.	EST. TOTAL
			15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
CS1	FL BS (COMPL IN PLAC (TY A GR2 CL 5) (TEMPORARY) (4")	SY	2932	1996	558	695					350									CS1	6531
CS2	HOT MIX-COLD LAID ACP (TY D) (TEMPORARY) (2")	SY	2932	1996	558	695					350									CS2	6531
CS3	HOT MIX-COLD LAID ACP (TY B) (TEMPORARY) (2")	SY	2932	1996	558	695					350									CS3	6531
CS4	WRK ZN PAV MRK (4" REFL WHITE) (BRK)	LF															20			CS4	20
CS5	WRK ZN PAV MRK (4" REFL WHITE) (DOT)	LF	45				46	78				51					50			CS5	270
CS6	WRK ZN PAV MRK (4" REFL WHITE) (SOLID)	LF	2158	1159		1106	1454	931			763		214	438	1348		200			CS6	9771
CS7	WRK ZN PAV MRK (4" REFL YELLOW) (DOT)	LF	27				31	27					25							CS7	110
CS8	WRK ZN PAV MRK (4" REFL YELLOW) (SOLID)	LF	3884	4006	4006	3996	1746	4016	3352	2180	4014	1728	4259	4000	4052	4000	1732	966	1590	CS8	53527
CS9	WRK ZN PAV MRK (6" REFL WHITE) (SOLID)	LF						151												CS9	151
CS10	WRK ZN PAV MRK (8" REFL WHITE) (SOLID)	LF						66					94							CS10	160
CS11	WRK ZN PAV MRK (24" REFL WHITE) (SOLID)	LF											22							CS11	22
CS12	WRK ZN PAV MRK (FIRE LANE) (SOLID)	LF						355												CS12	355
CS13	WRK ZN PAV MRK (ARROW)	EA						1												CS13	1
CS14	WRK ZN PAV MRK (WORD)	EA						1												CS14	1

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

QUANTITY SUMMARY

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-004	4 OF 252

QUANTITY SUMMARY SHEET

ITEM NO.	DESCRIPTION	UNIT	DRAINAGE SUMMARY																ITEM NO.	EST. TOTAL
			64	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	
D1	TRENCH EXCAV PROTECTION	LF	4	398	558	439	189	453	556	577	641	240	439	202	456	569	552	624	177	D1 7074
D2	RIPRAP (CONC) (5 IN)	CY		5															7	D2 12
D3	GROUTED ROCK RIPRAP	SY										441	18						116	D3 575
D4	CONCRETE BOX CULVERTS 6 x 6	LF							35											D4 35
D5	CONCRETE BOX CULVERTS 7 x 6	LF							18	460	455	240		202	456	275				D5 2106
D6	CONCRETE BOX CULVERTS 12 x 8	LF																	166	D6 166
D7	8" PVC	LF			21	49														D7 70
D8	RC PIPE (CL III) (24")	LF	4		100	30	92	53	75	117	186					74		158	16	D8 956
D9	RC PIPE (CL III) (27")	LF															92	50		D9 142
D10	RC PIPE (CL III) (30")	LF							60				95	70						D10 225
D11	RC PIPE (CL III) (36")	LF						44								23				D11 67
D12	RC PIPE (CL III) (42")	LF											65							D12 65
D13	RC PIPE (CL III) (48")	LF					64													D13 64
D14	RC PIPE (CL III) (54")	LF			314	360	33	120	428											D14 1255
D15	RC PIPE (CL III) (60")	LF		398	123													248		D15 769
D16	RC PIPE (CL III) (72")	LF														81		128		D16 209
D17	RC PIPE (CL IV) (36")	LF						182												D17 182
D18	RC PIPE (CL IV) (42")	LF											279							D18 279
D19	RC PIPE (CL IV) (54")	LF						54												D19 54
D20	RC PIPE (CL IV) (72")	LF														116	460	40		D20 616
D21	5' STD CURB INLET	EA	1																	D21 1
D22	10' STD CURB INLET	EA									2									D22 2
D23	10' RECESSED INLET (COMPL)	EA									1									D23 1
D24	20' RECESSED INLET (COMPL)	EA			3	2	2	2	2	2	2		2			2		2	2	D24 23
D25	DOUBLE SPECIAL "Y" INLET	EA						1										1		D25 2
D26	MANH (COMPL) TY B	EA			1		1	1	2		1		1					2		D26 9
D27	JUNCTION BOX	EA							1		1				1	1			1	D27 5
D28	CONCRETE WINGWALL (TxDOT SW-0)(4:1)(HW=10 FT)	EA																	1	D28 1
D29	SAFETY END TREATMENT (TY II)(30")(4:1)(PARALLEL)	EA							2											D29 2
D30	SAFETY END TREATMENT (TY II)(42")(4:1)(PARALLEL)	EA											1							D30 1
D31	TxDOT PW (3:1)	EA							1											D31 1
D32	TxDOT FW-0 (3:1)	EA										1								D32 1
D33	CONCRETE COLLAR)	LF																		D33 8

ITEM NO.	DESCRIPTION	UNIT	PAVMENT MARKING SUMMARY						ITEM NO.	EST. TOTAL
			77	142	143	144	145	146		
PM1	REFL PAV MARK TY I & II (W)(4")(SOLID)	LF		303	493	1372			PM1	2168
PM2	REFL PAV MARK TY I & II (W)(6")(SOLID)	LF						1113	PM2	1113
PM3	REFL PAV MARK TY I & II (W)(8")(SOLID)	LF		677	189			270	PM3	1136
PM4	REFL PAV MARK TY I & II (W)(12")(SOLID)	LF						414	PM4	414
PM5	REFL PAV MARK TY I & II (W)(24")(SOLID)	LF		97	43			57	PM5	197
PM6	REFL PAV MARK TY I & II (Y)(4")(SOLID)	LF			313	1192			PM6	1505
PM7	REFL PAV MARK TY I & II (W)(ARROW)	EA		3				3	PM7	6
PM8	REFL PAV MARK TY I & II (W)(WORD)	EA		3				3	PM8	6
PM9	RAIS PAV MARKER (TRAF BTN) TY II-C-R	EA		765	500	374	644	266	PM9	2549
PM10	RAIS PAV MARKER (TRAF BTN) TY Y	EA		24					PM10	24
PM11	RAIS PAV MARKER (TRAF BTN) TY II-A-A	EA		66					PM11	66
PM12	RAIS PAV MARKER (TRAF BTN) TY II-B-B	EA		2	2	2	3	1	PM12	10
PM13	FIRE LANE PAVEMENT MARKING	LF		355					PM13	355
PM14	YIELD TRIANGLES	EA						20	PM14	20

ITEM NO.	DESCRIPTION	UNIT	RETAINING WALL SUMMARY					ITEM NO.	EST. TOTAL
			45	46	47	59	64		
RW1	RETAINING WALL (SIDEWALK WALL)	CY	4	13	14	4	1	RW1	36
RW2	RETAINING WALL (DRIVEWAY WALL)	CY			7	3		RW2	10
RW3	CONCRETE RETAINING WALL	CY			52		14	RW3	66
RW4	CONCRETE BLOCK RETAINING WALL	SF						RW4	1000

ITEM NO.	DESCRIPTION	UNIT	WATER & WASTEWATER SUMMARY																ITEM NO.	EST. TOTAL
			GEN.	156	157	158	159	160	161	162	163	164	165	166	167	168	170	171		
W1	6" P.V.C. WATER PIPE SDR-14 200 PSI W/EMBEDMENT	LF		4				18		64	16	27		58	43				W1	230
W2	8" P.V.C. WATER PIPE SDR-14 200 PSI W/EMBEDMENT	LF			13						126					483			W2	622
W3	12" P.V.C. WATER PIPE SDR-14 200 PSI W/EMBEDMENT	LF				40	477	122	51	218	460	137	389	218		29			W3	2141
W4	16" P.V.C. WATER PIPE SDR-14 200 PSI W/EMBEDMENT	LF							149										W4	149
W5	18" D.I. WATER PIPE - AWWA C151/A21.51, CLASS 52, W/EMBEDMENT	LF		334	460	420													W5	1214
W6	EXTRA CAST IRON FITTINGS	TON	5.5																W6	5.5
W7	INSTALL FIRE HYDRANT	EA		1				1		1	1	1		1	4				W7	10
W8	REMOVE & SALVAGE FIRE HYDRANT	EA		1						1		1		1	4				W8	8
W9	DELIVER FIRE HYDRANT TO CITY	EA		1				1		1		1			4				W9	8
W10	6" RS GATE VALVE	EA		1				1		1	1	1		1	4				W10	10
W11	8" RS GATE VALVE	EA			1						2					3			W11	6
W12	12" RS GATE VALVE	EA						1		1	2		1	1		2			W12	8
W13	16" RS GATE VALVE	EA							1										W13	1
W14	18" RS GATE VALVE	EA		1		2													W14	3
W15	CUT & PLUG EXIST. WATER MAIN	EA		1	1			1	3	1		1	1	1					W15	10
W16	TYPE II AIR VALVE ASSEMBLY (VENT-O-MAT 050 RBXb 2521 - 2")	EA				1													W16	1
W17	WATER METER	EA				1		3					1		2				W17	7
W18	WATER SERVICE - SHORT	EA				1													W18	1
W19	WATER SERVICE - LONG	EA						3					1		2				W19	6
W20	STEEL PIPE ENCASEMENT	LF			20				20										W20	40
W21	REMOVE AIR RELEASE VALVE	EA			1														W21	1
W22	2" P.V.C. PRESSURE RATED W.W. PIPE DR-26 W/EMBEDMENT	LF																55	W22	55
W23	8" P.V.C. PRESSURE RATED W.W. PIPE DR-26 W/EMBEDMENT	LF															313		W23	313
W24	CONNECTION TO EXIST. MANHOLE	EA																1	W24	1
W25	CONNECTION TO PROP. MANHOLE	EA															2		W25	2
W26	60" DIA. MANHOLE	EA															1		W26	1
W27	60" DIA. DROP CONNECTION MANHOLE	EA															1		W27	1
W28	REMOVE EXIST. MANHOLE	EA															2		W28	2
W29	ODOR ELIMINATOR	EA																1	W29	1
W30	TRENCH SAFETY & SUPPORT	LF		338	473	460	477	140	200	282	602	164	389	276	43	512	313	55	W30	4724

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS · ERIC K. KRONER · 88551 · LICENSED PROFESSIONAL ENGINEER · 12/27/22

APM & Associates, Inc. Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

QUANTITY SUMMARY

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-005	5 OF 252

QUANTITY SUMMARY SHEET

ITEM NO.	DESCRIPTION	UNIT	ROUNDABOUT PAVING SUMMARY	ITEM NO.	EST. TOTAL
P1	PREPARE RIGHT-OF-WAY	STA	9.9	P1	9.9
P2	EXCAVATION (ROADWAY)	CY	3500	P2	3500
P3	EMBANKMENT (DENSITY CONTROL) (TY. D) (CL. 3)	CY	12500	P3	12500
P4	LIME TRT BS (TYPE A) (44 LBS/SY) (8")	SY	7508	P4	7508
P5	LIME (TYPE A) (SLRY)	TON	170	P5	170
P11	CONC PAV (REINF) (10")	SY	7100	P11	7100
P19	CONCRETE SIDEWALK (4")	SY	2160	P19	2160
P26	STAMPED CONC PAV (CONT. REINF) (10")	SY	400	P26	400
P27	STAMPED CONC MEDIAN PAV (4")	SY	270	P27	270
P28	CURB RAMPS (TY 1)	EA	8	P28	8
P29	CURB RAMPS (TY 20)	EA	8	P29	8
P30	3" MOUNTABLE CURB	LF	368	P30	368
P31	6" MOUNTABLE CURB	LF	180	P31	180
P32	6" INTEGRAL CURB	LF	3940	P32	3940
P33	6" TOPSOIL	SY	6750	P33	6750
P34	SOD	SY	6750	P34	6750
P35	SMALL ROADSIDE SIGN ASSEMBLIES	EA	29	P35	29
P36	REFL PAV MRK TY I (W) (8") (SOLID)	LF	420	P36	420
P37	REFL PAV MRK TY I (W) (18") (BRK)	LF	175	P37	175
P38	REFL PAV MRK TY I (W) (ARROW)	EA	2	P38	2
P39	REFL PAV MRK TY I (W) (DBL ARROW)	EA	4	P39	4
P40	RAIS PAV MRKER TY II-C-R	EA	131	P40	131
P41	RAIS PAV MRKER (TRAF BTN) TY W	EA	42	P41	42

ITEM NO.	DESCRIPTION	UNIT	TRAIL SUMMARY	ITEM NO.	EST. TOTAL
TR1	6" PEDESTRIAN CONCRETE TRAIL, NATURAL GREY, MEDIUM BROOM FINISH	SY	491	TR1	491
TR2	42" GUARD RAIL (SAFETY RAILING)	LF	485	TR2	485
TR3	PEDESTRIAN HANDRAIL	LF	514	TR3	514
TR4	CL B CONC (FLUME)	CY	3	TR4	3
TR5	RIPRAP (CONC)(4")	CY	21	TR5	21
TR6	RIPRAP (STONE TY R)(DRY)(18")	CY	44	TR6	44
TR7	RETAINING WALL (CAST IN PLACE)	SF	2490	TR7	2490
TR8	VARIABLE HEIGHT CURB	LF	135	TR8	135
TR9	4" REINFORCED CONC (CLASS "A", 3600 PSI)	SY	255	TR9	255

ITEM NO.	DESCRIPTION	UNIT	SIGNAL & ILLUMINATION SUMMARY									ITEM NO.	EST. TOTAL
			88	89	90	91	92	93	94	95	129		
T1	2" PVC CONDUIT	LF			1465	1425	1075	1050	1600	1315	395	T1	8325
T2	4" PVC CONDUIT	LF	125						915			T2	1040
T3	4" PVC CONDUIT (BORED)	LF		625								T3	625
I1	GROUND BOX TY C (W/APRON)	SY	2	4								I1	6
I2	ROADWAY LIGHTING ASSEMBLY (TY 1)	SY							4			I2	4
I3	ROADWAY LIGHTING ASSEMBLY (TY 2)	LF			9	9	8	7	12	9		I3	54
I4	IRRIGATION GROUND BOX (FOR SLEEVE AT RDBT)	EA							8			I4	8
I5	ONCOR FOUNDATION	EA			9	9	8	7	16	9		I5	58
I6	ONCOR GROUND BOX	EA			2		1		10	2	1	I6	16

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
CHRISTOPHER J. CHA
112732
LICENSED PROFESSIONAL ENGINEER
12/27/2022

Pacheco Koch
a Westwood company
7557 RAMBLER ROAD SUITE 1400
DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2020-095

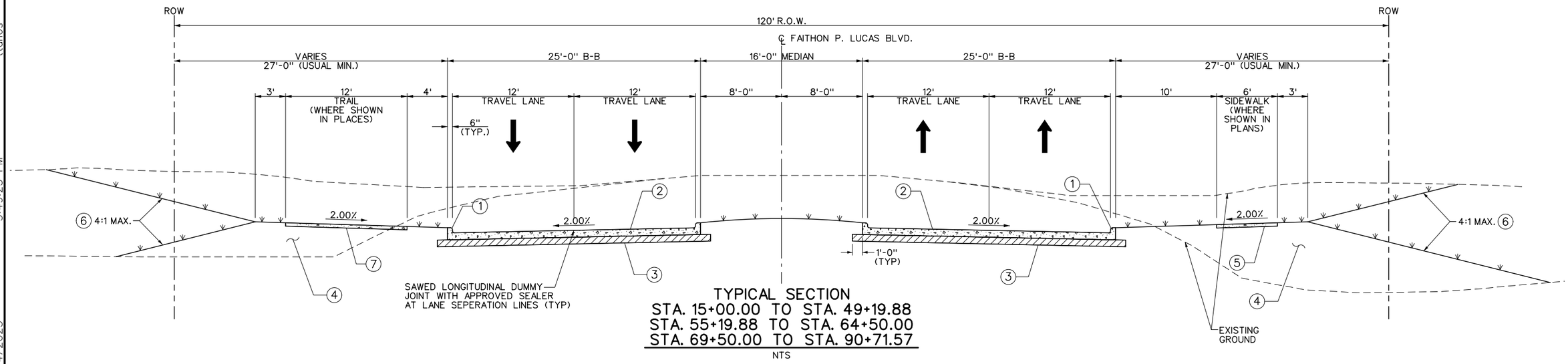
FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

QUANTITY SUMMARY

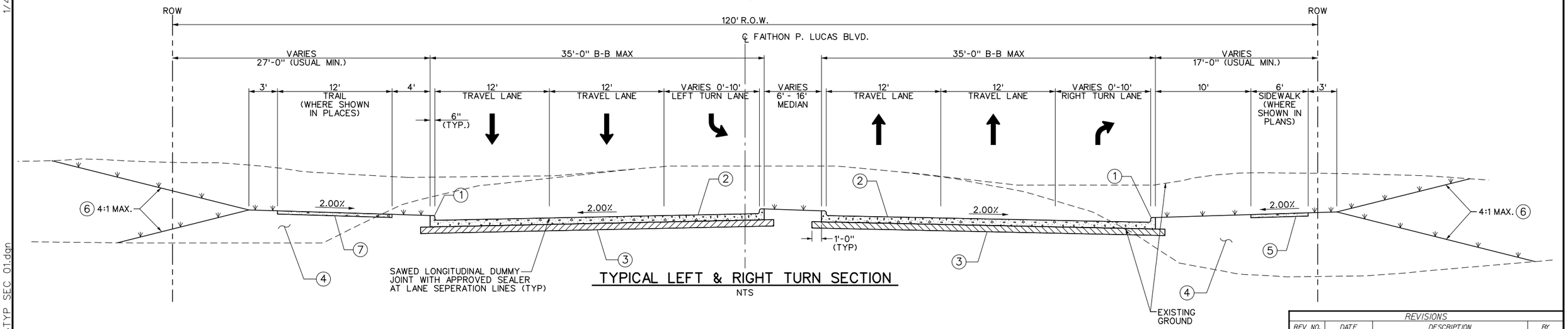
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-006	6 OF 252



TYPICAL SECTION
STA. 15+00.00 TO STA. 49+19.88
STA. 55+19.88 TO STA. 64+50.00
STA. 69+50.00 TO STA. 90+71.57

NTS



TYPICAL LEFT & RIGHT TURN SECTION

NTS

LEGEND

1. 6" MONOLITHIC CURB (CLASS 'A' CONCRETE)
2. 10" REINFORCED CONCRETE PAVEMENT WITH No. 5 BARS ON 18" C-C BOTH WAYS (CONCRETE 4000 PSI; 6 SACK MIN.)
3. 8" LIME STABILIZED SUBGRADE. USE TYPE 'A' HYDRATED LIME AT A 44 LBS/S.Y. APPLICATION RATE
4. FILL COMPACTED IN ACCORDANCE WITH TxDOT ITEM 132 "EMBANKMENT"
5. 4" REINFORCED CONCRETE TRAIL WITH No. 3 BARS ON 12" C-C BOTH WAYS AT LOCATIONS SHOWN IN PLANS (CONCRETE 3600 PSI)
6. SOD ROW/ DEVELOPED LOTS
7. 6" REINFORCED CONCRETE SIDEWALK WITH No. 4 BARS ON 12" C-C BOTH WAYS AT LOCATIONS SHOWN IN PLANS (CONCRETE 4000 PSI)

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

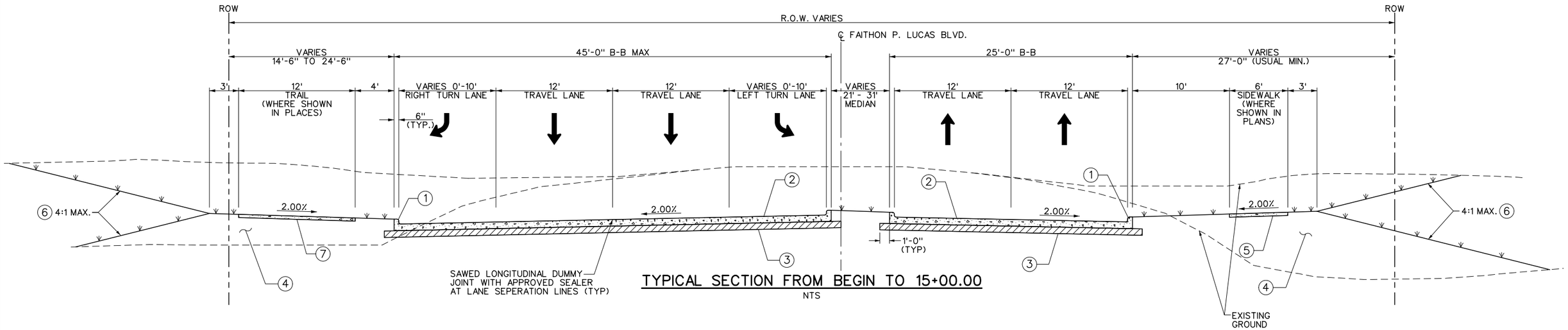
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD.TO CARTWRIGHT RD.
TYPICAL SECTIONS

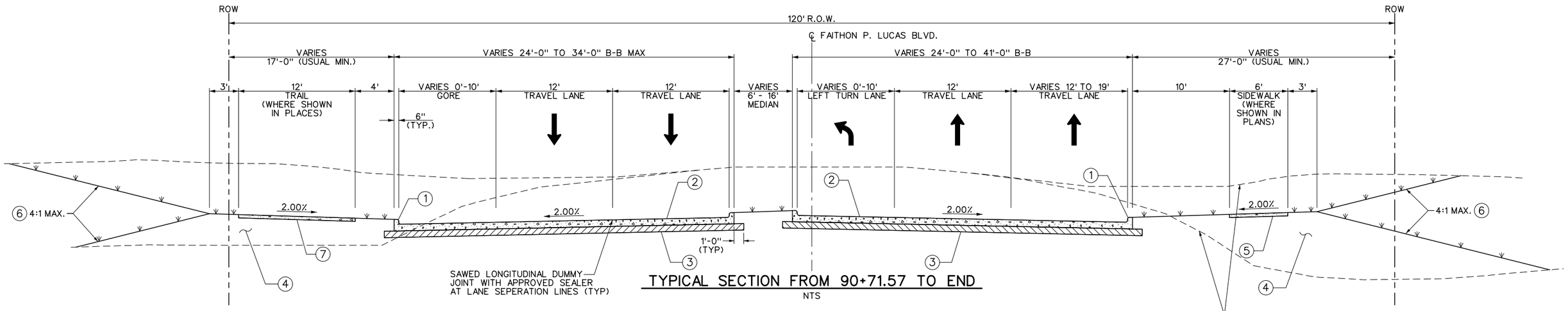
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-007	7 OF 252



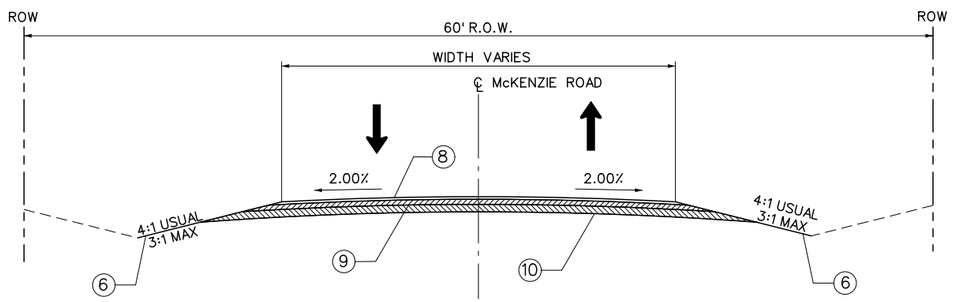
TYPICAL SECTION FROM BEGIN TO 15+00.00

NTS



TYPICAL SECTION FROM 90+71.57 TO END

NTS



ASPHALT TRANSITION TYPICAL SECTION

NTS

LEGEND

1. 6" MONOLITHIC CURB (CLASS 'A' CONCRETE)
2. 10" REINFORCED CONCRETE PAVEMENT WITH No. 5 BARS ON 18" C-C BOTH WAYS (CONCRETE 4000 PSI; 6 SACK MIN.)
3. 8" LIME STABILIZED SUBGRADE. USE TYPE 'A' HYDRATED LIME AT A 44 LBS/S.Y. APPLICATION RATE
4. FILL COMPACTED IN ACCORDANCE WITH TxDOT ITEM 132 "EMBANKMENT"
5. 4" REINFORCED CONCRETE SIDEWALK WITH No. 3 BARS ON 12" C-C BOTH WAYS AT LOCATIONS SHOWN IN PLANS (CONCRETE 3600 PSI)
6. SOD ROW/ DEVELOPED LOTS
7. 6" REINFORCED CONCRETE TRAIL WITH No. 4 BARS ON 12" C-C BOTH WAYS AT LOCATIONS SHOWN IN PLANS (CONCRETE 4000 PSI)
8. 2" ACP (TY D)
9. 4" ACP (TY B)
10. 6" RECYCLED CONCRETE FLEX BASE (TY D) GR 1

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS — ERIC K. KRONER — 88551 — LICENSED PROFESSIONAL ENGINEER — 12/27/22

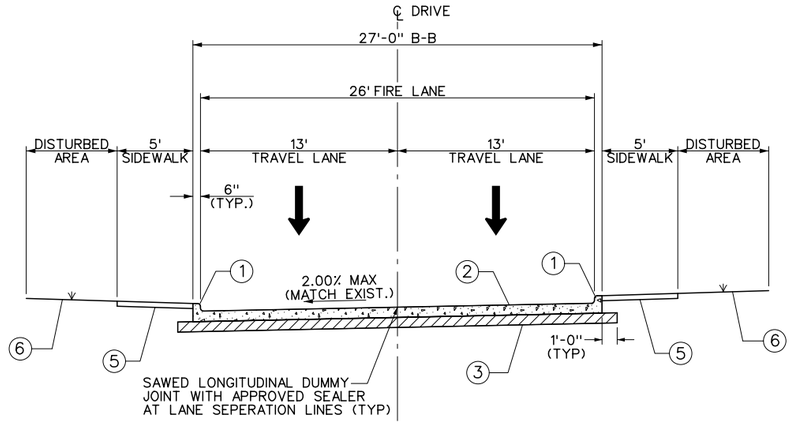
APM & Associates, Inc. Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
TYPICAL SECTIONS

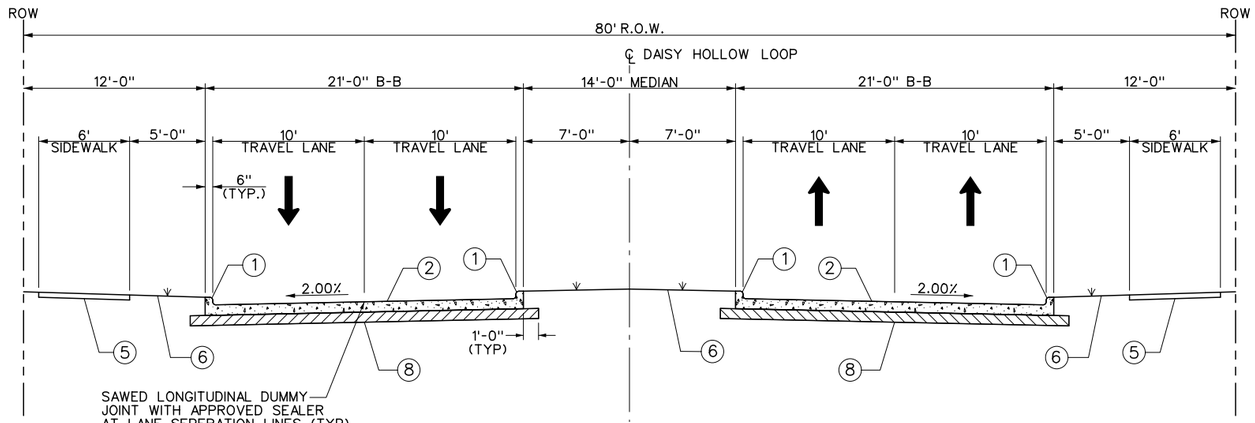
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-008	8 OF 252



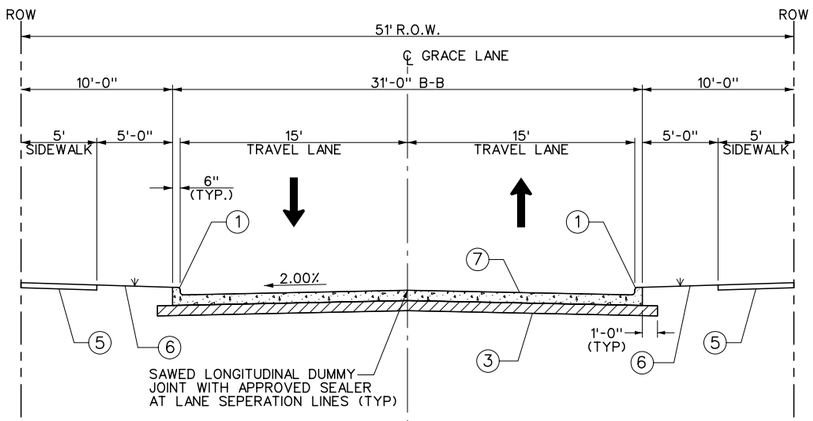
TYPICAL SECTION VANGUARD HIGH SCHOOL DRIVEWAY

NTS



TYPICAL SECTION DAISY HOLLOW LOOP

NTS



TYPICAL SECTION GRACE LANE

NTS

LEGEND

1. 6" MONOLITHIC CURB (CLASS 'A' CONCRETE)
2. 8" REINFORCED CONCRETE PAVEMENT WITH No. 4 BARS ON 18" C-C BOTH WAYS (CONCRETE 4000 PSI; 6 SACK MIN.)
3. 6" LIME STABILIZED SUBGRADE. USE TYPE 'A' HYDRATED LIME AT A 44 LBS/S.Y. APPLICATION RATE
4. FILL COMPACTED IN ACCORDANCE WITH TxDOT ITEM 132 "EMBANKMENT"
5. 4" REINFORCED CONCRETE SIDEWALK WITH No. 4 BARS ON 18" C-C BOTH WAYS AT LOCATIONS SHOWN IN PLANS (CLASS 'C' CONCRETE)
6. SOD ROW/ DEVELOPED LOTS
7. 6" REINFORCED CONCRETE PAVEMENT WITH No. 4 BARS ON 18" C-C BOTH WAYS (CONCRETE 4000 PSI; 6 SACK MIN.)
8. 8" LIME STABILIZED SUBGRADE. USE TYPE 'A' HYDRATED LIME AT A 44 LBS/S.Y. APPLICATION RATE

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS — ERIC K. KRONER — 88551 — LICENSED PROFESSIONAL ENGINEER — 12/27/22

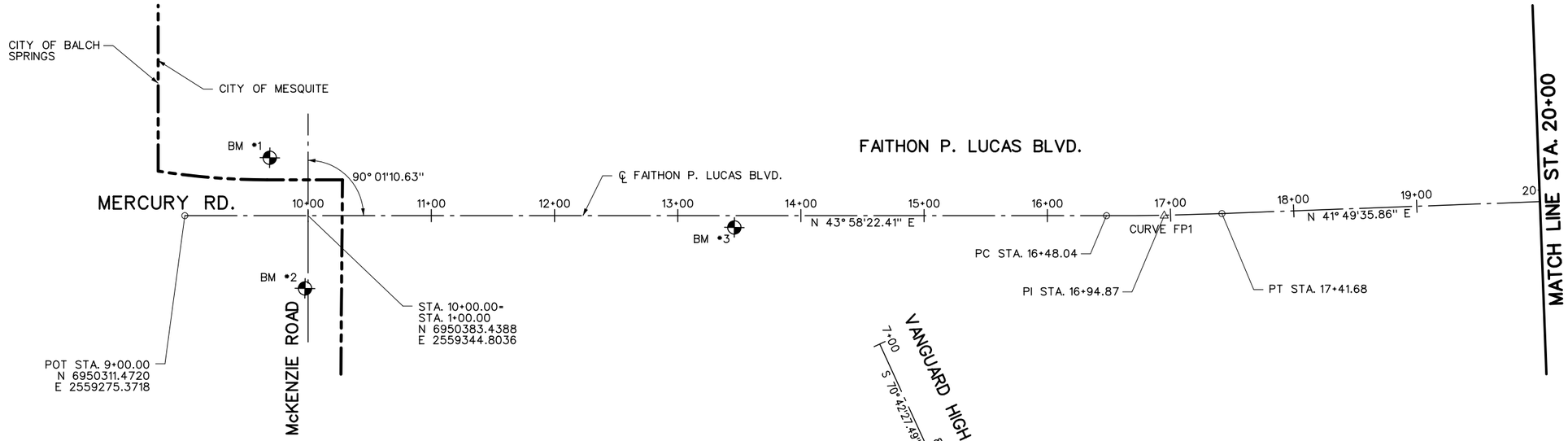
APM & Associates, Inc. Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
TYPICAL SECTIONS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-009	9 OF 252



CURVE NO	STATION	COORDINATE		CURVE COORDINATE		DELTA	LENGTH	TANGENT	RADIUS	DEGREE
		N	E	N	E					
℄ FAITHON P. LUCAS BLVD.										
	PC 16+48.04	6,950,849.8099	2,559,794.7467			N 43° 58'22.41" E				
FP1	PI 16+94.87	6,950,883.5117	2,559,827.2614	6,952,585.6047	2,557,995.5757	2° 08' 46.55" (LT)	93.6485'	46.8297'	2500.0000'	2° 17'30.59"
	PT 17+41.68	6,950,918.4076	2,559,858.4911			N 41° 49'35.86" E				
	PC 20+89.26	6,951,177.4108	2,560,090.2834			N 41° 49'35.86" E				
FP2	PI 21+38.48	6,951,214.0890	2,560,123.1082	6,949,510.2137	2,561,953.1988	2° 15' 21.08" (RT)	98.4303'	49.2215'	2500.0000'	2° 17'30.59"
	PT 21+87.69	6,951,249.4467	2,560,157.3512			N 44° 04'56.94" E				
	PC 9+11.76	6,951,627.0423	2,560,400.8968			S 70° 42'27.49" E				
VHS1	PI 9+19.89	6,951,624.3557	2,560,408.5718	6,951,592.1200	2,560,388.6724	24° 47'24.43" (RT)	16.0088'	8.1316'	37.0000'	154° 51'12.45"
	PT 9+27.77	6,951,618.6986	2,560,414.4131			S 45° 55'03.06" E				

CONTROL/ BENCHMARK XYZ SURFACE COORDINATE LIST (CITY OF MESQUITE CONTROL)

PT NO.	NORTHING	EASTING	ELEV	DESCRIPTION
BM 1	6950393.7278	2559289.4139	454.19	½" IRON ROD WITH CAP
BM 2	6950340.7276	2559385.4946	453.60	PK NAIL
BM 3	6950625.8245	2559591.8598	458.81	¾" IRON ROD
BM 4	6951248.8004	2560200.6764	475.51	RR SPIKE

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

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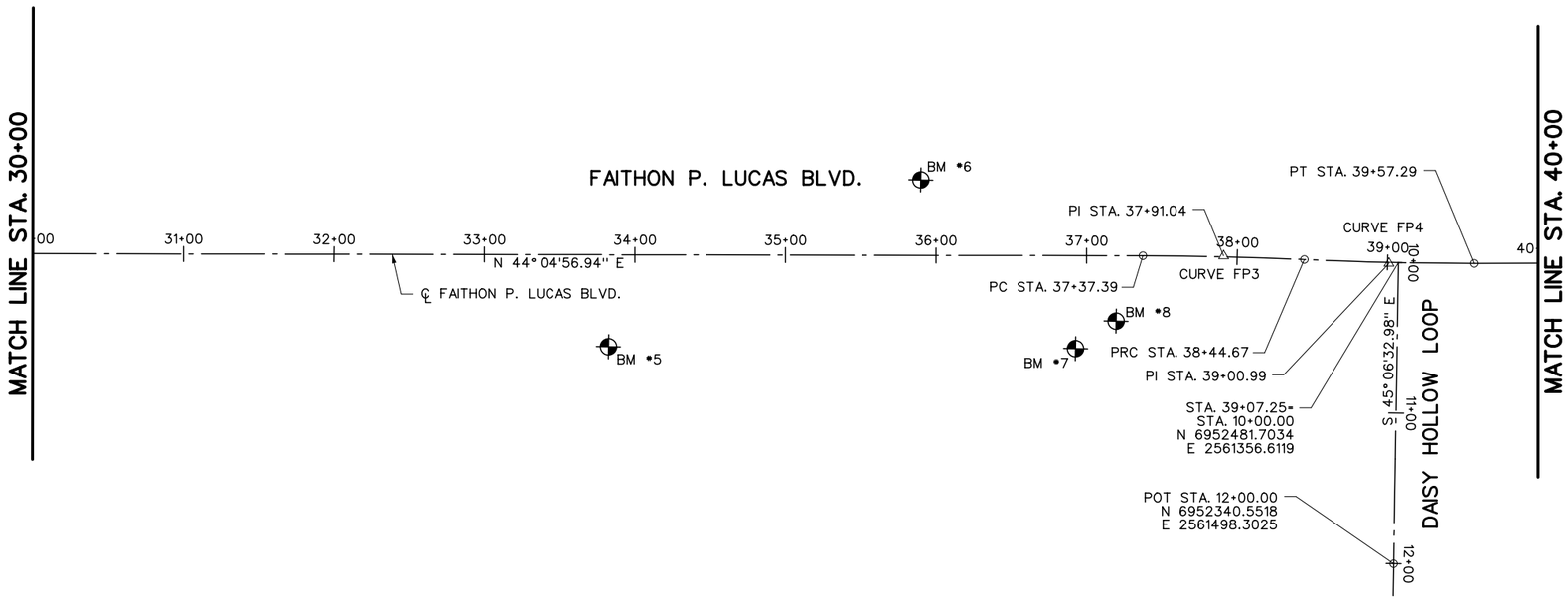
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

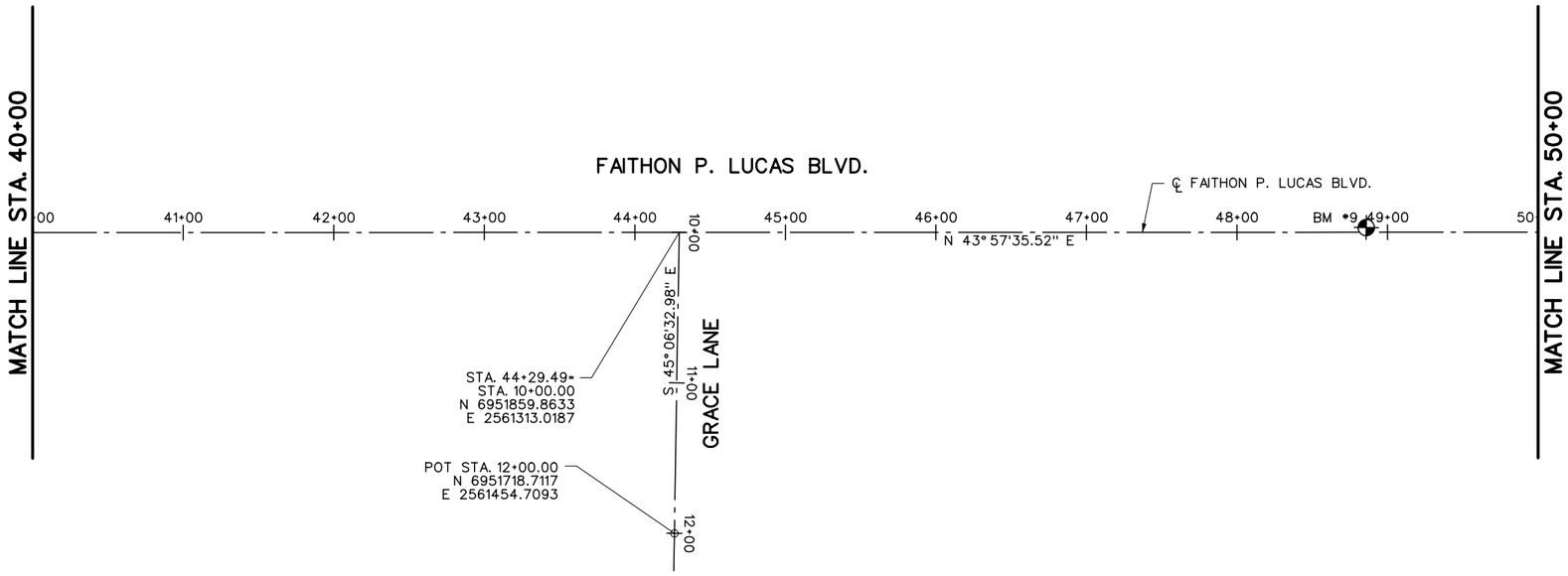
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
HORIZONTAL AND VERTICAL CONTROLS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-010	10 OF 252





CONTROL/ BENCHMARK XYZ SURFACE COORDINATE LIST (CITY OF MESQUITE CONTROL)

PT NO.	NORTHING	EASTING	ELEV	DESCRIPTION
BM 5	6952065.2945	2561032.4786	416.93	1/2" IRON ROD
BM 6	6952291.5278	2561096.8049	417.77	1/2" IRON ROD WITH CAP
BM 7	6952287.6617	2561248.8054	410.60	3/8" IRON ROD
BM 8	6952319.7048	2561254.3470	412.43	SET 60D SPIKE
BM 9	6953187.9638	2562034.0131	411.62	SET "X"

CURVE NO	STATION	COORDINATE		CURVE COORDINATE		DELTA	LENGTH	TANGENT	RADIUS	DEGREE
		N	E	N	E					
℄ FAITHON P. LUCAS BLVD.										
	PC 37+37.39	6,952,362.6546	2,561,235.4650			N 44° 04'56.94" E				
FP3	PI 37+91.04	6,952,401.1910	2,561,272.7864	6,950,623.4216	2,563,031.3125	02° 27'30.95" (RT)	107.2765'	53.6465'	2500.0000'	2° 17'30.59"
	PRC 38+44.67	6,952,438.0909	2,561,311.7267			N 46° 32'27.88" E				
	PRC 38+44.67	6,952,438.0909	2,561,311.7267			N 46° 32'27.88" E				
FP4	PI 39+00.99	6,952,476.8316	2,561,352.6096	6,954,252.7601	2,559,592.1409	02° 34'52.36" (LT)	112.6266'	56.3228'	2500.0000'	2° 17'30.59"
	PT 39+57.29	6,952,517.3743	2,561,391.7064			N 43° 57'35.52" E				

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

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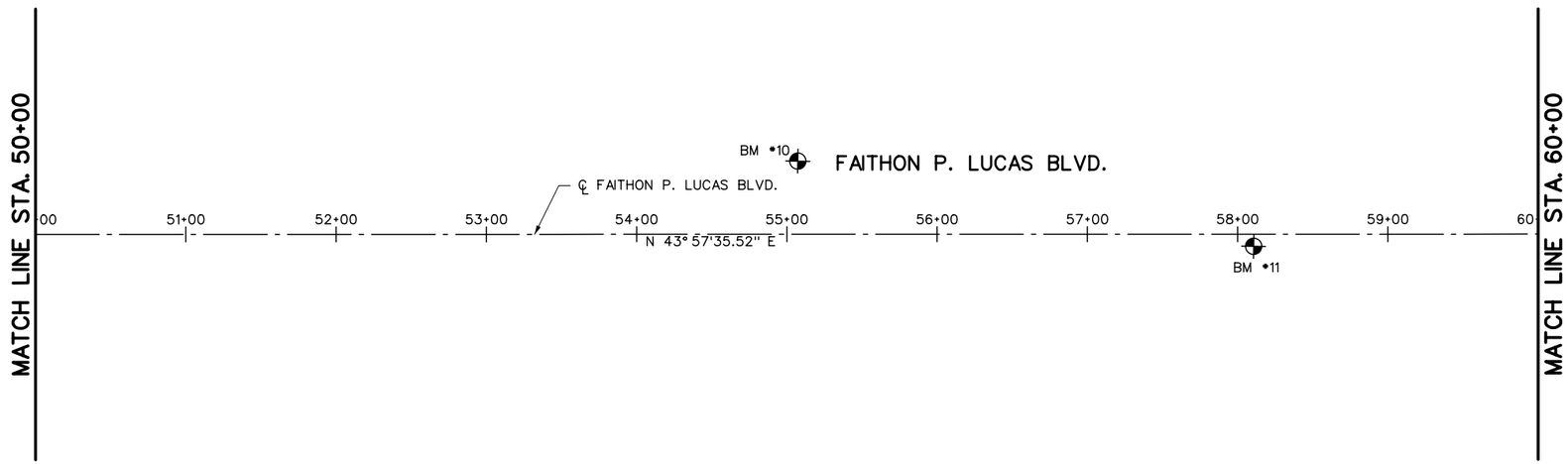
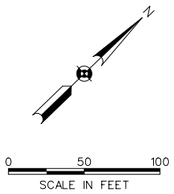
CITY CONTRACT NO. 2020-095

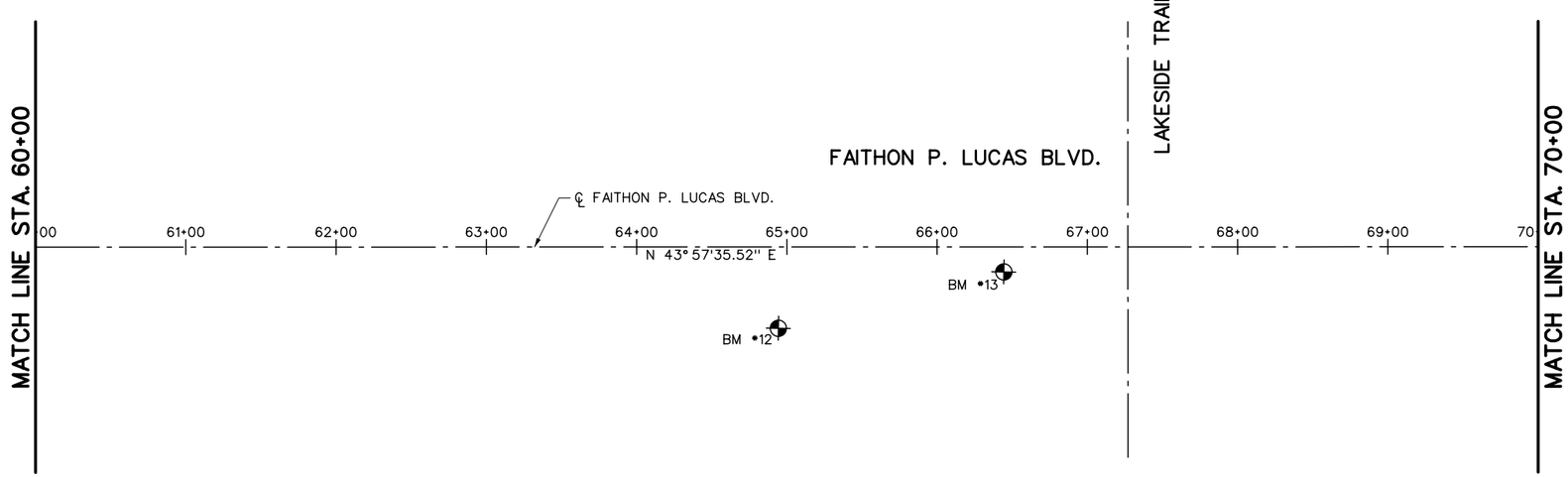
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
HORIZONTAL AND VERTICAL CONTROLS

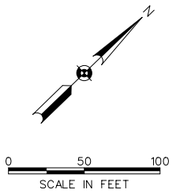
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-011	11 OF 252









CONTROL/ BENCHMARK XYZ SURFACE COORDINATE LIST (CITY OF MESQUITE CONTROL)

PT NO.	NORTHING	EASTING	ELEV	DESCRIPTION
BM 10	6953666.9255	2562432.5906	411.23	GAGING BENHMARK
BM 11	6953845.8466	2562684.0431	406.01	SET 60D SPIKE
BM 12	6954306.0031	2563191.7499	421.23	1/4" IRON ROD
BM 13	6954440.0599	2563268.9347	421.91	1/2" IRON ROD WITH RED TRAV PLASTIC CAP

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

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Dallas, TX. 75201 (214) 748-4888
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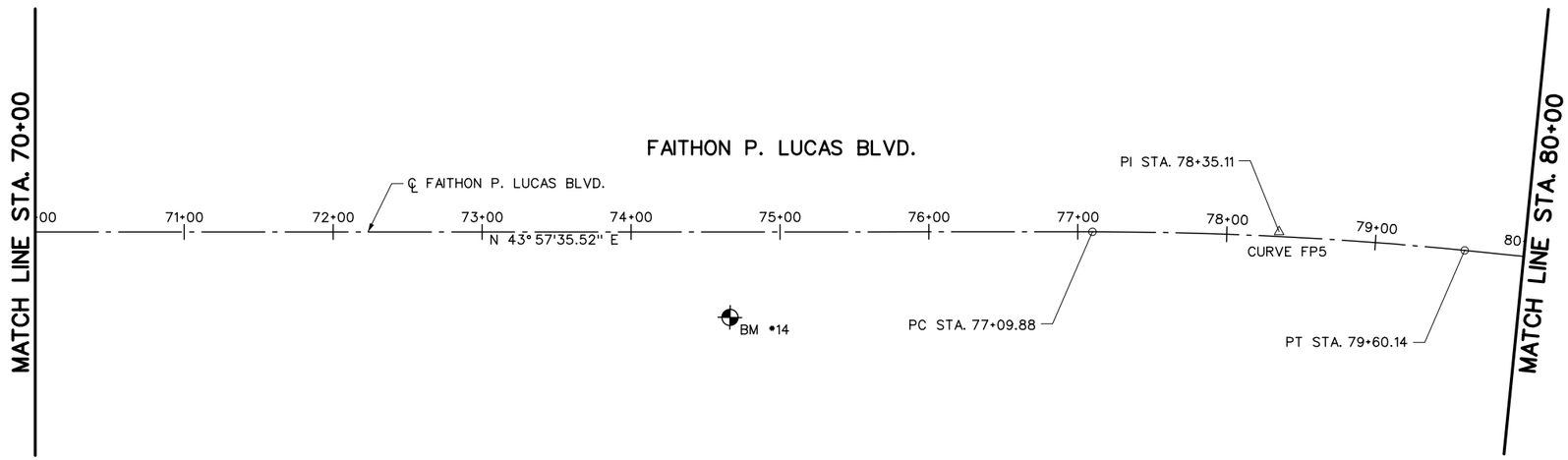
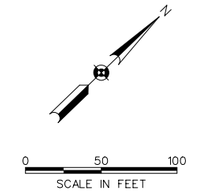
CITY CONTRACT NO. 2020-095

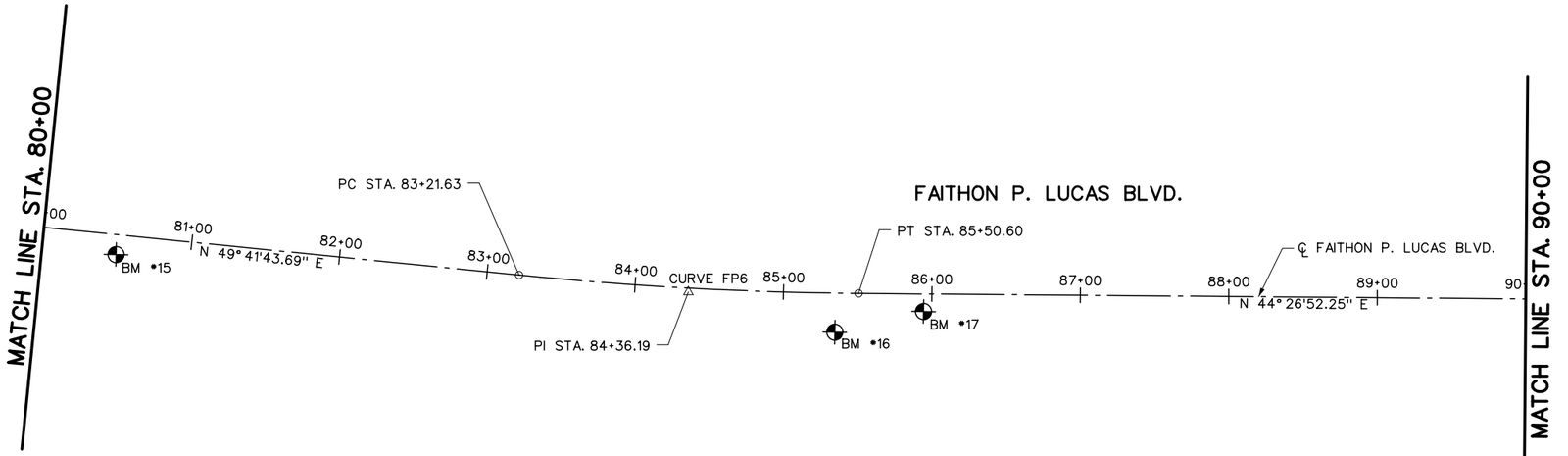
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
HORIZONTAL AND VERTICAL CONTROLS

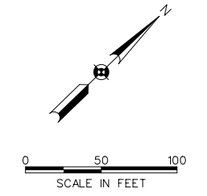
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-012	12 OF 252









CURVE NO	STATION	COORDINATE N	COORDINATE E	CURVE COORDINATE N	CURVE COORDINATE E	DELTA	LENGTH	TANGENT	RADIUS	DEGREE
℄ FAITHON P. LUCAS BLVD.										
	PC 77+09.88	6,955,218.5816	2,563,996.5779			N 43° 57'35.52" E				
FP5	PI 78+35.11	6,955,308.7297	2,564,083.5110	6,953,483.1957	2,565,796.1434	5° 44'08.17" (RT)	250.2629'	125.2360'	2500.0000'	2° 17'30.59"
	PT 79+60.14	6,955,389.7387	2,564,179.0182			N 49° 41'43.69" E				
	PC 83+21.62	6,955,623.5666	2,564,454.6944			N 49° 41'43.69" E				
FP6	PI 84+36.19	6,955,697.6733	2,564,542.0640	6,957,530.1096	2,562,837.5692	5° 14'51.44" (LT)	228.9708'	114.5655'	2500.0000'	2° 17'30.59"
	PT 85+50.60	6,955,779.4602	2,564,622.2896			N 44° 26'52.25" E				

CONTROL/ BENCHMARK XYZ SURFACE COORDINATE LIST (CITY OF MESQUITE CONTROL)

PT NO.	NORTHING	EASTING	ELEV	DESCRIPTION
BM 14	6955003.4851	2563868.8921	436.85	SET 60D SPIKE
BM 15	6955437.7281	2564256.2733	444.34	½" STEEL ROD WITH RED TRAV PLASTIC CAP
BM 16	6955749.8197	2564629.9895	443.20	½" IRON ROD
BM 17	6955802.5297	2564661.4773	445.02	PK NAIL

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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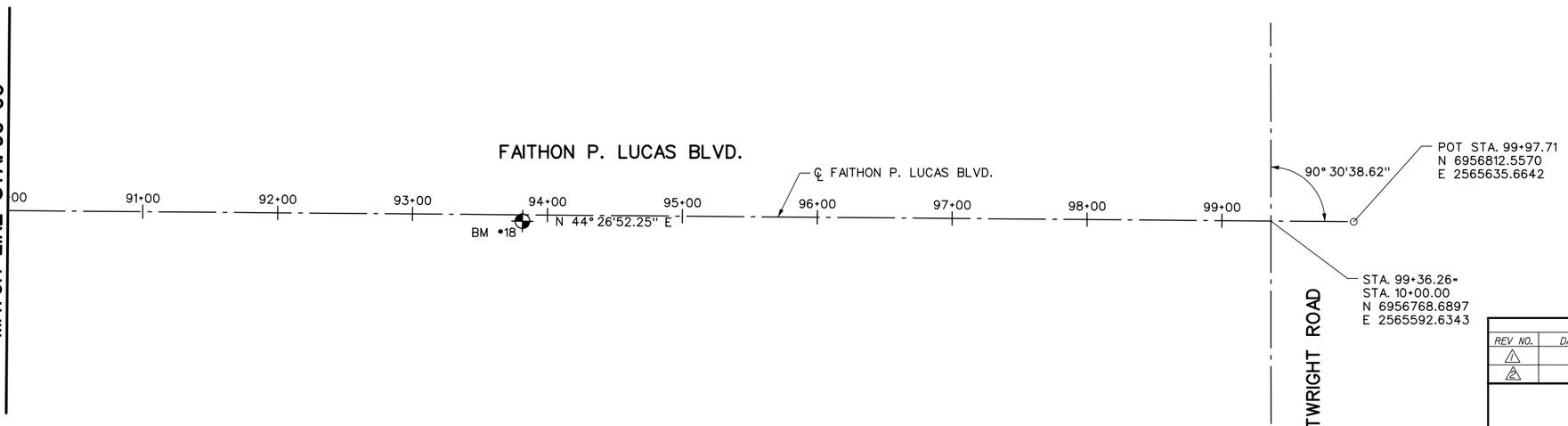
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
HORIZONTAL AND VERTICAL CONTROLS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-013	13 OF 252



CONTROL/ BENCHMARK XYZ SURFACE COORDINATE LIST (CITY OF MESQUITE CONTROL)

PT NO.	NORTHING	EASTING	ELEV	DESCRIPTION
BM 18	6956369.3222	2565207.4352	445.16	PK NAIL

0 50 100
SCALE IN FEET

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
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88551
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FROM McKENZIE RD. TO CARTWRIGHT RD.
HORIZONTAL AND VERTICAL CONTROLS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-014	14 OF 252

SEQUENCE OF CONSTRUCTION ~ PHASE 1

1. COMPLETE ALL PROPOSED ITEMS, INCLUDING UTILITIES TO BE RELOCATED.
2. PLACE TEMPORARY PAVEMENT AS NECESSARY TO DETOUR TRAFFIC.
3. DETOUR TRAFFIC AS SHOWN IN PLANS.
4. COMPLETE STORM SEWERS AND PAVING.

N

0 40 80
SCALE IN FEET

MATCH LINE STA. 20+00

MERCURY RD.

EXIST. R.O.W.

CHANNELIZING DEVICES

TYPE III BARRICADES (TYP)

WORK ZONE PVMT MARKING SINGLE 4" (Y) DOT

McKENZIE ROAD

CITY OF BALCH SPRINGS
CITY OF MESQUITE

WORK ZONE PVMT MARKING SINGLE 4" (W) DOT

PROP. R.O.W.

FAITHON P. LUCAS BLVD.

℄ FAITHON P. LUCAS BLVD.

CUT & RESTORE EXISTING PAVEMENT

DRAINAGE EASEMENT

COMPLETE DRAINAGE LINE "A" IN THIS PHASE

WORK ZONE PVMT MARKING DOUBLE 4" (Y) SOLID

VANGUARD HIGH SCHOOL DRIVEWAY

MATCH LINE STA. 30+00

WORK ZONE PVMT MARKING DOUBLE 4" (Y) SOLID

WORK ZONE PVMT MARKING SINGLE 4" (W) SOLID

LEGEND

- EXISTING ROADWAY
- ROADWAY CONSTRUCTED IN THIS PHASE
- ROADWAY CONSTRUCTED IN PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TEMP. PVMT. CONSTRUCTED IN PREVIOUS PHASE
- BRIDGE CONSTRUCTED IN THIS PHASE
- TEMPORARY PAVEMENT STRIPING (TWO-WAY)
- ROUTING OF TRAFFIC (DIRECTIONAL ARROW)
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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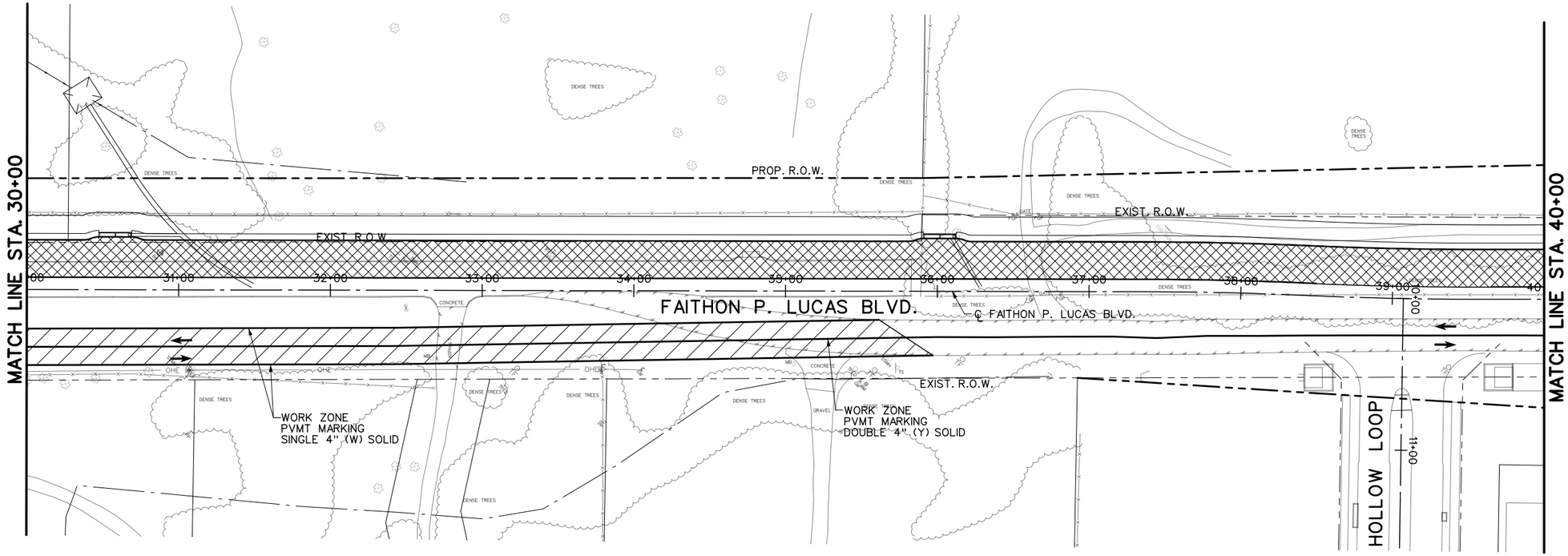
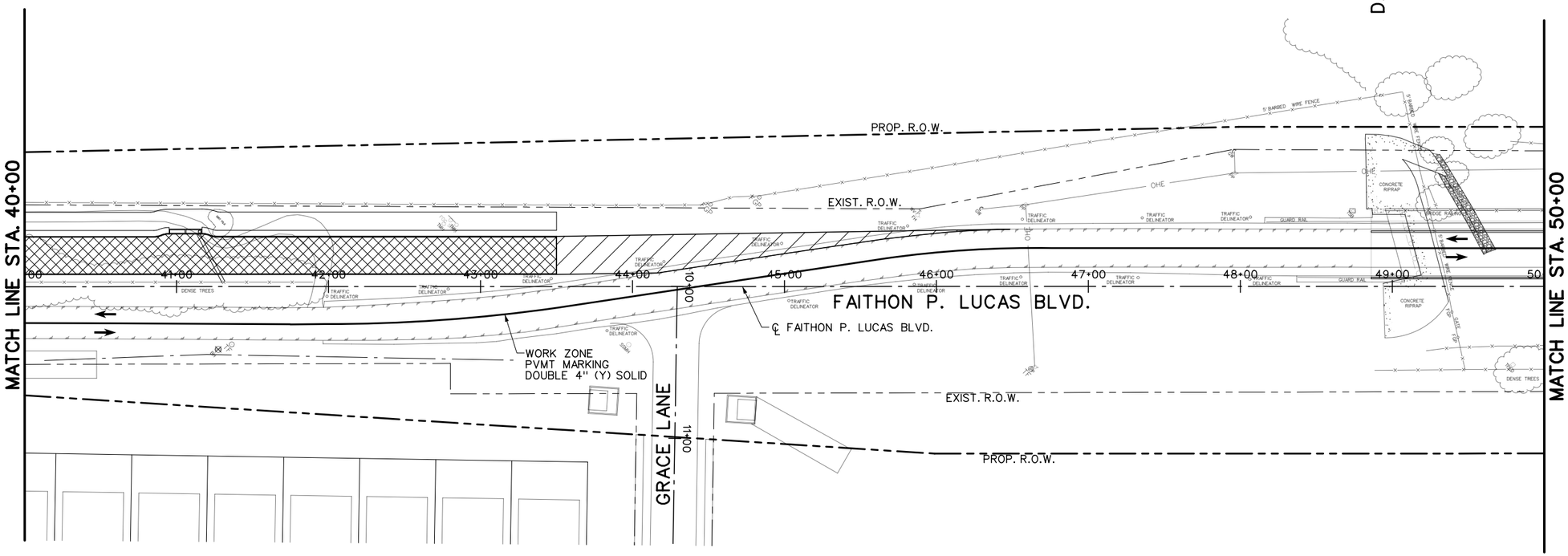
FIRM REG. #3091

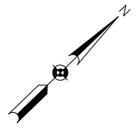
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE I
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-015	15 OF 252







LEGEND

- EXISTING ROADWAY
- ROADWAY CONSTRUCTED IN THIS PHASE
- ROADWAY CONSTRUCTED IN PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TEMP. PVMT. CONSTRUCTED IN PREVIOUS PHASE
- BRIDGE CONSTRUCTED IN THIS PHASE
- TEMPORARY PAVEMENT STRIPING (TWO-WAY)
- ROUTING OF TRAFFIC (DIRECTIONAL ARROW)
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

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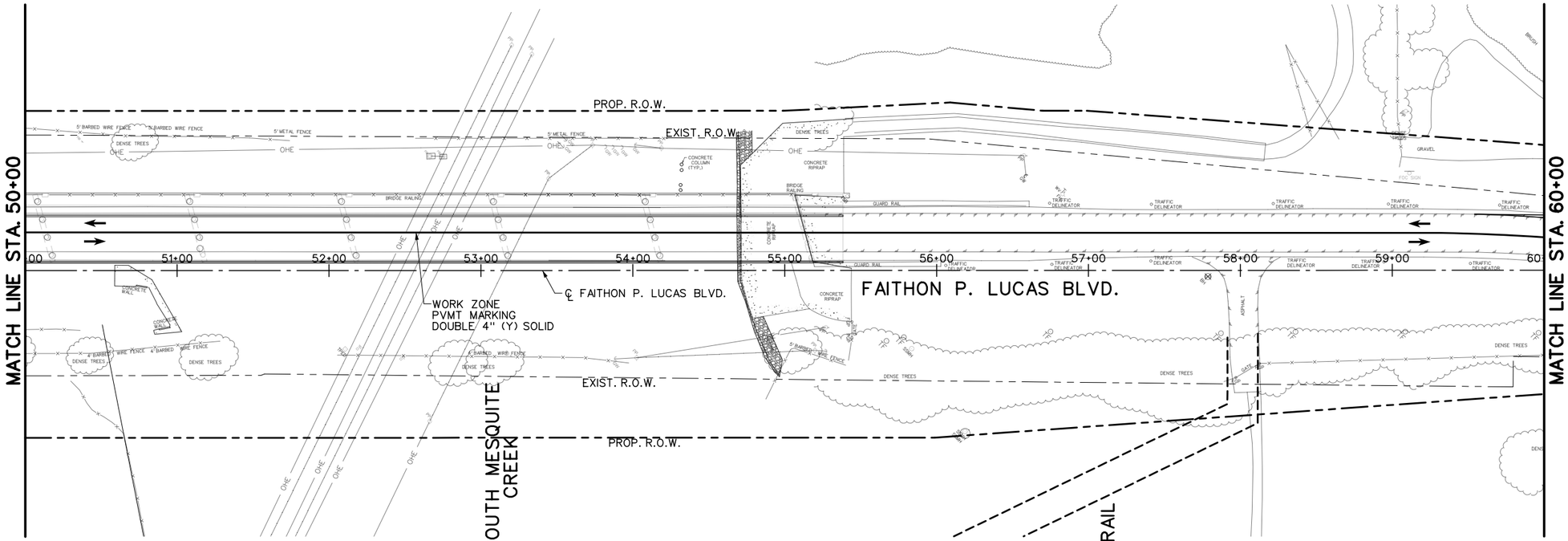
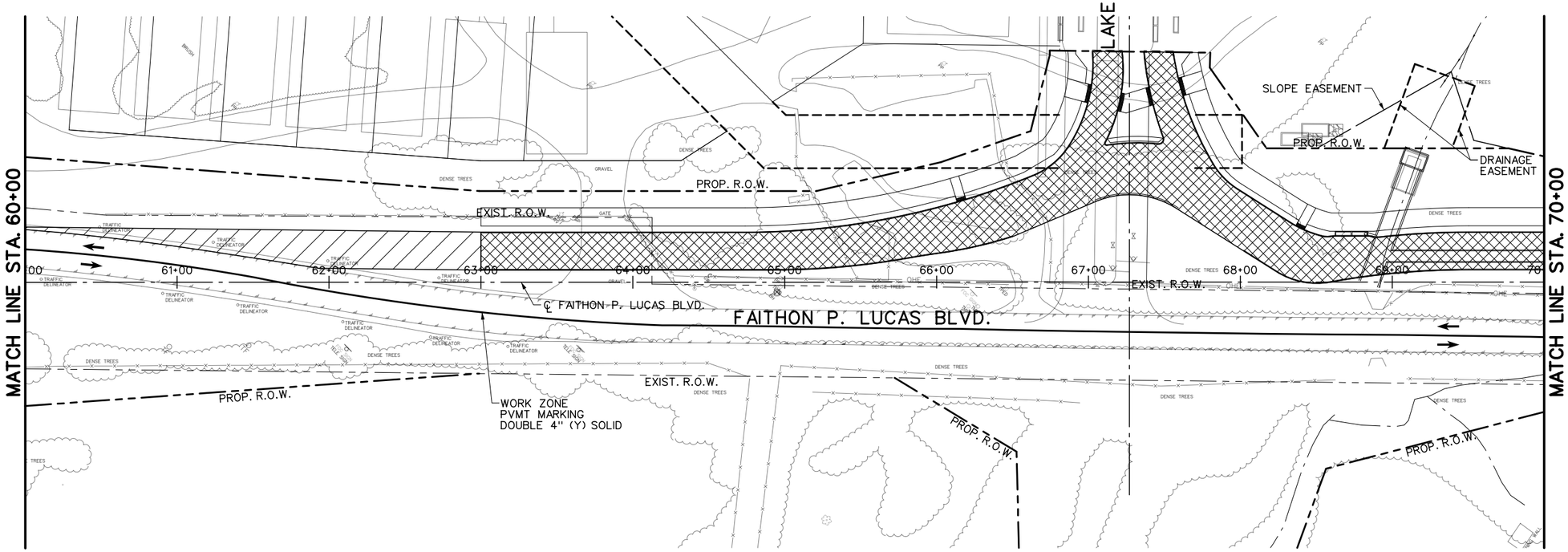
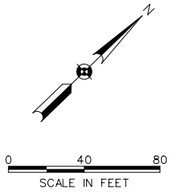
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE I
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-016	16 OF 252







LEGEND

- EXISTING ROADWAY
- ROADWAY CONSTRUCTED IN THIS PHASE
- ROADWAY CONSTRUCTED IN PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TEMP. PVMT. CONSTRUCTED IN PREVIOUS PHASE
- BRIDGE CONSTRUCTED IN THIS PHASE
- TEMPORARY PAVEMENT STRIPING (TWO-WAY)
- ROUTING OF TRAFFIC (DIRECTIONAL ARROW)
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

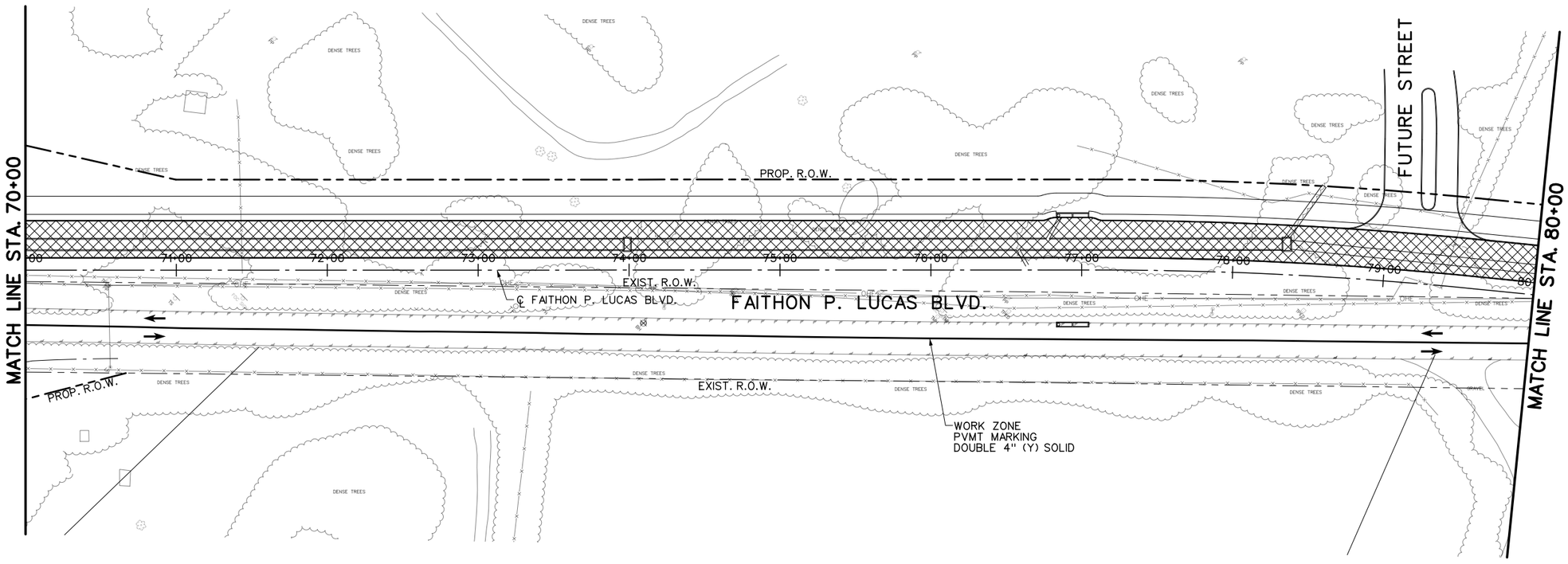
FROM McKENZIE RD. TO CARTWRIGHT RD.

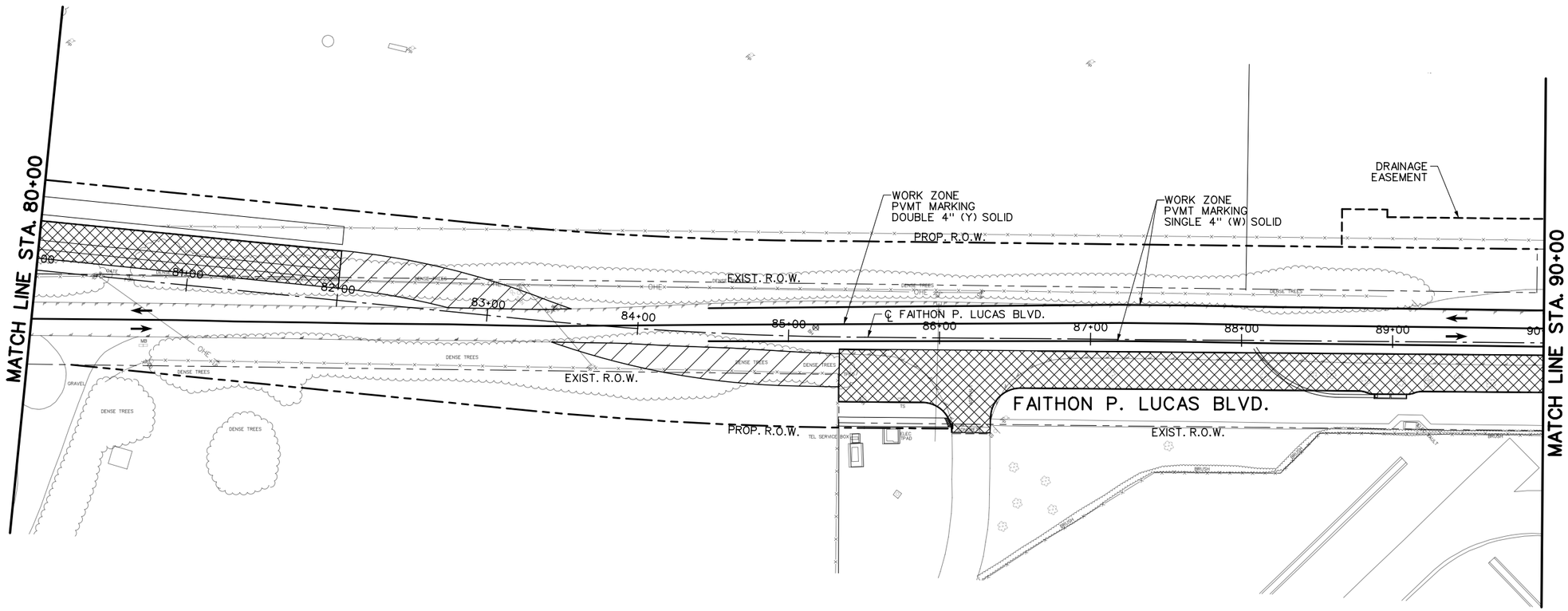
SUGGESTED SEQUENCE OF CONSTRUCTION

PHASE I

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-017	17 OF 252





0 40 80
SCALE IN FEET

LEGEND

- EXISTING ROADWAY
- ROADWAY CONSTRUCTED IN THIS PHASE
- ROADWAY CONSTRUCTED IN PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TEMP. PVMT. CONSTRUCTED IN PREVIOUS PHASE
- BRIDGE CONSTRUCTED IN THIS PHASE
- TEMPORARY PAVEMENT STRIPING (TWO-WAY)
- ROUTING OF TRAFFIC (DIRECTIONAL ARROW)
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

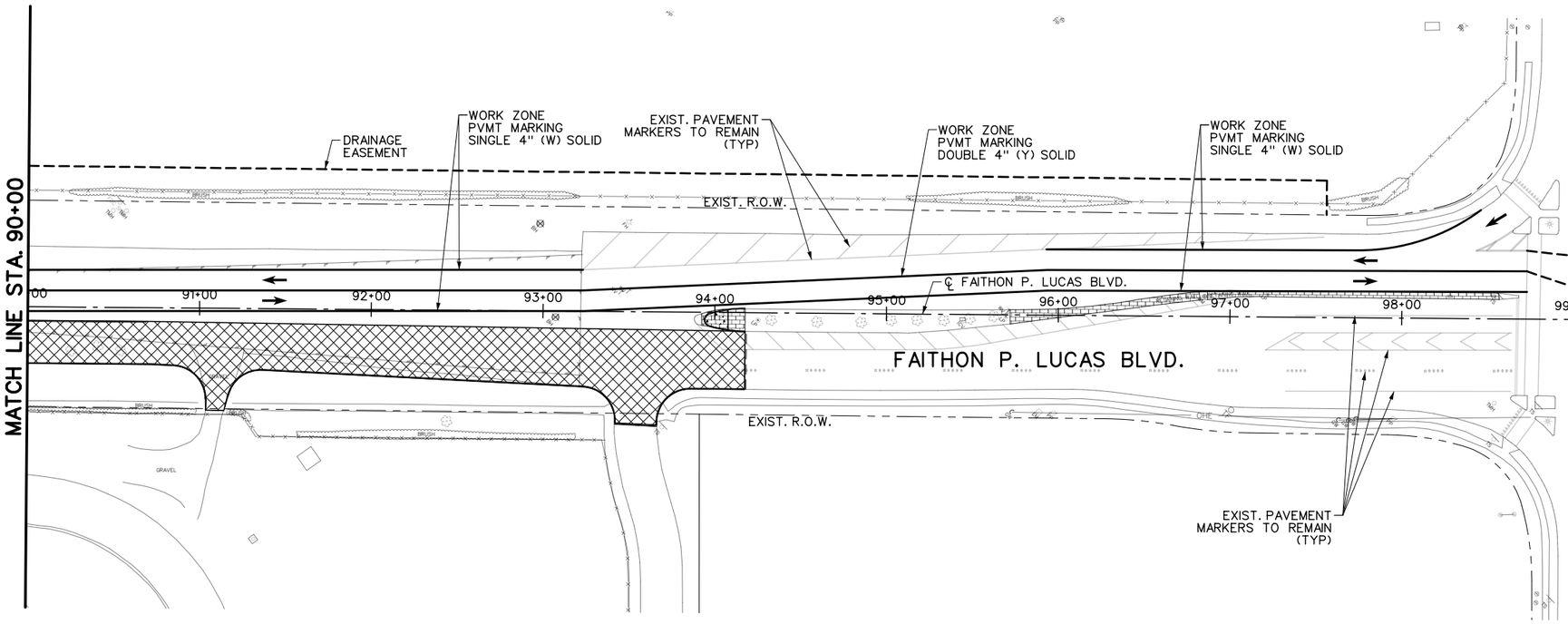
STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

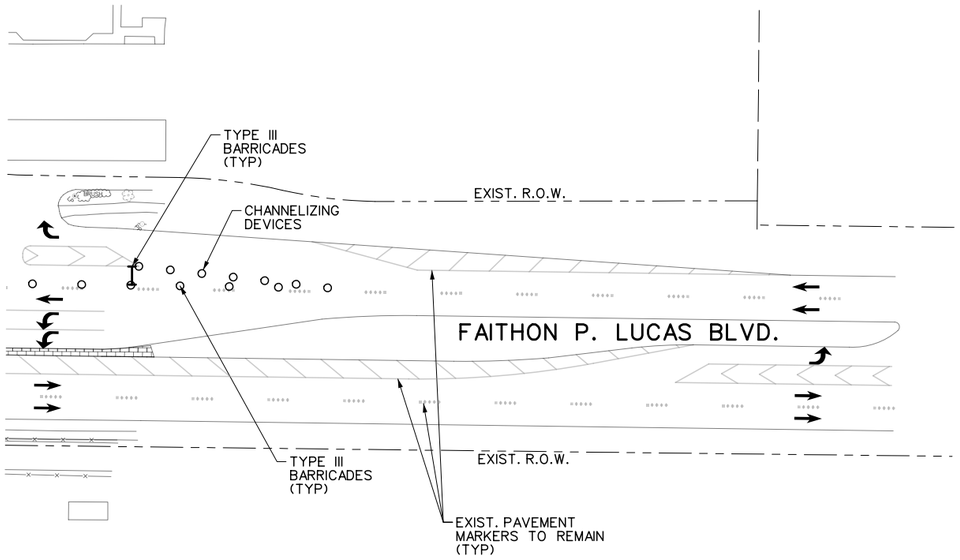
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

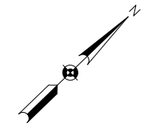
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE I
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-018	18 OF 252







LEGEND

- EXISTING ROADWAY
- ROADWAY CONSTRUCTED IN THIS PHASE
- ROADWAY CONSTRUCTED IN PREVIOUS PHASE
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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE I
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-018	19 OF 252

SEQUENCE OF CONSTRUCTION ~ PHASE 1

1. COMPLETE ALL PROPOSED ITEMS, INCLUDING UTILITIES TO BE RELOCATED.
2. COMPLETE STORM SEWERS, BRIDGE STRUCTURES, AND DRAINAGE CHANNELS.
3. COMPLETE PAVING.

MERCURY RD.

FAITHON P. LUCAS BLVD.

℄ FAITHON P. LUCAS BLVD.

McKENZIE ROAD

VANGUARD HIGH SCHOOL DRIVEWAY

CITY OF BALCH SPRINGS
CITY OF MESQUITE

MATCH LINE STA. 20+00

MATCH LINE STA. 30+00

EXIST. R.O.W.

PROP. R.O.W.

CHANNELIZING DEVICES

WORK ZONE PVMT MARKING SINGLE 4" (Y) SOLID

WORK ZONE PVMT MARKING SINGLE 4" (Y) DOT

WORK ZONE PVMT MARKING SINGLE 4" (W) SOLID

WORK ZONE PVMT MARKING DOUBLE 4" (Y) SOLID

WORK ZONE PVMT MARKING SINGLE 4" (W) DOT

TYPE III BARRICADES (TYP)

DRAINAGE EASEMENT

WORK ZONE PVMT MARKING FIRE LANE

WORK ZONE PVMT MARKING SINGLE 6" (W) SOLID

WORK ZONE PVMT MARKING DOUBLE 4" (Y) SOLID

0 40 80
SCALE IN FEET

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 2
CITY OF MESQUITE, TEXAS

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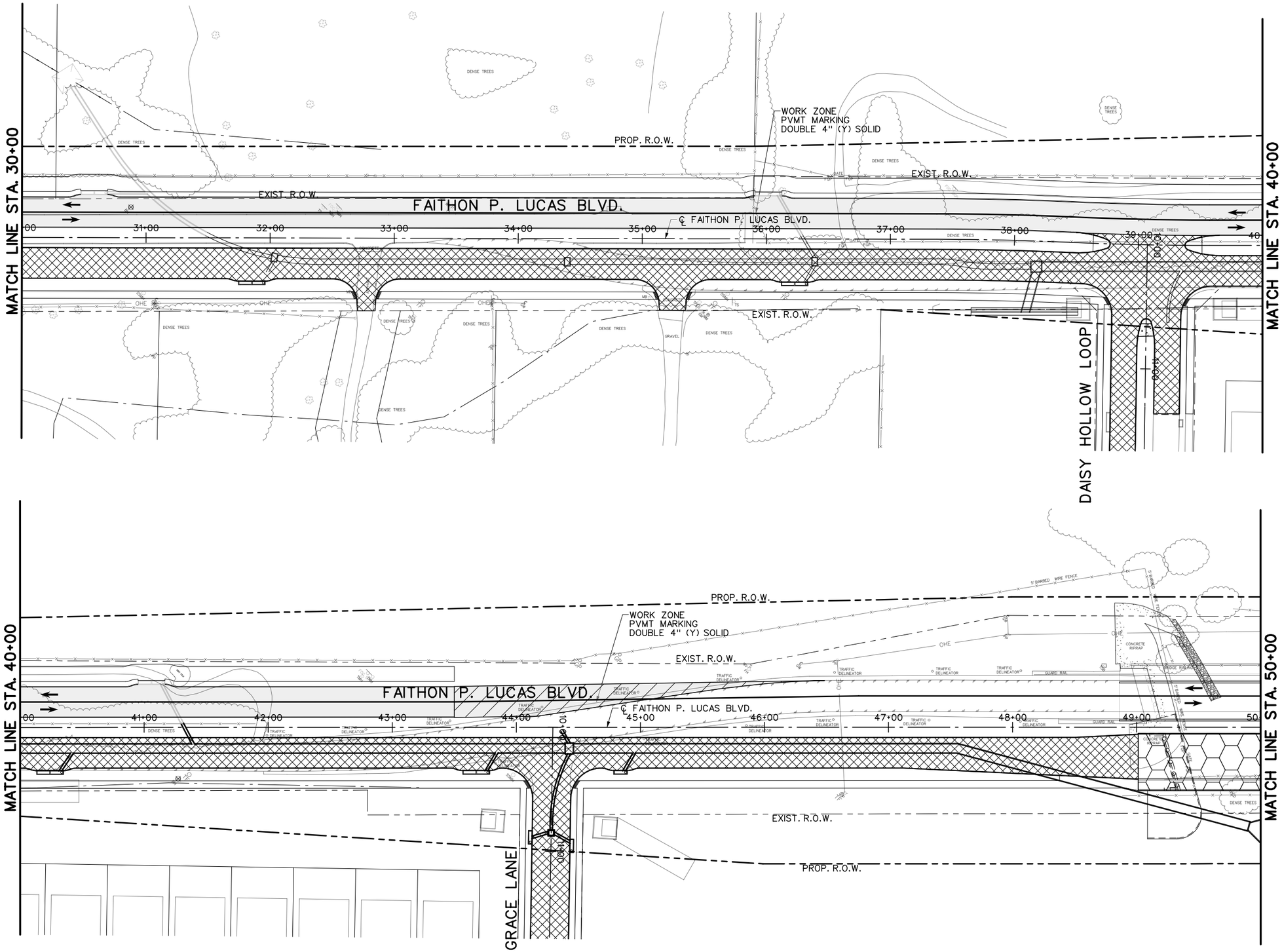

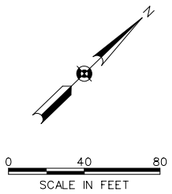

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88551
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12/27/22

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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
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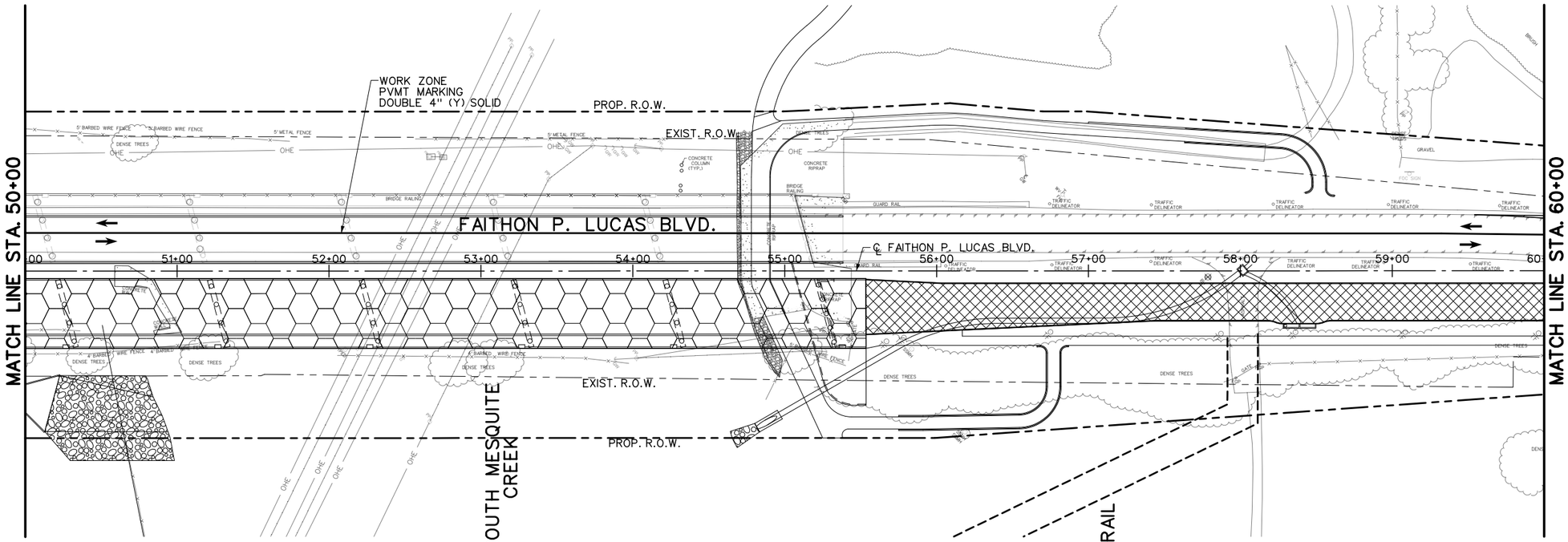
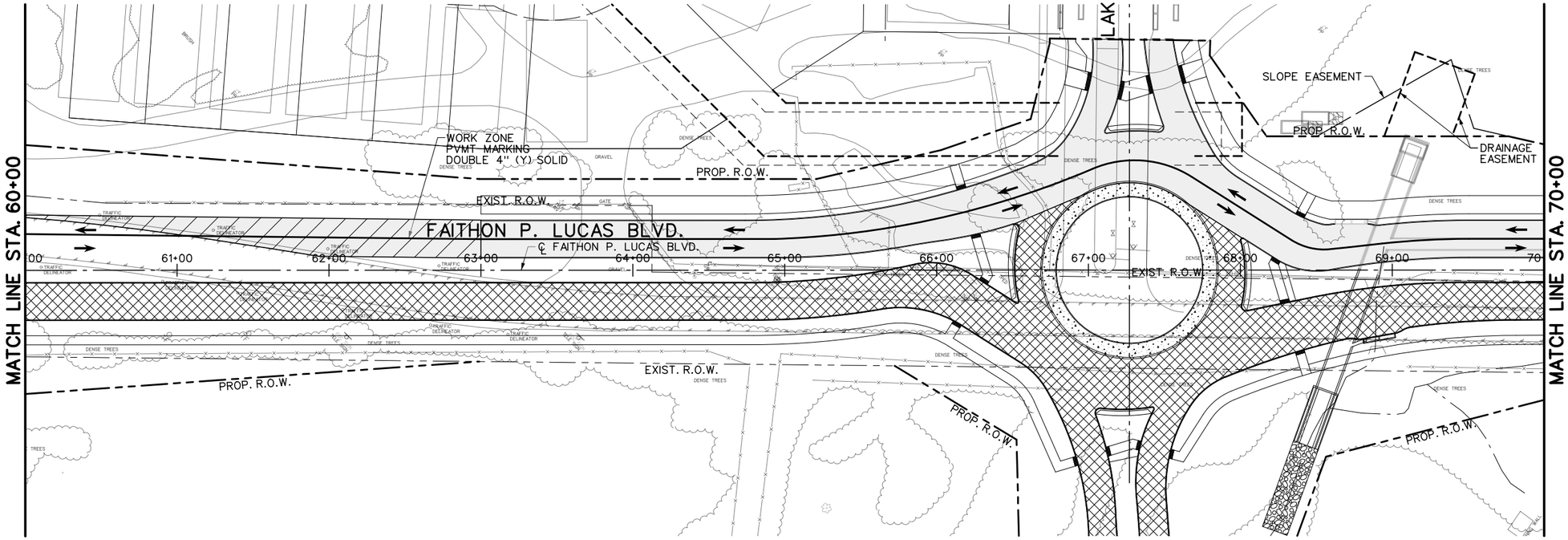
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 2
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-021	21 OF 252





0 40 80

SCALE IN FEET

LEGEND

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12/27/22

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Dallas, TX. 75201 (214) 748-4888
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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

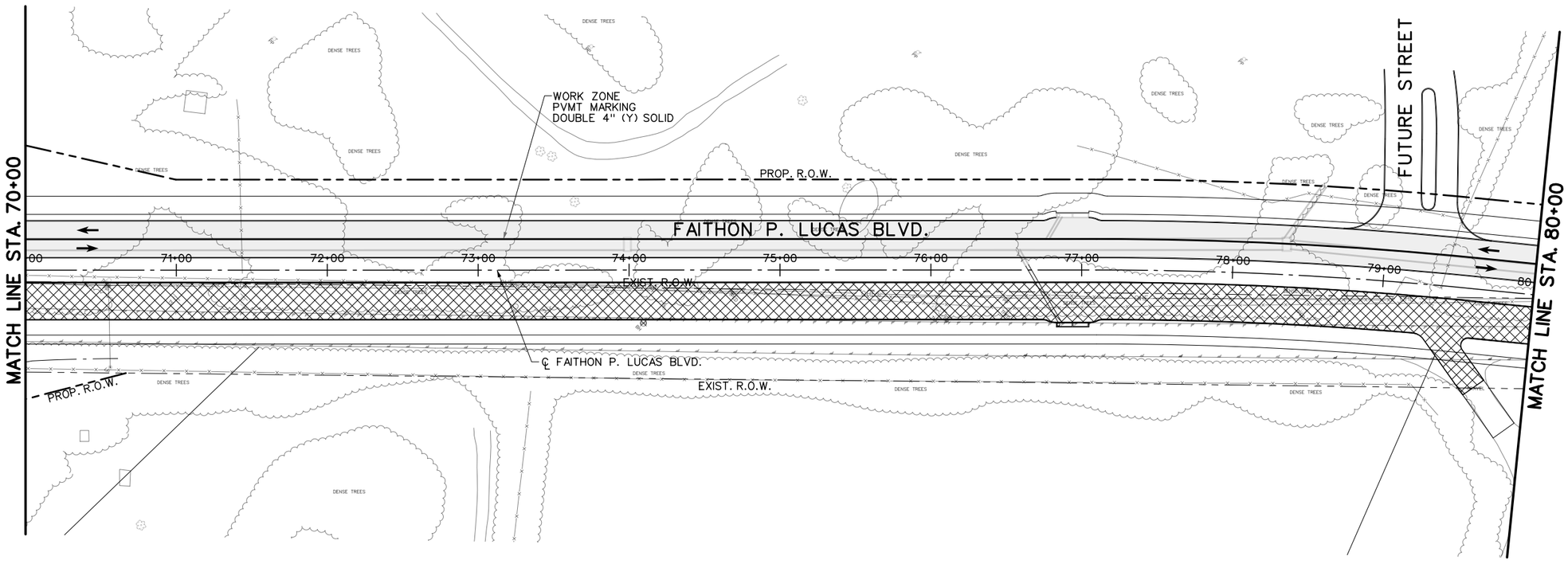
FROM McKENZIE RD. TO CARTWRIGHT RD.

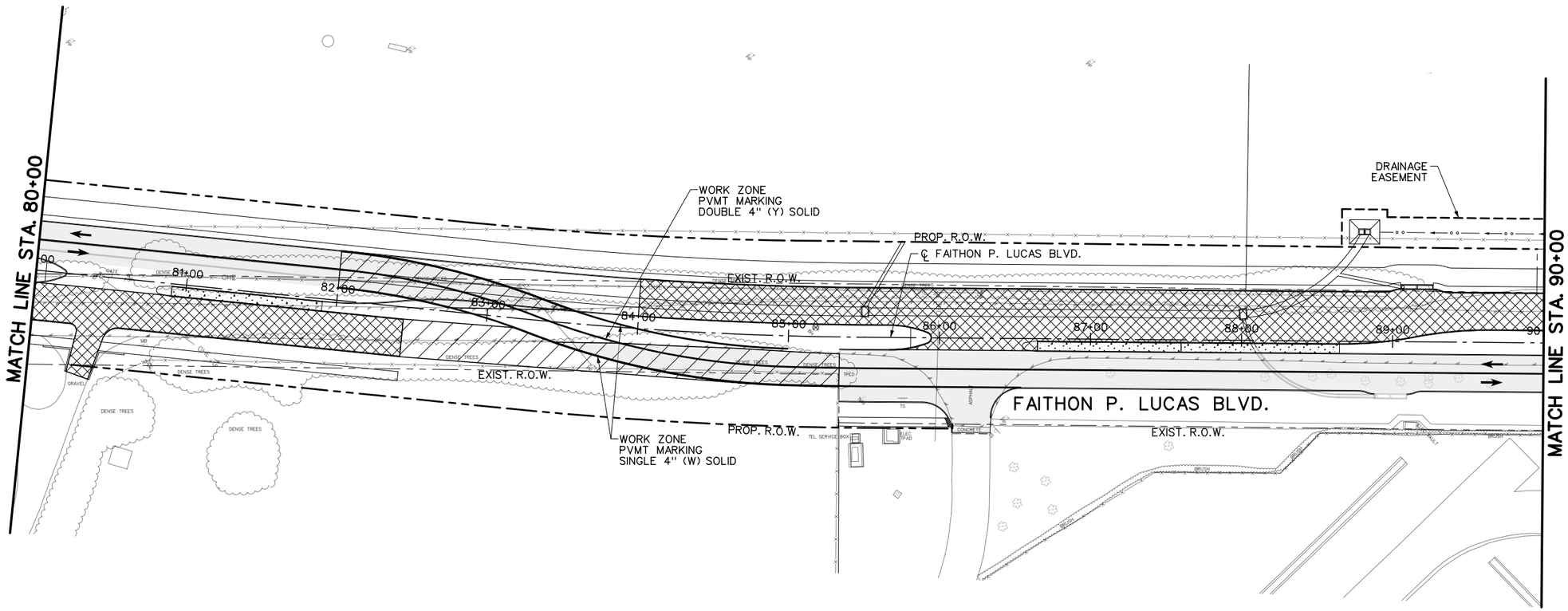
SUGGESTED SEQUENCE OF CONSTRUCTION

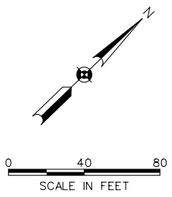
PHASE 2

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-022	22 OF 252







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12/27/22

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1700 Pacific Avenue, Suite 1020
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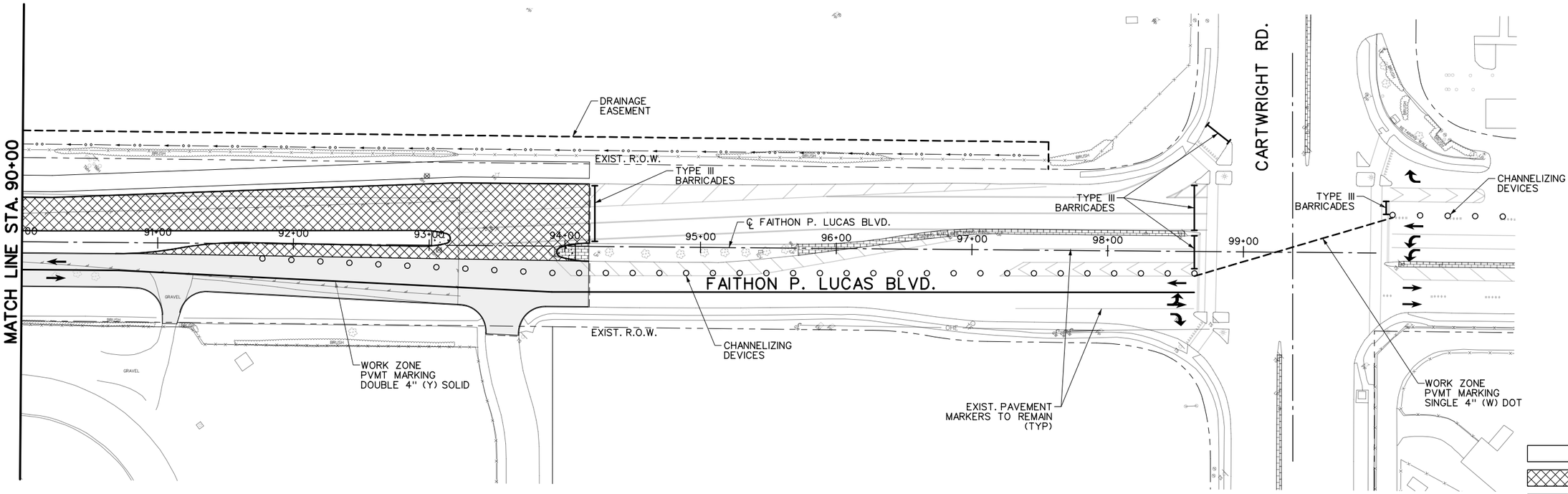
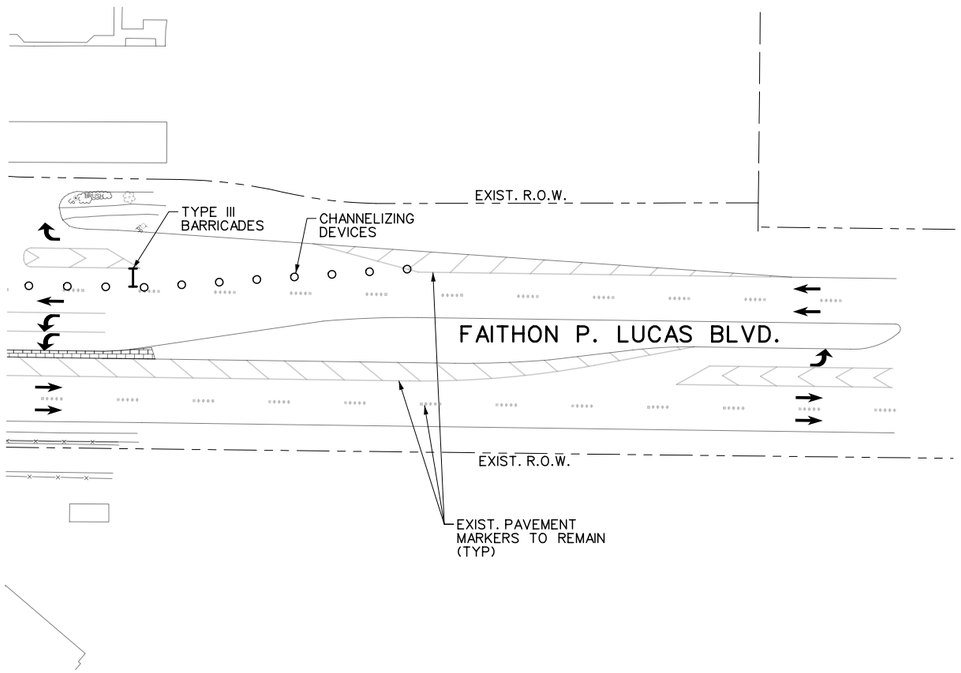
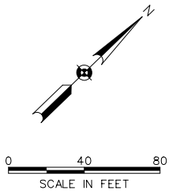
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 2
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-023	23 OF 252







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ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

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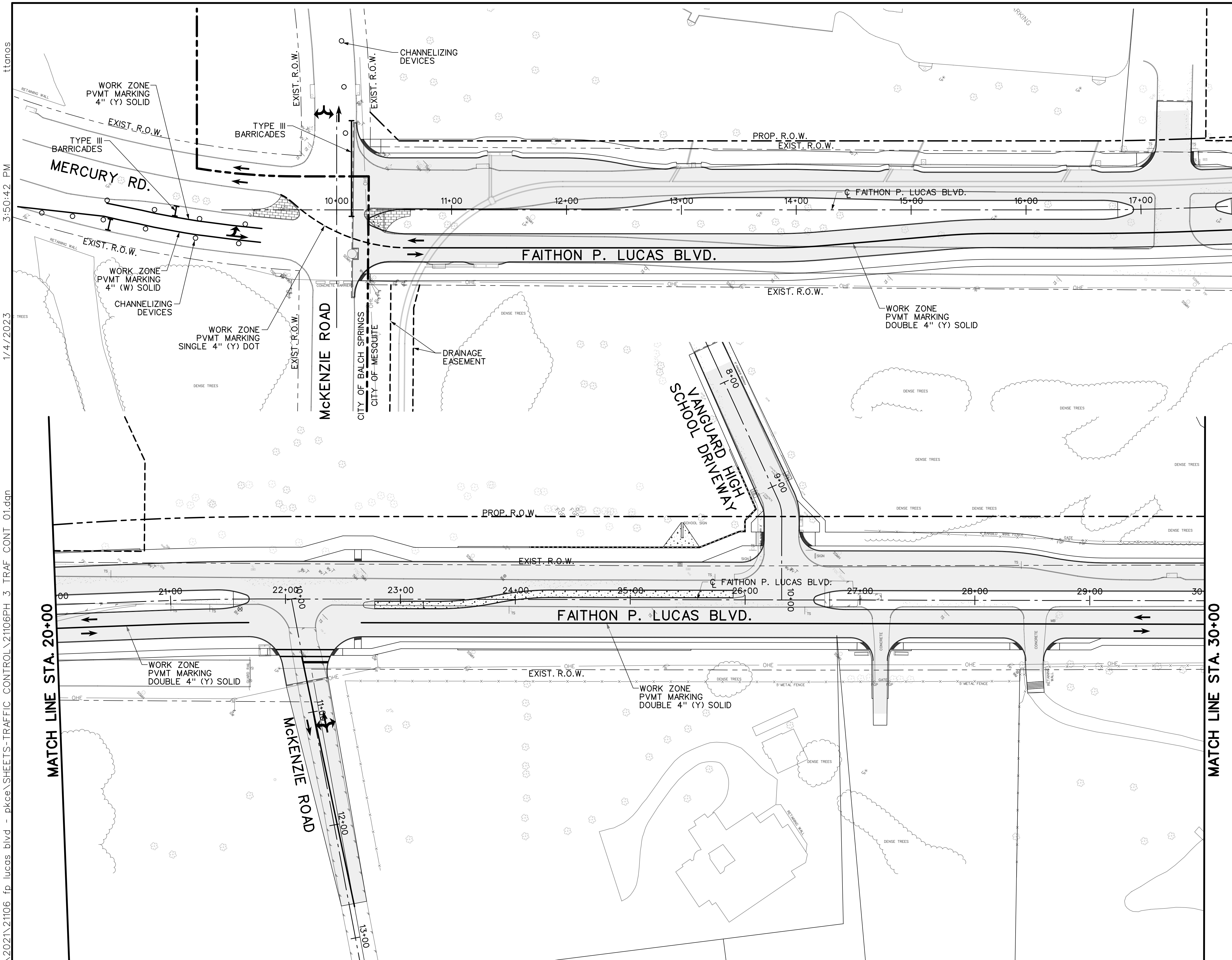
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 2
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-024	24 OF 252



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2			

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS ERIC K. KRONER 88551 LICENSED PROFESSIONAL ENGINEER
12/27/22

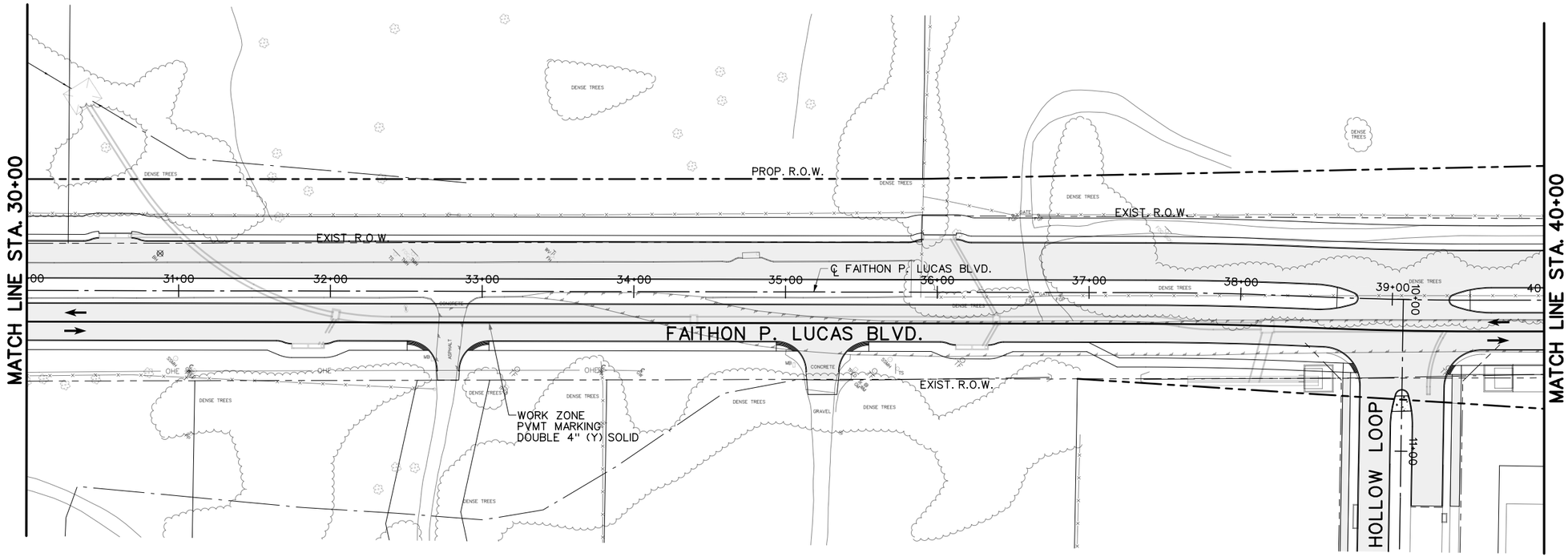
APM & Associates, Inc. Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 3

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-025	25 OF 252



N

0 40 80

SCALE IN FEET

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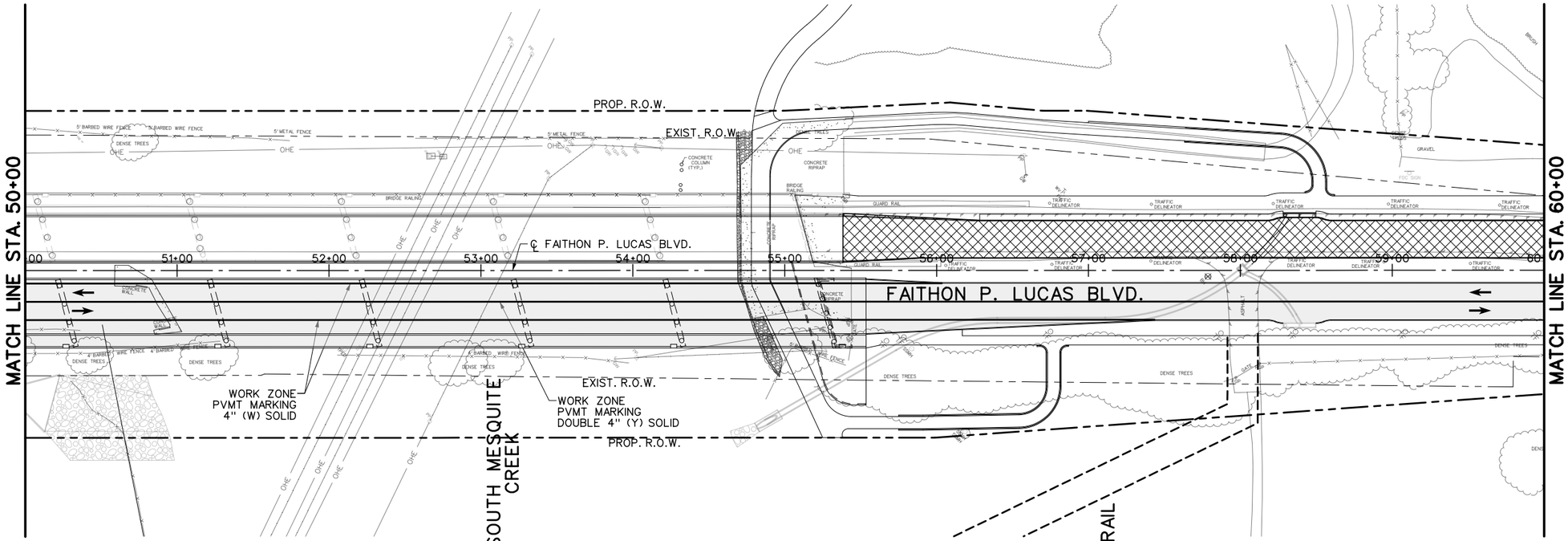
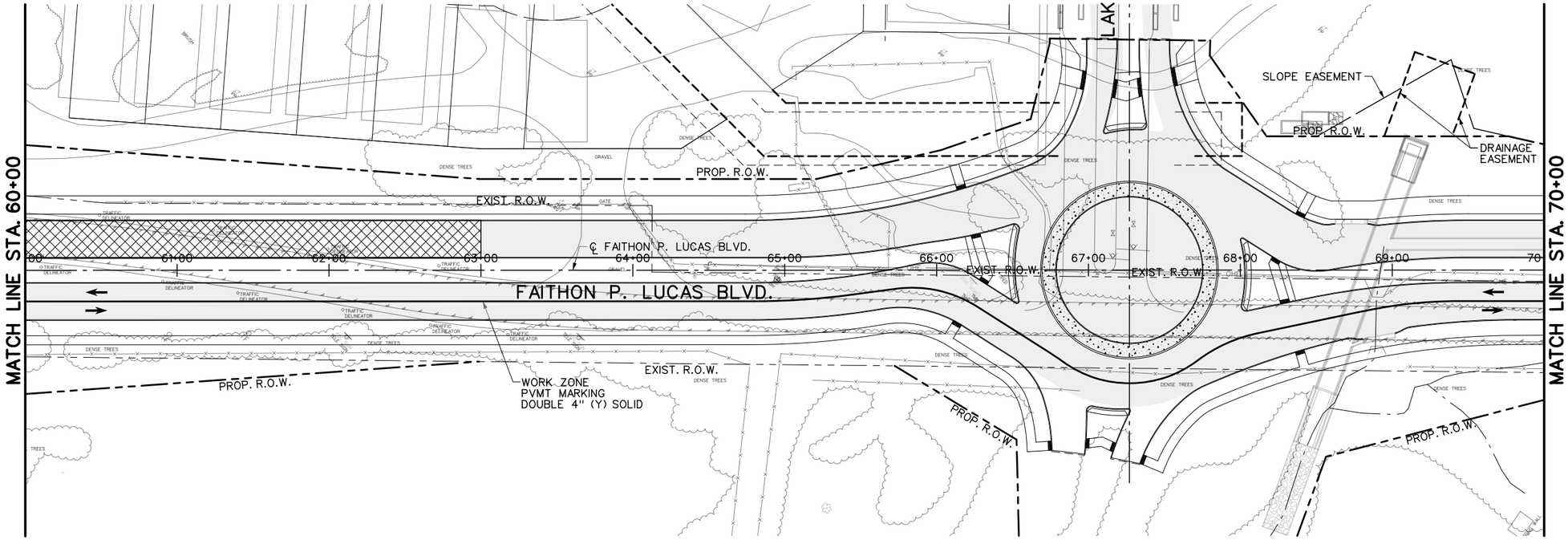
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 3
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-026	26 OF 252





0 40 80
SCALE IN FEET

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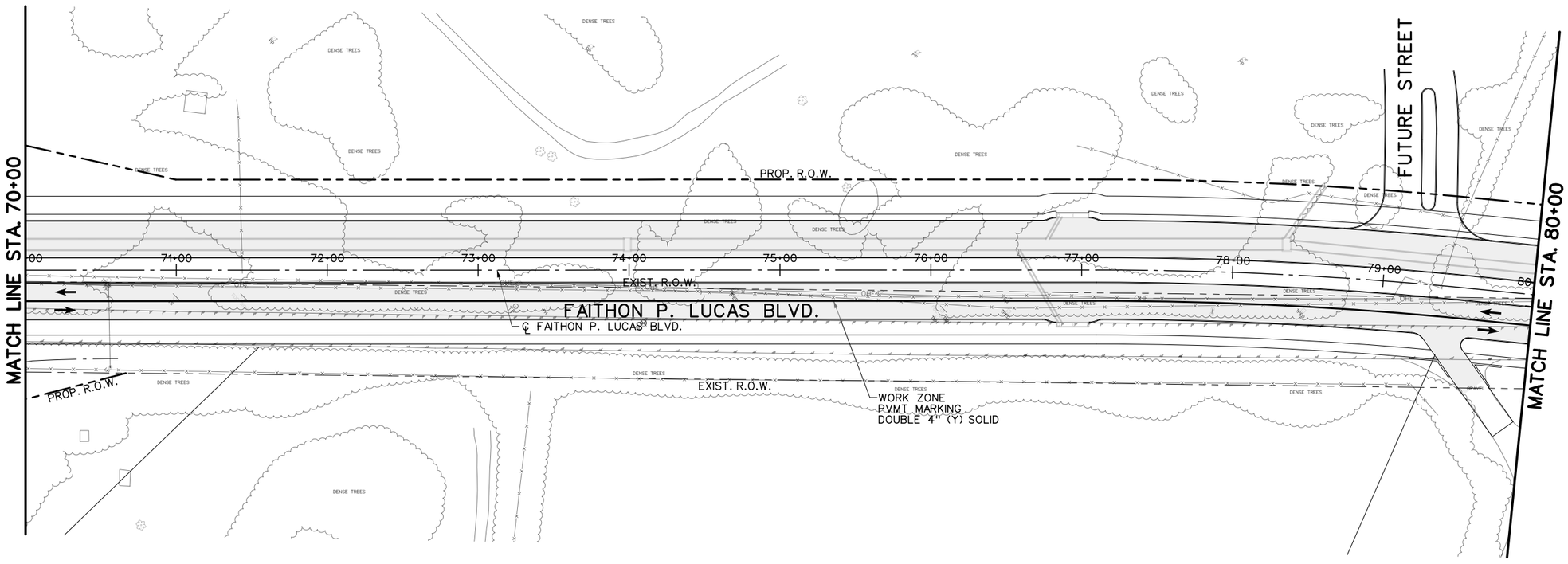
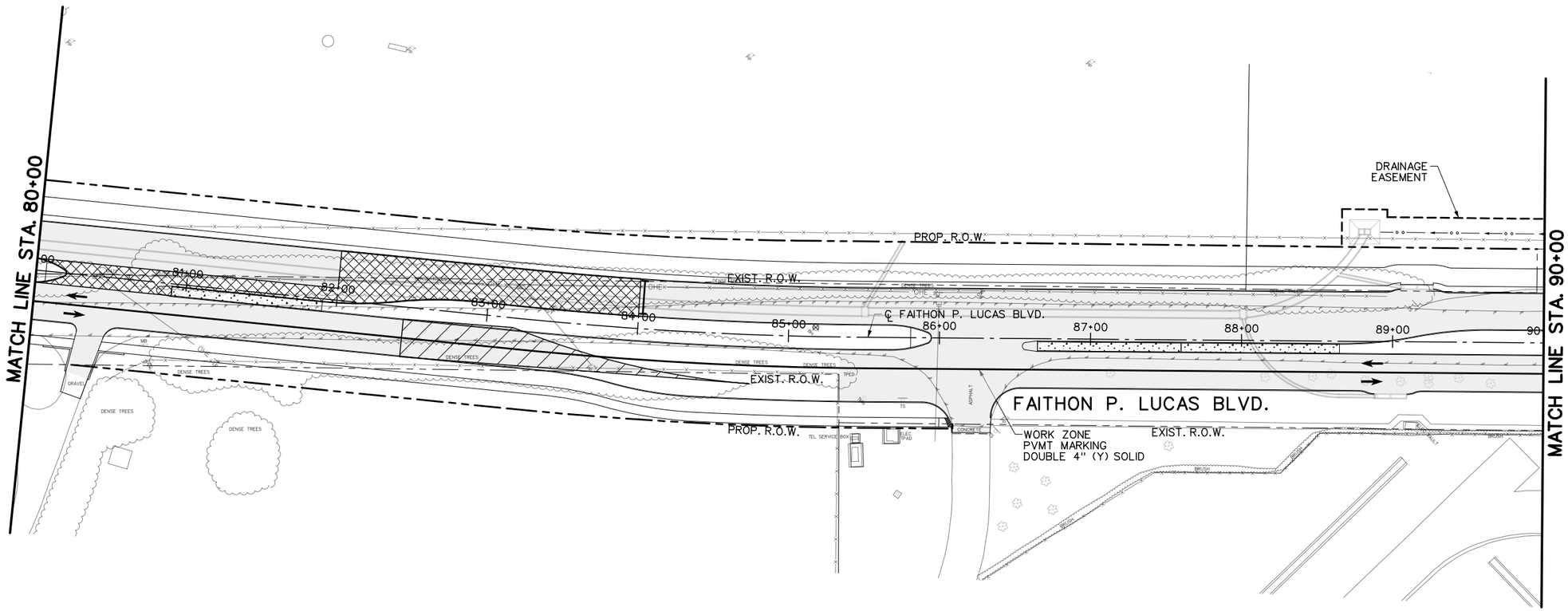
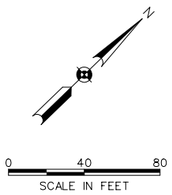
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 3
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-027	27 OF 252







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CITY CONTRACT NO. 2020-095

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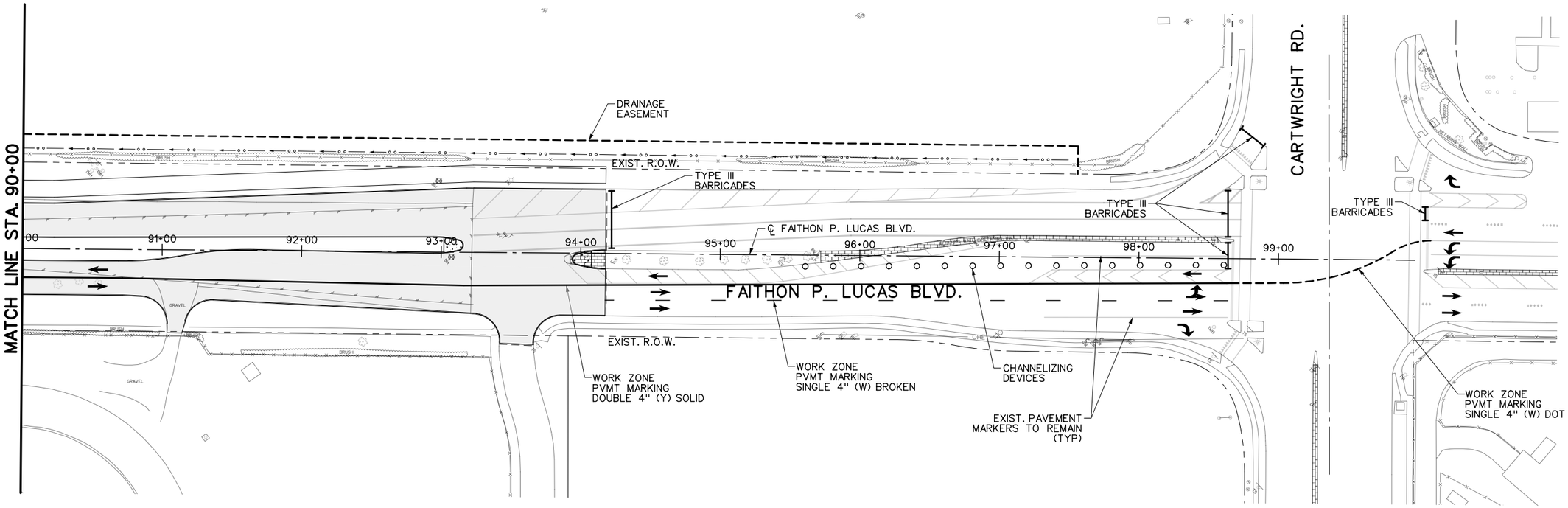
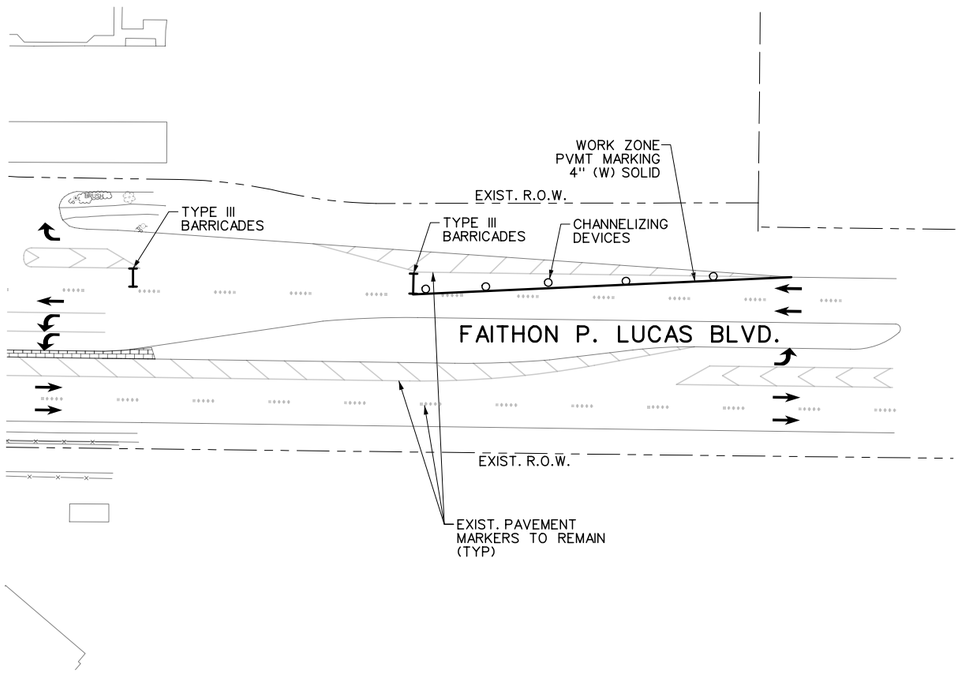
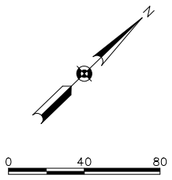
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 3
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-028	28 OF 252







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ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

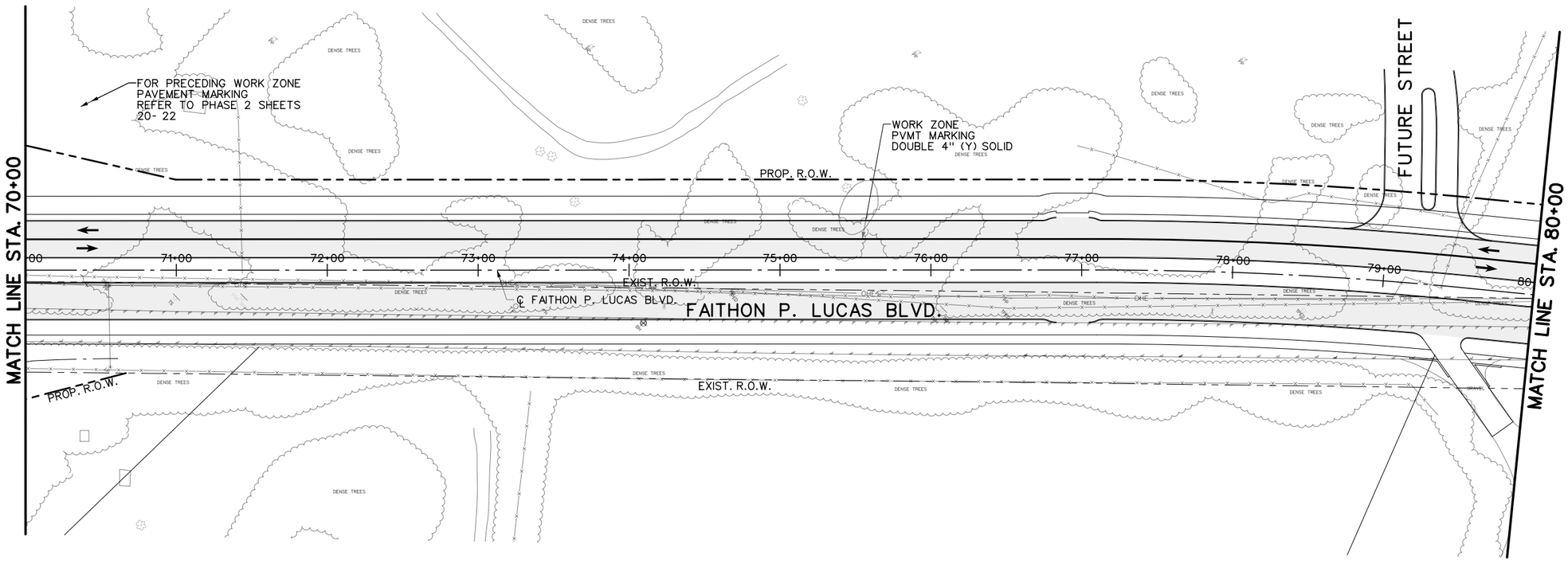
STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

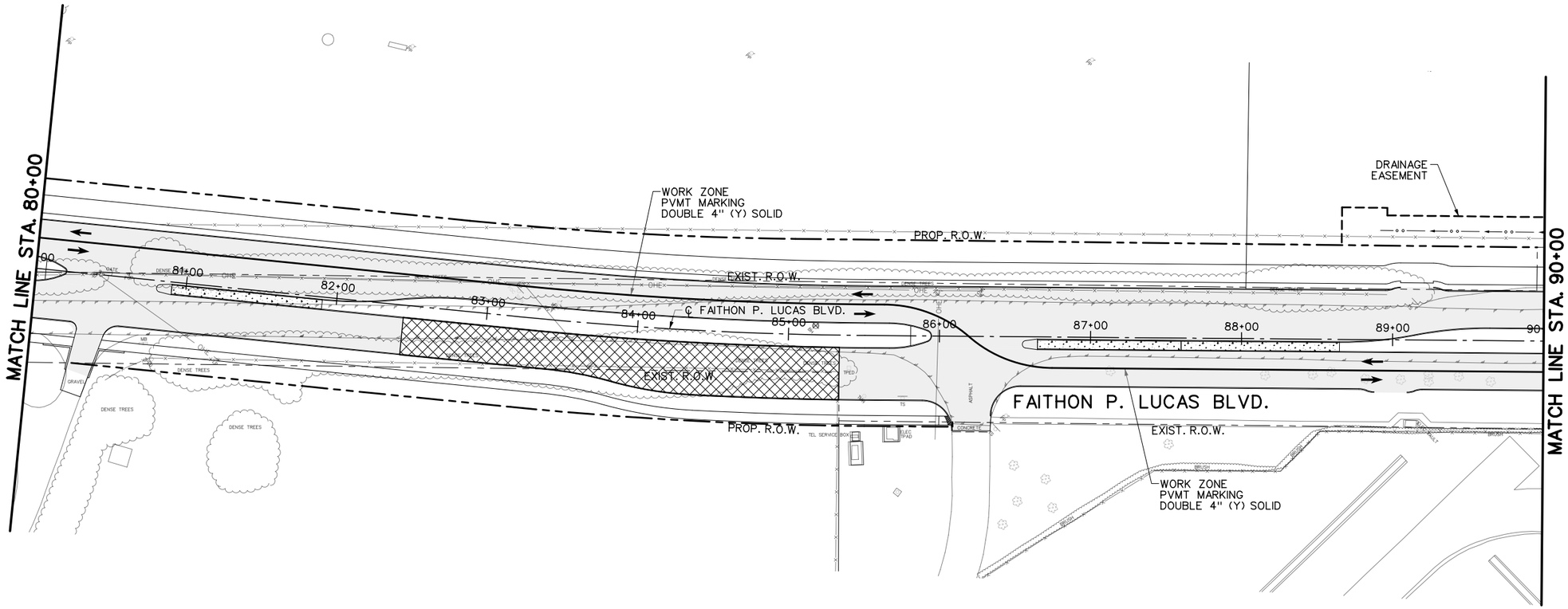
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

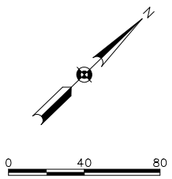
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 3
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-029	29 OF 252







LEGEND

- EXISTING ROADWAY
- ROADWAY CONSTRUCTED IN THIS PHASE
- ROADWAY CONSTRUCTED IN PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TEMP. PVMT. CONSTRUCTED IN PREVIOUS PHASE
- BRIDGE CONSTRUCTED IN THIS PHASE
- TEMPORARY PAVEMENT STRIPING (TWO-WAY)
- ROUTING OF TRAFFIC (DIRECTIONAL ARROW)
- TYPE 3 BARRICADE
- CHANNELIZING DEVICES

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES
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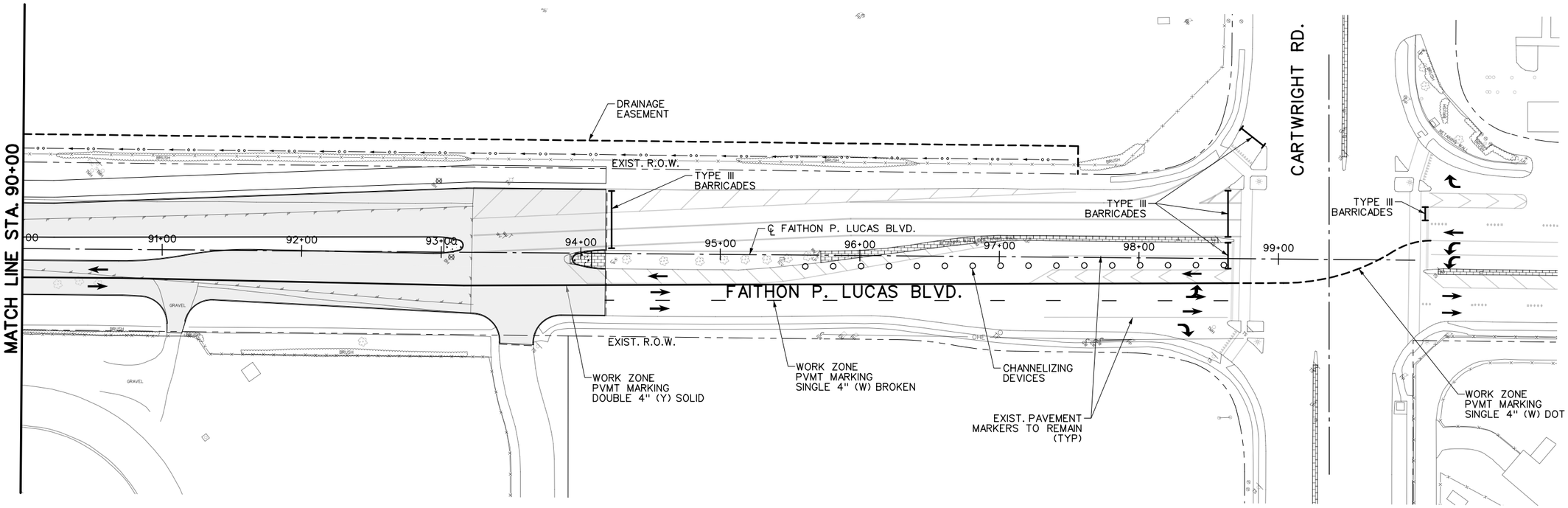
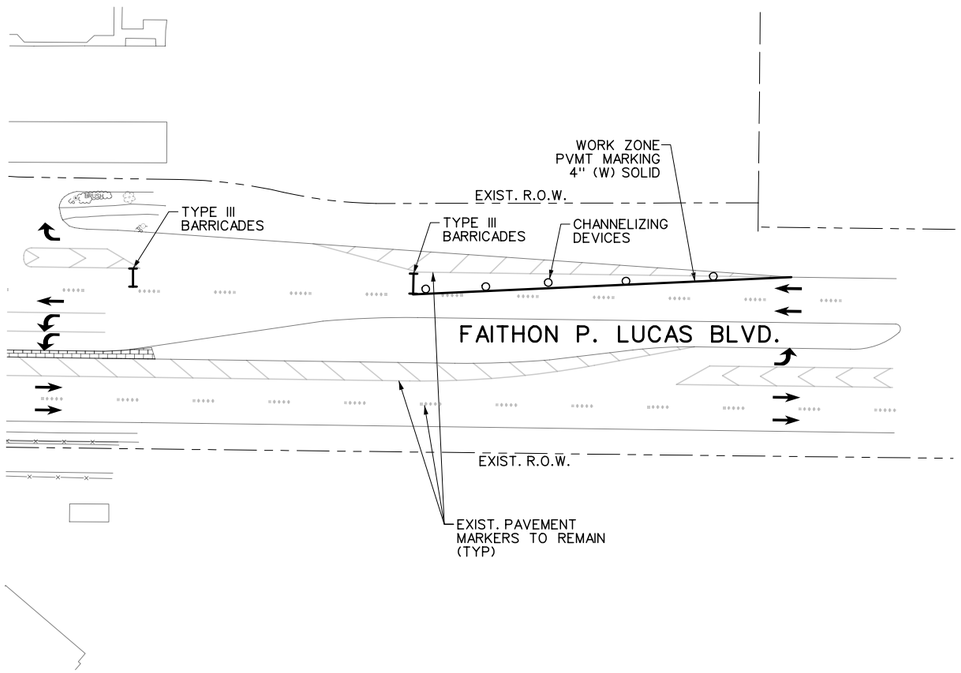
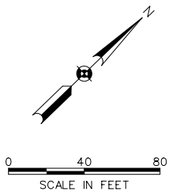
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 3A
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-030	30 OF 252







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- TYPE 3 BARRICADE
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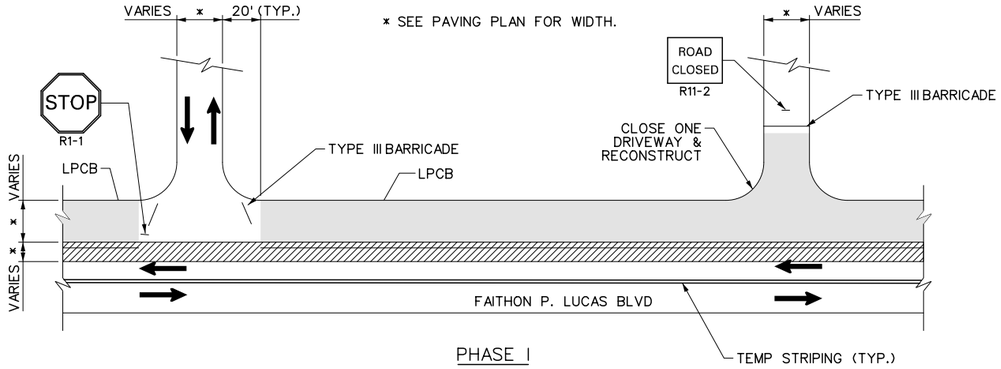
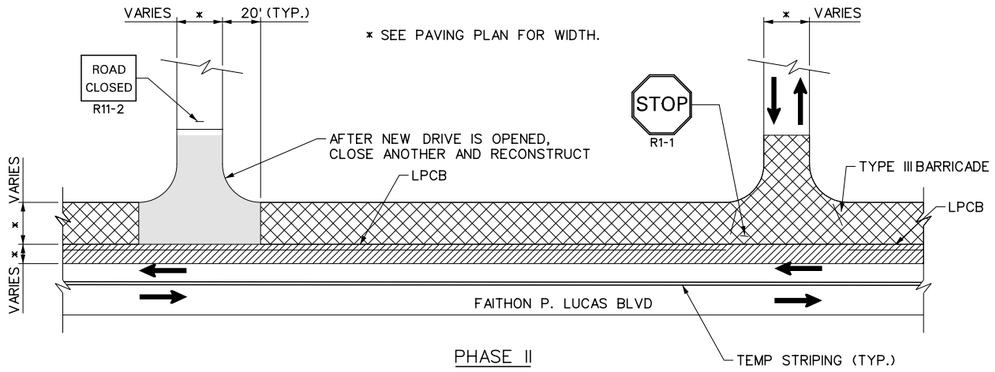
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
SUGGESTED SEQUENCE OF CONSTRUCTION
PHASE 3A
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-031	31 OF 252



PHASE I



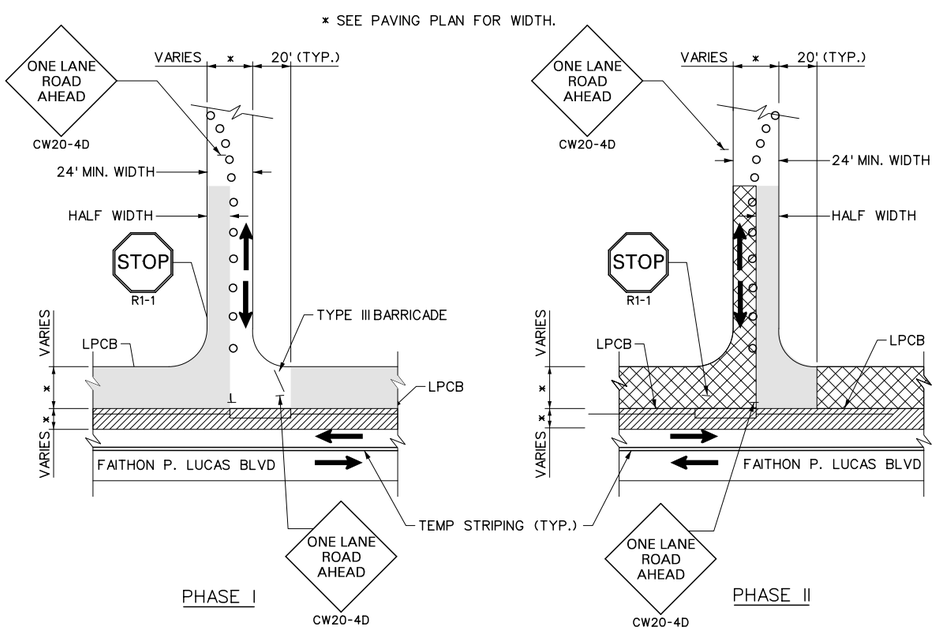
PHASE II

TYPICAL ROADWAY PHASING AND DRIVEWAY CONSTRUCTION

N.T.S.

TRAFFIC CONTROL NOTES :

1. REFER TO THE SUGGESTED SEQUENCE OF CONSTRUCTION LAYOUT SHEETS FOR A MORE DETAILED DESCRIPTION OF THE WORK SEQUENCE.
2. REFER TO THE SPECIAL SIGN DETAILS SHEETS, "BARRICADE AND CONSTRUCTION STANDARDS" BC(1)-03 THRU BC(12)-03 AND TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR TEMPORARY SIGN DETAILS USED IN THE SEQUENCE OF WORK.
3. THE CONTRACTOR SHALL PLACE & MAINTAIN ALL PROJECT LIMIT TRAFFIC CONTROL DEVICES AS SHOWN ON BC (1)-03 THRU BC (12)-03 AND WZ (BTS-1)-03, IN ACCORDANCE WITH CURRENT TXMUTCD GUIDELINES, AND AS DIRECTED BY THE ENGINEER.
4. TEMPORARY BARRIER AND ATTENUATORS SHALL BE USED AS SHOWN ON THE PLANS AND AS INDICATED BY THE APPROPRIATE BARRIER AND/OR ATTENUATOR STANDARDS. REFER TO THE "BARRICADE AND CONSTRUCTION STANDARDS" BC(1)-03 THRU BC(12)-03 FOR DETAILS.
5. WORK ZONE PAVEMENT MARKINGS SHALL BE RAISED MARKERS WHERE POSSIBLE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY OR PERMANENT DRAINAGE SYSTEMS PRIOR TO PLACEMENT OF THE TEMPORARY/ PERMANENT PAVEMENT.
7. THE CONTRACTOR SHALL SLOPE ALL TEMPORARY PIPES TO DRAIN WHERE POSSIBLE, OTHERWISE, TEMPORARY SYSTEMS SHALL OPERATE AS INVERTED SYPHONS, IN THE ABSENCE OF SPECIFIED FLOWLINE ELEVATIONS.
8. THE OUTSIDE EDGES OF SHARP CURVES AND TAPERS SHALL BE DELINEATED WITH CHEVRONS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
9. TEMPORARY ASPHALT PAVEMENT SHALL MATCH AT ALL INTERFACES WITH EXISTING PAVEMENT. REMOVE THE EXISTING CURB AT THE INTERFACE.
10. THE SEQUENCE OF WORK FOR THE PHASE 1 AND PHASE 2 CONSTRUCTION MAY OVERLAP. SEE TIMELINE FOR OVERLAP DETAILS. THE CONTRACTOR IS REQUIRED TO ENSURE THE CONTINUITY OF CONSTRUCTION WORK AND TRAFFIC CONTROL DEVICES BETWEEN PHASE 1 AND PHASE 2 CONSTRUCTION AT ALL TIMES.
11. SIGNS SHALL REMAIN IN PLACE FOR THE DURATION OF CONSTRUCTION IF APPROPRIATE, UNTIL CONSTRUCTION IS COMPLETE, OR UNTIL IT IS REPLACED BY OTHER SIGNING SHOWN IN TCP.
12. REMOVALS ASSOCIATED WITH STAGED CONSTRUCTION TO BE PAID FOR UNDER REMOVAL ITEMS.
13. THE CONTRACTOR SHALL MAINTAIN ACCESS TO RESIDENTIAL AND COMMERCIAL PROPERTIES ADJACENT TO WORK AREAS AT ALL TIMES.
14. CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH ANCHORED STEEL PLATES DURING NONWORKING HOURS AND OPEN TRAFFIC LANES.
15. THE ENGINEER MAY DIRECT THE CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES, AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND MOTORIST SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS, BARRICADES, ETC. SHALL BE CONSIDERED A PART OF THE LUMP SUM PAY ITEM "TRAFFIC CONTROL AND REGULATION".
16. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A MANNER SUCH THAT TRUCKS AND OTHER VEHICLES DO NOT CREATE A DIRT NUISANCE OR SAFETY HAZARD IN ANY STREETS, PUBLIC OR PRIVATE.
17. THE CONTRACTOR SHALL MAINTAIN A TEN FOOT (10') WIDE EMERGENCY LANE AT ALL TIMES.
18. ACCESS TO DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.



PHASE I PHASE II

DRIVEWAY PHASING

N.T.S.

PHASE I PHASE II

"T" INTERSECTION PHASING

N.T.S.

LEGEND

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- ROADWAY CONSTRUCTED IN PREVIOUS PHASE
- TEMPORARY PAVEMENT
- TEMPORARY PAVEMENT STRIPING (TWO-WAY)
- ROUTING OF TRAFFIC (DIRECTIONAL ARROW)
- BARRICADE
- CHANNELIZING DEVICE

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
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REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS — ERIC K. KRONER — 88551 — LICENSED PROFESSIONAL ENGINEER — 12/27/22

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1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD.TO CARTWRIGHT RD.

TYPICAL TRAFFIC CONTROL SEQUENCE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-032	32 OF 252

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1/4/2023

MCKENZIE ROAD
CITY OF MESQUITE
CITY OF BALCH SPRINGS
MERCURY RD.
FAITHON P. LUCAS BLVD.
MATCH LINE STA. 15+00
MATCH LINE SEE SHEET 42
MATCH LINE STA. 15+00
MATCH LINE STA. 20+00

VERTICALLY ADJUST WV
RELOCATE FH
REMOVE INLET
REMOVE TREE
PROP. R.O.W.
EXIST. R.O.W.
8" PVC TO REMAIN
REMOVE PVC TO R.O.W.
RELOCATE BY OTHERS
REMOVE RCP
REMOVE BRICK PAVERS
RCP TO REMAIN
REMOVE MH
REMOVE CONC. PAVEMENT
REMOVE CONC. CURB
REMOVE LIGHT POLE
℄ FAITHON P. LUCAS BLVD.
REMOVE TREES
VERTICALLY ADJUST MH
MANHOLE TO REMAIN CUT & PLUG 42" RCP
REMOVE INLET
CONCRETE BARRIERS
DRAINAGE EASEMENT
DENSE TREES
POWER LINE RELOCATION BY OTHERS (TYP.)
REMOVE CONC. DRIVE
REMOVE AIR RELEASE VALVE
REMOVE ASPH. PAVEMENT & SHOULDER
REMOVE GUARD RAIL

Ex.18" D.I.Water
Ex.8" P.V.C.Wastewater
Ex.12" P.V.C.Wastewater
Ex.15" RCP Wastewater
Ex.16" D.I.Water
M.I.S.D. FOC
OHE
8" GAS
R.O.W.

0 20 40
SCALE IN FEET

LEGEND

CONCRETE REMOVAL
ASPHALT REMOVAL

NOTES:

1. CITY OF MESQUITE, TRAFFIC MAINTENANCE WILL REMOVE AND REINSTALL ALL PERMANENT TRAFFIC CONTROL SIGNS. PLEASE CONTACT 972-216-6917 FOR FURTHER INFORMATION.
2. CONTRACTOR IS RESPONSIBLE FOR REPLACING REMOVED TRAFFIC CONTROL SIGNS WITH NECESSARY TEMPORARY TRAFFIC CONTROL SIGNS DURING PROJECT CONSTRUCTION.
3. CONTRACTOR SHALL NOTIFY THE CITY 5 WORKING DAYS PRIOR TO PLACEMENT OF NEW SIGNAGE.
4. THE FOLLOWING FRANCHISE UTILITIES ARE RESPONSIBLE FOR RELOCATING AND/OR REMOVING PRIVATELY OWNED UTILITIES.

   ELECTRICAL: ONCOR
   TELEPHONE: AT&T
   CABLE: COMCAST
   GAS: ATMOS

REVISIONS

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1			
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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-033	33 OF 252

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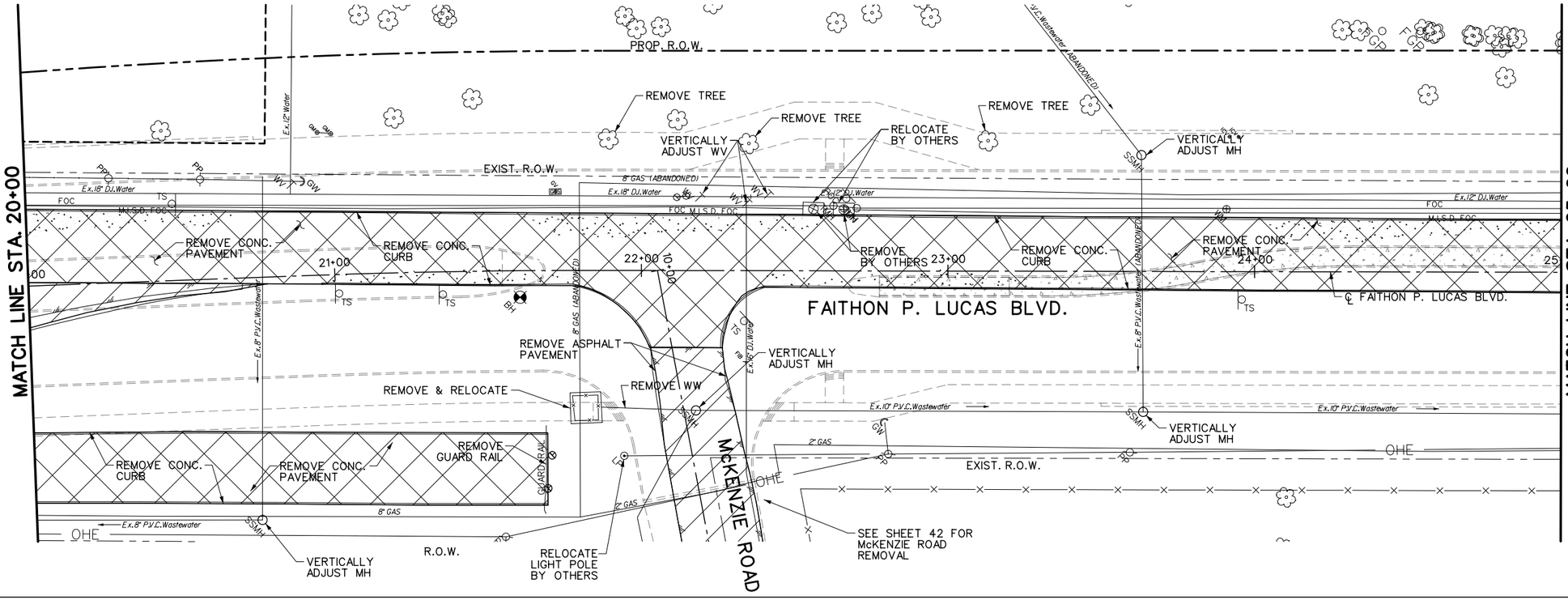

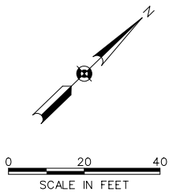

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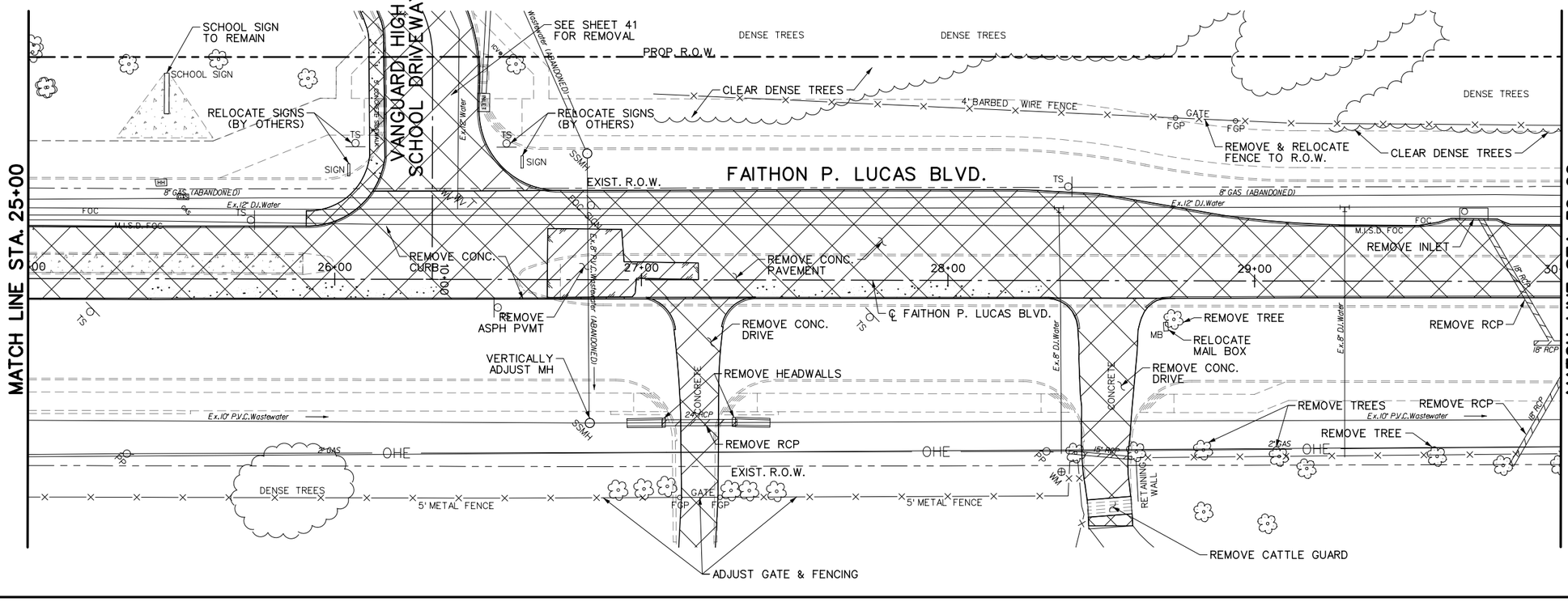
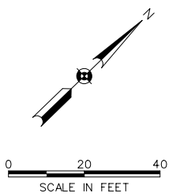
LEGEND

CONCRETE REMOVAL

ASPHALT REMOVAL





REVISIONS			
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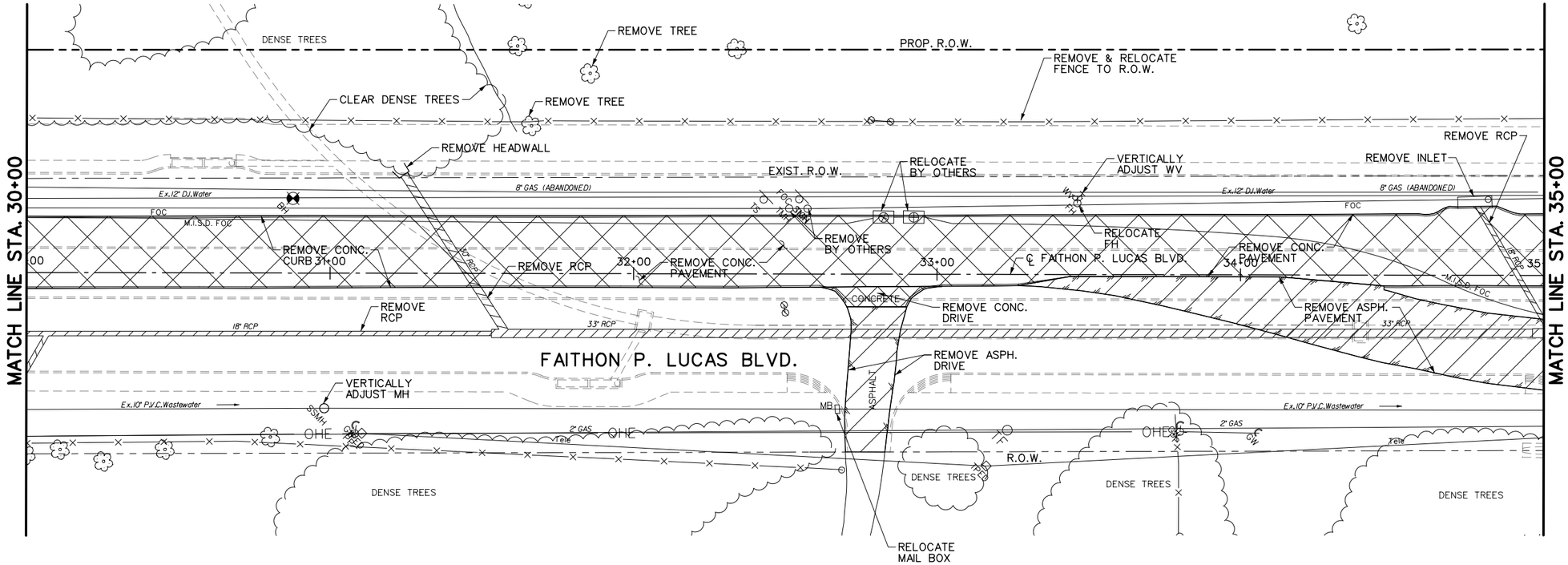
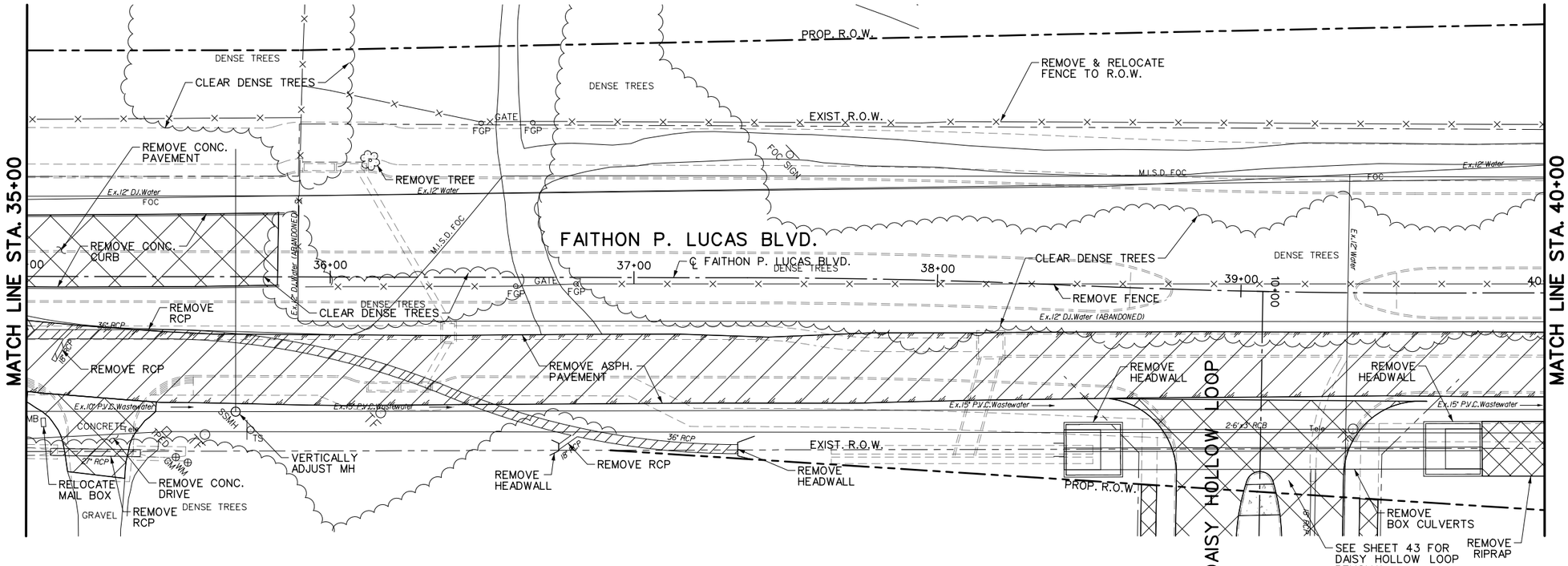
CITY CONTRACT NO. 2020-095

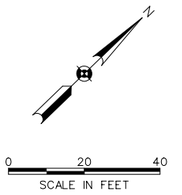
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-034	34 OF 252







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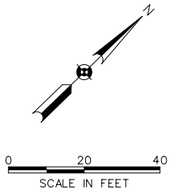
LEGEND

CONCRETE REMOVAL

ASPHALT REMOVAL



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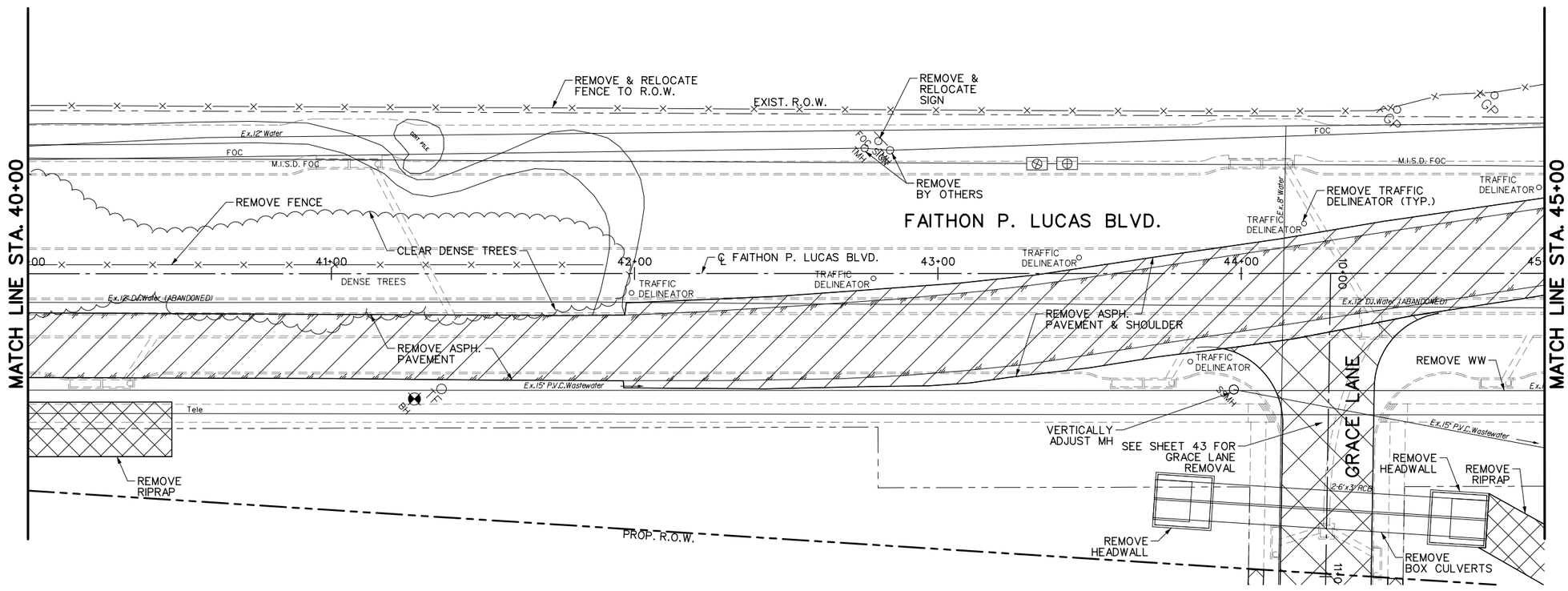
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-035	35 OF 252



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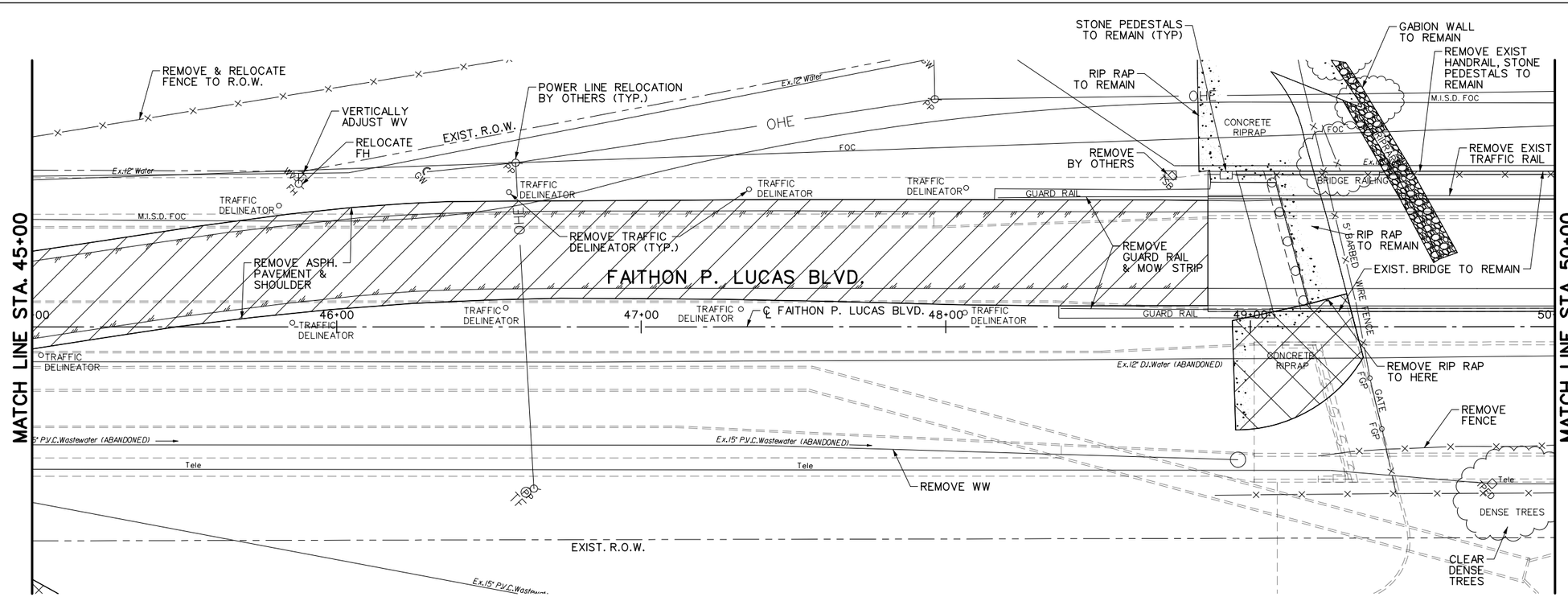
0 20 40
SCALE IN FEET

LEGEND

CONCRETE REMOVAL
ASPHALT REMOVAL



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SCALE IN FEET

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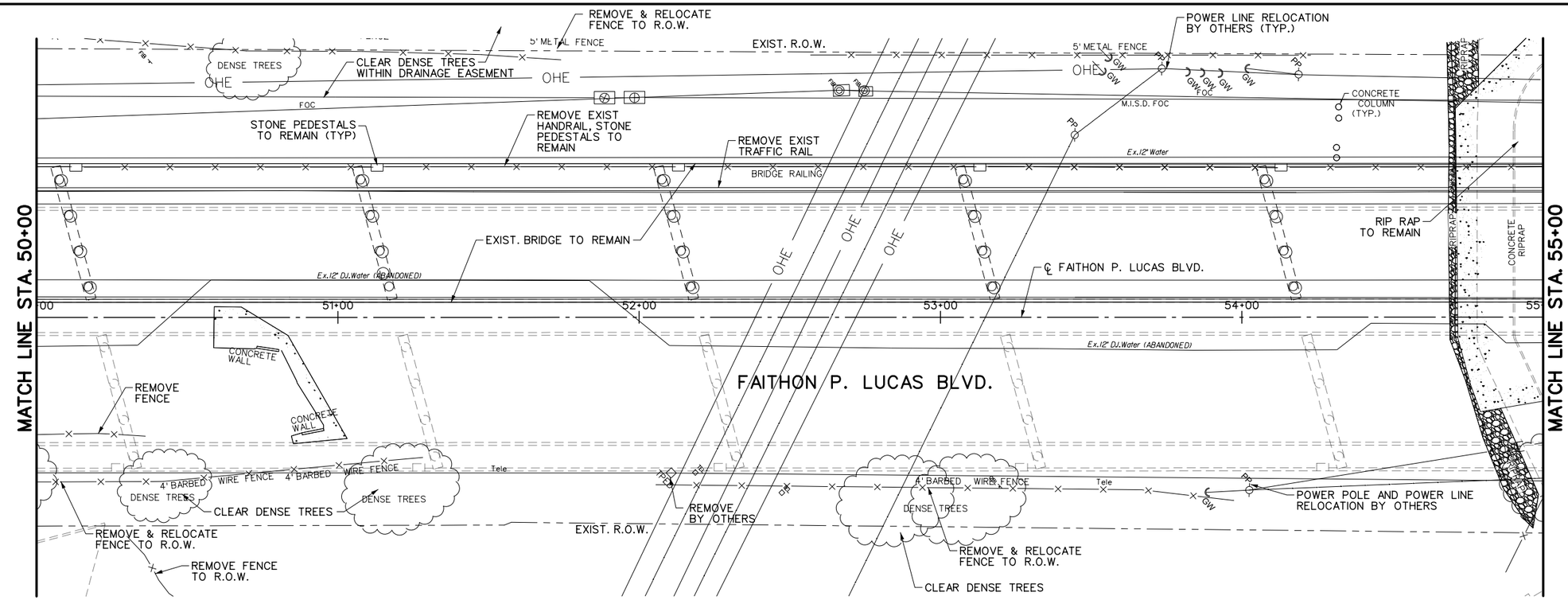
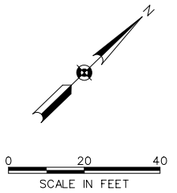
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-036	36 OF 252





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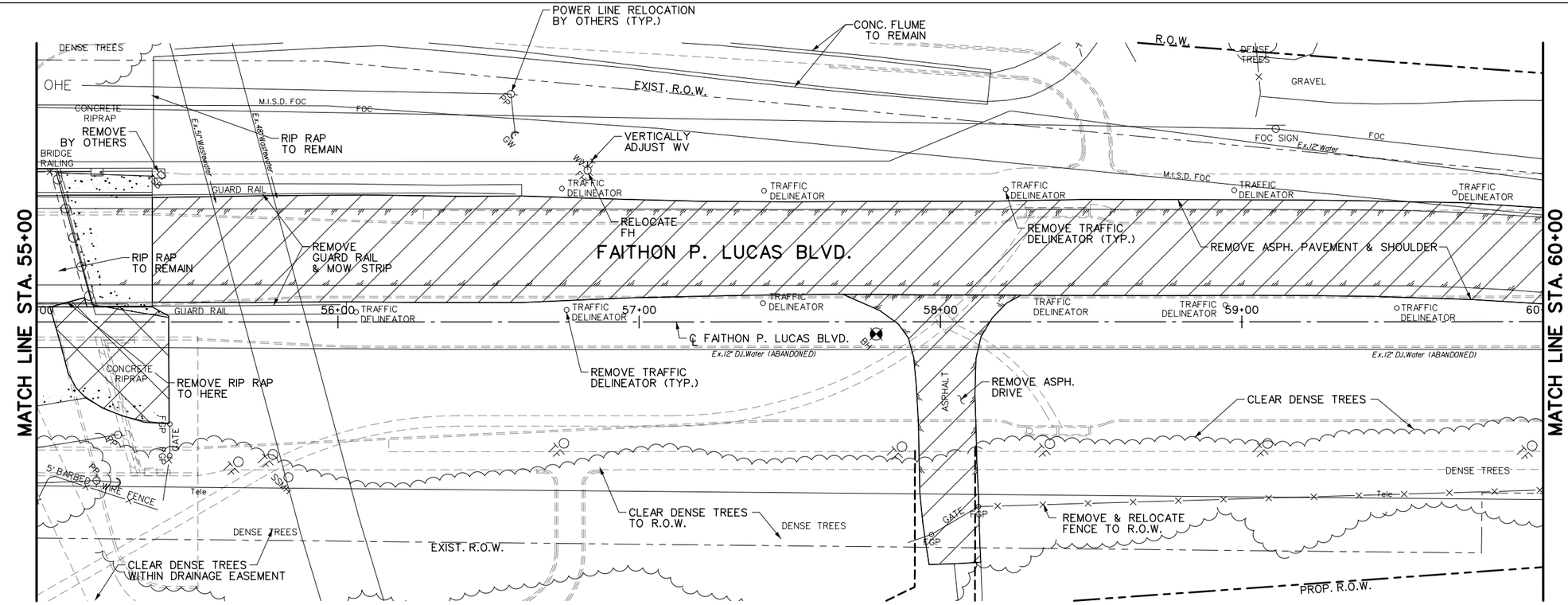
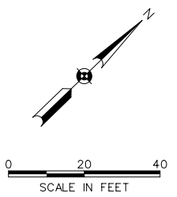
LEGEND

CONCRETE REMOVAL

ASPHALT REMOVAL





REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

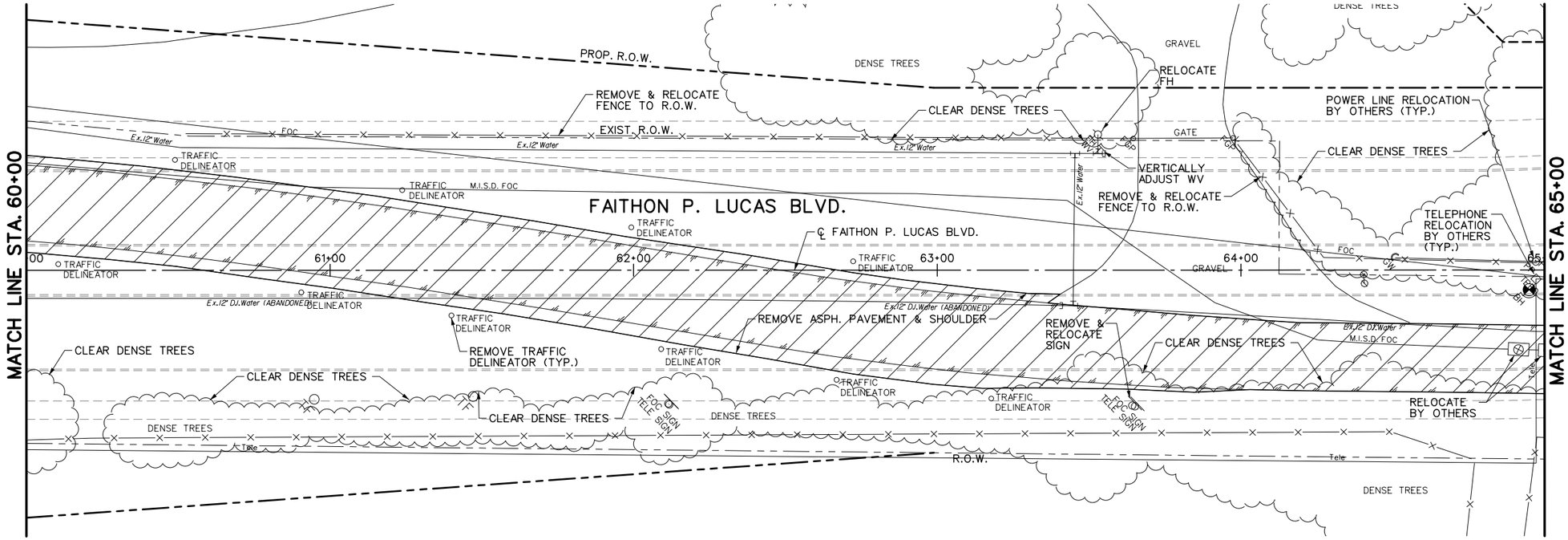
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-037	37 OF 252



NOTES:

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2. CONTRACTOR IS RESPONSIBLE FOR REPLACING REMOVED TRAFFIC CONTROL SIGNS WITH NECESSARY TEMPORARY TRAFFIC CONTROL SIGNS DURING PROJECT CONSTRUCTION.
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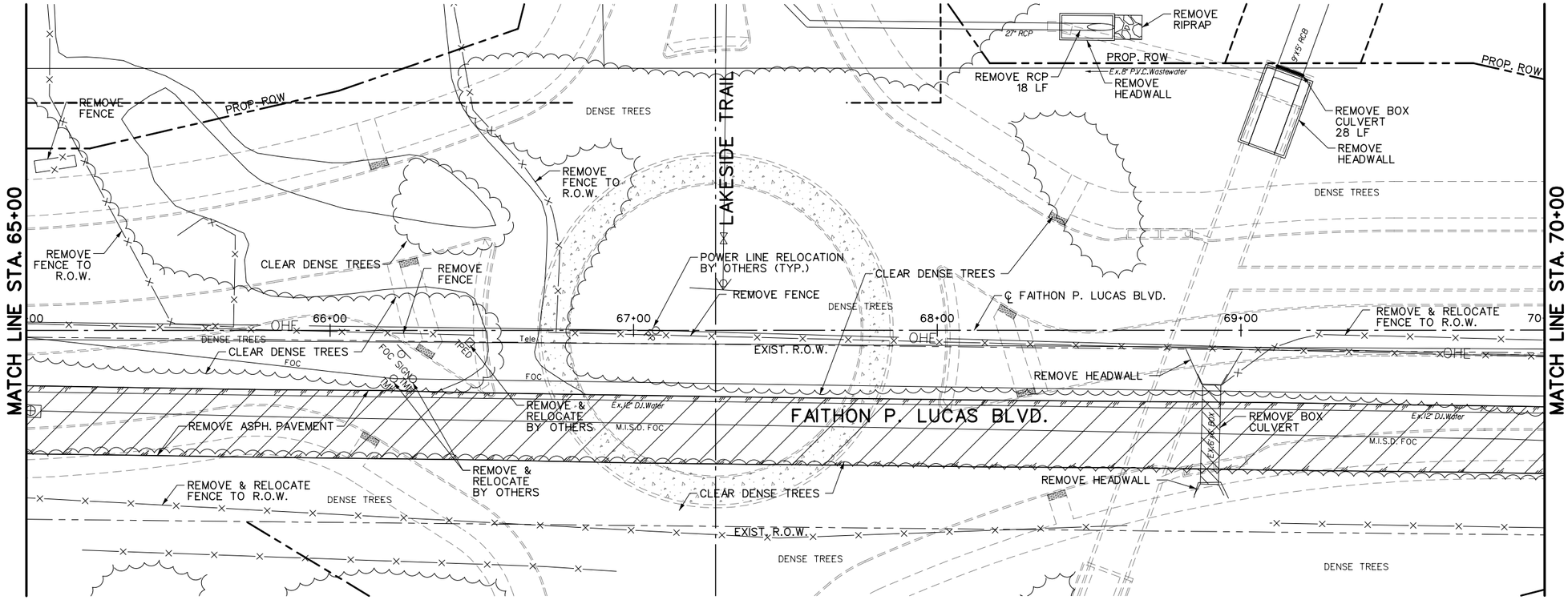
   ELECTRICAL: ONCOR
   TELEPHONE: AT&T
   CABLE: COMCAST
   GAS: ATMOS

LEGEND

- CONCRETE REMOVAL
- ASPHALT REMOVAL



REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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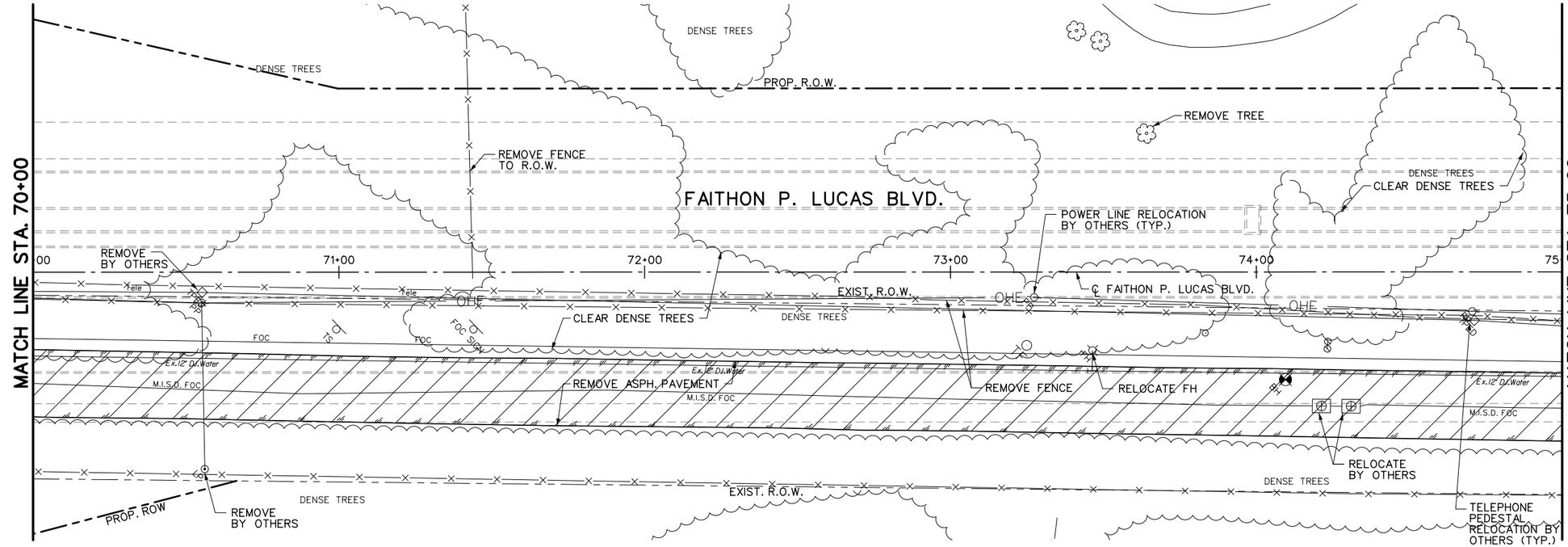
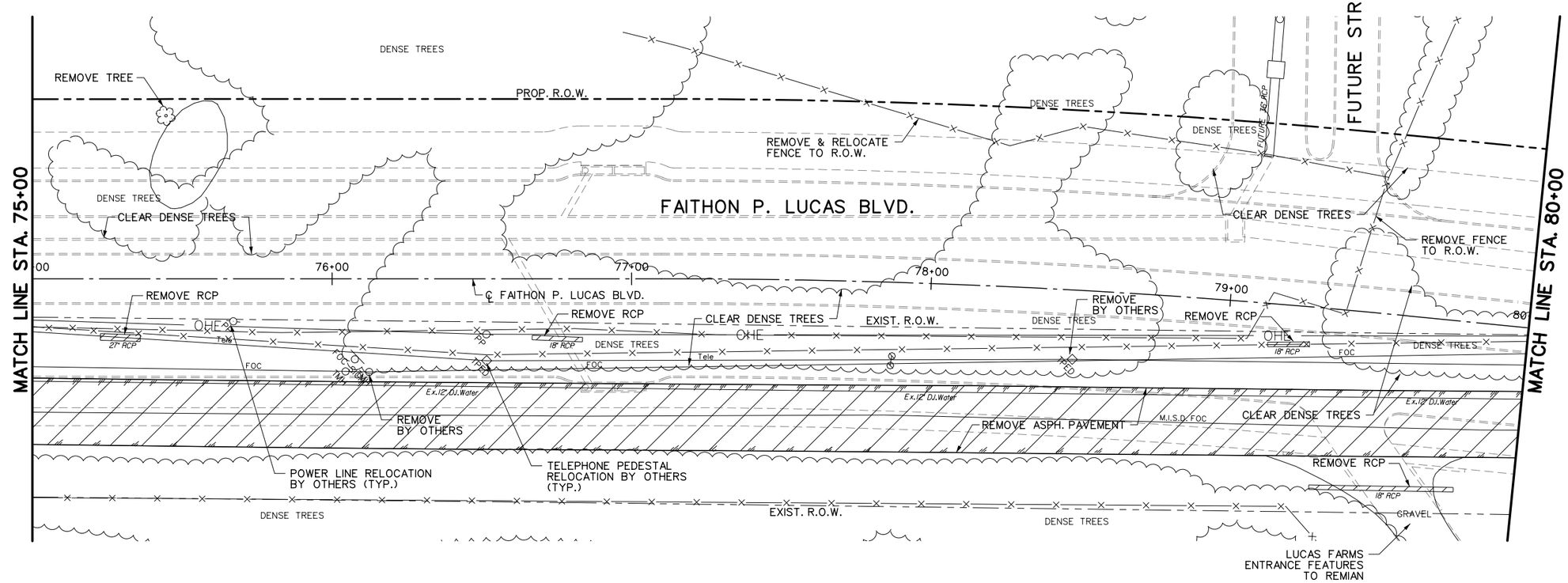
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-038	38 OF 252





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   TELEPHONE: AT&T
   CABLE: COMCAST
   GAS: ATMOS

LEGEND

CONCRETE REMOVAL

ASPHALT REMOVAL

0 20 40
SCALE IN FEET

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
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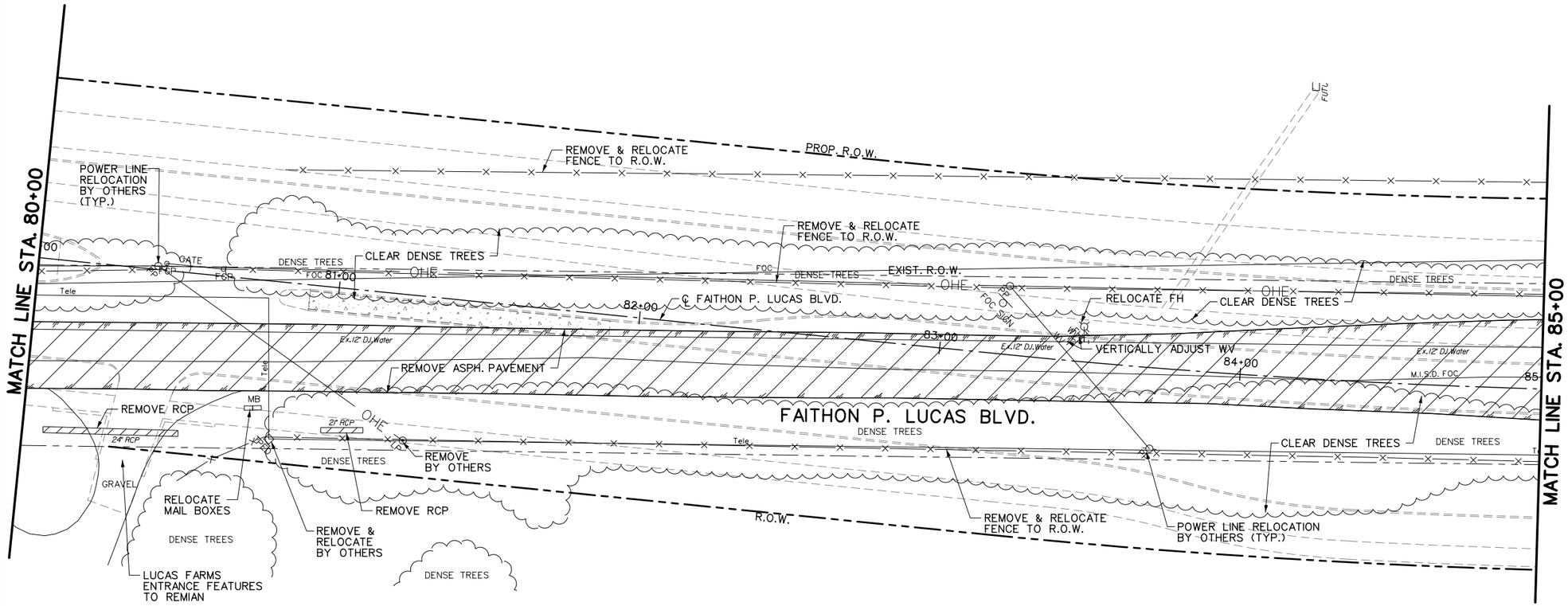
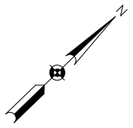
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-039	39 OF 252





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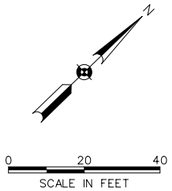
LEGEND

CONCRETE REMOVAL

ASPHALT REMOVAL



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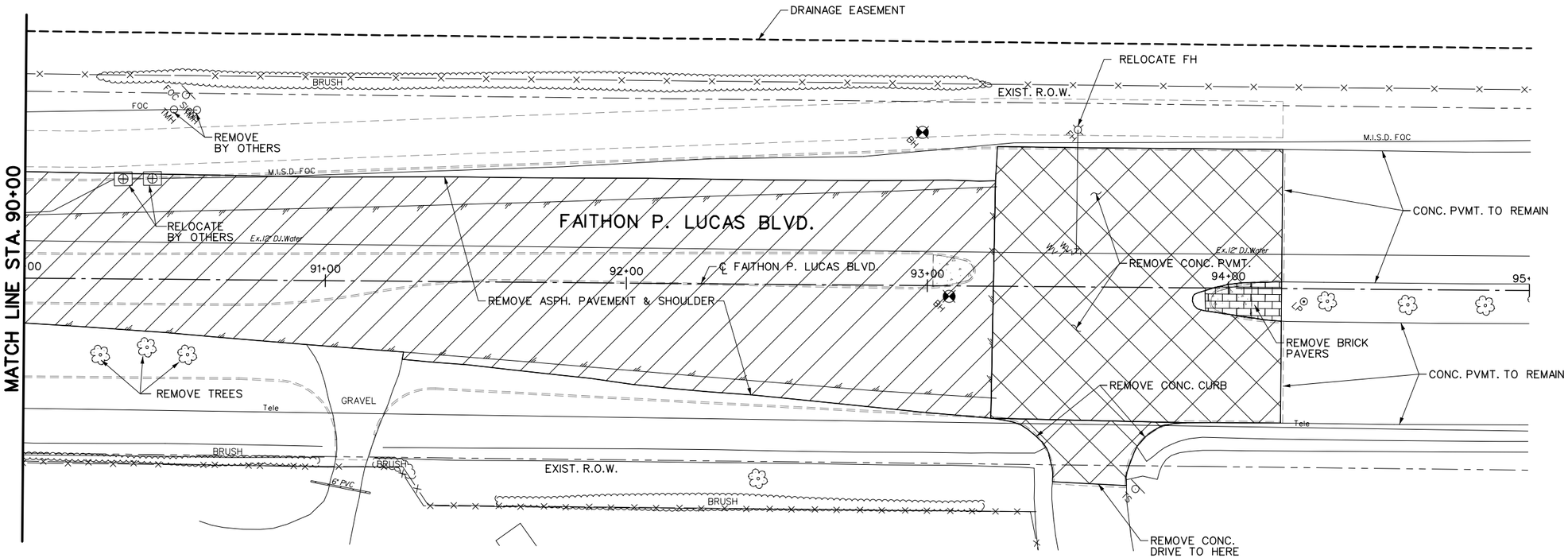
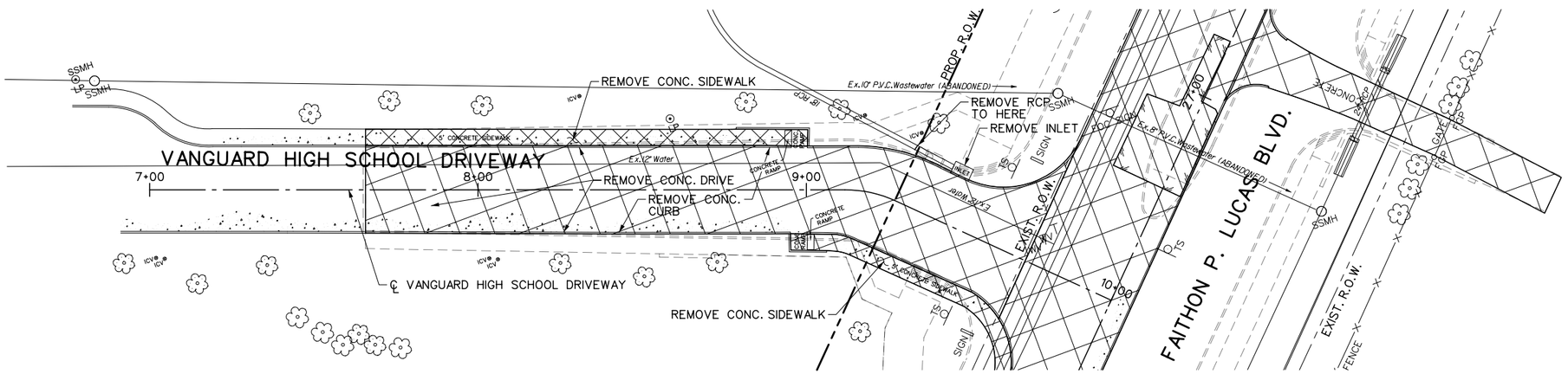
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-040	40 OF 252





0 20 40
SCALE IN FEET

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LEGEND

- CONCRETE REMOVAL
- ASPHALT REMOVAL

REVISIONS			
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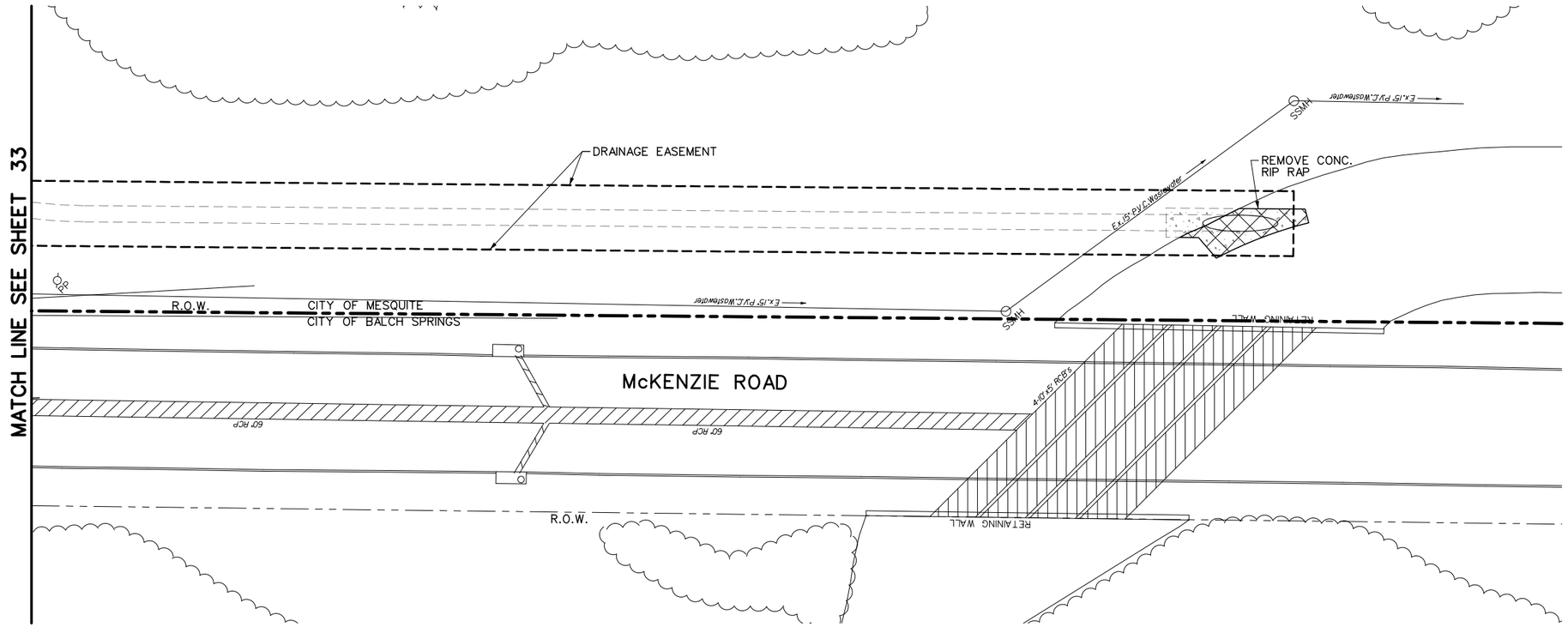
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-041	41 OF 252



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0 20 40
SCALE IN FEET

LEGEND

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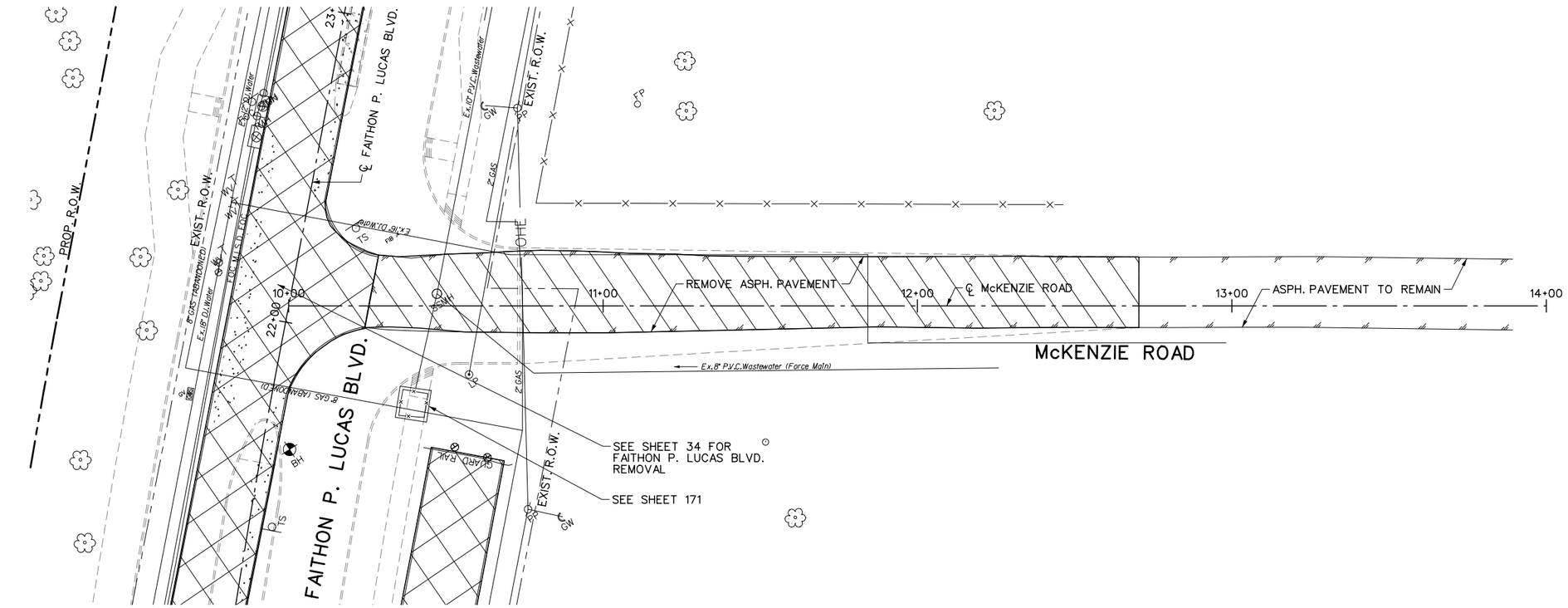
- ASPHALT REMOVAL



0 20 40
SCALE IN FEET

REVISIONS			
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1			
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Dallas, TX. 75201 (214) 748-4888
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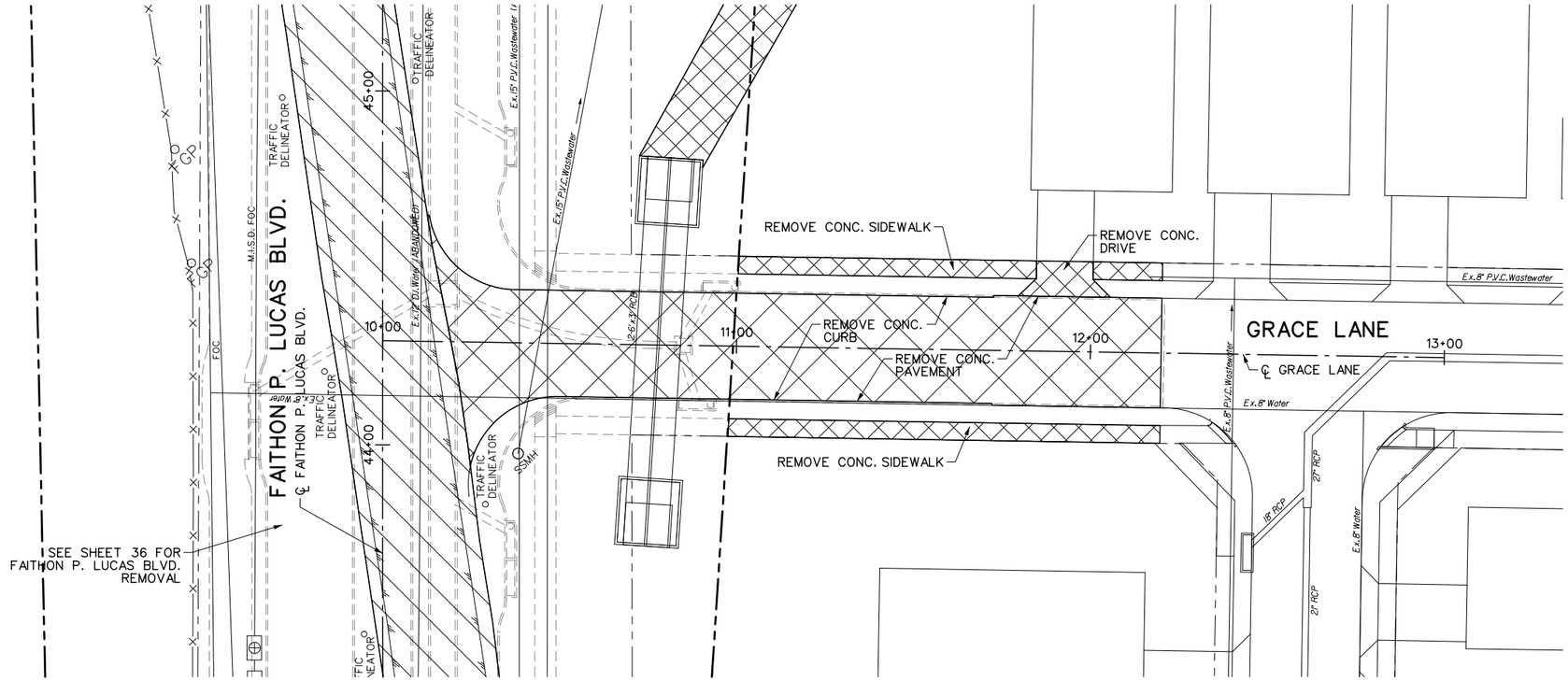
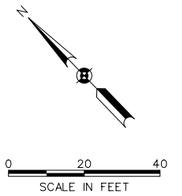
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-042	42 OF 252





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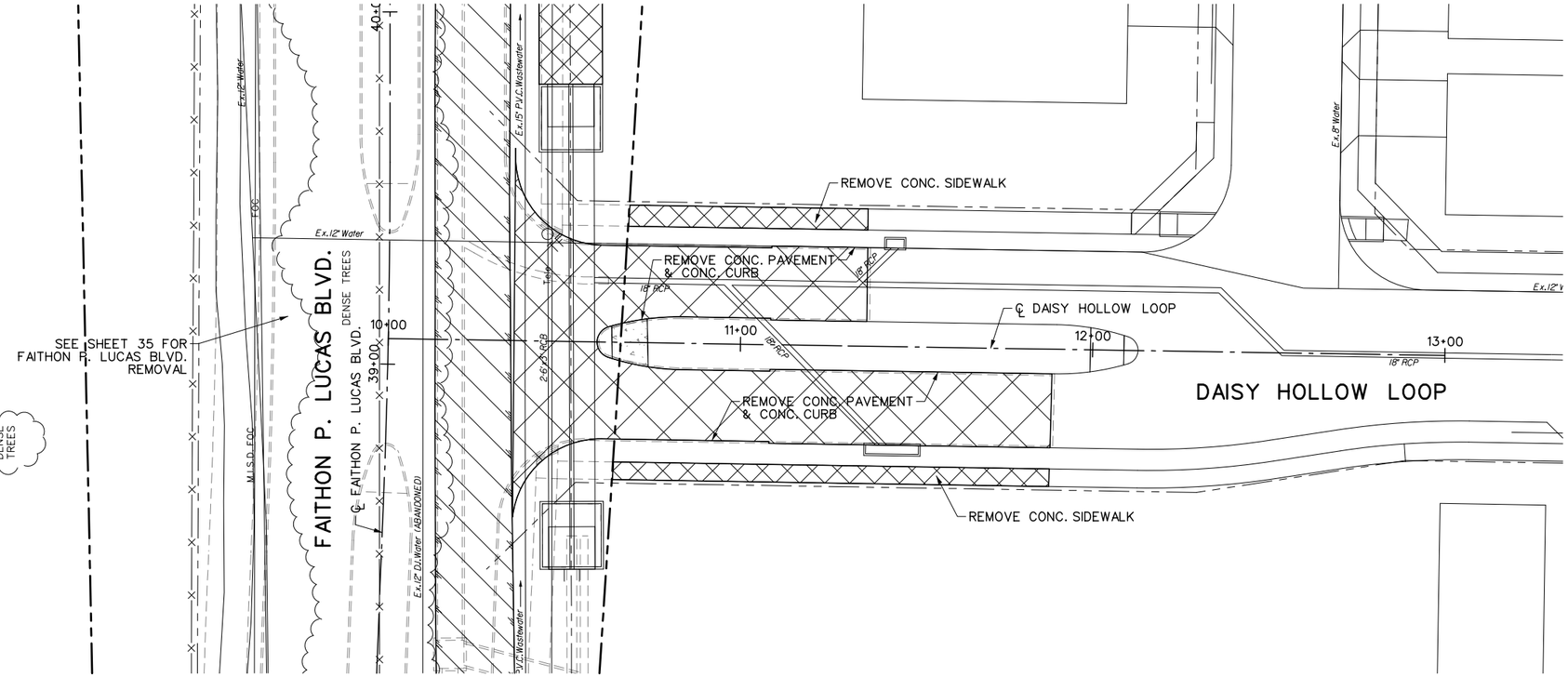
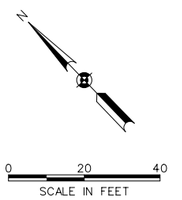
LEGEND

CONCRETE REMOVAL

ASPHALT REMOVAL





REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

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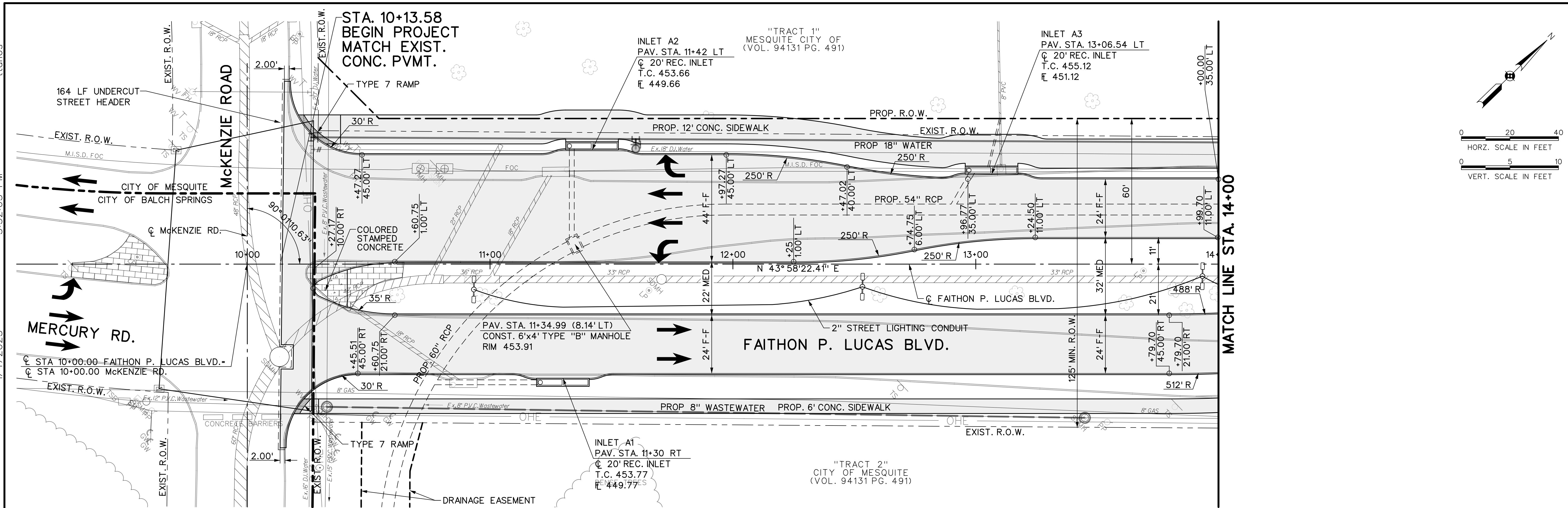
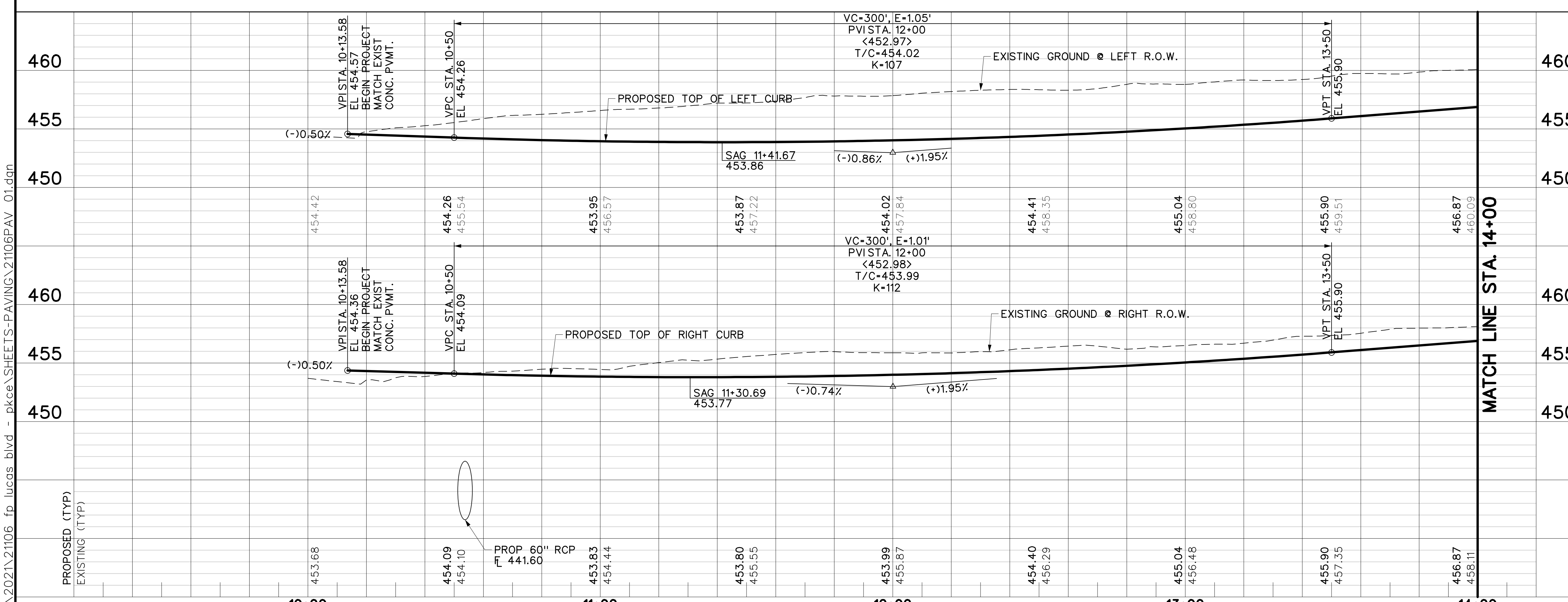
FROM McKENZIE RD. TO CARTWRIGHT RD.
REMOVAL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-043	43 OF 252





REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-044	44 OF 252

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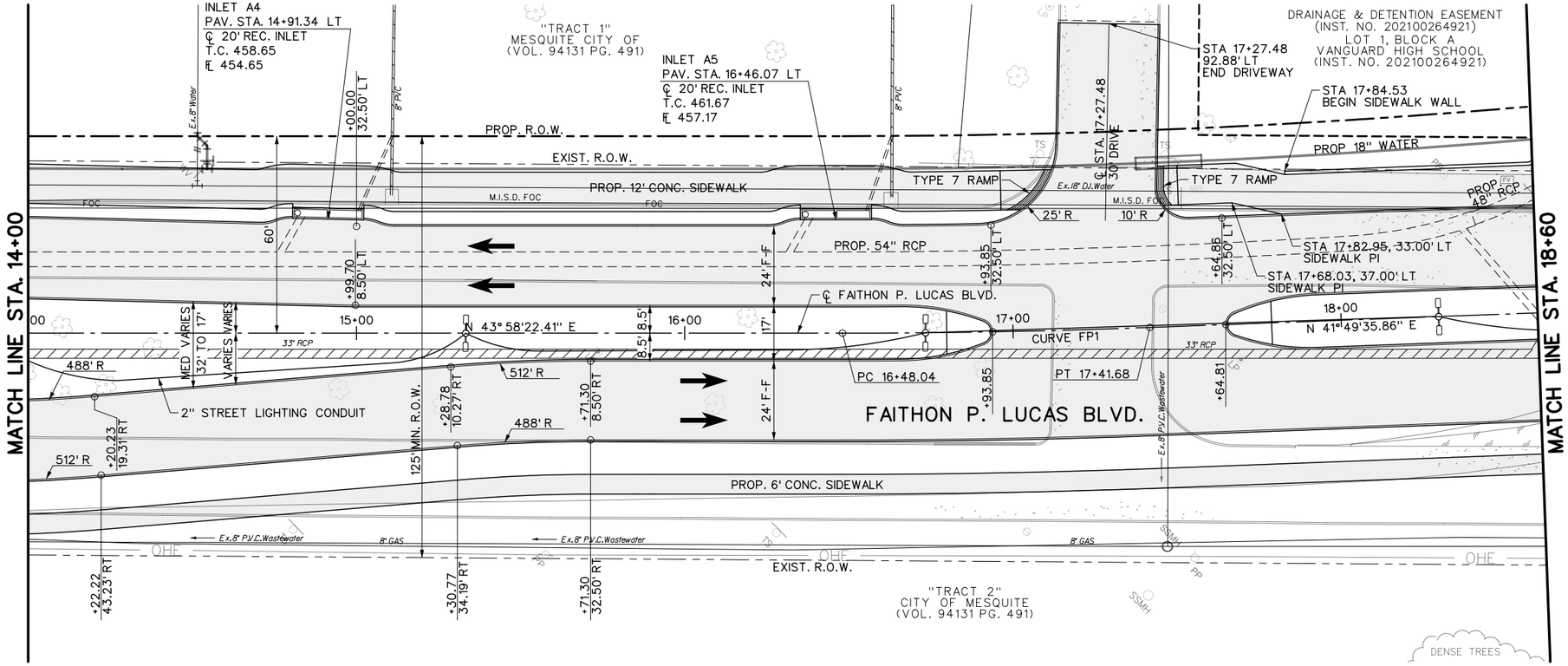

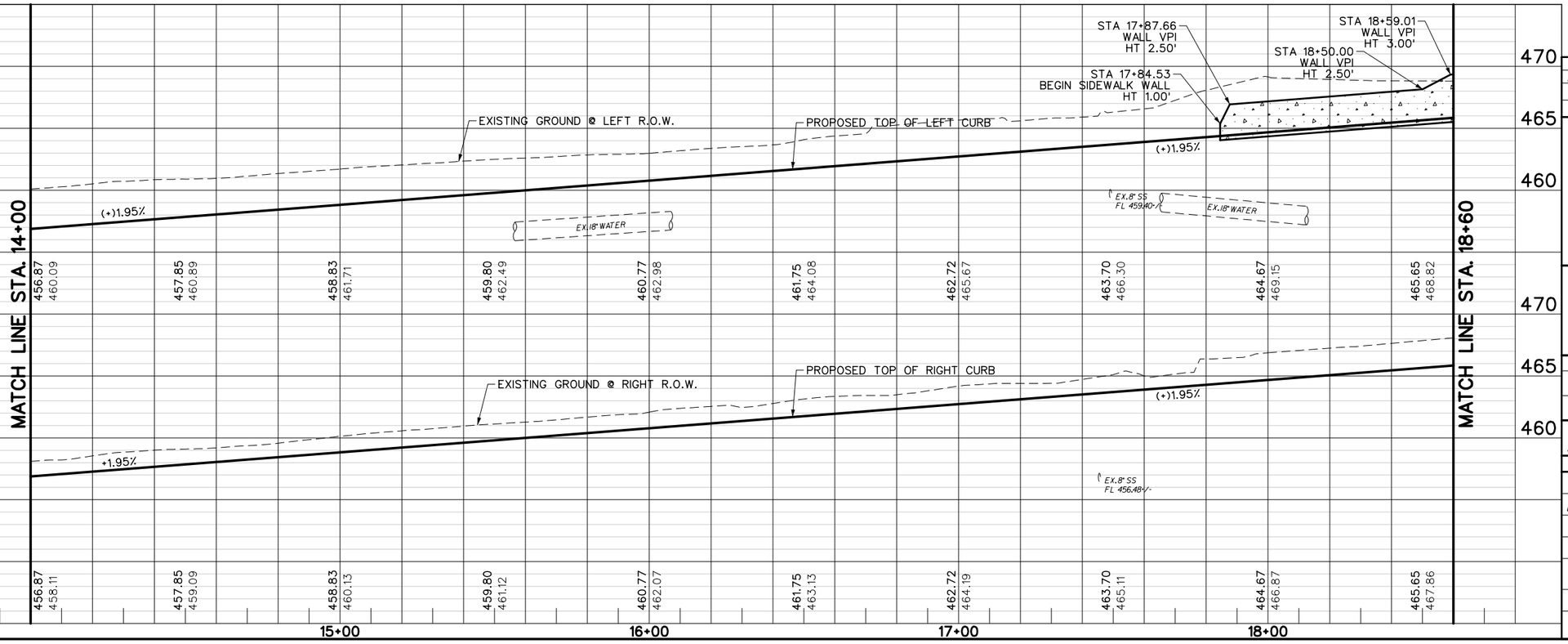

CURVE NO	DELTA	RADIUS	TANGENT	LENGTH
FP1	2° 08' 46.55" LT	2500.00'	46.83'	93.65'

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

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SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

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PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-045	45 OF 252

HORZ. SCALE IN FEET: 0 20 40
VERT. SCALE IN FEET: 0 5 10

j:\2021\21106 fp lucas blvd - pkce\SHEETS-PAVING\21106PAV 02.dgn

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PAV. STA. 18+97.65 (60.85' LT)
CONST. 7'x4' TYPE "B" MANHOLE
RIM 468.64

INLET A7
PAV. STA. 18+87.11 LT
℄ 20' REC. INLET
T.C. 466.39
℄ 461.89

DRAINAGE & DETENTION EASEMENT
(INST. NO. 202100264921)

15' WATER EASEMENT

LOT 1, BLOCK A
VANGUARD HIGH SCHOOL
(INST. NO. 202100264921)

STA 22+60.03
43.00' LT
SIDEWALK PI

STA 22+51.53
43.00' LT
SIDEWALK PI

STA 22+66.03
43.00' LT
SIDEWALK PI

STA 22+74.53
43.00' LT
SIDEWALK PI

PROP. R.O.W.

PROP 18" WATER

PROP 12" WATER

STA 20+75.00
END SIDEWALK WALL

STA 22+15.70
33.00' LT
SIDEWALK PI

STA 23+10.36
33.00' LT
SIDEWALK PI

PROP 48" RCP

PROP. 12' CONC. SIDEWALK

EXIST. R.O.W.

TYPE 7
RAMP

MATCH LINE STA. 18+60

MATCH LINE STA. 23+20

FAITHON P. LUCAS BLVD.

24' F-F

125' MIN. R.O.W.

PC 20+89.26

PT 21+87.69

N 41° 49'35.86" E

N 44° 04'56.94" E

2" STREET LIGHTING CONDUIT

CURVE FP2

℄ FAITHON P. LUCAS BLVD.

79° 12'13.47"

S 56° 42'49.59" E

34' F-F

COLORED STAMPED CONCRETE

PROP. 6' CONC. SIDEWALK

PROP 16" WATER

PROP. 2" WW

℄ STA 22+05.25 FAITHON P. LUCAS BLVD.
℄ STA 10+00.00 McKENZIE RD.

TYPE 7 RAMP

McKENZIE ROAD

STA 23+00.00
37.00' RT
SIDEWALK PI

EXIST. R.O.W.

TERRY ANDERSON
(VOL. 2004108
PG. 4092)

STA 22+75.00
43.00' RT
SIDEWALK PI

STA 22+60.03
43.00' RT
SIDEWALK PI

STA 22+66.03
43.00' RT
SIDEWALK PI

INLET A6
PAV. STA. 18+95.63 RT
℄ 20' REC. INLET
T.C. 466.53
℄ 462.53

"TRACT 2"
CITY OF MESQUITE
(VOL. 94131 PG. 491)

SEE SHEET 63
FOR PLAN & PROFILE

℄ McKENZIE DR.

CURVE NO	DELTA	RADIUS	TANGENT	LENGTH
FP2	2° 15' 21.08" RT	2500.00'	49.22'	98.43'

HORZ. SCALE IN FEET: 0 20 40
VERT. SCALE IN FEET: 0 5 10

STA 19+15.21
WALL VPI
HT 3.00'

STA 19+18.03
WALL VPI
HT 2.50'

STA 20+72.11
WALL VPI
HT 2.50'

STA 20+75.00
END SIDEWALK WALL
HT 1.00'

EXISTING GROUND ℄ LEFT R.O.W.

PROPOSED TOP OF LEFT CURB

CREST 22+71.72
472.20

(+)1.95%

VPC STA. 21+00
EL 470.52

VC-700', E-6.96'
PVI STA. 24+50
<477.35>
T/C-470.40
K-88

EX.18" WATER

EX.16" WATER

EX.12" WATER

EX.8" SS
FL 461.09+/-

EXISTING GROUND ℄ RIGHT R.O.W.

PROPOSED TOP OF RIGHT CURB

CREST 22+71.67
472.20

PROP 48" RCP
℄ 452.35

EX.8" SS
FL 460.83+/-

	19+00	20+00	21+00	22+00	23+00
PROPOSED (TYP)	466.62	467.60	468.57	469.55	470.52
EXISTING (TYP)	469.12	470.05	470.92	471.97	473.04
	471.36	471.91	472.17	472.15	
	474.15	475.55	475.45	476.39	
	466.62	467.60	468.57	469.55	470.52
	468.74	468.49	468.19	469.60	472.89
	471.36	471.91	472.17	472.15	
	473.92	475.36	476.83	477.68	

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc. 1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888
Engineering · Planning · CM Services FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-046	46 OF 252

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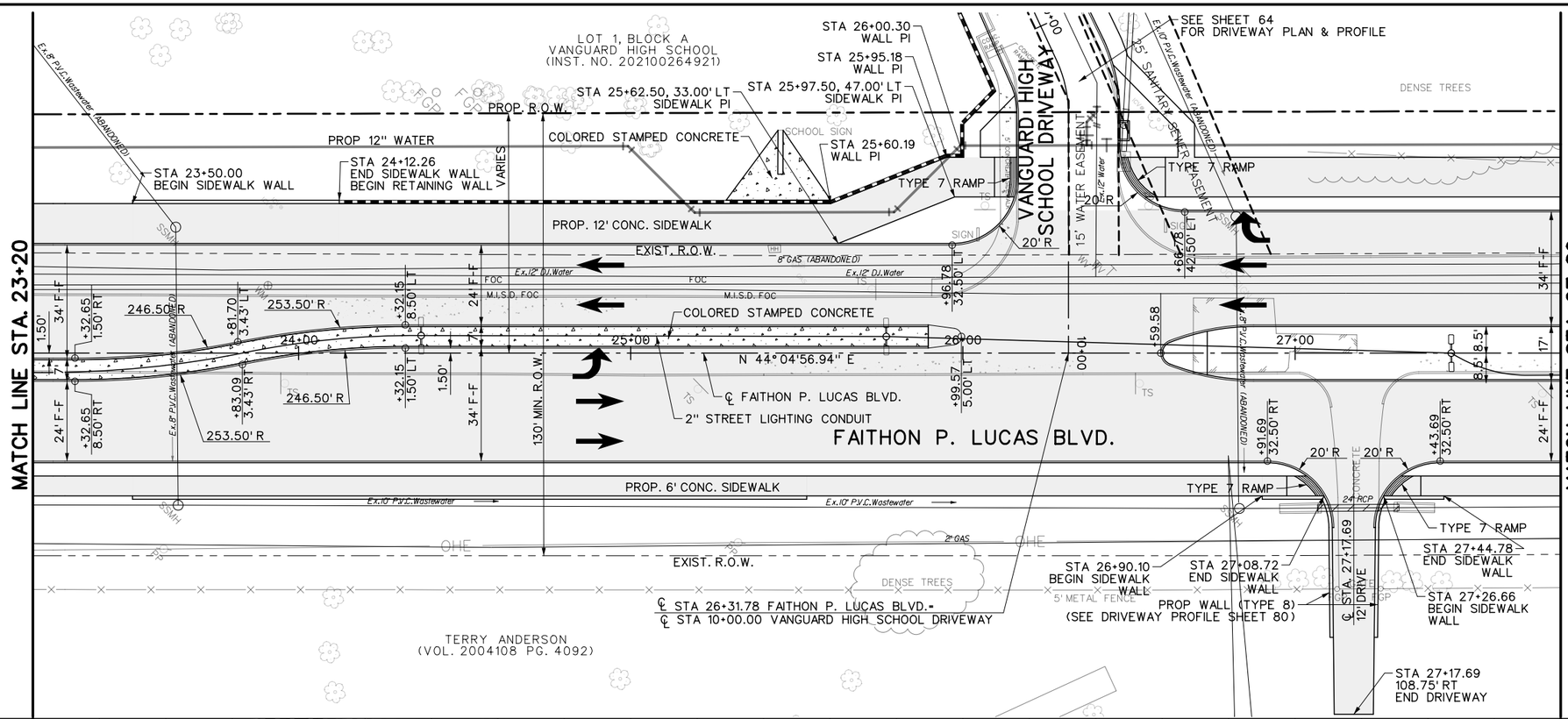
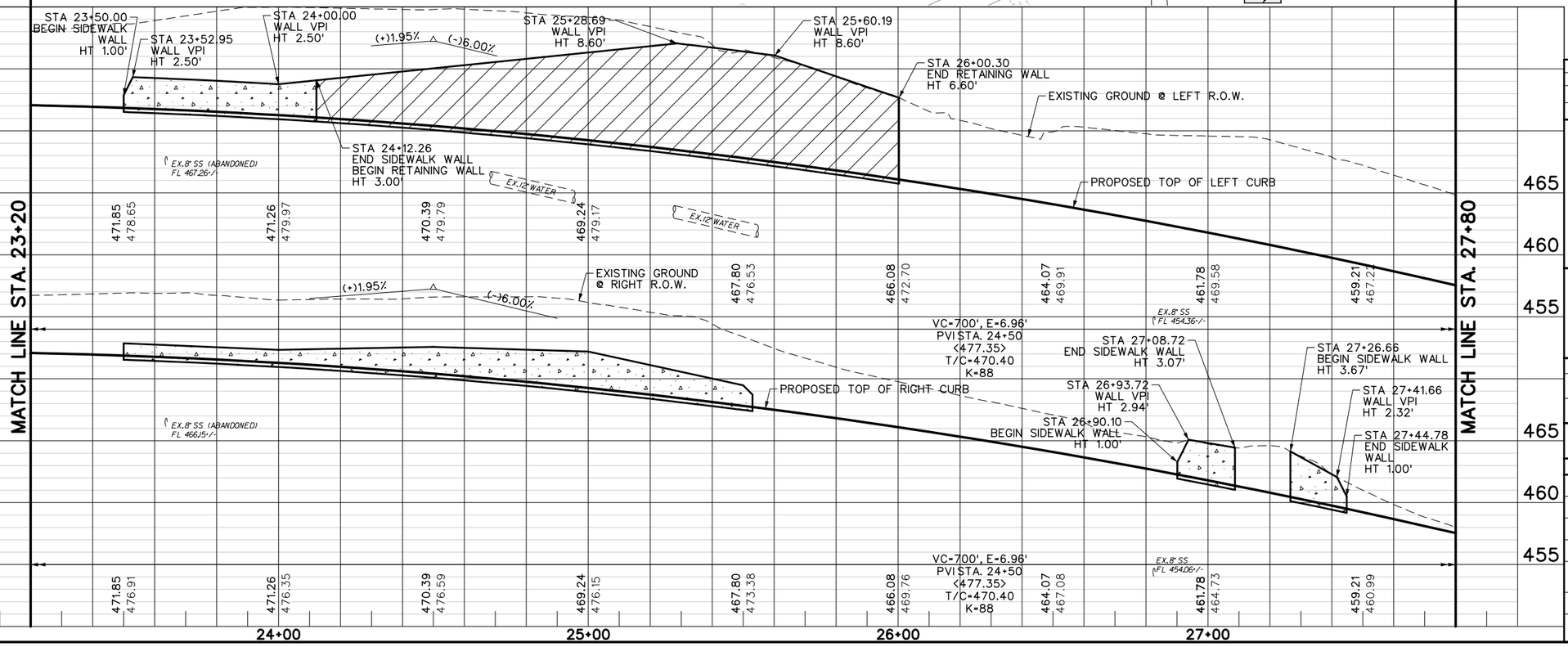




REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

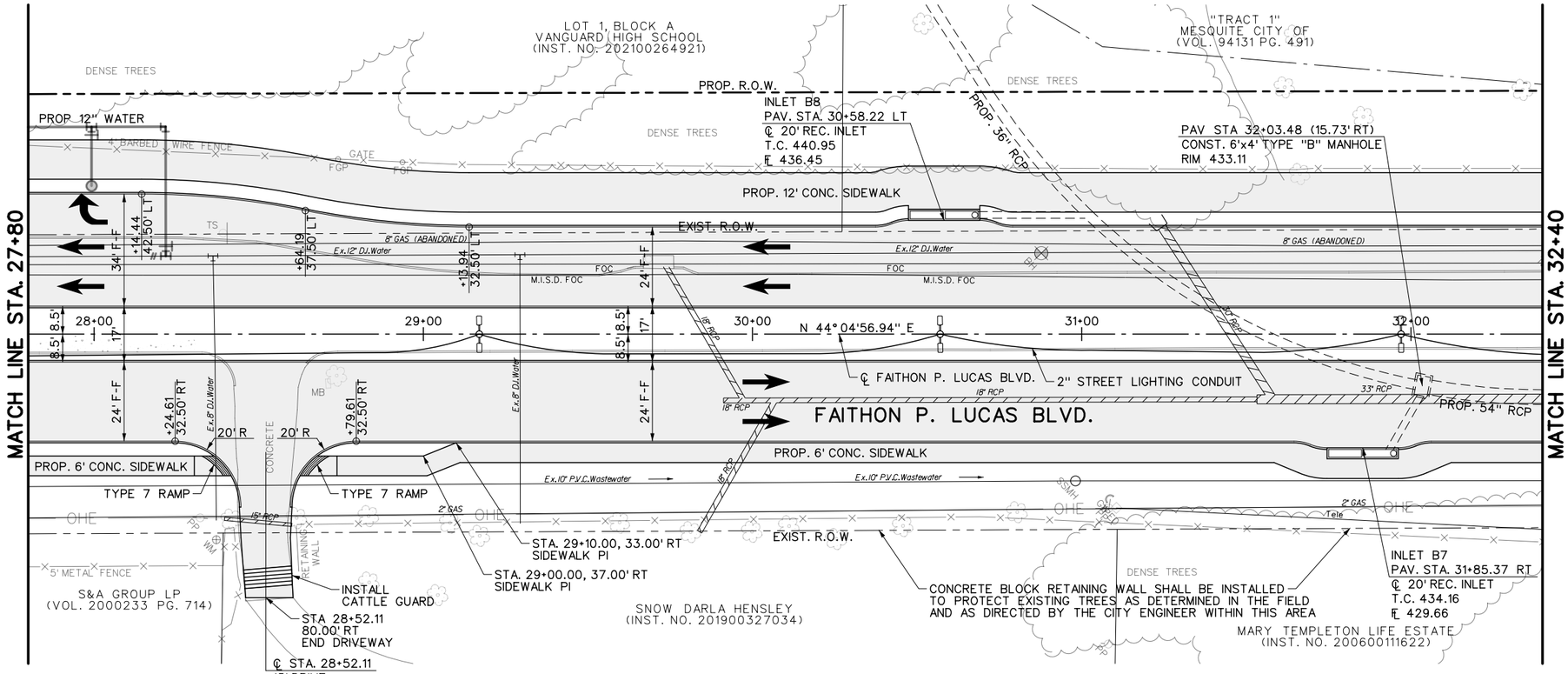
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

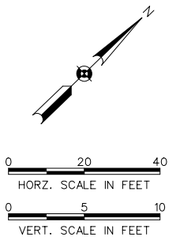
CITY CONTRACT NO. 2020-095

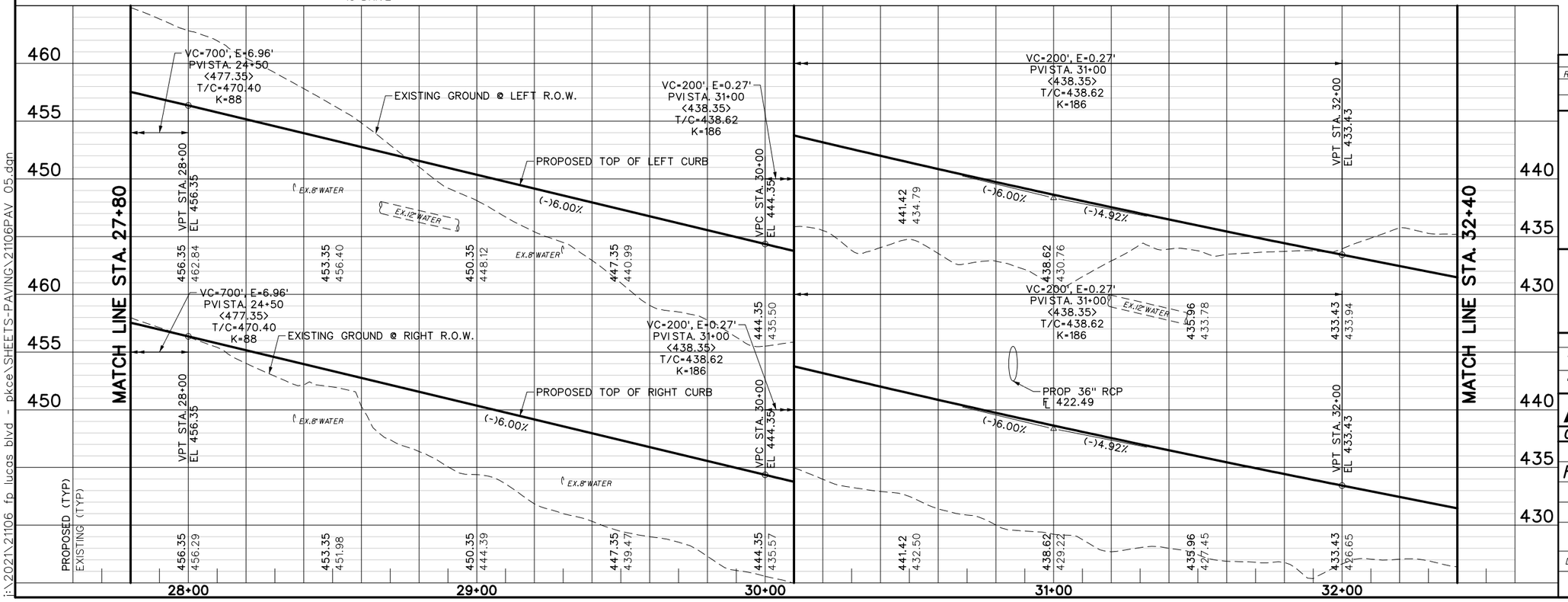
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-047	47 OF 252







REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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LICENSED
PROFESSIONAL ENGINEER
12/27/22

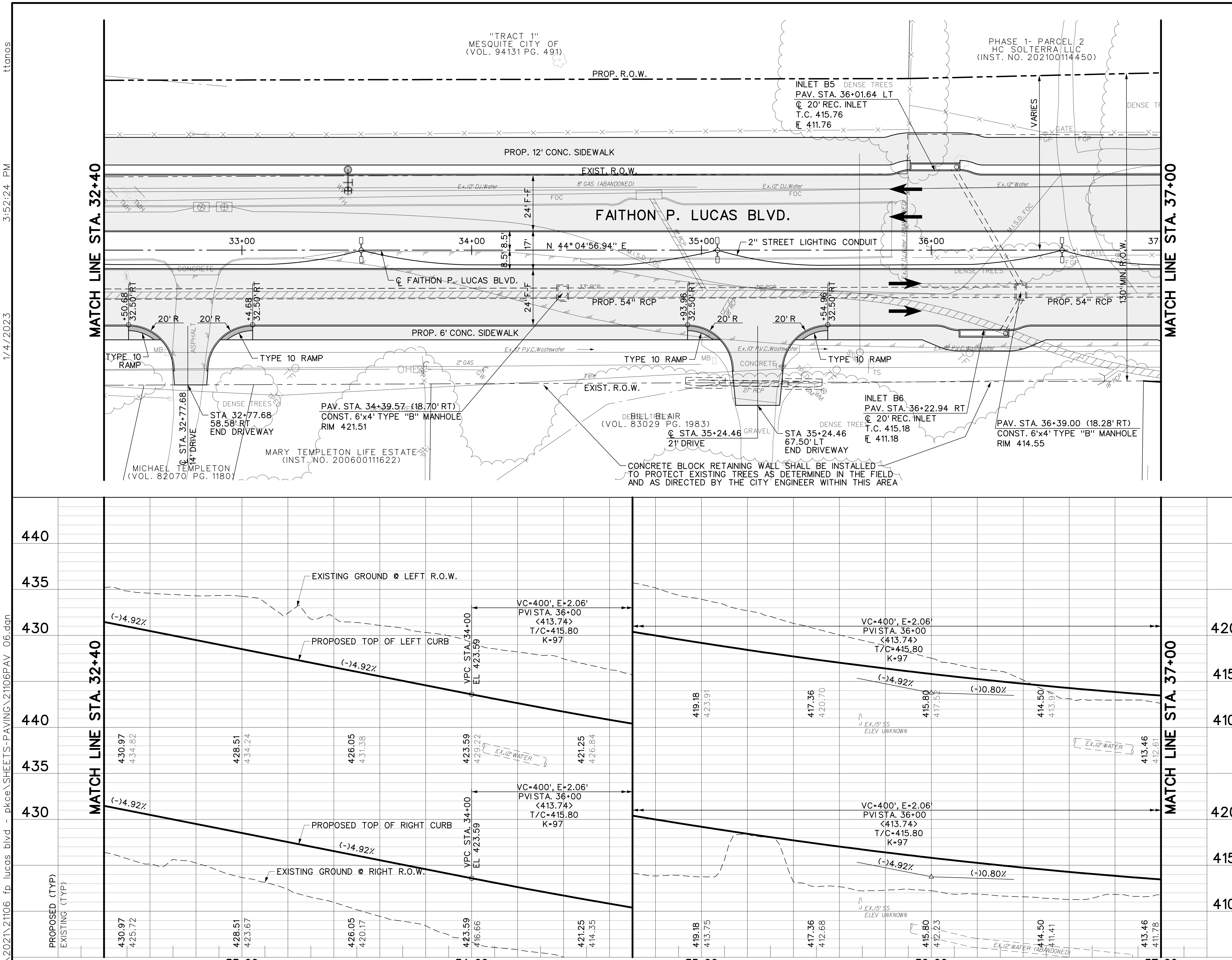
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-048	48 OF 252



REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS ERIC K. KRONER 88551 LICENSED PROFESSIONAL ENGINEER 12/27/22

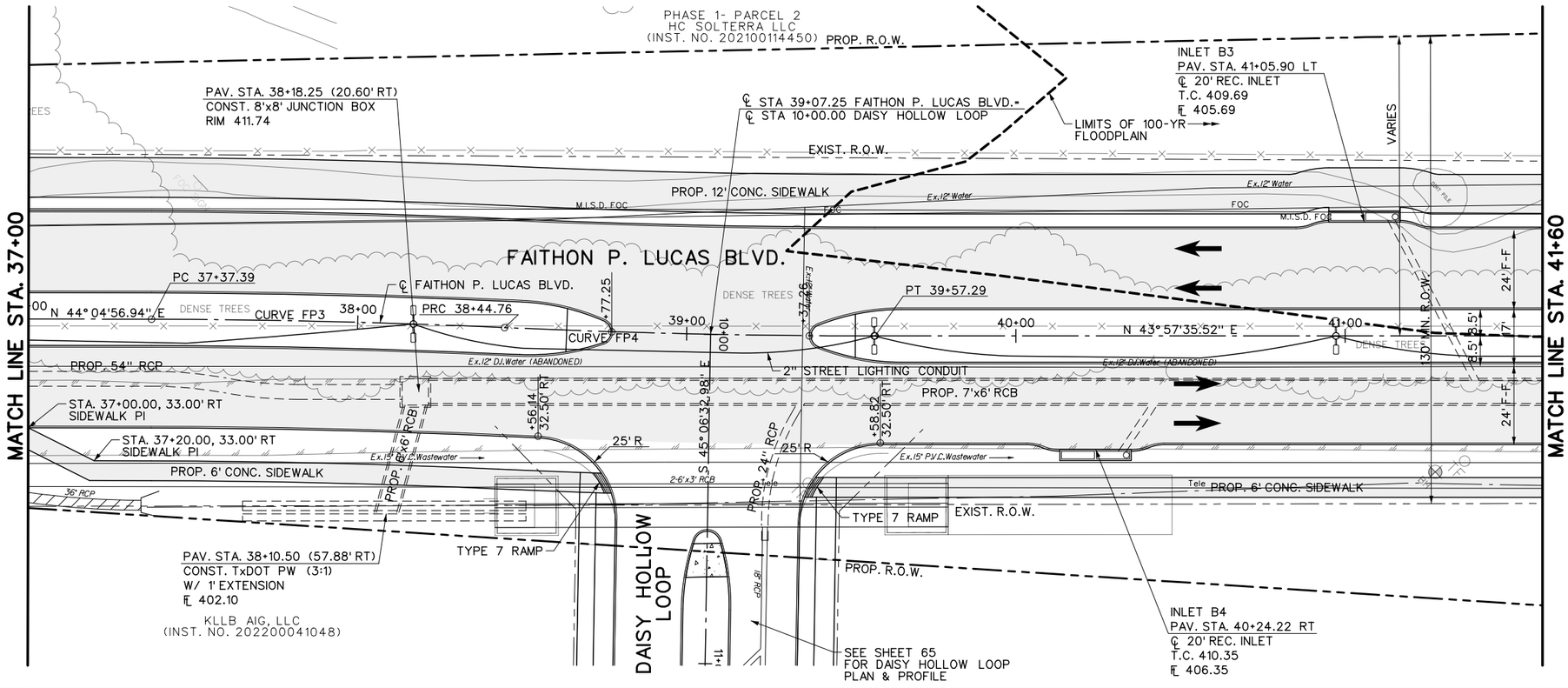
APM & Associates, Inc. Engineering · Planning · CM Services 1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

CITY CONTRACT NO. 2020-095

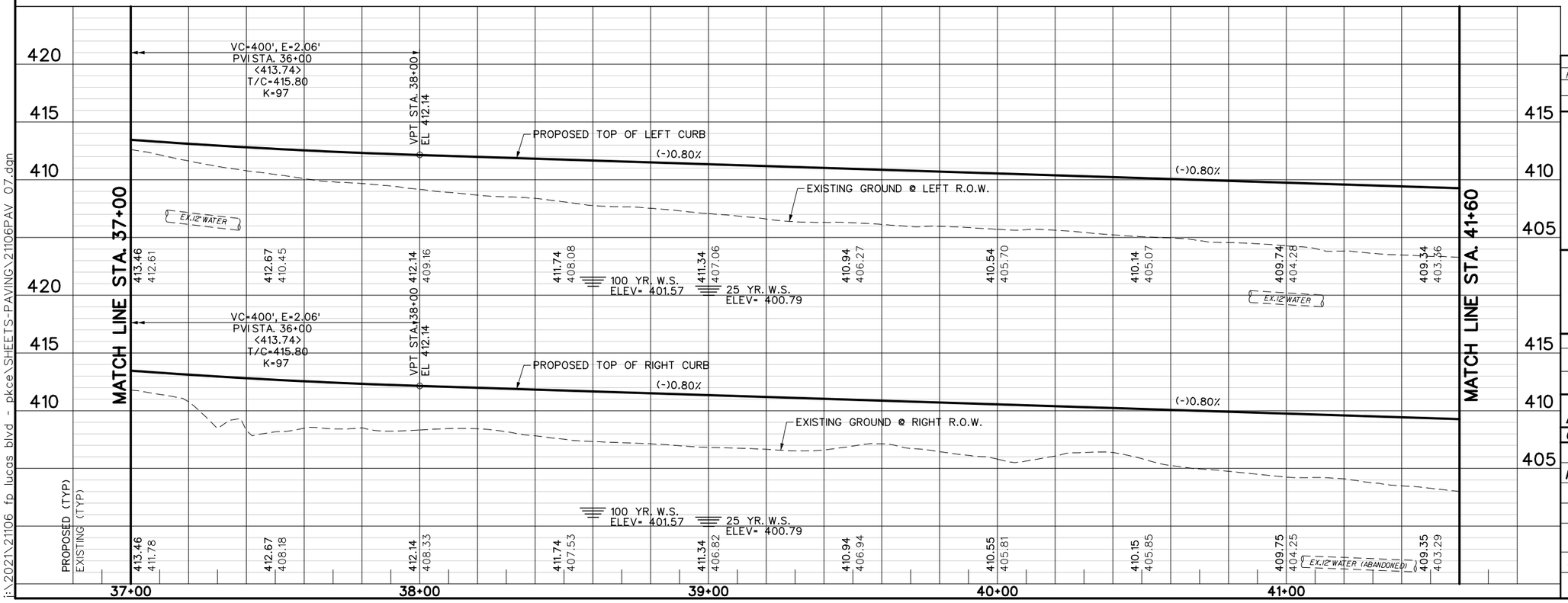
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-049	49 OF 252



CURVE NO	DELTA	RADIUS	TANGENT	LENGTH
FP3	4° 00'00.00" RT	2500.00'	53.65'	107.28'
FP4	4° 00'00.00" LT	2500.00'	56.32'	112.63'



REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

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Engineering · Planning · CM Services
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Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-050	50 OF 252

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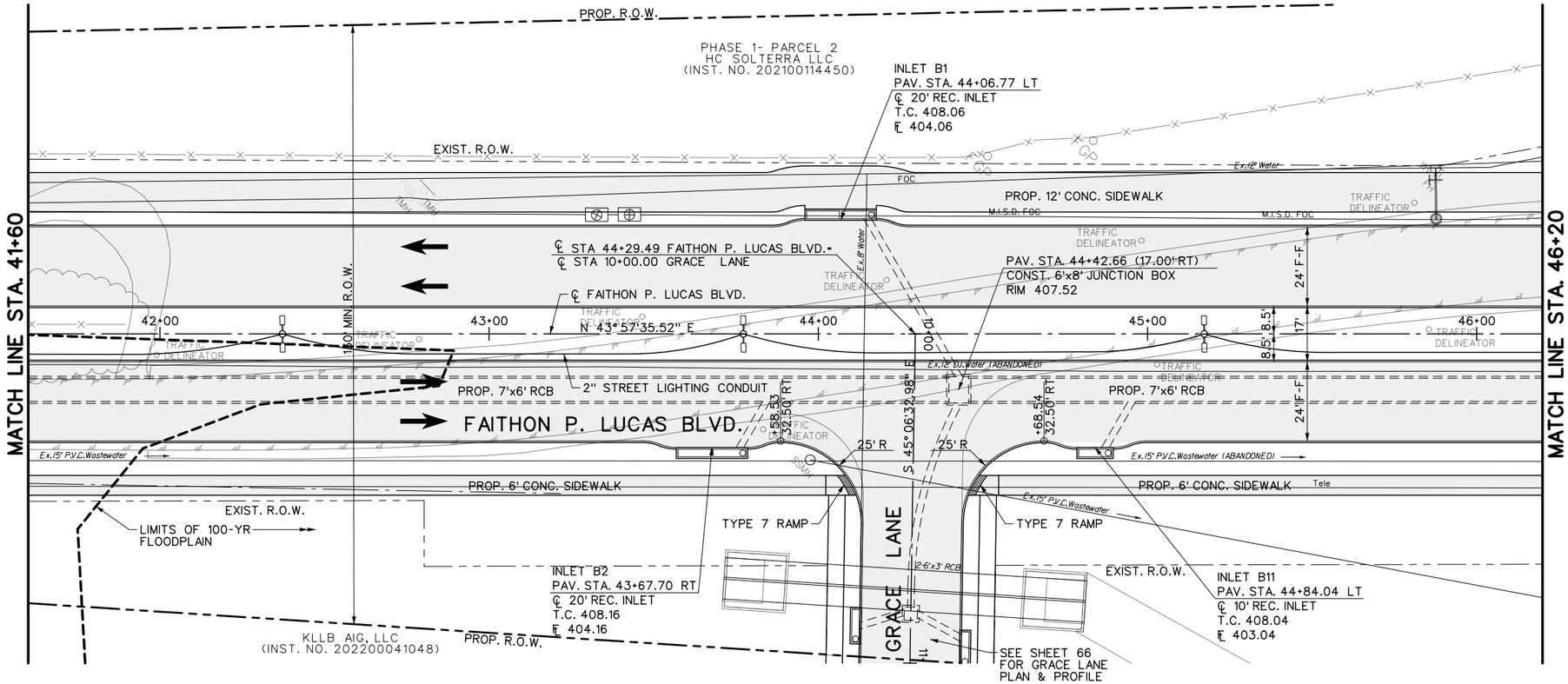

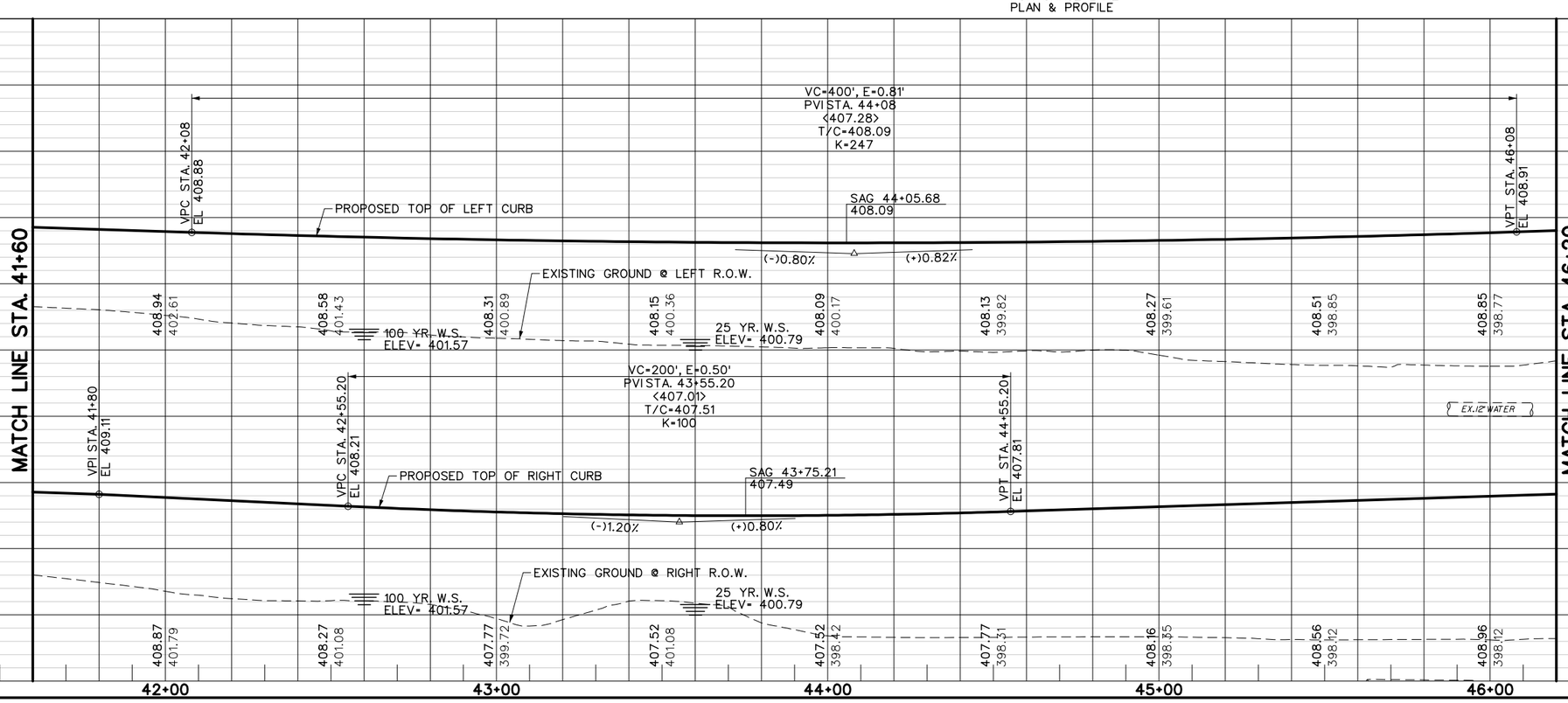

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-051	51 OF 252

PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

EXIST. R.O.W.

Ex.12" Water

OHE

FOC

5' BARBED WIRE FENCE

DENSE TREE

M.I.S.D. FOC

CONCRETE RIPRAP

Ex.12" Water

BRIDGE RAILING

TRAFFIC DELINEATOR

PROP. 12' CONC. SIDEWALK

GUARD RAIL

+76.09
49.00' LT

+96.09
32.50' LT

+36.09
8.50' LT

FAITHON P. LUCAS BLVD.

MATCH LINE STA. 46+20

MATCH LINE STA. 50+80

24' F-F

8.5'

17'

47+00

48+00

49+00

50+00

2" STREET LIGHTING CONDUIT

N 43°57'35.52" E

℄ FAITHON P. LUCAS BLVD.

Ex.12" DI.Water (ABANDONED)

BEGIN BRIDGE
STA 49+19.88
ELEV 412.04

TOP OF GATE FOR

5'-0"

46'-0"

215' R.O.W.

CONCRETE WALL

PROP. 7'x6' RCB

+11.22
32.50' RT

+51.22
8.50' RT

+37.87

Ex.15" P.V.C.Wastewater (ABANDONED)

PROP. 6' CONC. SIDEWALK

Tele

+91.22
49.00' RT

PROP. 7'x6' RCB

DENSE TREES

4' BARBED WIRE FENCE

EXIST. R.O.W.

KLLB AIG, LLC
(INST. NO. 202200041048)

Ex.15" P.V.C.Wastewater

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

415
410
405

STA 48+86.09
END PROPOSED PVMT.
MATCH EXISTING

PROPOSED TOP OF LEFT CURB
(+)0.82%

EXISTING TOP OF LEFT CURB

EXISTING GROUND @ LEFT R.O.W.

EX.12" WATER

409.26 399.83
409.67 401.03
410.08 404.53
410.49 405.05
410.90 407.35
405.33
388.06
387.93
390.60

100 YR. W.S.
ELEV= 401.57

25 YR. W.S.
ELEV= 400.79

VPI STA. 48+95
EL 411.52

PROPOSED TOP OF RIGHT CURB
(+)0.80%

(+)1.50%

(+)1.50%

VPC STA. 50+64
EL 413.83

EXISTING GROUND @ RIGHT R.O.W.

VC=300', E=1.12'
PVI STA. 52+14
<416.10>
T/C=414.98
K=100

PROPOSED (TYP)
EXISTING (TYP)

ER (ABANDONED)
409.36 398.22
409.76 398.16
410.16 398.02
410.56 398.18
PROP 7'x6' RCB
F. 389.13
410.96 398.27
411.39 397.41
EX.15" SS (ABANDONED)
412.14 397.51
412.89 398.35
413.64 399.52

47+00 48+00 49+00 50+00

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
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BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-052	52 OF 252

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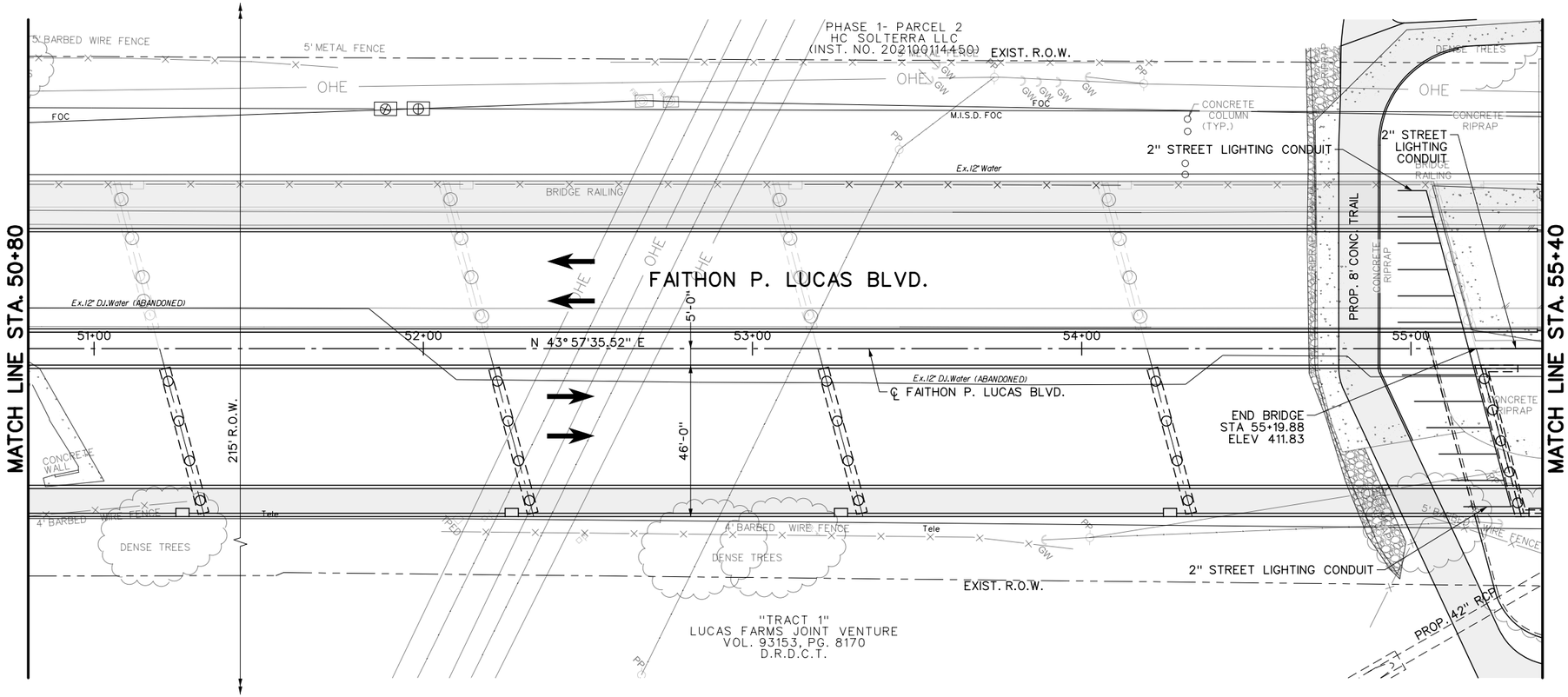

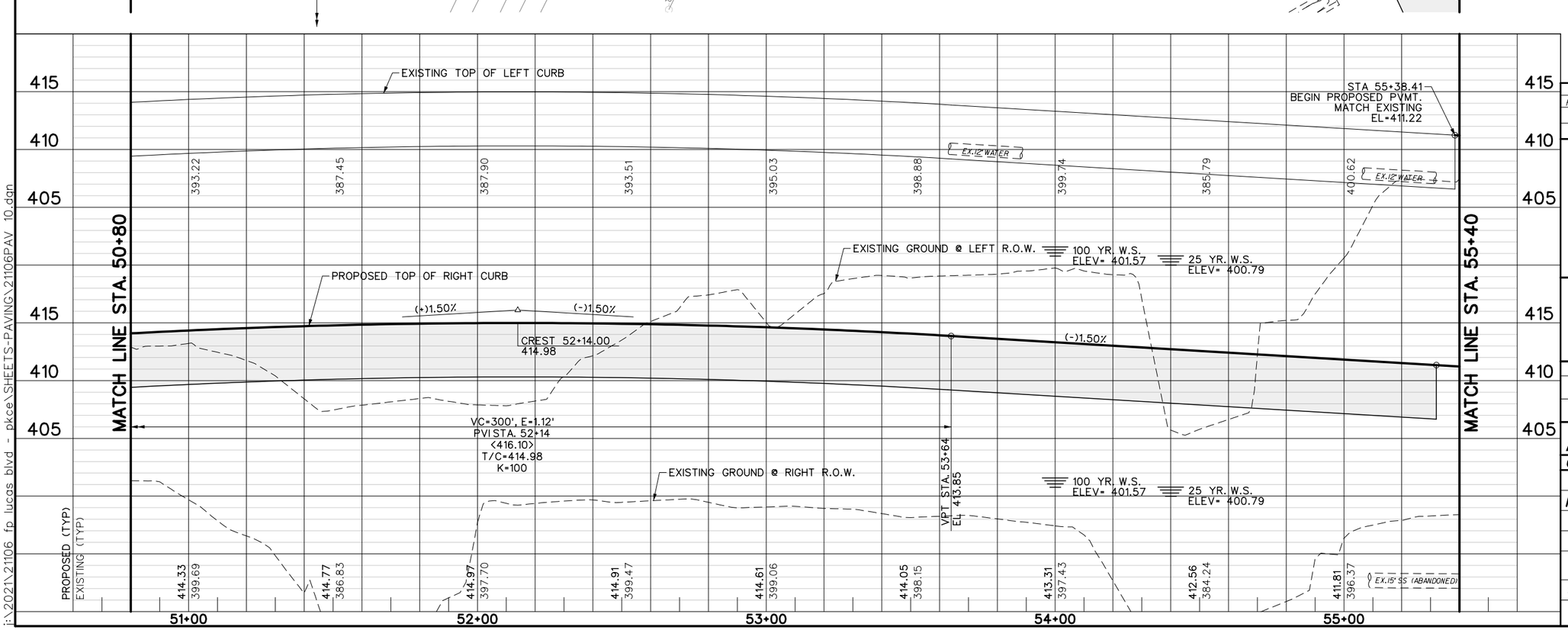

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-053	53 OF 252

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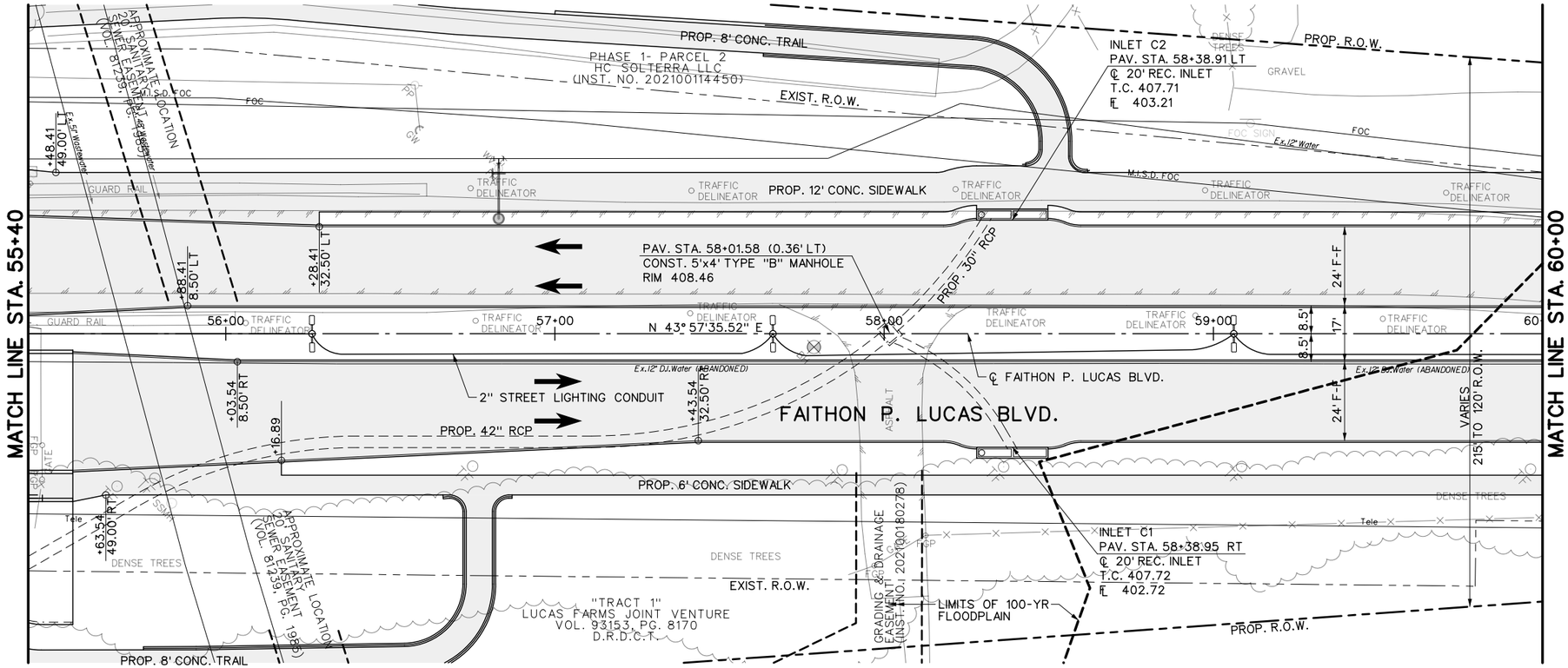

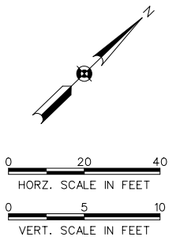

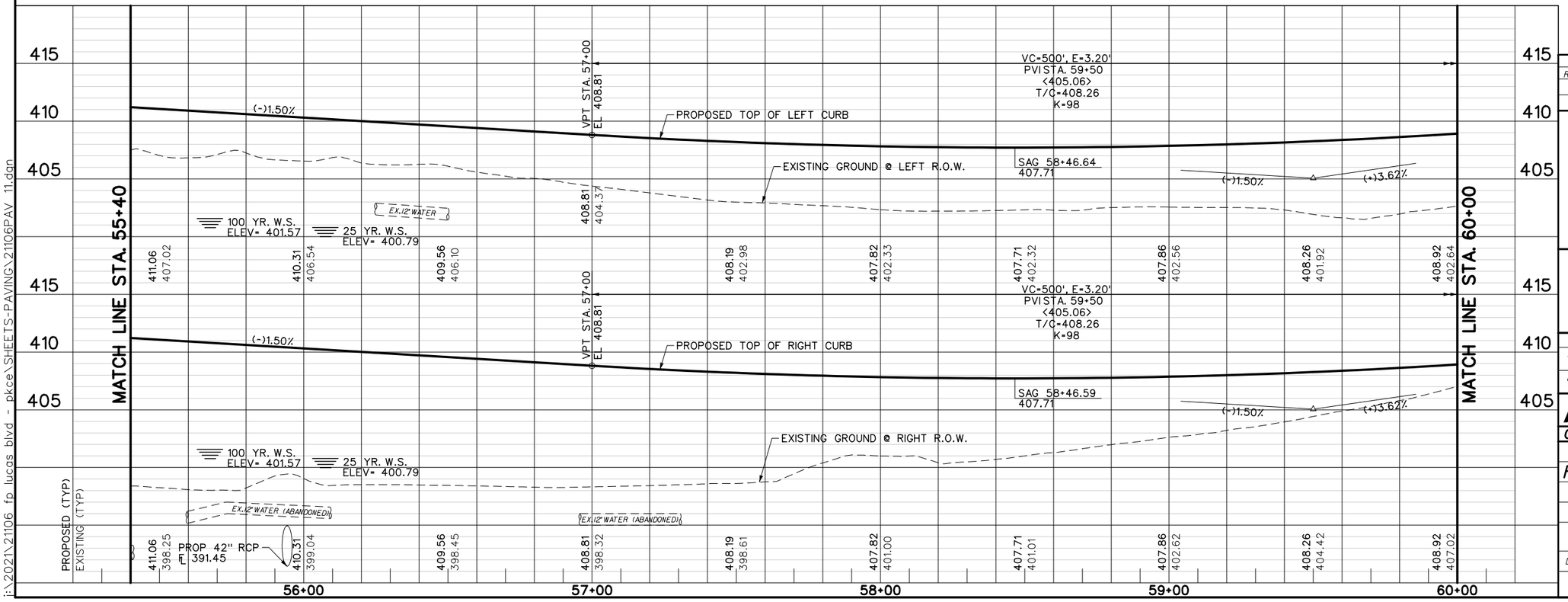

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-054	54 OF 252

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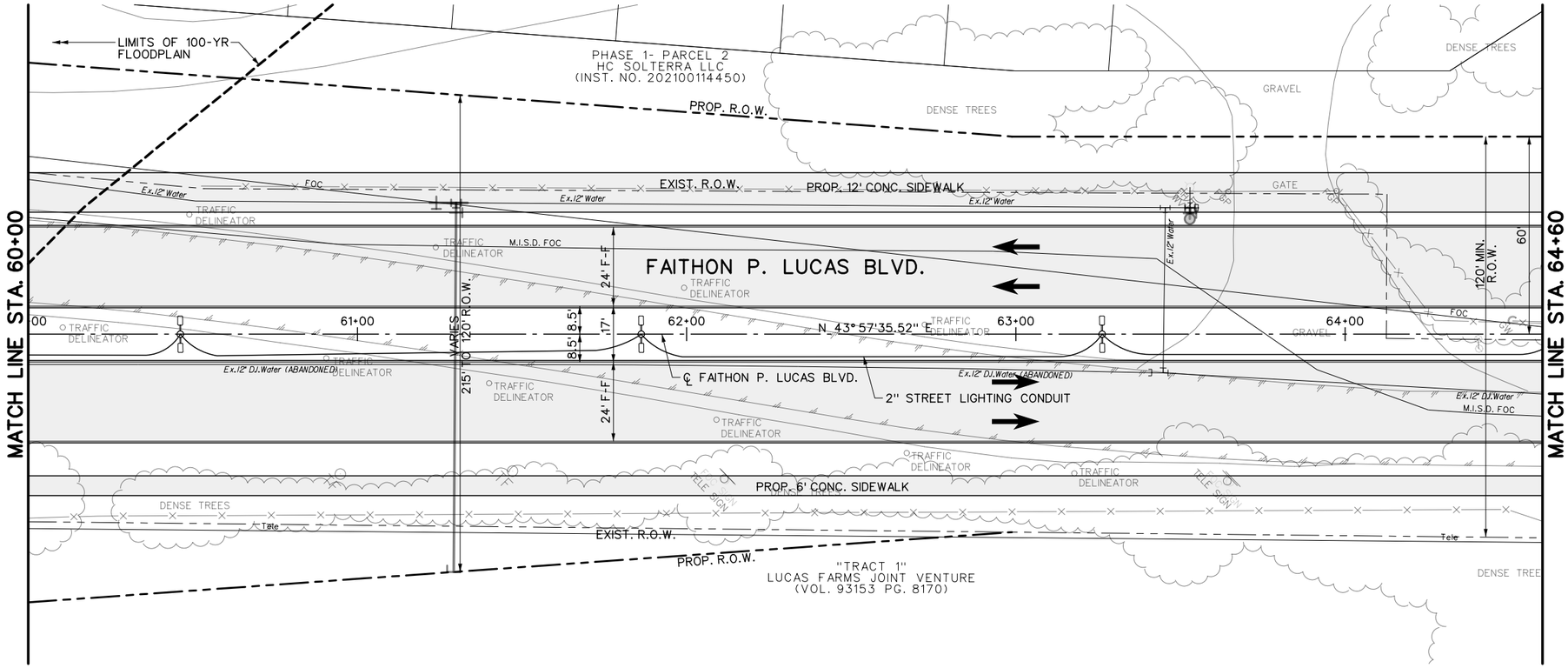

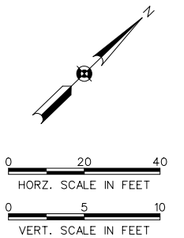

SEE SHEETS 68-75 FOR PROFILE IN AREA OF ROUND ABOUT

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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LICENSED
PROFESSIONAL ENGINEER
12/27/22

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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-055	55 OF 252

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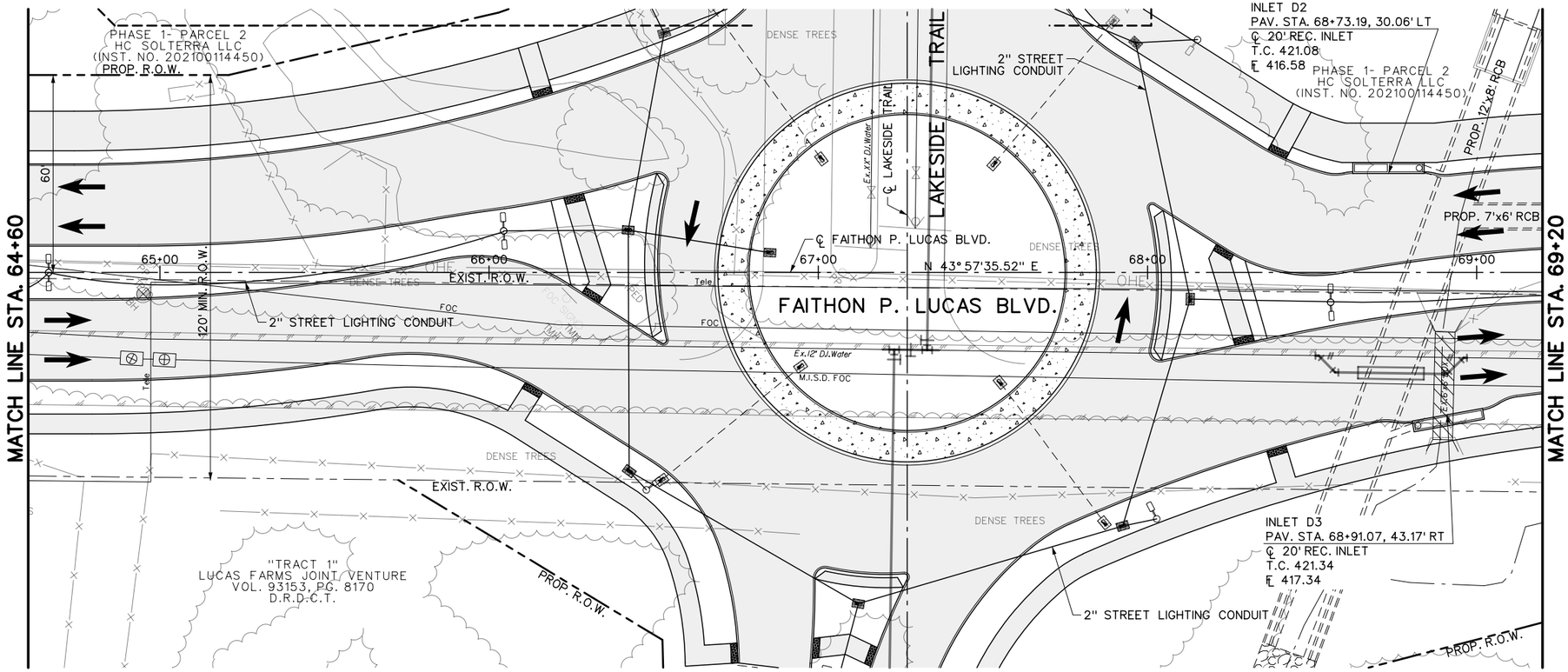

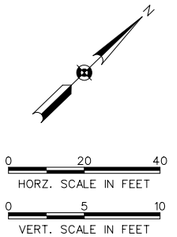

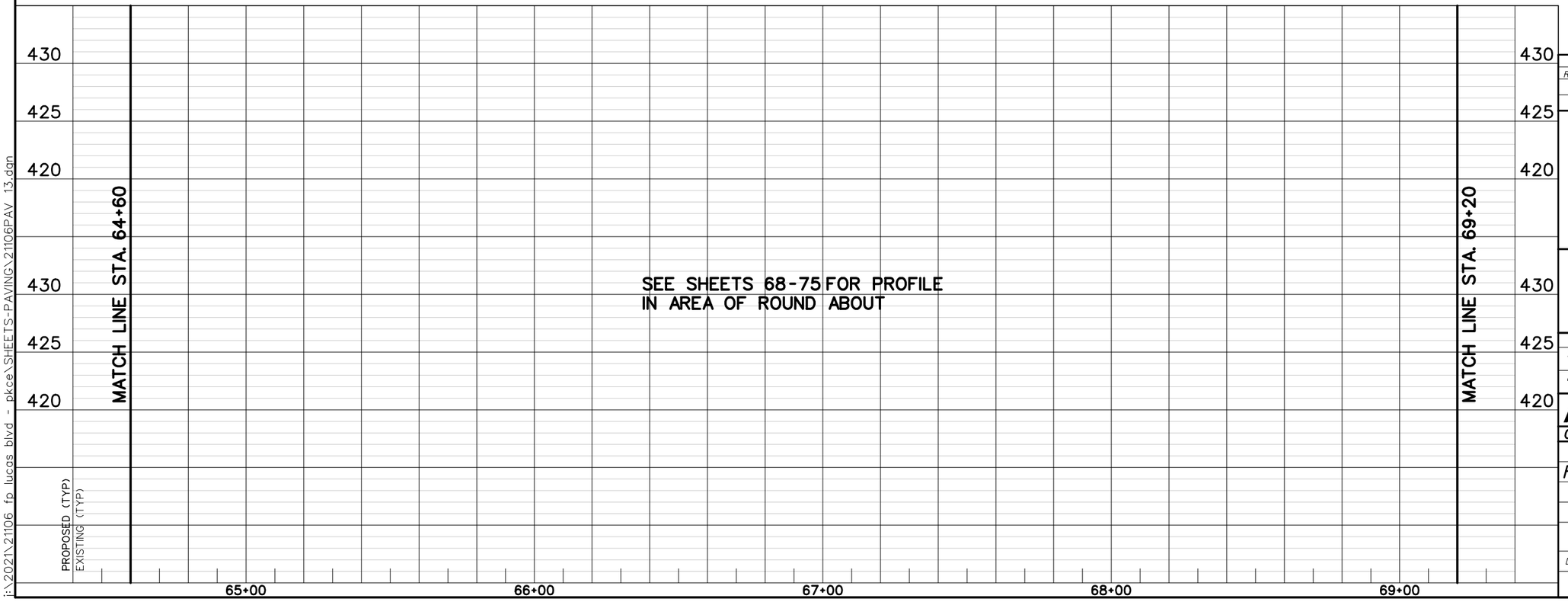

SEE SHEETS 68-75 FOR PROFILE
IN AREA OF ROUND ABOUT

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
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2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
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Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
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PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-056	56 OF 252

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1/4/2023

SLOPE EASEMENT

PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 20210011450)

DENSE TREES

PROP. R.O.W.

PROP. 12' CONC. SIDEWALK

FAITHON P. LUCAS BLVD.

PROP. 7'x6' RCB

MATCH LINE STA. 69+20

MATCH LINE STA. 73+80

70+00 71+00 72+00 73+00

60'

120' MIN. R.O.W.

24' F-F

17'

8.5' 8.5'

N 43°57'55.52" E

2" STREET LIGHTING CONDUIT

EXIST. R.O.W.

℄ FAITHON P. LUCAS BLVD.

Tele

FOC

Ex.12" DI.Water

M.I.S.D. FOC

PROP. 6' CONC. SIDEWALK

EXIST. R.O.W.

"TRACT 3"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

SEE SHEETS 68-75 FOR PROFILE
IN AREA OF ROUND ABOUT

PROPOSED (TYP)
EXISTING (TYP)

435 430 425 420 415

(+)3.25%
(+)3.50%

VPI STA. 73+00
EL 428.90

VPC STA. 73+50
EL 430.65

VC=300', E=0.99'
PVI STA. 75+00
<435.90>
T/C=434.91
K=113

428.90
431.96

430.65
433.72

(+)3.25%

VPI STA. 73+00
EL 428.90

EX.12" WATER

VPC STA. 73+50
EL 430.65

VC=300', E=0.99'
PVI STA. 75+00
<435.90>
T/C=434.91
K=113

428.90
429.89

430.65
431.68

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
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BENCHMARKS & CONTROL POINTS

REFERENCES

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SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
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LICENSED
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12/27/22

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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-057	57 OF 252

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PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

DENSE TREES

PAV. STA. 73+98.86 (17.00' LT)
CONST. 8'x4' JUNCTION BOX
RIM 432.06

INLET D5
PAV. STA. 76+93.95 LT
℄ 20' REC INLET
T.C. 437.54
F. 433.54

PROP. R.O.W.

PROP. 12' CONC. SIDEWALK

MATCH LINE STA. 73+80

DENSE TREES

FAITHON P. LUCAS BLVD.

PROP. 7'x6' RCB

℄ FAITHON P. LUCAS BLVD.

24' F-F

60'

120' MIN. R.O.W.

8.5'

8.5'

17'

24' F-F

74+00 75+00 76+00 77+00 78+00

N 43° 57'35.52" E

2" STREET LIGHTING CONDUIT

CURVE FP5

PC 77+09.88

EXIST. R.O.W.

OHE

Tele

FOC

27" RCP

18" RCP

Ex.12" DI.Water

M.I.S.D. FOC

PROP. 6' CONC. SIDEWALK

DENSE TREES

EXIST. R.O.W.

INLET D4
PAV. STA. 76+93.95 RT
℄ 20' REC INLET
T.C. 437.54
F. 433.54

"TRACT 3"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

MATCH LINE STA. 78+40

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

CURVE NO	DELTA	RADIUS	TANGENT	LENGTH
FP5	5° 44'08.17" RT	2500.00'	125.24'	250.26'

PROPOSED (TYP)
EXISTING (TYP)

EXISTING GROUND @ LEFT R.O.W.
PROPOSED TOP OF LEFT CURB
(+)0.85%
(+)3.50%
(+)0.85%

VC=300', E=0.99'
PVI STA. 75+00
<435.90>
T/C=434.91
K=113

VPT STA. 76+50
EL 437.17

EXISTING GROUND @ RIGHT R.O.W.
PROPOSED TOP OF RIGHT CURB
(+)0.85%
(+)3.50%
(+)0.85%

VC=300', E=0.99'
PVI STA. 75+00
<435.90>
T/C=434.91
K=113

VPT STA. 76+50
EL 437.17

	74+00	75+00	76+00	77+00	78+00
PROPOSED (TYP)	432.29	433.71	434.91	435.88	436.64
EXISTING (TYP)	435.80	437.65	436.98	437.60	438.55
	432.29	433.71	434.91	435.88	436.64
	433.37	435.21	436.85	438.53	439.76

	74+00	75+00	76+00	77+00	78+00
PROPOSED (TYP)	437.17	437.60	438.02	438.45	
EXISTING (TYP)	439.03	439.39	439.99	440.57	
	437.17	437.60	438.02	438.45	
	440.76	441.61	442.18	442.38	

445 440 435 430 425

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-058	58 OF 252

PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

PAV. STA. 78+99.73 (24.28' LT)
CONST. 8'x5' JUNCTION BOX
RIM 438.95

FUTURE STREET

MATCH LINE STA. 78+40

MATCH LINE STA. 83+00

PROP. R.O.W.

PROP. 12' CONC. SIDEWALK

FAITHON P. LUCAS BLVD.

PROP. 72" RCP

2" STREET LIGHTING CONDUIT

EXIST. R.O.W.

PT 79+60.14

CURVE FP5

N 49° 41'43.69" E

℄ FAITHON P. LUCAS BLVD.

COLORED STAMPED CONCRETE.

PROP. 6' CONC. SIDEWALK

Ex.12" DJ.Water

21" RCP

24" RCP

18" RCP

STA 80+09.51
BEGIN
SIDEWALK
WALL

STA 80+63.42
END SIDEWALK WALL

STA 80+46.87
BEGIN SIDEWALK WALL

PROP WALL (TYPE 8)
(SEE DRIVEWAY
PROFILE SHEET 81)

℄ STA. 79+10.23
17' DRIVE

STA 79+66.41
90.71' RT
END DRIVEWAY

STA 80+27.51
END SIDEWALK WALL

℄ STA. 80+50.43
14' DRIVE

STA 80+33.36
79.91' RT
END DRIVEWAY

"TRACT 3"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

"TRACT 4"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

CURVE NO	DELTA	RADIUS	TANGENT	LENGTH
FP5	5° 44'08.17" RT	2500.00'	125.24'	250.26'

HORZ. SCALE IN FEET
0 20 40
VERT. SCALE IN FEET
0 5 10

EXISTING GROUND ℄ LEFT R.O.W.

PROPOSED TOP OF LEFT CURB

(+)0.85%

EXISTING GROUND ℄ RIGHT R.O.W.

PROPOSED TOP OF RIGHT CURB

(+)0.85%

END SIDEWALK WALL
STA 80+27.51
HT 3.07'

BEGIN SIDEWALK WALL
STA 80+09.51
HT 1.00'

WALL VPI
STA 80+12.51
HT 2.48'

BEGIN SIDEWALK WALL
STA 80+46.87
HT 3.59'

WALL VPI
STA 80+61.87
HT 2.32'

END SIDEWALK WALL
STA 80+63.42
HT 1.00'

EX.12" WATER

	79+00	80+00	81+00	82+00	83+00
PROPOSED (TYP)	438.87	439.30	439.72	440.15	440.57	441.00	441.42	441.85	442.27	442.70
EXISTING (TYP)	441.34	441.74	442.15	442.09	442.04	442.57	442.75	442.63	442.96	442.82
PROPOSED (TYP)	438.87	439.30	439.72	440.15	440.57	441.00	441.42	441.85	442.27	442.70
EXISTING (TYP)	442.25	442.10	442.96	441.99	443.19	442.76	442.51	442.57	442.60	442.62

450 445 440 435

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
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BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD.TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-059	59 OF 252

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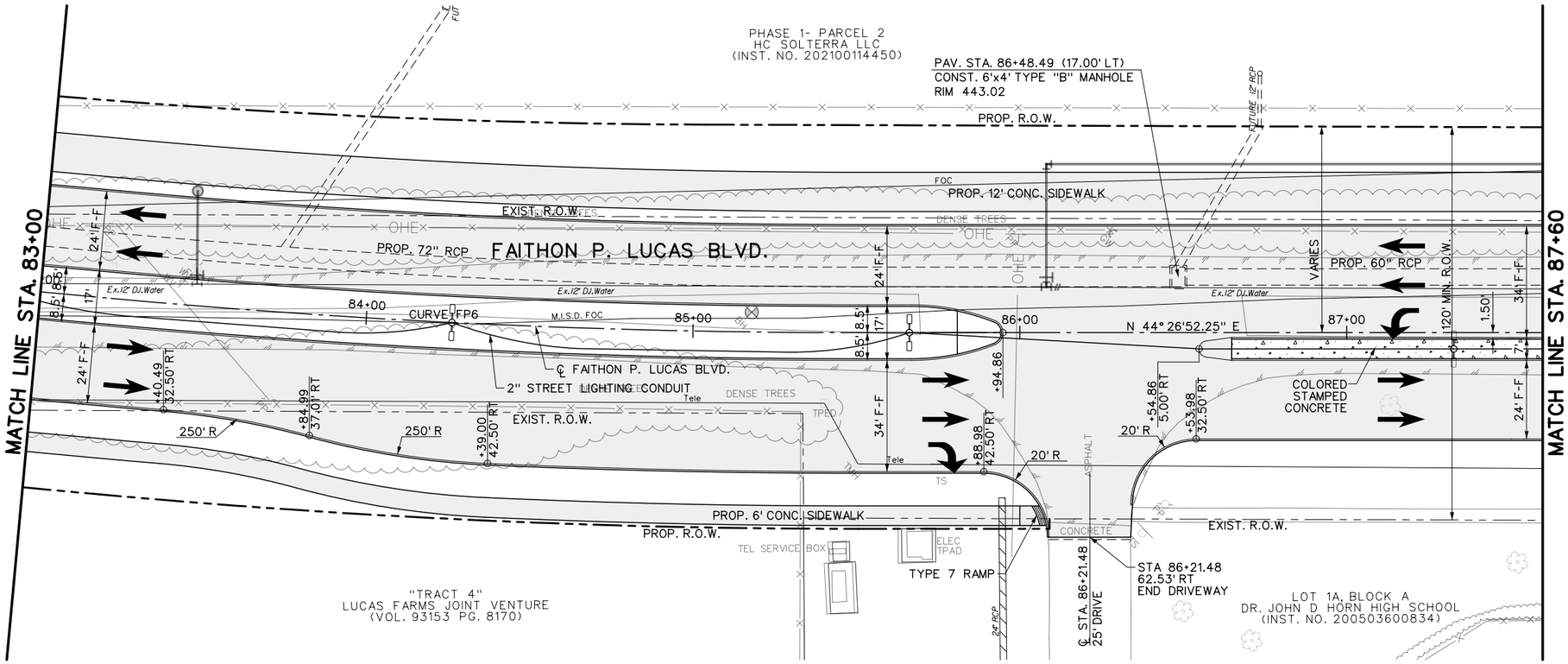
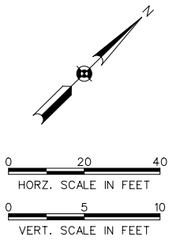
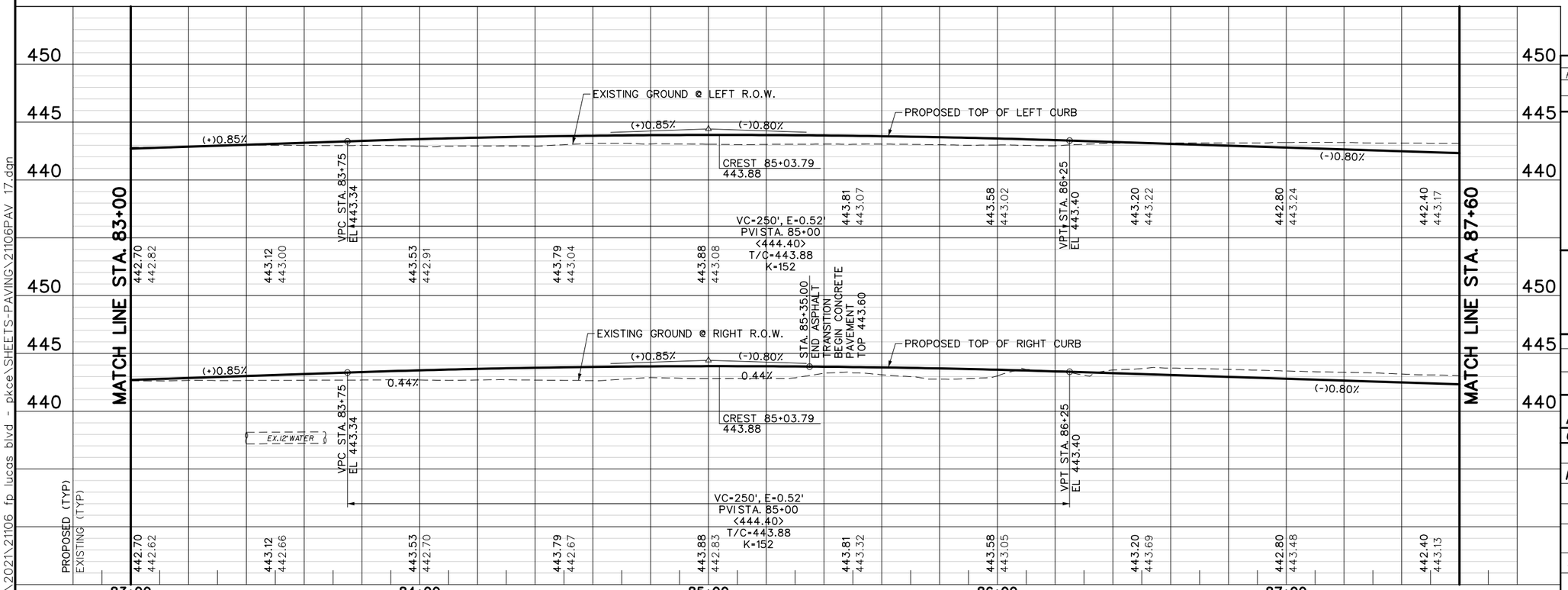




CURVE NO	DELTA	RADIUS	TANGENT	LENGTH
FP6	5° 14'51.44" LT	2500.00'	114.57'	228.97'



REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-060	60 OF 252

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PAV. STA. 88+80.85 (72.50' LT)-
CONST. DBL. SPECIAL 'Y' INLET D8
THROAT 437.33

STA. 88+91.99
72.38' LT
BEGIN PROP. DITCH
℄ 440.33

INLET D10
PAV. STA. 89+15.86 LT
℄ 20' REC. INLET
T.C. 441.46
℄ 437.46

SEE SHEET 62
FOR PROPOSED DITCH SECTION

DRAINAGE EASEMENT WAL-MART REAL ESTATE BUSINESS TRUST
(INST. NO. 201500177457)

PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

PROP. R.O.W.
EXIST. R.O.W.
BRUSH
FOC
PROP. 12' CONC. SIDEWALK
BEND. TREE
PROP. 60" RCP
PROP. 60" RCP
M.I.S.D. FOC
Ex.12" DI.Water
FAITHON P. LUCAS BLVD.
VARIES
120' MIN. R.O.W.
MATCH LINE STA. 87+60
MATCH LINE STA. 92+20
88+00
89+00
90+00
91+00
92+00
N 44° 26'52.25" E
250' R
2" STREET LIGHTING CONDUIT
COLORED STAMPED CONCRETE
℄ FAITHON P. LUCAS BLVD.
GRAVEL
20' R
Tele
PAV. STA. 88+00.91 (17.37' LT)
CONST. 6'x4' TYPE "B" MANHOLE
RIM 441.79
INLET D9
PAV. STA. 88+98.86 RT
℄ 20' REC INLET
T.C. 441.61
℄ 437.61
LOT 1A, BLOCK A
DR. JOHN D HORN HIGH SCHOOL
(INST. NO. 200503600834)
℄ STA. 91+10.19
11' DRIVE
STA 90+09.26
59.41' RT
END DRIVEWAY
6' PC

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

VC-200', E-0.40'
PVI STA. 89+17
<441.06>
T/C-441.46
K-125
VPC STA. 88+17
EL 441.86
VPT STA. 90+17
EL 441.86
SAG 89+17.01
441.46
EXISTING GROUND @ LEFT R.O.W.
PROPOSED TOP OF LEFT CURB
(-)0.80%
(+)0.80%
(+)0.80%

442.00 443.32
441.64 443.51
441.48 444.16
441.51 444.01
441.74 443.93
442.13 443.86
442.53 443.93
442.93 444.10
443.33 444.19

VC-200', E-0.40'
PVI STA. 89+00
<441.21>
T/C-441.61
K-124
VPC STA. 88+00
EL 442.01
VPT STA. 90+00
EL 442.02
PROP 60" RCP
℄ 430.53
SAG 88+99.39
441.61
EXISTING GROUND @ RIGHT R.O.W.
PROPOSED TOP OF RIGHT CURB
(-)0.80%
(+)0.81%
(+)0.81%
EX.12" WATER
PROP 24" RCP
℄ 435.91

PROPOSED (TYP)
EXISTING (TYP)

442.00 443.05
441.71 443.72
441.61 443.46
441.71 443.64
442.02 443.95
442.42 443.79
442.83 443.68
443.23 444.08
443.64 444.87

450
445
440

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
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BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-061	61 OF 252

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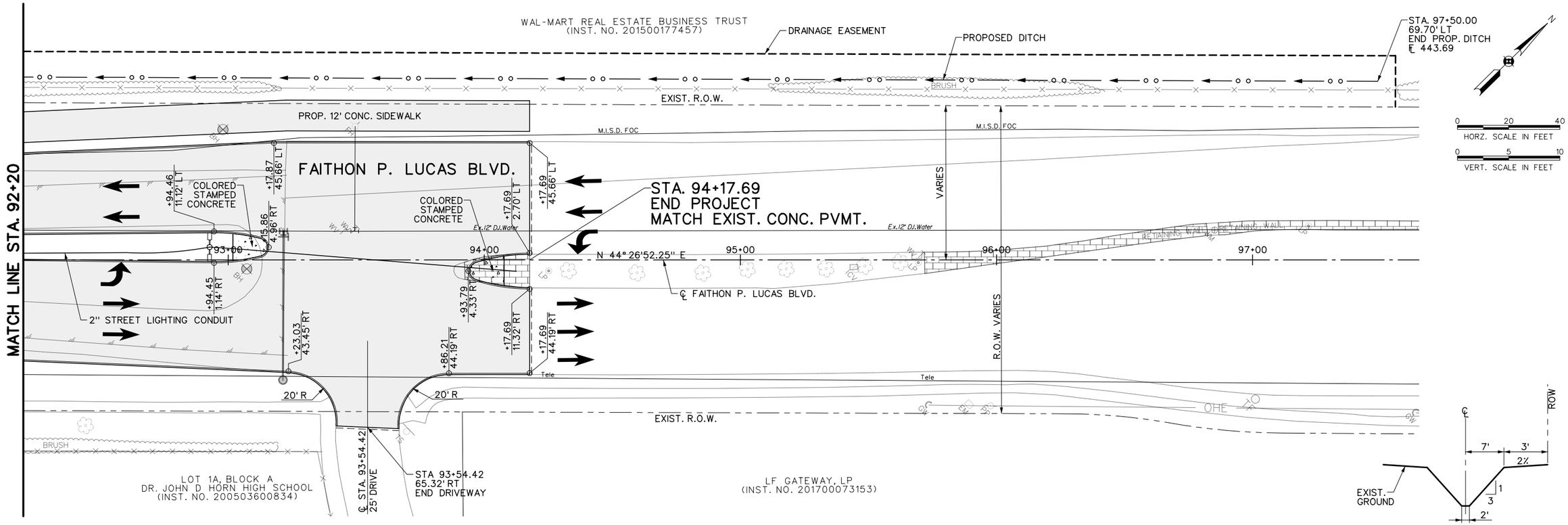

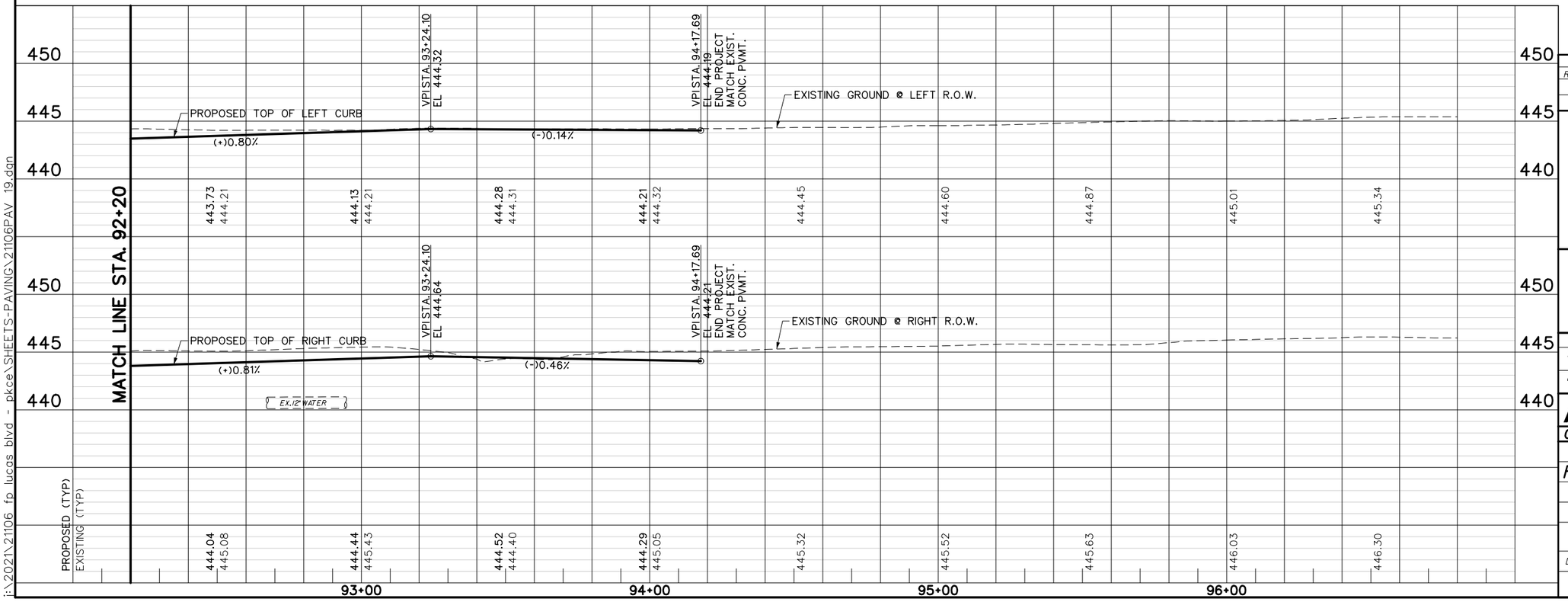

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-062	62 OF 252

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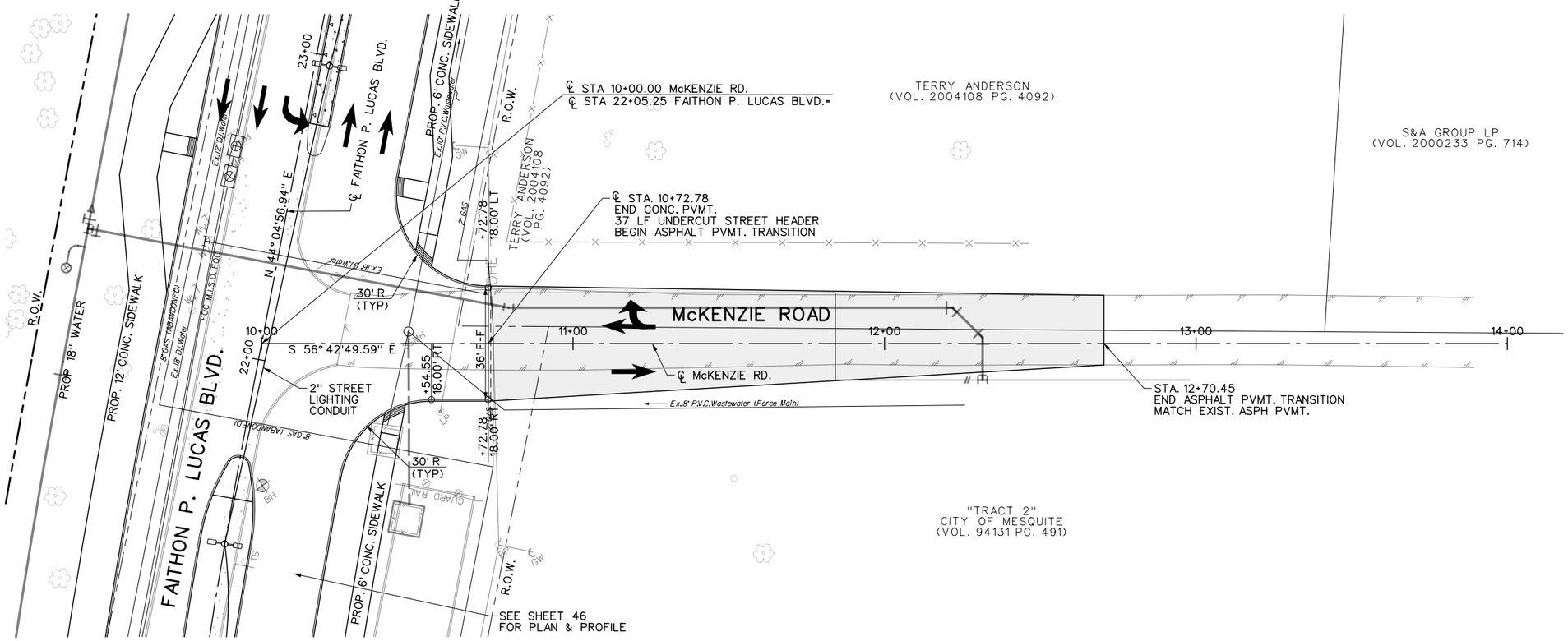
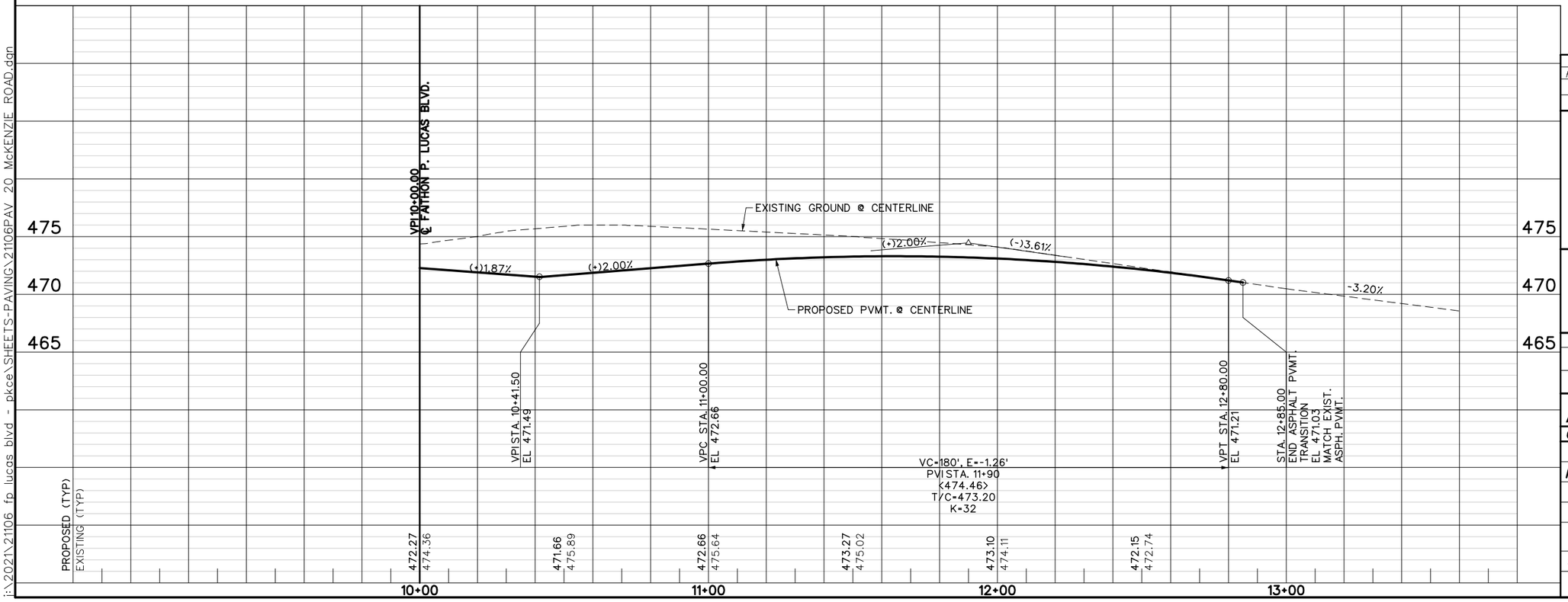




REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

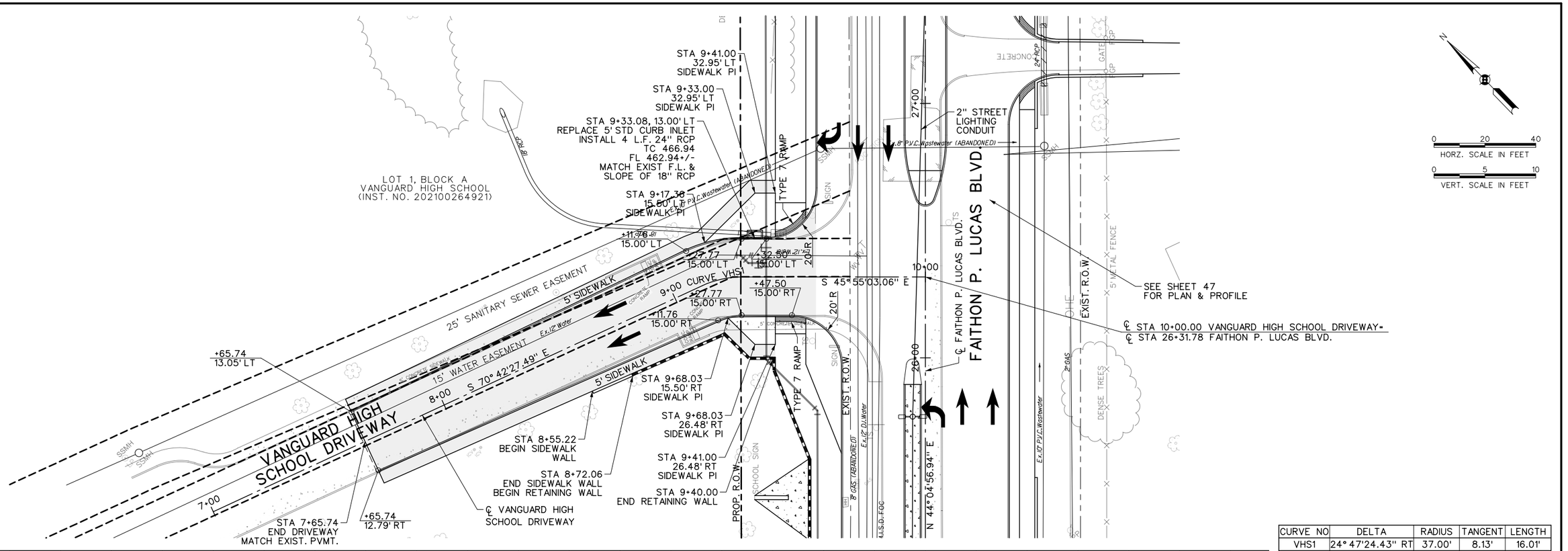
STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

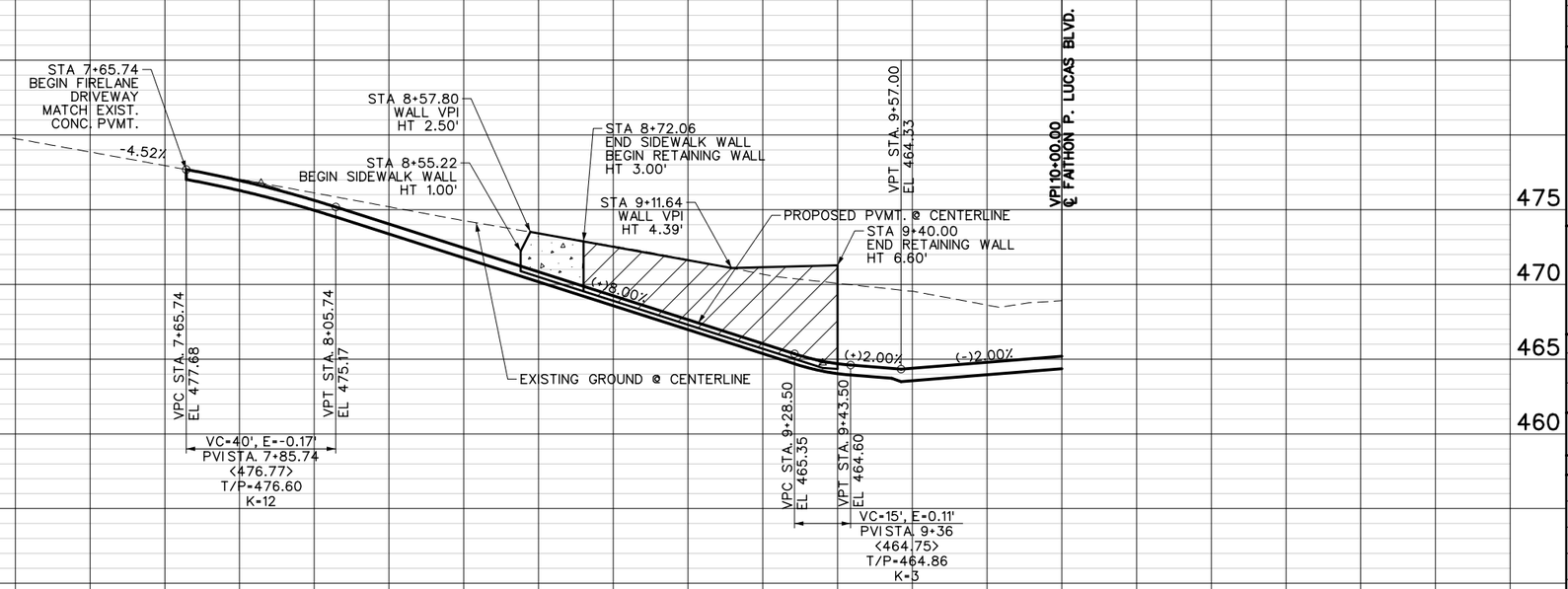
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE
McKENZIE ROAD
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-063	63 OF 252



CURVE NO	DELTA	RADIUS	TANGENT	LENGTH
VHS1	24° 47'24.43" RT	37.00'	8.13'	16.01'



REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

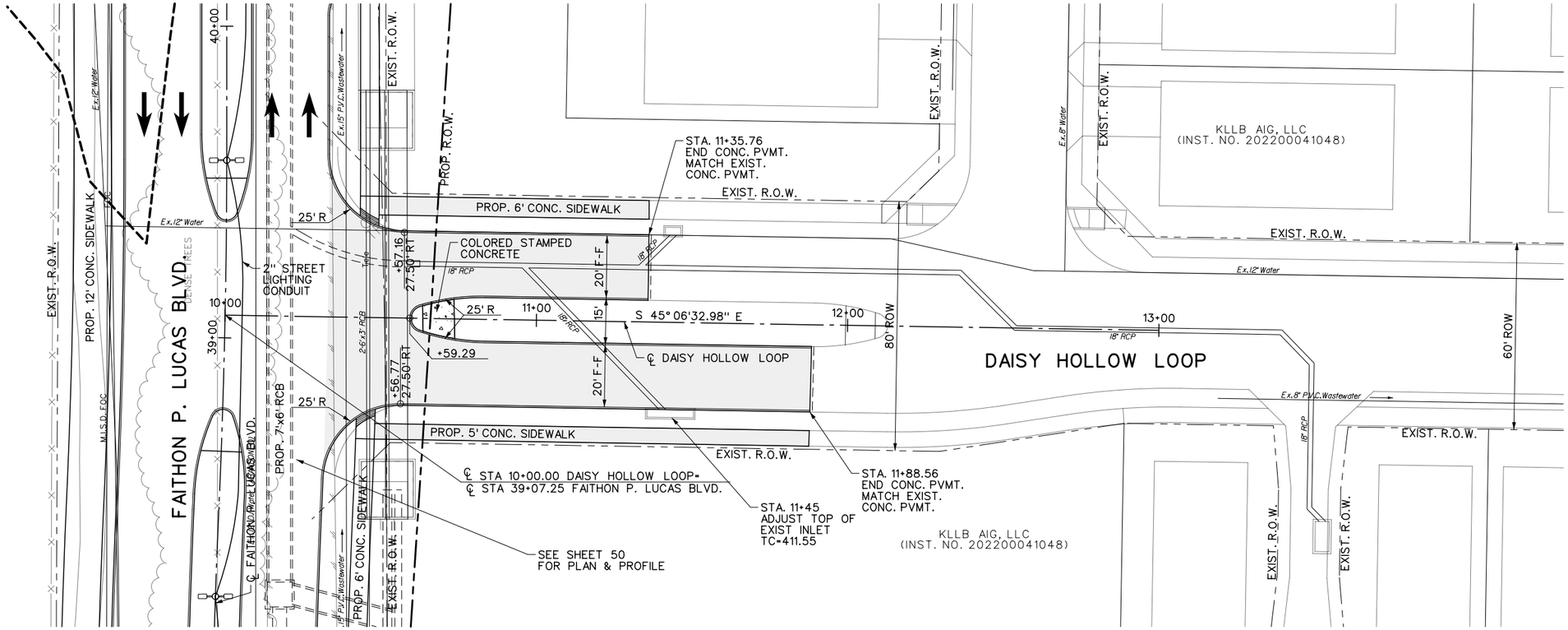
STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

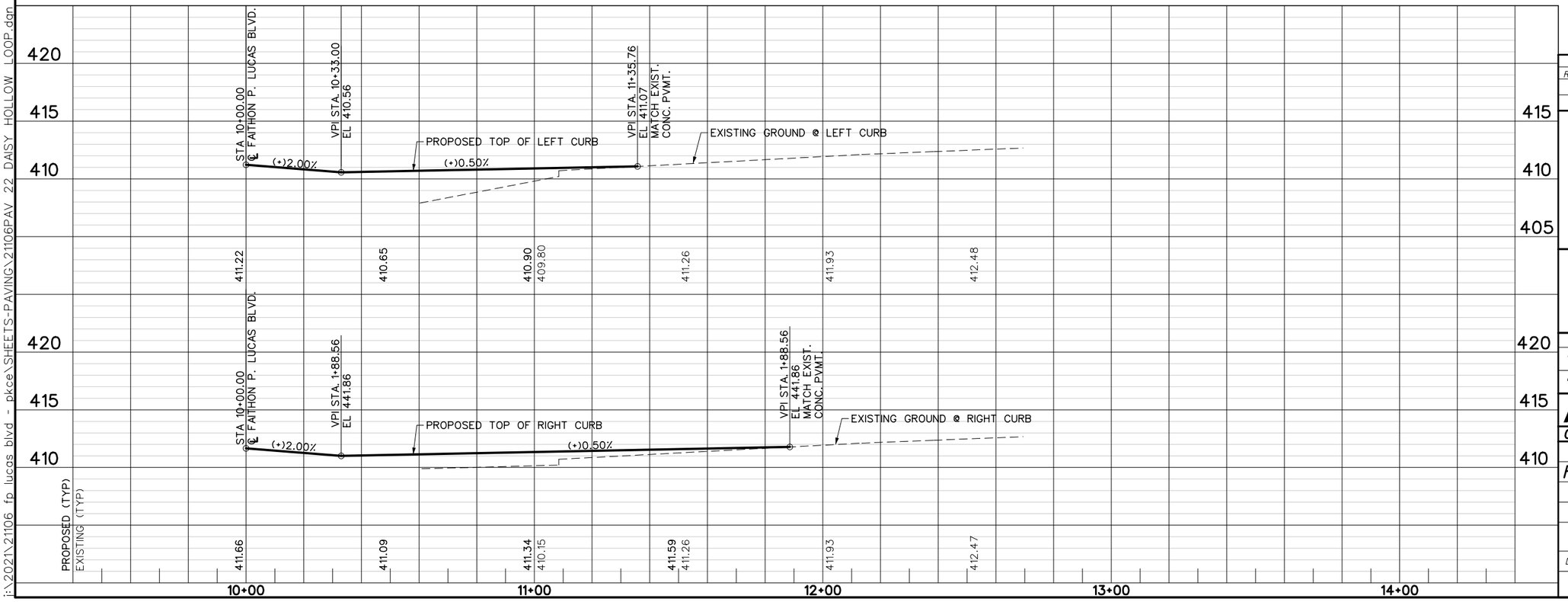
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE
VANGUARD HIGH SCHOOL DRIVEWAY
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-064	64 OF 252





REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

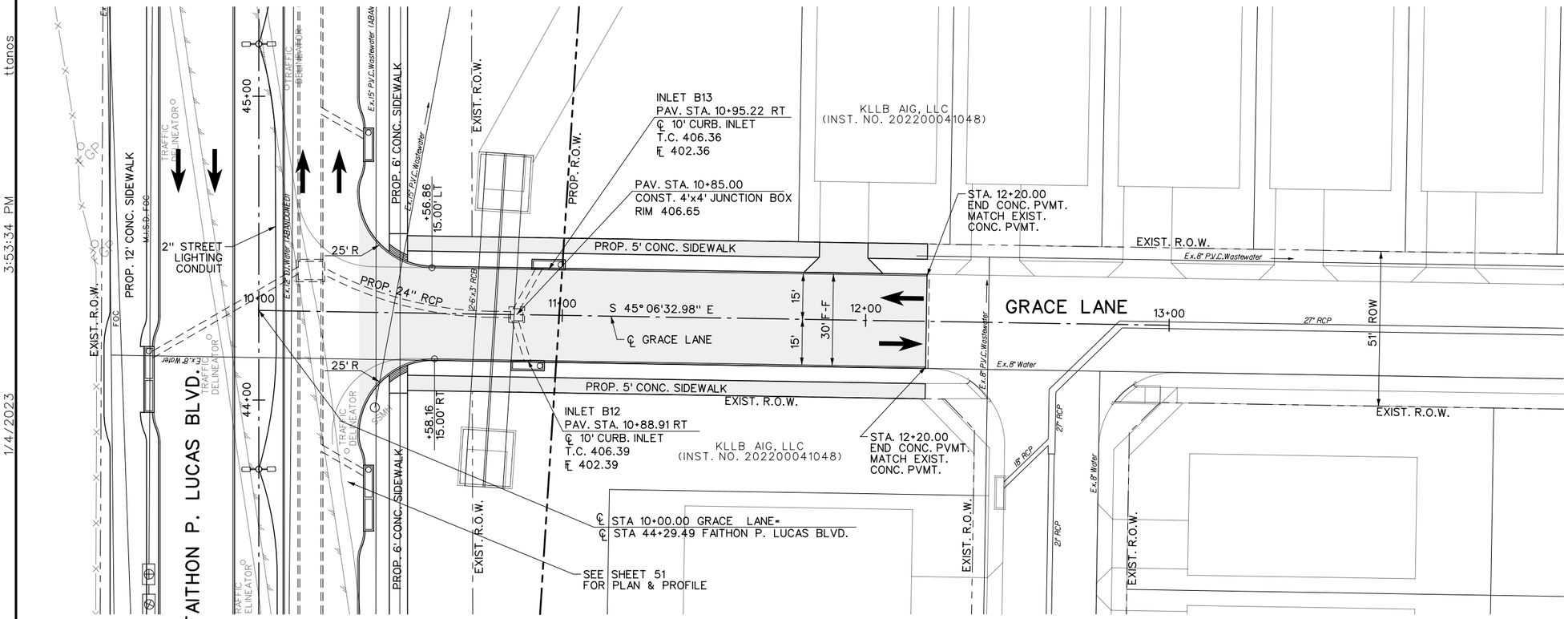
STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

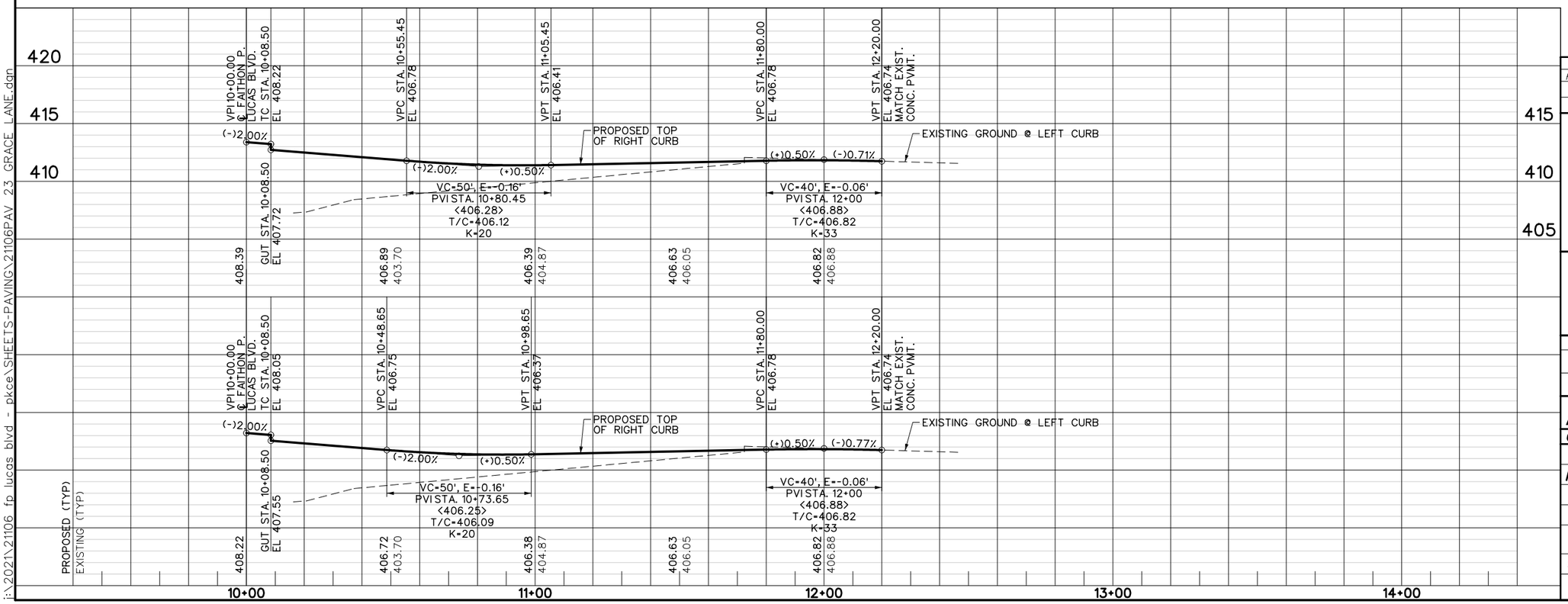
APM & Associates, Inc. Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

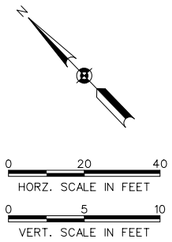
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE
DAISY HOLLOW LOOP
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-065	65 OF 252







REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

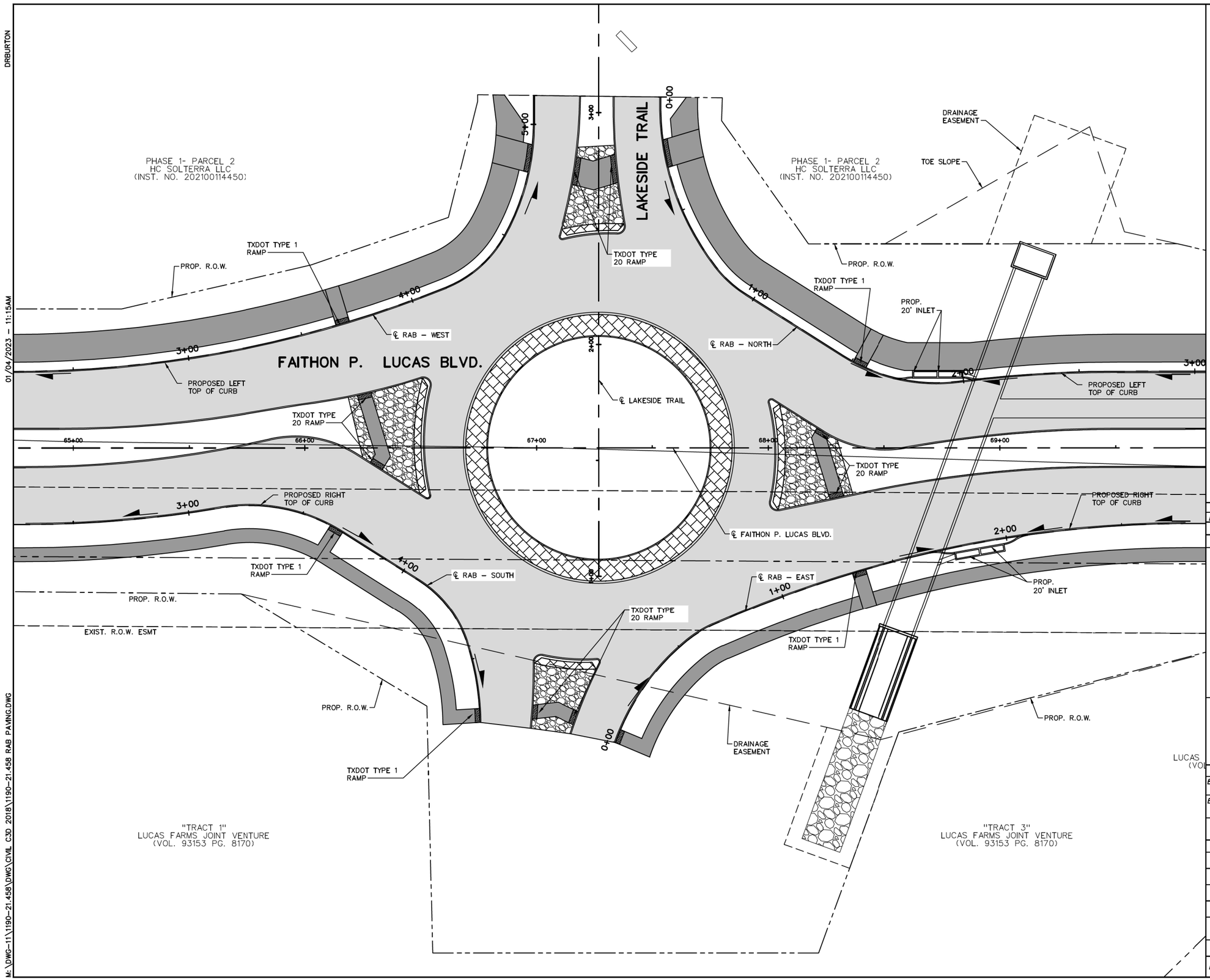
STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVING PLAN AND PROFILE
GRACE LANE
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-066	66 OF 252



0 20 40
HORZ. SCALE IN FEET

LEGEND

- PROPSOED ROW
- FLOW DIRECTION
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- INTEGRAL COLORED/TEXTURED 10" CONCRETE TRUCK APRON/PEDESTRIAN BUFFER
- INTEGRAL COLORED/TEXTURED 4" CONCRETE MEDIAN (SPLITTER ISLAND)

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
JONATHAN C. IRETON
124957
LICENSED
PROFESSIONAL ENGINEER

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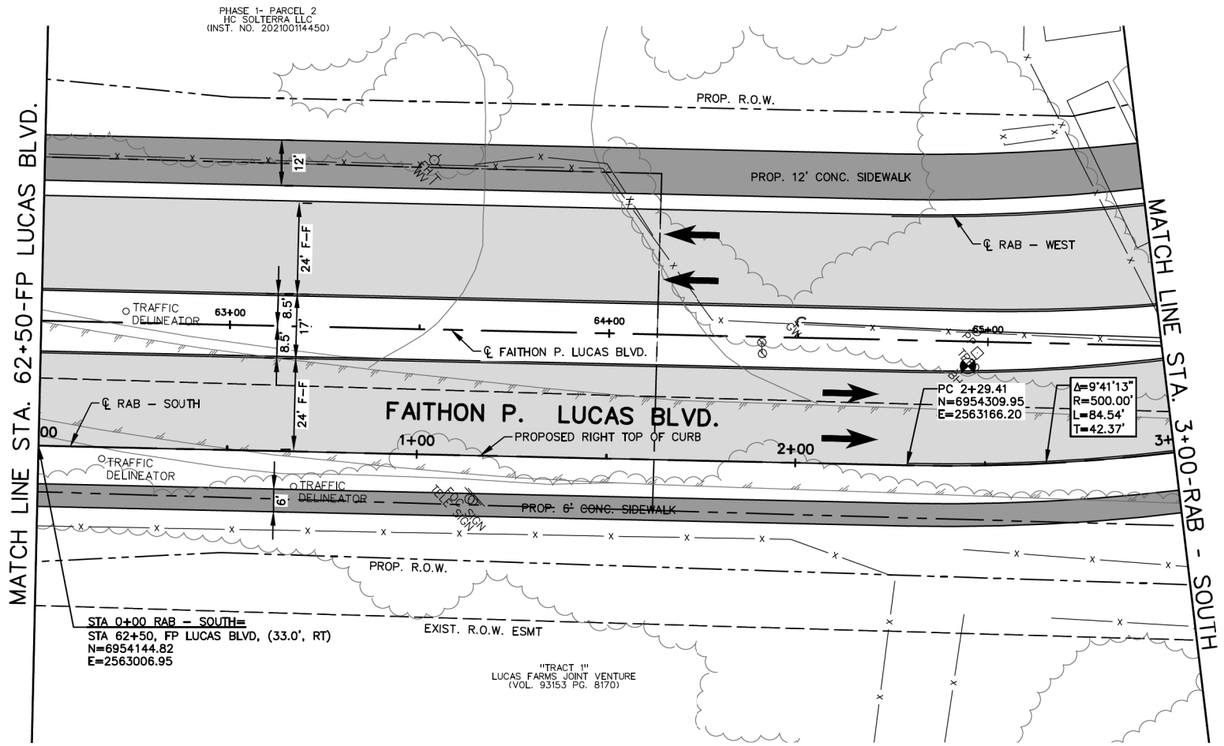
DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008000

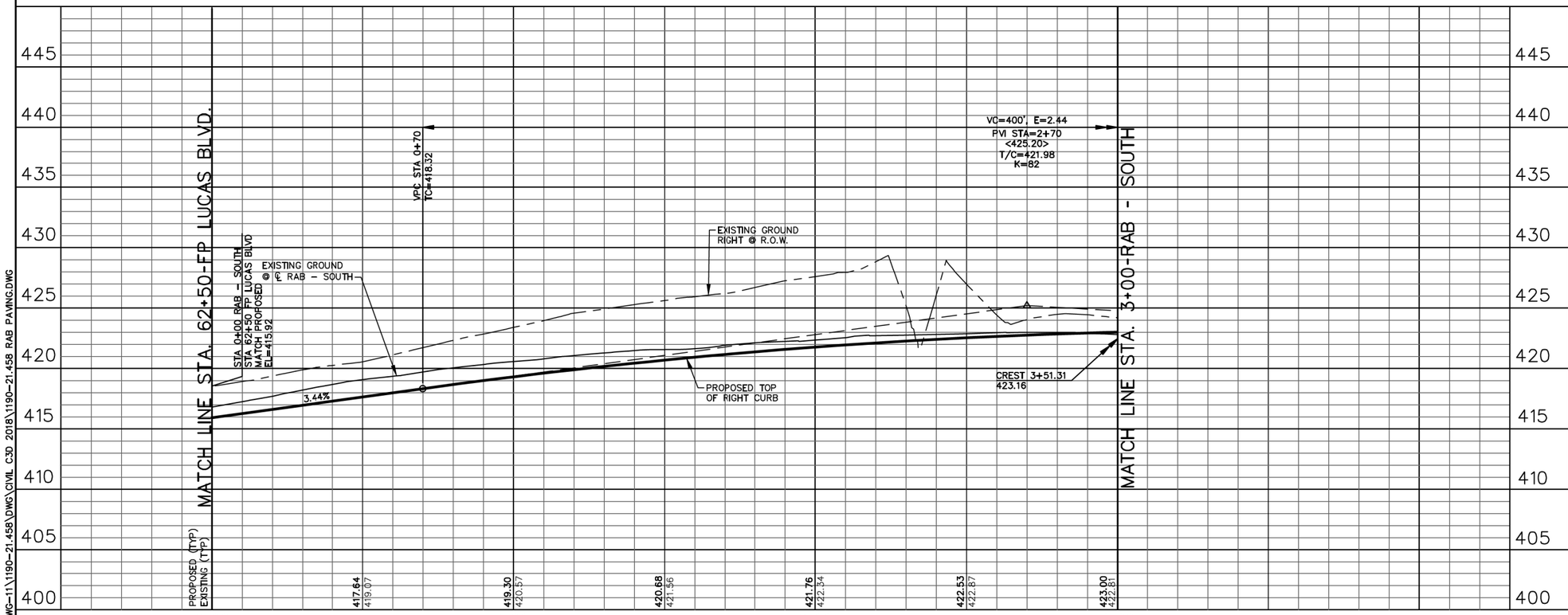
CITY CONTRACT NO. 2023-029

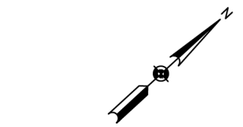
F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT

ROUNDABOUT LAYOUT
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-067	67 OF 252







LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
JONATHAN C. IRETON
124957
LICENSED
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972.235.3031
TX REG. ENGINEERING FIRM F-439
TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD

MCKENZIE ROAD TO E. CARTWRIGHT

ROUNDABOUT PLAN AND PROFILE

RAB - SOUTH

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-068	68 OF 252

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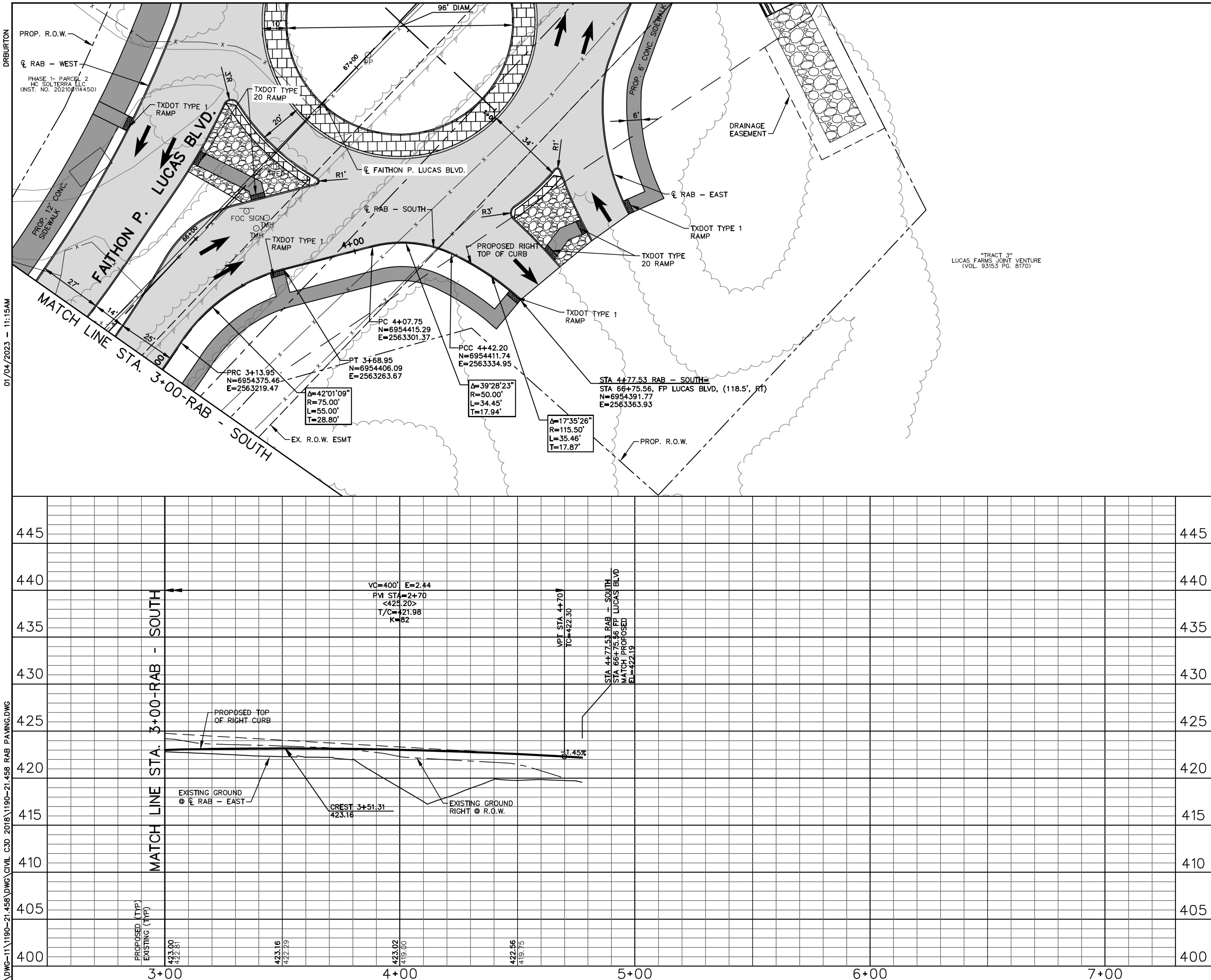
DRBURTON



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HORZ. SCALE IN FEET (0, 20, 40)

VERT. SCALE IN FEET (0, 5, 10)

LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- INTEGRAL COLORED/TEXTURED 10" CONCRETE TRUCK APRON/PEDESTRIAN BUFFER
- INTEGRAL COLORED/TEXTURED 4" CONCRETE MEDIAN (SPLITTER ISLAND)

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS — JONATHAN C. IRETON — 124957 — LICENSED PROFESSIONAL ENGINEER

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CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD

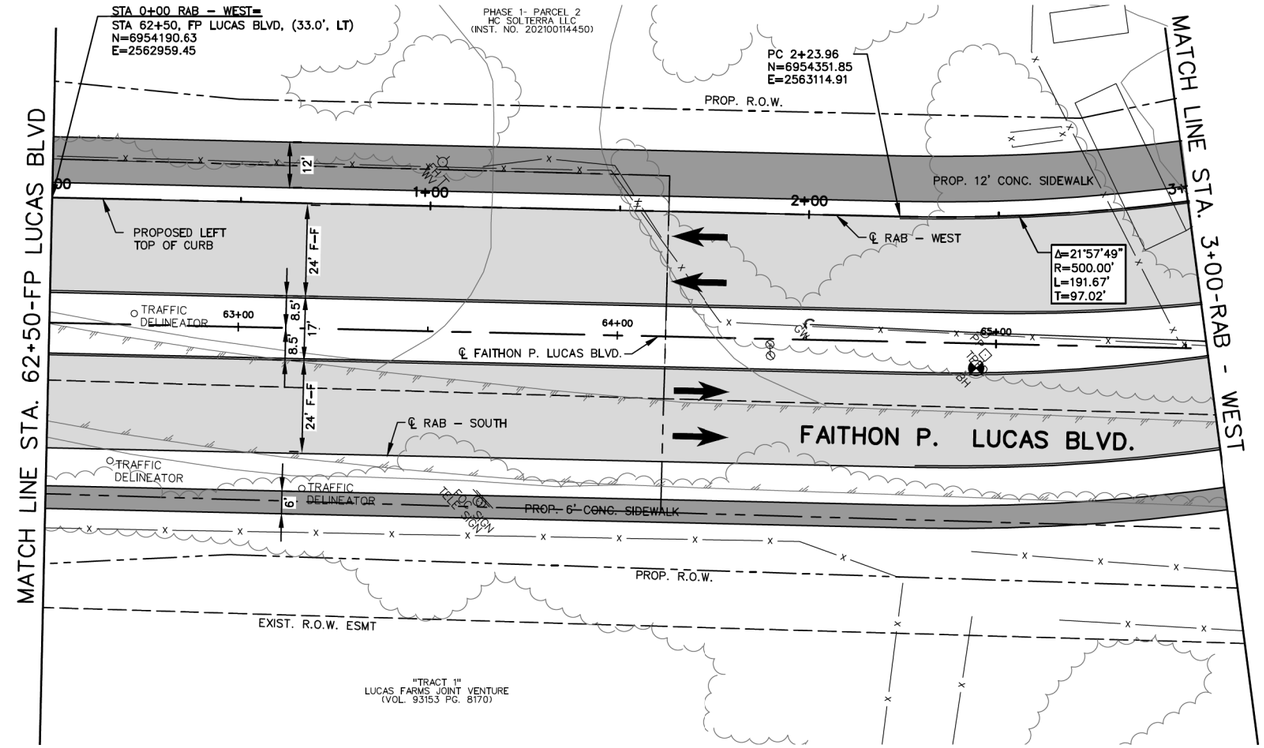
MCKENZIE ROAD TO E. CARTWRIGHT

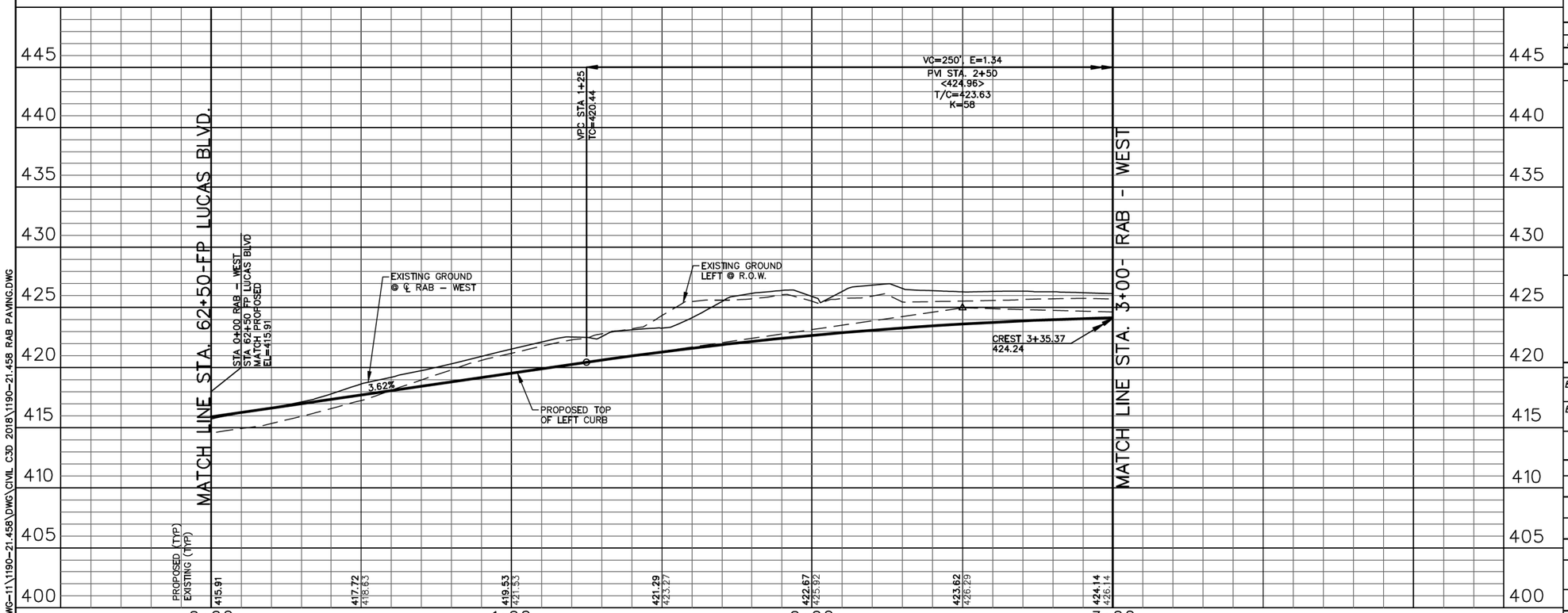
ROUNDABOUT PLAN AND PROFILE

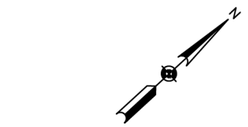
RAB - SOUTH

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-069	69 OF 252







LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD

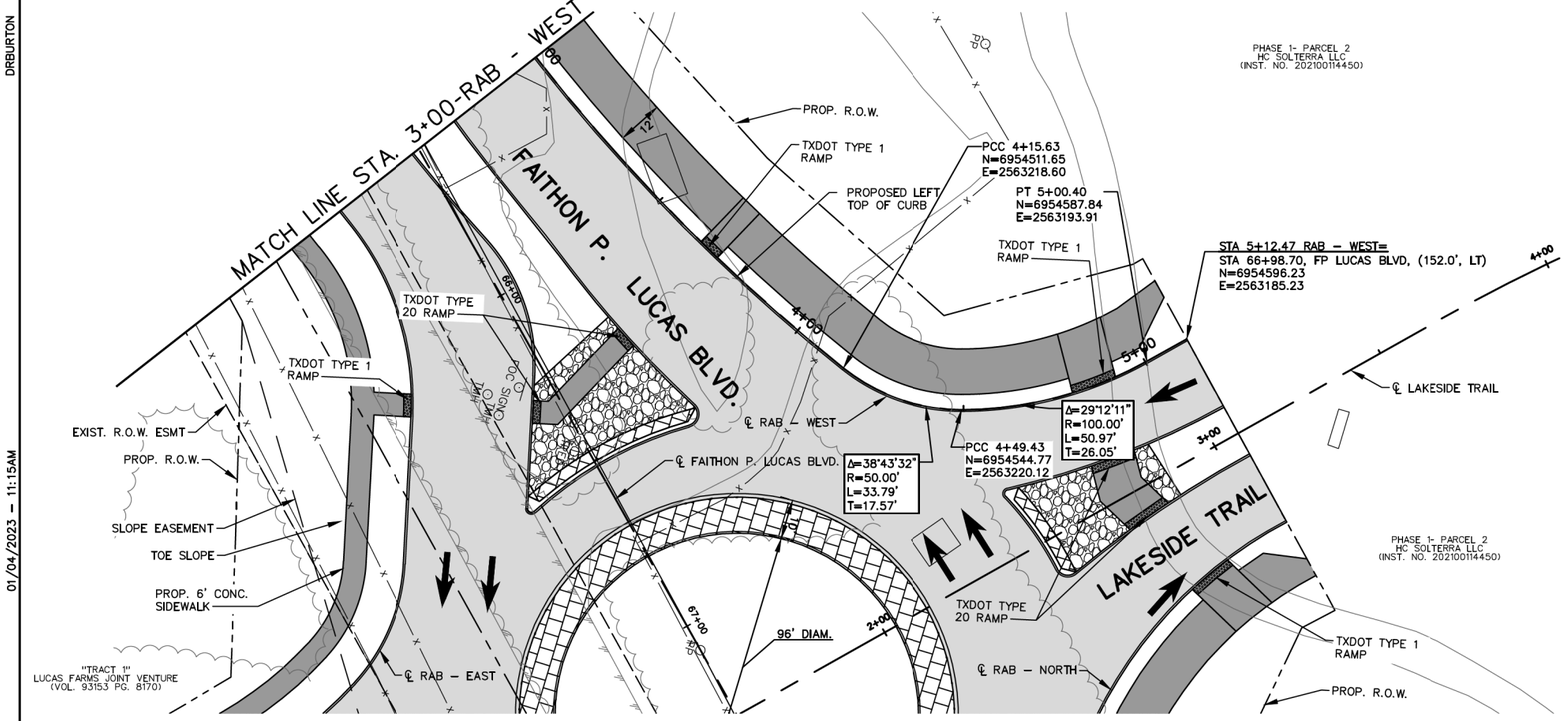
MCKENZIE ROAD TO E. CARTWRIGHT

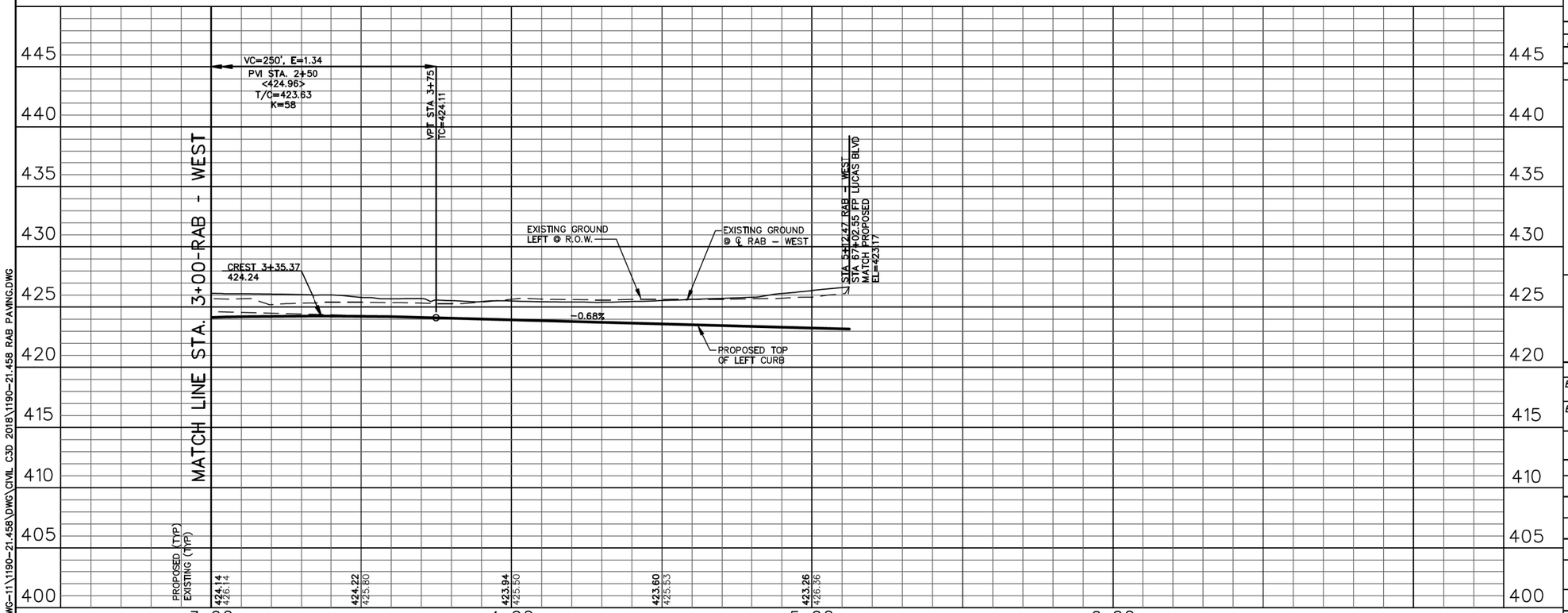
ROUNDABOUT PLAN AND PROFILE

RAB - WEST

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-070	70 OF 252





0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- INTEGRAL COLORED/TEXTURED 10" CONCRETE TRUCK APRON/PEDESTRIAN BUFFER
- INTEGRAL COLORED/TEXTURED 4" CONCRETE MEDIAN (SPLITTER ISLAND)

REVISIONS

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0 10 20 40
HORIZONTAL SCALE IN FEET

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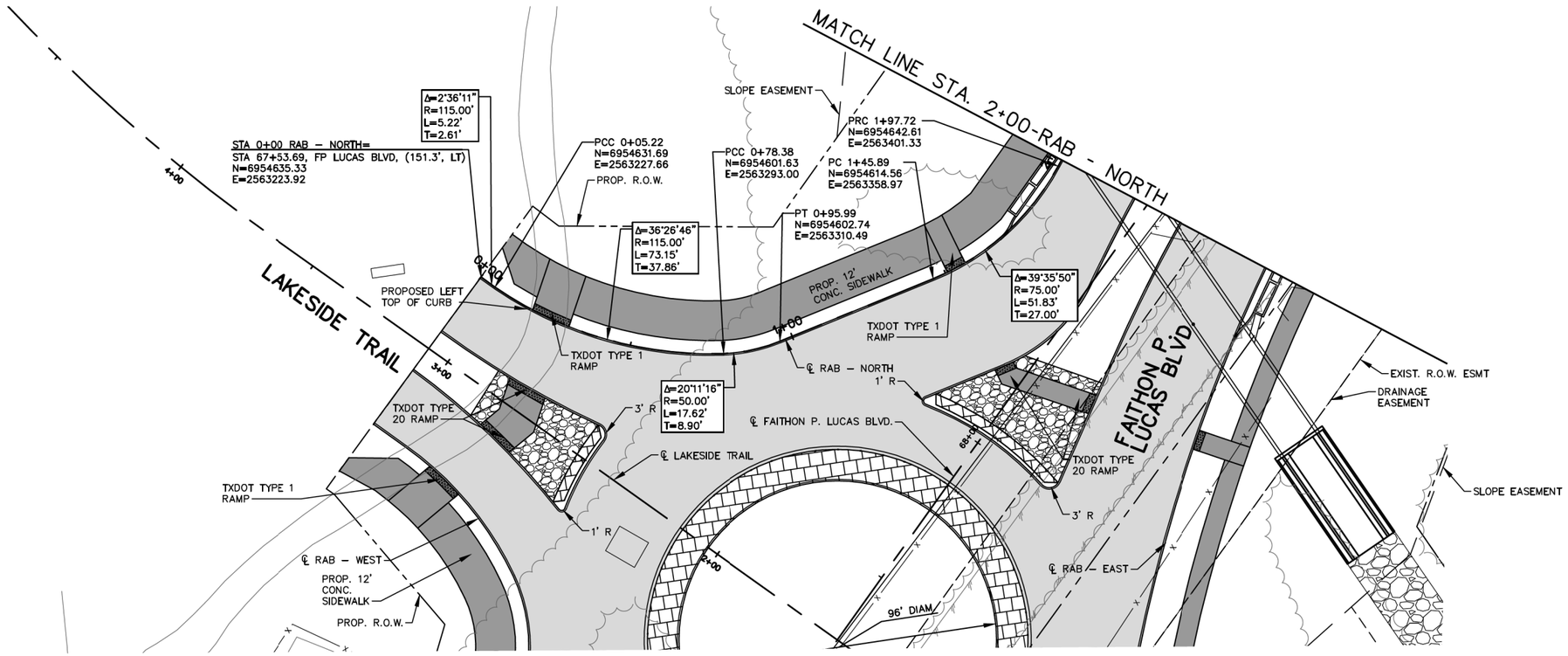
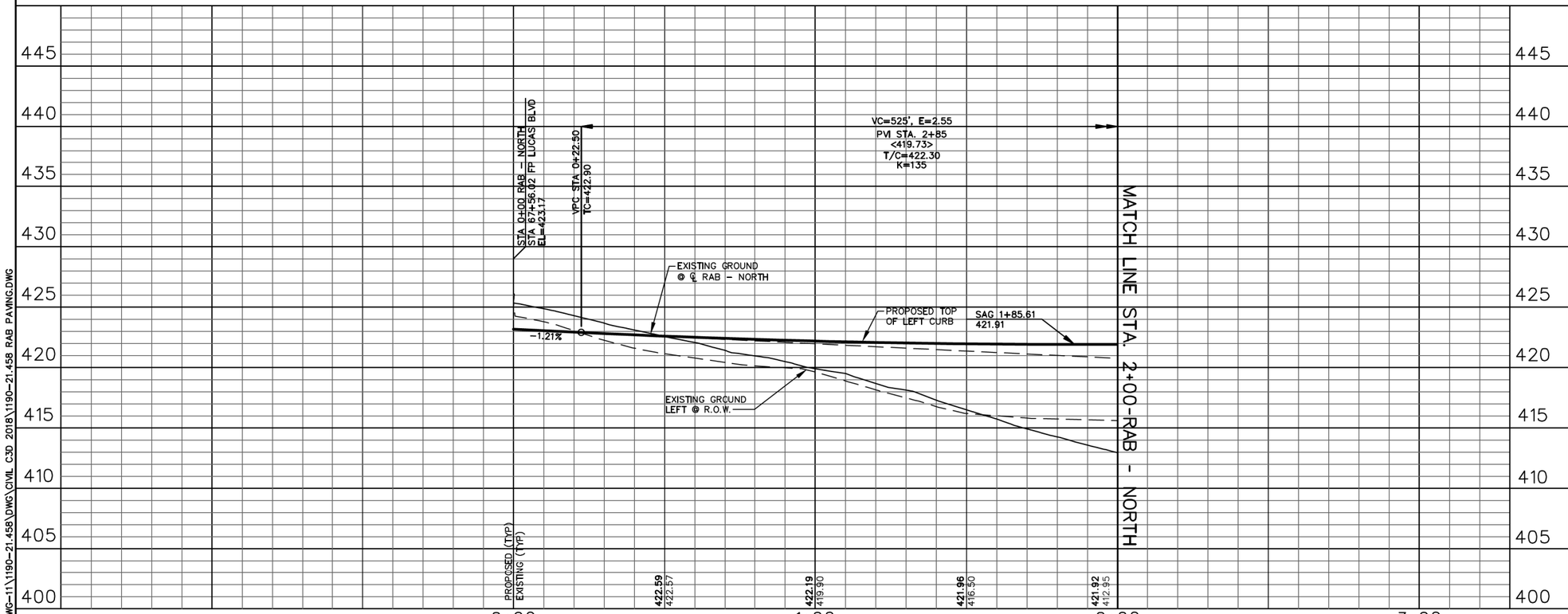
CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
ROUNDABOUT PLAN AND PROFILE
RAB - WEST
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-071	71 OF 252





N

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- INTEGRAL COLORED/TEXTURED 10" CONCRETE TRUCK APRON/PEDESTRIAN BUFFER
- INTEGRAL COLORED/TEXTURED 4" CONCRETE MEDIAN (SPLITTER ISLAND)

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
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BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2023-029

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MCKENZIE ROAD TO E. CARTWRIGHT

ROUNDABOUT PLAN AND PROFILE

RAB - NORTH

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-072	72 OF 252

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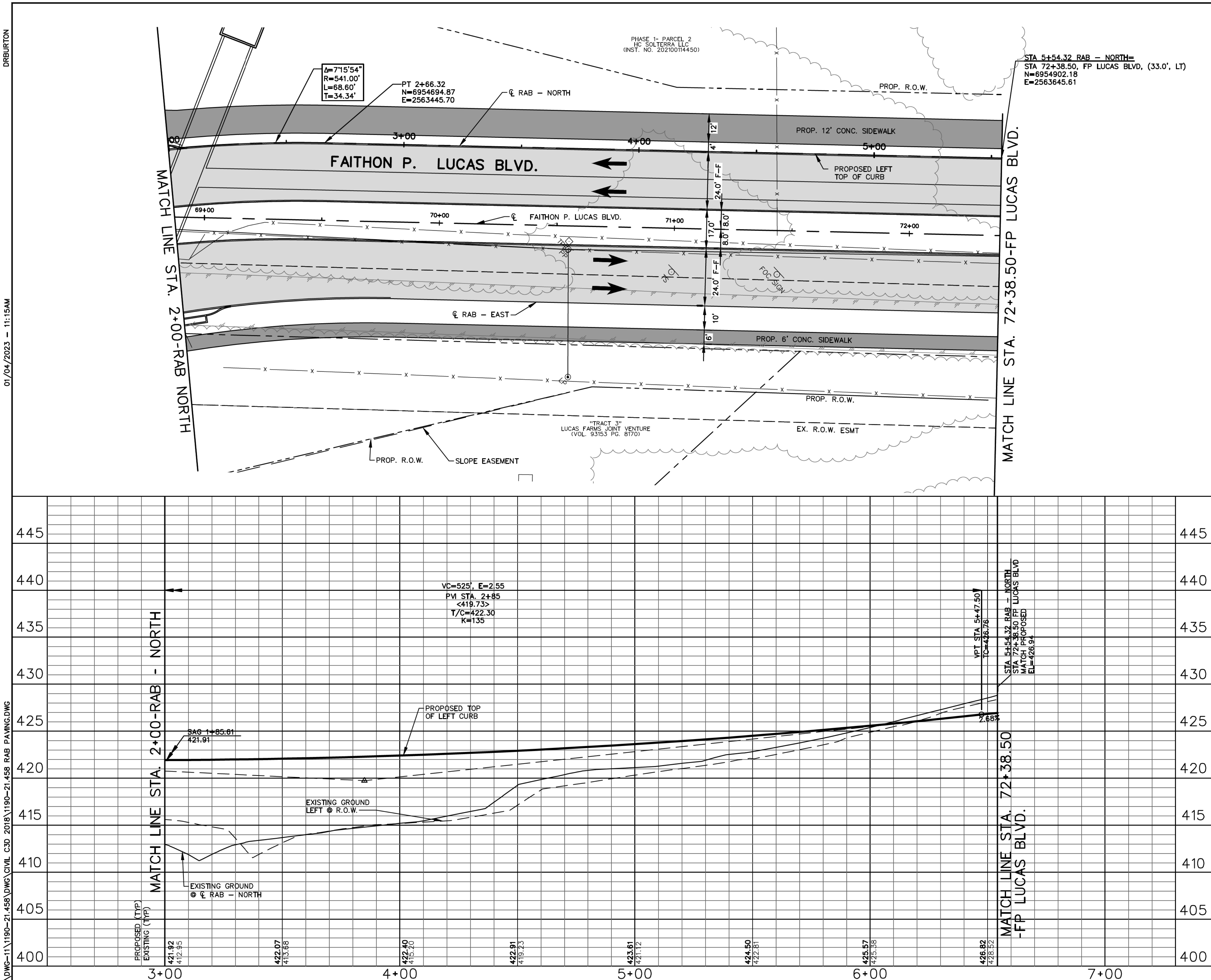

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

LEGEND

ROW

PROPOSED CONCRETE PAVEMENT

PROPOSED CONCRETE TRAIL

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

STATE OF TEXAS
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CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD

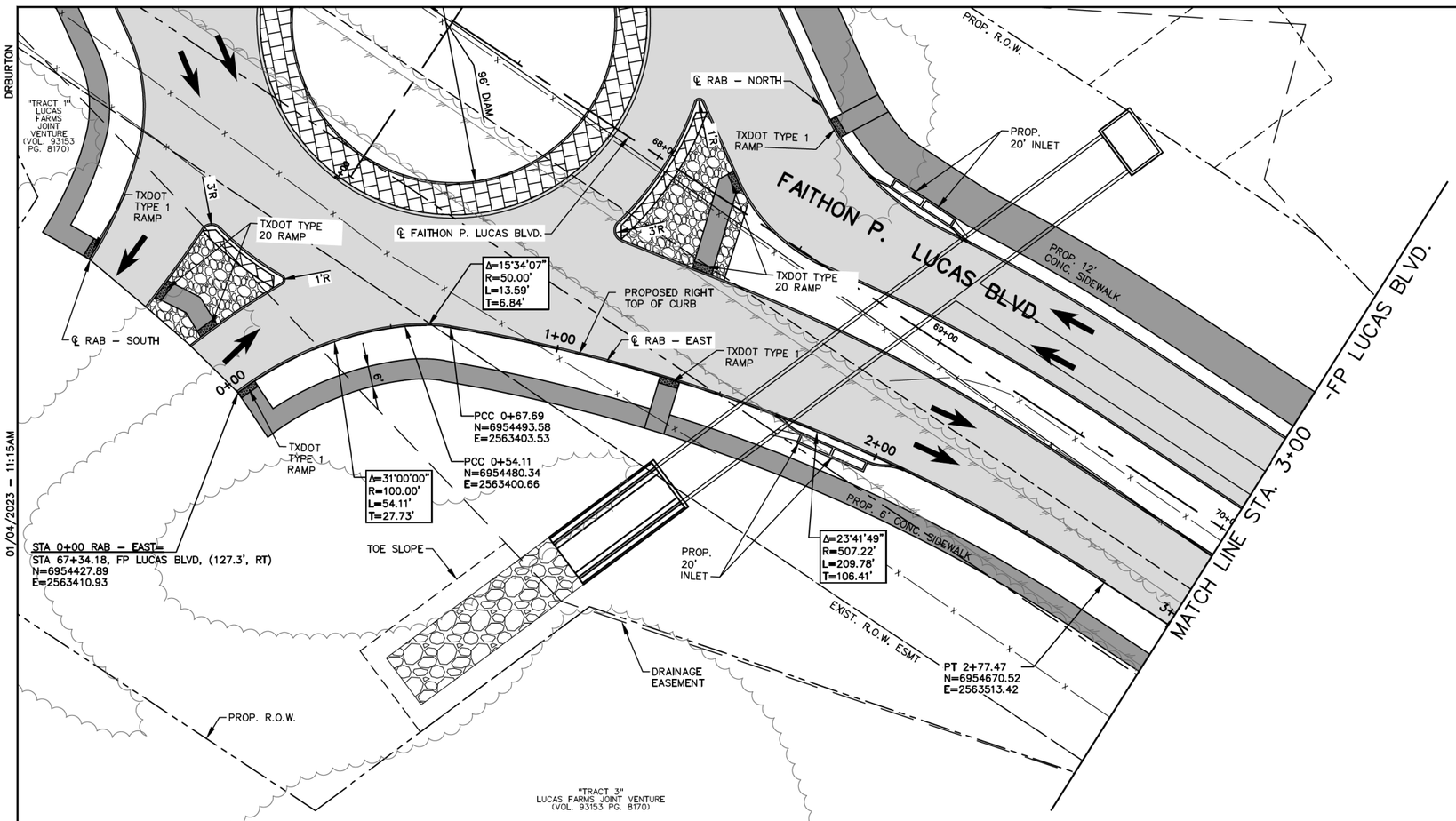
MCKENZIE ROAD TO E. CARTWRIGHT

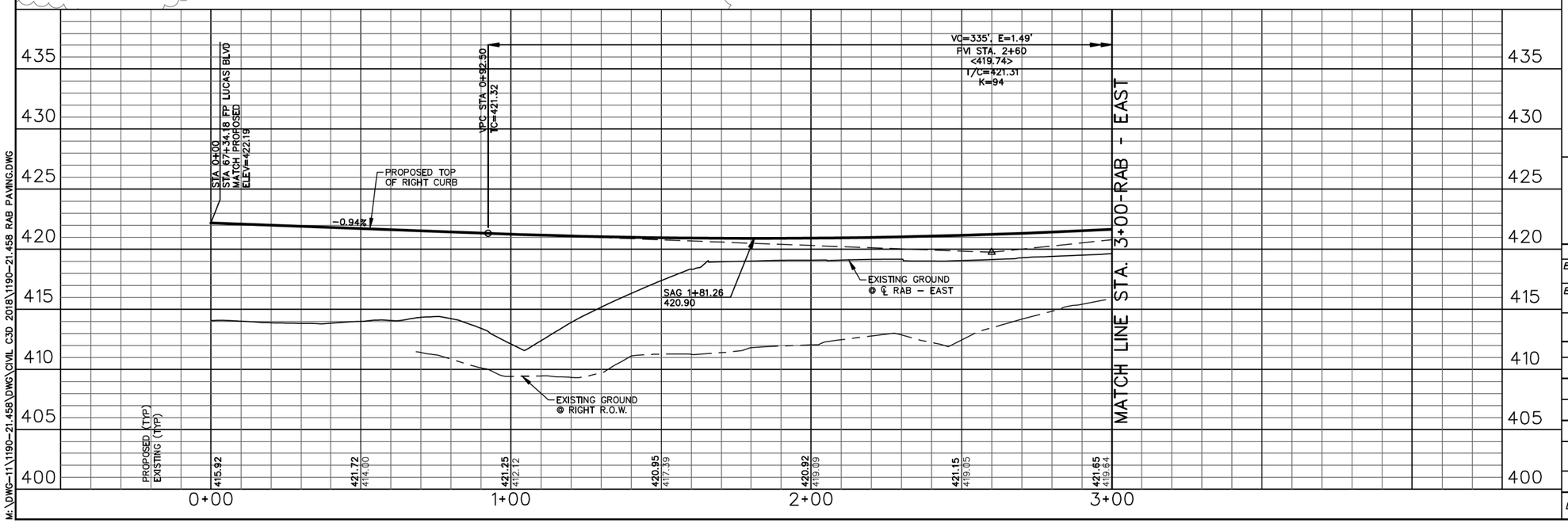
ROUNDABOUT PLAN AND PROFILE

RAB - NORTH

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-073	73 OF 252





N

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- INTEGRAL COLORED/TEXTURED 10" CONCRETE TRUCK APRON/PEDESTRIAN BUFFER
- INTEGRAL COLORED/TEXTURED 4" CONCRETE MEDIAN (SPLITTER ISLAND)

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP	SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP	SHEET NO. 98 & 99

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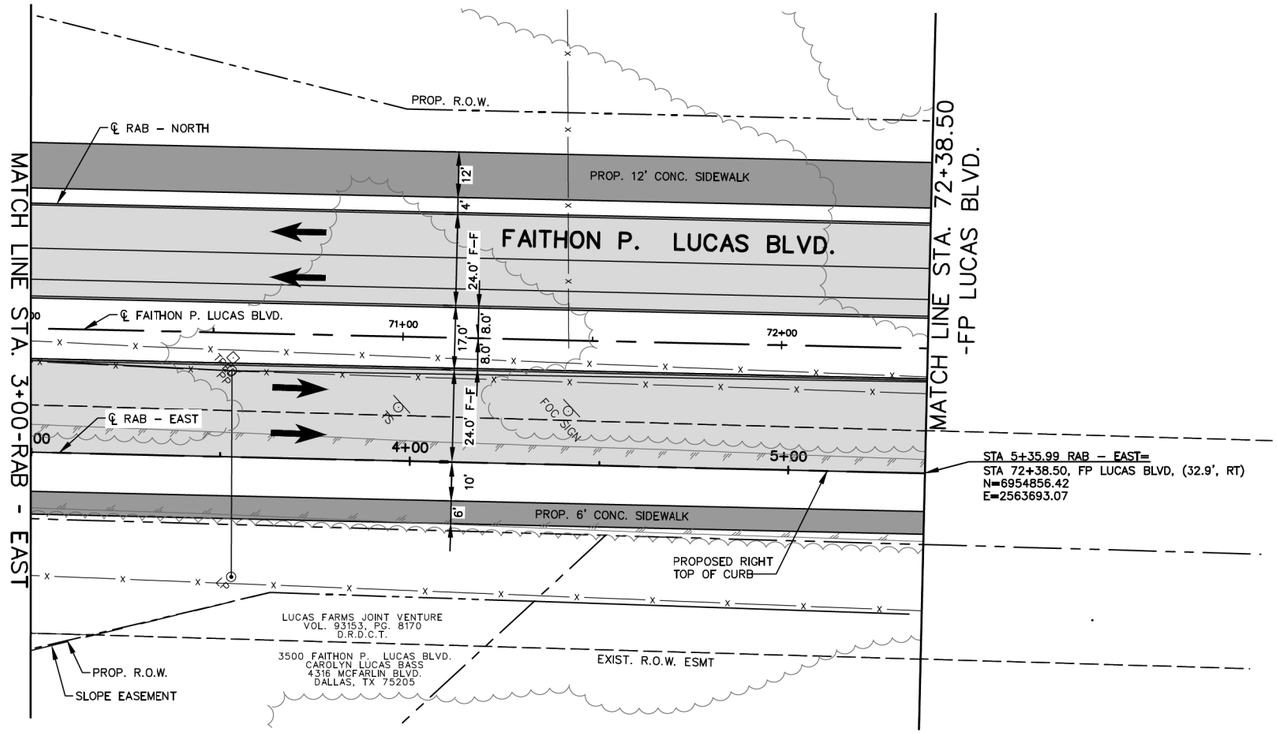
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008800

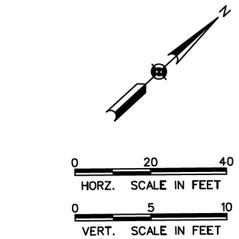
CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
ROUNDABOUT PLAN AND PROFILE
RAB - EAST

CITY OF MESQUITE, TEXAS

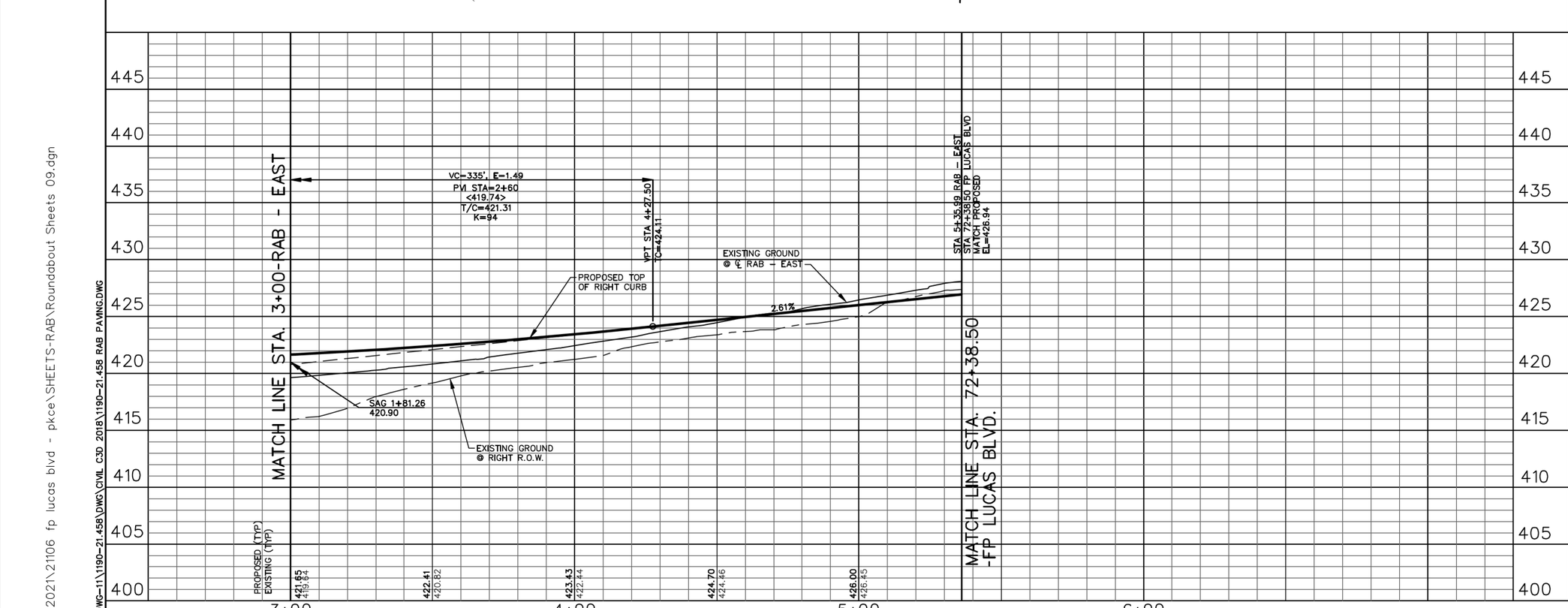
DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-074	74 OF 252





LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK



REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD

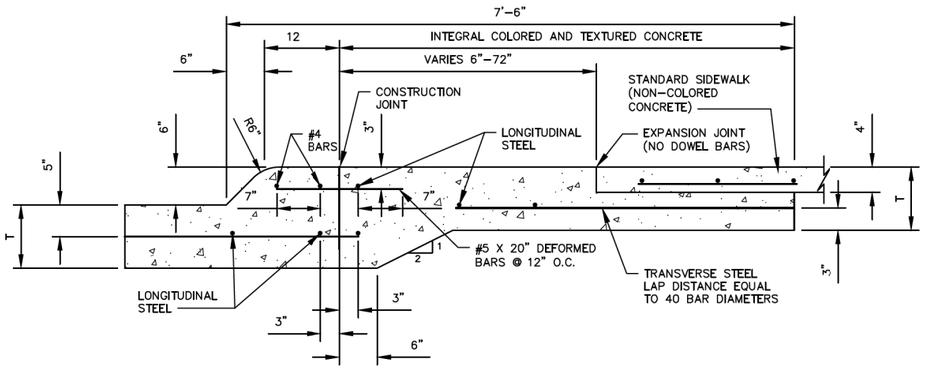
MCKENZIE ROAD TO E. CARTWRIGHT

ROUNDABOUT PLAN AND PROFILE

RAB - EAST

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-075	75 OF 252



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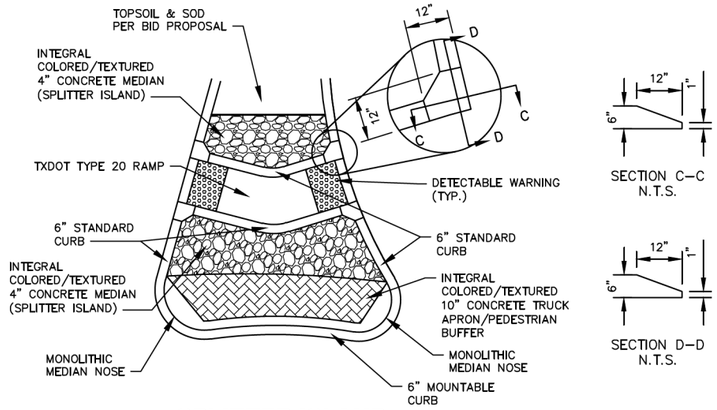
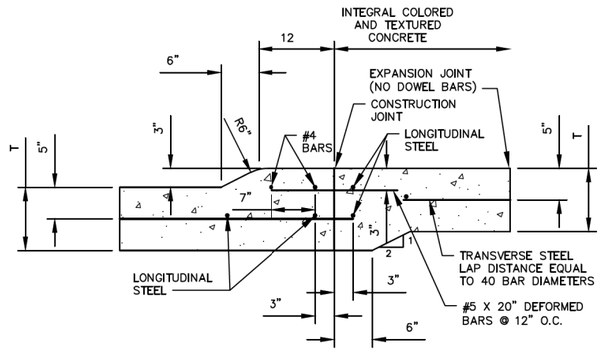
NOT TO SCALE



2 SPLITTER ISLAND DETAIL
NOT TO SCALE



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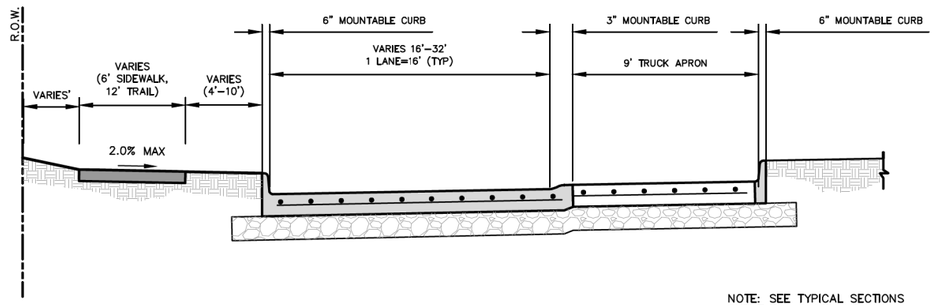
NOT TO SCALE



NOTE: SEE TYPICAL SECTIONS SHEET FOR PAVEMENT AND SUBGRADE THICKNESS, MATERIAL, AND REINFORCING INFORMATION

1 ROUNDABOUT TYPICAL SECTION
NOT TO SCALE

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
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TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD

MCKENZIE ROAD TO E. CARTWRIGHT

ROUNDABOUT DETAILS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-076	76 OF 252

LAKESIDE TRAIL

FAITHON P. LUCAS BLVD.

65+00 66+00 67+00 68+00 69+00 70+00

W11-2 M6-02AL
W11-2 M6-02AR
W11-2 M6-02AL
W11-2 M6-02AL
W11-2 M6-02AR
W11-2 M6-02AL
W11-2 M6-02AL
W11-2 M6-02AR
W11-2 M6-02AL
W11-2 M6-02AL
W11-2 M6-02AR

R1-2 YIELD
R1-2 YIELD
R1-2 YIELD
R1-2 YIELD

R6-4A

TYPE II-C-R RAISED PAVEMENT MARKERS (TYP)
TYPE W TRAFFIC BUTTON
TYPE II-C-R RAISED PAVEMENT MARKERS (TYP)
8" SOLID WHITE
PROP. R.O.W.
PROP. R.O.W.
PROP. R.O.W.
18" BROKEN WHITE PAVEMENT MARKER

12'
25'
16'
25'
10'
6'

RETAINING WALL

N

0 20 40
HORZ. SCALE IN FEET

LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED TRUCK APRON

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

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HORIZONTAL SCALE IN FEET

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STATE OF TEXAS
JONATHAN C. IRETON
124957
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JONATHAN C. IRETON, P.E. 124957 ON 01/04/2023. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

Pacheco Koch
a Wilsonart company
7557 RAMBLER ROAD SUITE 1406
DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
ROUNDABOUT MARKING AND SIGNAGE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-077	77 OF 252

DRBURTON

LAKESIDE TRAIL

FUTURE GRADING TO BE COMPLETED BY DEVELOPER

PROP. R.O.W.

SEE DRAINAGE SHEETS FOR FINAL GRADING OF HEADWALL

LOW POINT

PROP. R.O.W.

FAITHON P. LUCAS BLVD.

℄ FAITHON P. LUCAS BLVD.

65+00 66+00 67+00 68+00 69+00 70+

LOW POINT

SEE DRAINAGE SHEETS FOR FINAL GRADING OF HEADWALL

PROP. R.O.W.

FUTURE GRADING TO BE COMPLETED BY DEVELOPER

RETAINING WALL

N

0 20 40
HORZ. SCALE IN FEET

LEGEND

- ROW
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
JONATHAN C. IRETON
124957
LICENSED
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a Westwood company
7557 RAMBLER ROAD SUITE 1400
DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
ROUNDABOUT GRADING PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-078	78 OF 252

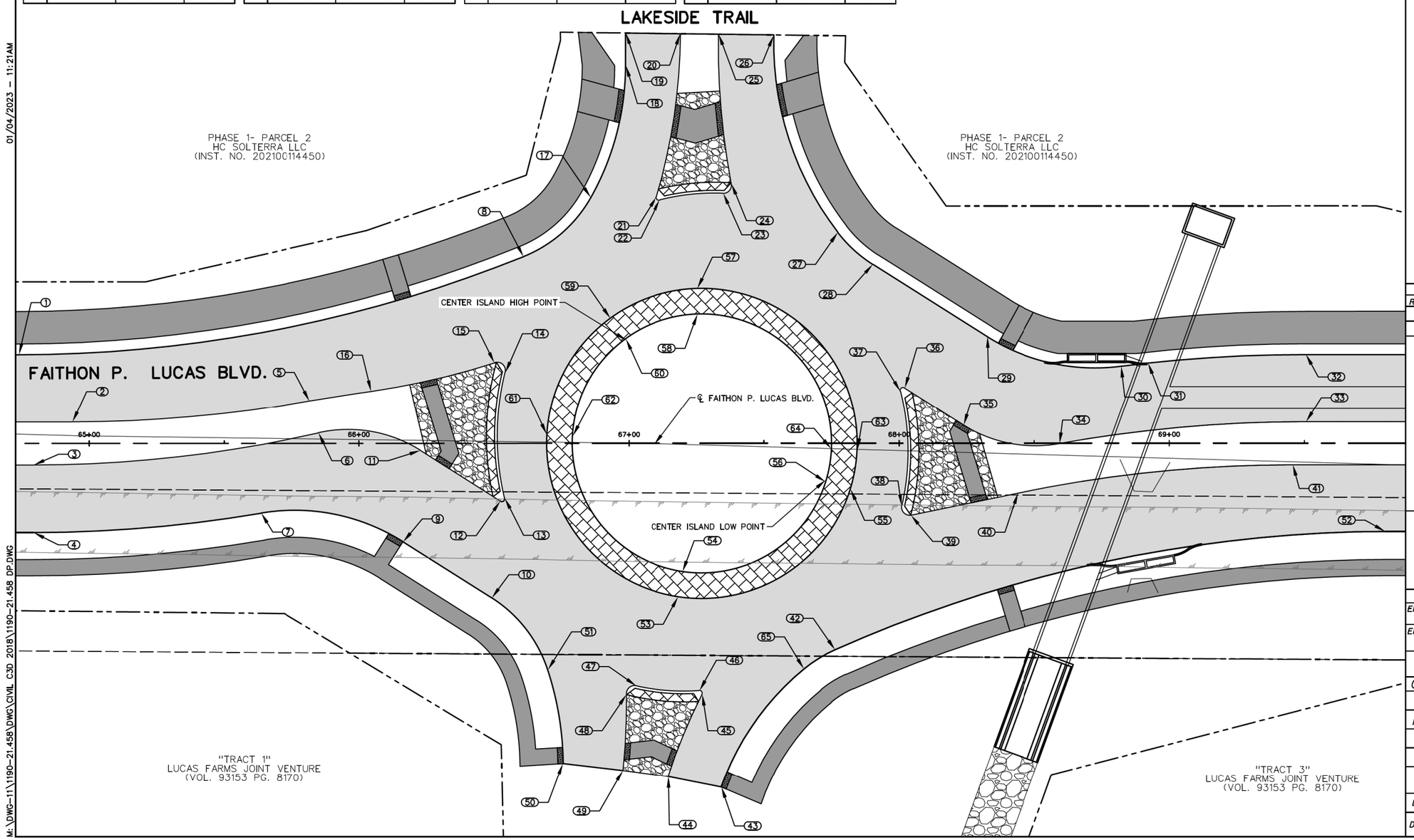
PAVING DESIGN POINTS			
PT.	NORTHING	EASTING	TC ELEV
1	6954351.8477	2563114.9108	423.17
2	6954348.7005	2563146.6064	423.99
3	6954327.3079	2563148.2044	422.75
4	6954309.9541	2563166.2000	422.25
5	6954417.5183	2563202.1108	424.78
6	6954411.5108	2563212.9130	423.70
7	6954375.4643	2563219.4698	423.07
8	6954511.6509	2563218.6015	423.83
9	6954406.0930	2563263.6742	423.14
10	6954415.2873	2563301.3682	422.97
11	6954434.2564	2563243.9247	423.79
12	6954442.5090	2563277.9331	423.38
13	6954444.3410	2563278.2073	423.38
14	6954476.9407	2563244.6845	424.63
15	6954476.6585	2563239.4533	424.63

PAVING DESIGN POINTS			
PT.	NORTHING	EASTING	TC ELEV
16	6954436.4631	2563215.4241	424.81
17	6954544.7708	2563220.1249	423.60
18	6954587.8378	2563193.9080	423.25
19	6954596.2345	2563185.2335	423.17
20	6954610.8051	2563199.6496	423.56
21	6954562.5336	2563236.8834	423.96
22	6954562.5336	2563238.6210	423.90
23	6954581.0801	2563253.0764	423.28
24	6954585.7505	2563252.6490	423.14
25	6954620.7594	2563209.4983	423.58
26	6954635.1094	2563224.1364	423.17
27	6954601.6304	2563293.0029	422.34
28	6954602.7352	2563310.4942	422.21
29	6954614.5592	2563358.9692	421.97
30	6954642.6063	2563401.3333	421.92

PAVING DESIGN POINTS			
PT.	NORTHING	EASTING	TC ELEV
31	6954650.6416	2563407.4389	421.93
32	6954694.8667	2563445.6964	422.16
33	6954677.5128	2563463.6920	422.64
34	6954606.1916	2563406.2098	422.48
35	6954585.4126	2563376.4972	422.59
36	6954579.3165	2563351.5050	422.66
37	6954577.4476	2563351.3008	422.50
38	6954548.3654	2563382.2456	421.88
39	6954548.1605	2563387.1141	421.82
40	6954582.4831	2563408.7751	421.58
41	6954662.8722	2563471.8011	421.61
42	6954493.5778	2563403.5270	421.55
43	6954427.8871	2563410.9279	422.19
44	6954416.4381	2563394.5156	422.59
45	6954446.6068	2563381.2625	422.39

PAVING DESIGN POINTS			
PT.	NORTHING	EASTING	TC ELEV
46	6954446.9169	2563379.5662	422.43
47	6954431.2478	2563362.0330	422.89
48	6954426.3733	2563361.8325	423.00
49	6954405.8980	2563381.2059	422.63
50	6954391.7729	2563363.9316	422.19
51	6954411.7407	2563334.9509	422.66
52	6954670.5179	2563513.4209	421.39
53	6954465.4119	2563349.2521	422.85
54	6954472.9545	2563343.4763	423.53
55	6954538.7333	2563364.6987	422.04
56	6954534.1619	2563356.3709	422.72
57	6954549.7453	2563271.7490	424.50
58	6954543.3545	2563278.7781	425.18
59	6954518.9508	2563257.3369	424.84
60	6954517.6478	2563266.7472	425.52

PAVING DESIGN POINTS			
PT.	NORTHING	EASTING	TC ELEV
61	6954472.0689	2563272.0371	424.10
62	6954478.5117	2563279.0186	424.78
63	6954550.7852	2563355.8688	422.22
64	6954544.2226	2563348.9999	422.90
65	6954480.3397	2563400.6622	421.68



N

0 20 40
HORZ. SCALE IN FEET

LEGEND

ROW

PROPOSED CONCRETE PAVEMENT

PROPOSED CONCRETE SIDEWALK

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

0 10 20 40
HORIZONTAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
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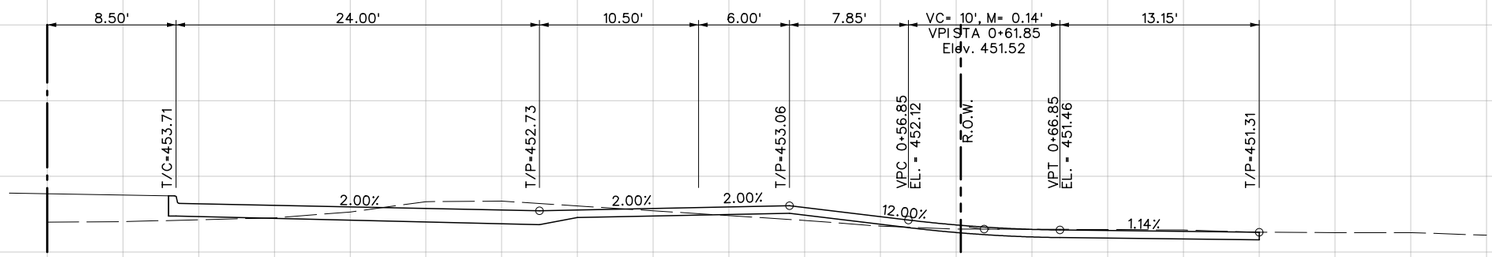
CITY CONTRACT NO. 2023-029

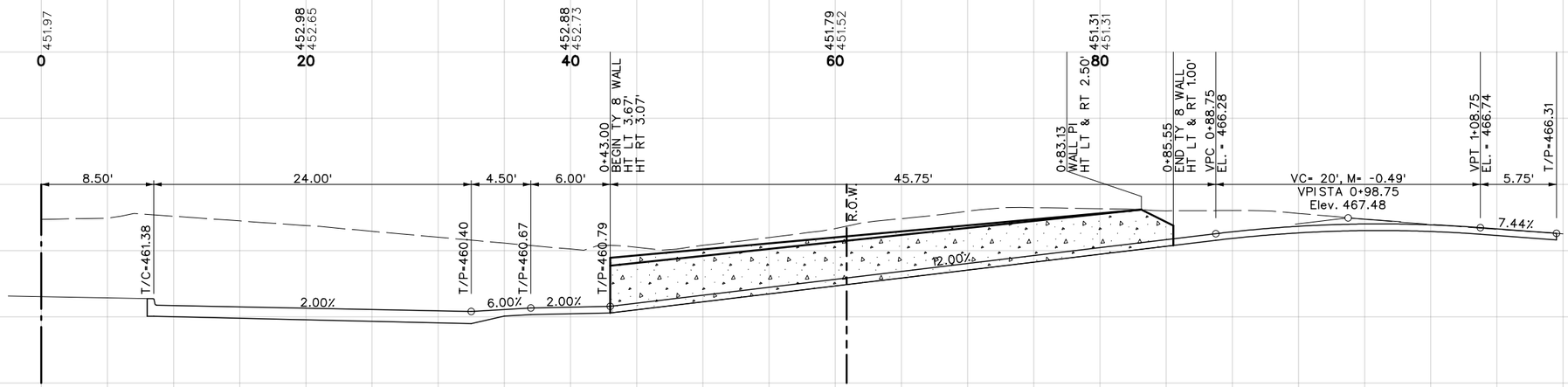
F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
DESIGN POINT LAYOUT

CITY OF MESQUITE, TEXAS

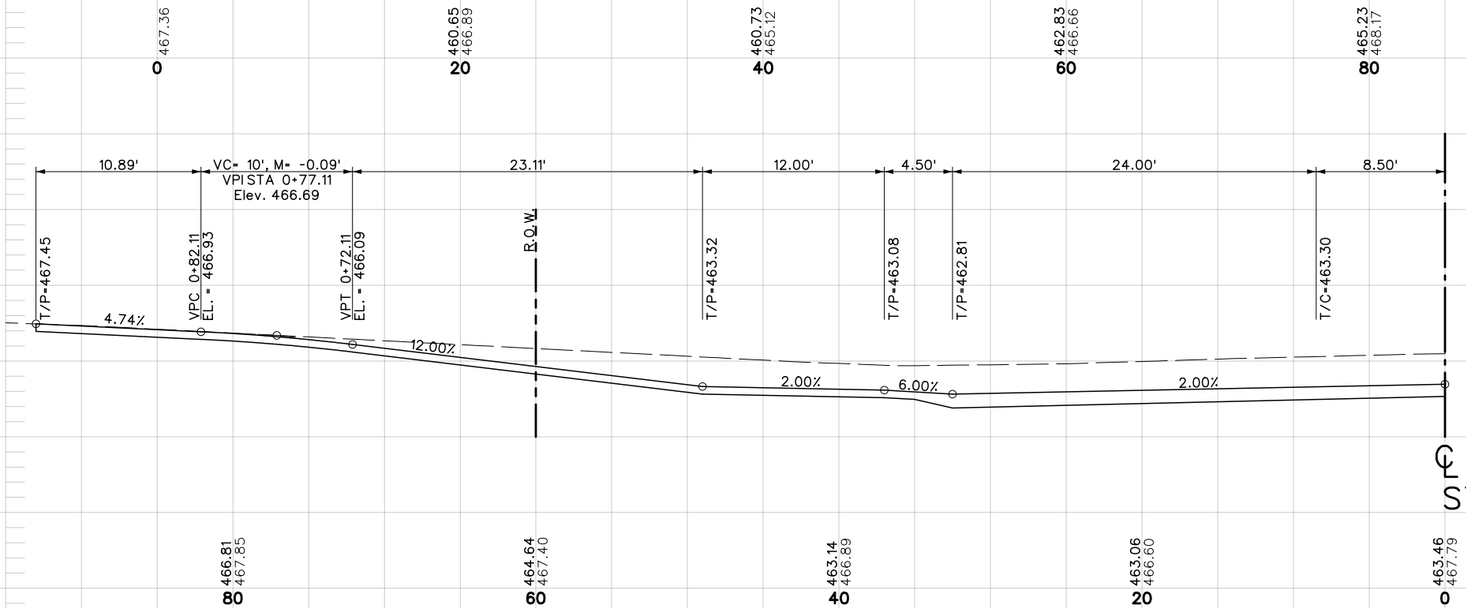
DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-079	79 OF 252



℄ DRIVEWAY STA. 28+52.11 RT



℄ DRIVEWAY STA. 27+17.69 RT



℄ DRIVEWAY
STA. 17+27.48 LT

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

Horizontal Scale: 1" = 5'
0' 5' 10'
Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRIVEWAY PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-080	80 OF 252

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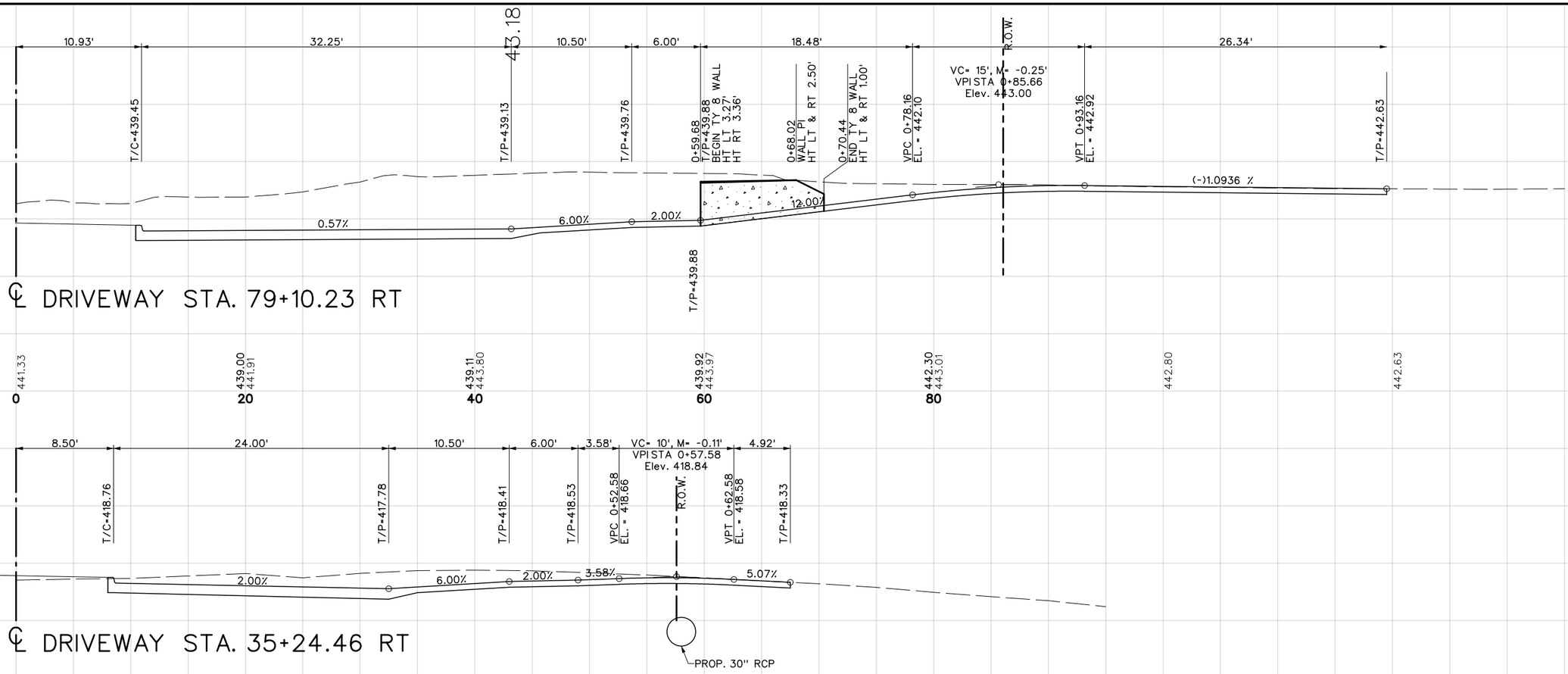
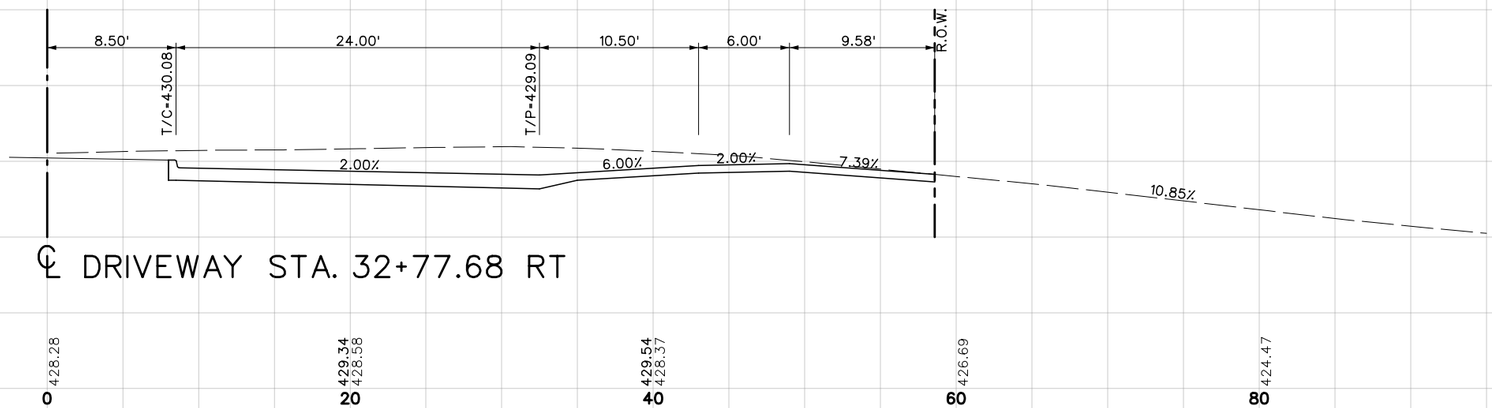
3:56:10 PM
1/4/2023
i:\2021\21106 fp lucas blvd - pkce\SHEETS-X-SEC\21106DRIVEWAY X-SEC 01.dgn





REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

Horizontal Scale: 1" = 5'
0' 5' 10'
Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES
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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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LICENSED
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12/27/22

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Engineering · Planning · CM Services
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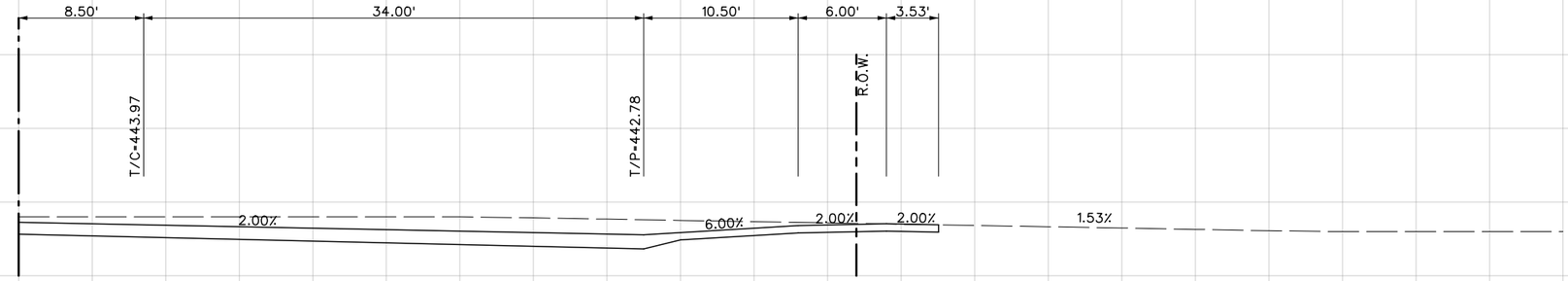
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

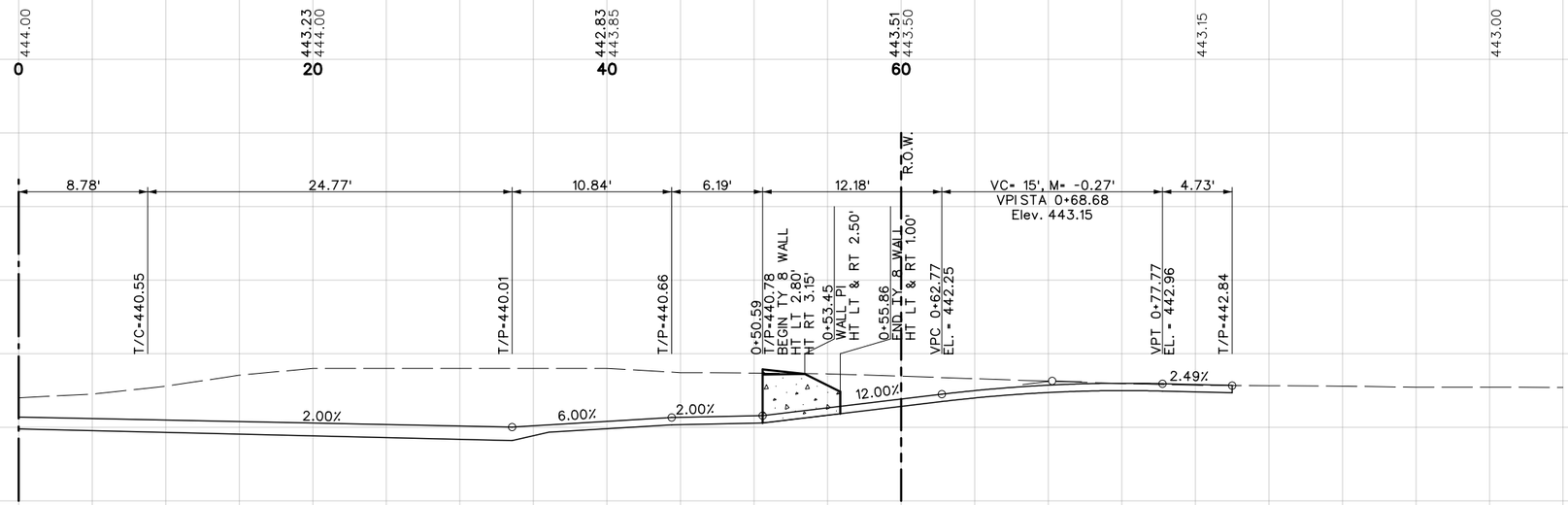
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRIVEWAY PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-081	81 OF 252



℄ DRIVEWAY STA. 86+21.48 RT



℄ DRIVEWAY STA. 80+50.43 RT

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

Horizontal Scale: 1" = 5'
0' 5' 10'
Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES

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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

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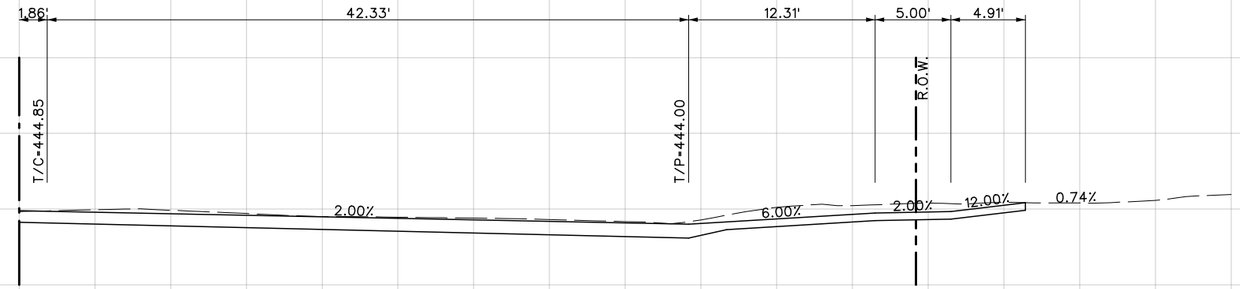
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRIVEWAY PROFILES

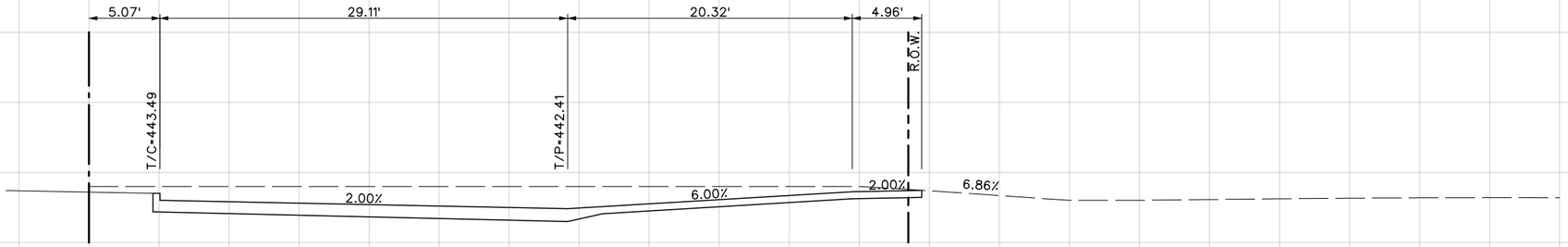
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-082	82 OF 252



℄ DRIVEWAY STA. 93+54.42 RT

0	20	40	60	80
444.84	444.50	444.18	445.39	445.96



℄ DRIVEWAY STA. 91+10.19 RT

0	20	40	60	80	100
444.00	444.00	444.00	443.70	443.07	443.20

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

Horizontal Scale: 1" = 5'
0' 5' 10'
Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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LICENSED PROFESSIONAL ENGINEER
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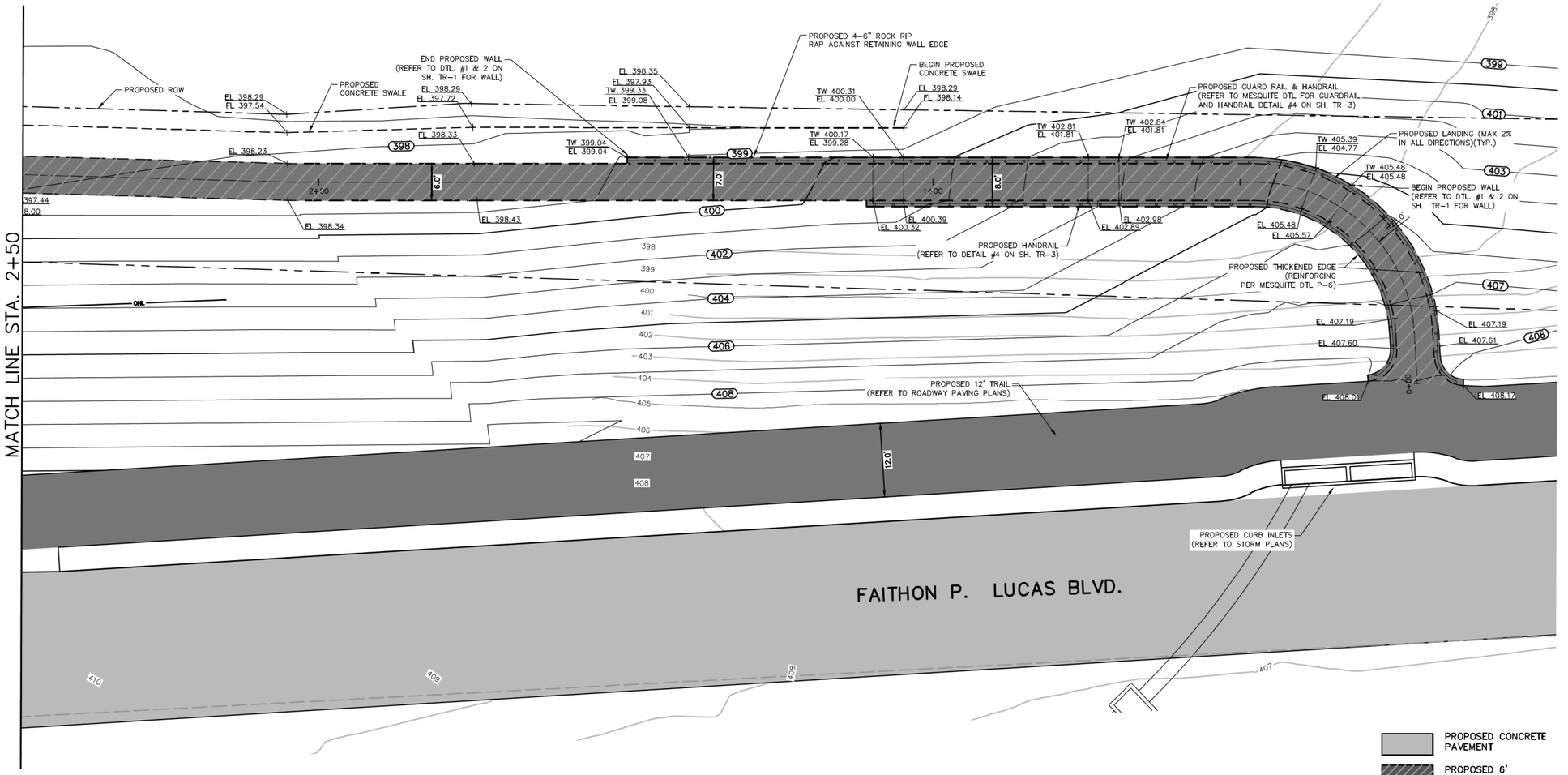
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRIVEWAY PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-083	83 OF 252



0 5 10 20 30
GRAPHIC SCALE IN FEET
1"=10'

LEGEND

BOLLARD		400	PROPOSED CONTOUR
ELECTRIC METER		TC 614.50 G 614.00	PROPOSED TOP OF CURB EL. PROPOSED GUTTER ELEVATION
POWER POLE			
LIGHT STANDARD			
WATER METER			
WATER VALVE		EL 614.25	PROPOSED SPOT ELEVATION
IRRIGATION CONTROL VALVE			
FIRE HYDRANT			
CLEANOUT			PROPOSED TOP OF WALL ELEVATION
MANHOLE		TW 620.50 EL 614.00	PROPOSED GROUND ELEVATION AT BOTTOM OF WALL
TRAFFIC SIGNAL CONTROL			
TRAFFIC SIGNAL POLE			
TELEPHONE BOX			
FLOOD LIGHT		M.G.	MATCH EXISTING GRADE
FLAG POLE			
TRAFFIC SIGN			PROPOSED SWALE
PROPERTY LINE			PROPOSED GRADE BREAK
FENCE			
OVERHEAD UTILITY LINE			PROPOSED DRAINAGE FLOW DIRECTION
EXIST CONTOUR			
EXIST SPOT ELEVATION			PROPOSED 100-YR FLOODPLAIN LIMITS
EXIST TOP OF CURB EL. TC 612.39 G 611.89			
EXIST GUTTER ELEVATION			

GRADING & DRAINAGE GENERAL NOTES

1. REFER TO GEOTECHNICAL REPORT FOR REQUIREMENTS REGARDING FILL COMPACTION AND MOISTURE CONTENT.
2. UNLESS NOTED, ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY WITHIN 3% OF OPTIMUM MOISTURE CONTENT. FILL TO BE PLACED IN MAXIMUM LIFTS OF 8 INCHES.
3. SIDEWALKS AND ACCESSIBLE ROUTES SHALL HAVE A RUNNING SLOPE NO GREATER THAN 5% (UNLESS OTHERWISE NOTED) AND A CROSS SLOPE NO GREATER THAN 2%.
4. GRADING OF ALL HANDICAPPED SPACES AND ROUTES TO CONFORM TO FEDERAL, STATE, AND LOCAL GUIDELINES.
5. ALL PROPOSED AND EXISTING GRADES IN NON-PAVED AREAS ARE "FINISHED GRADE" (i.e. IN LANDSCAPE BEDS, TOP OF MULCH/BEDDING MATERIAL).
6. UNLESS NOTED, STORM DRAIN LINES SHALL BE OF THE FOLLOWING MATERIALS AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS:
   - 6.A. RCP C-76, CLASS III
   - 6.B. ADS N-12
   - 6.C. HANCOR HI-Q
   - 6.D. CONTECH ALUMINIZED ULTRA FLOW
7. UNLESS NOTED, GRATE INLETS TO BE "FORTERRA PIPE AND PRECAST" CATCH BASIN SIZED AS SHOWN, OR APPROVED EQUAL.
8. FINAL PAVING, CURB, AND SIDEWALK ELEVATIONS WILL BE PLACED AT PLUS OR MINUS 0.03 FOOT.
9. REFER TO LANDSCAPE SPECIFICATIONS FOR SEEDING AND SODDING REQUIREMENTS.
10. ANY CONCRETE, ROCK, OR MATERIAL DEEMED BY THE ENGINEER TO BE UNSUITABLE FOR SUBGRADE SHALL BE DISPOSED OF OFFSITE AT CONTRACTOR'S EXPENSE.
11. TRENCH BACKFILL MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF NCTCOG ITEM 504.2 AND SHALL BE MECHANICALLY COMPACTED IN 6-INCH LIFTS TO THE TOP OF SUBGRADE TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY IN ACCORDANCE WITH NCTCOG ITEM 504.5 UNLESS OTHERWISE SHOWN ON THESE PLANS OR STATED IN THE STANDARD CITY SPECIFICATIONS.
12. EMBEDMENT SHALL CONFORM TO THE REQUIREMENTS OF NCTCOG ITEM 504.5 UNLESS OTHERWISE SHOWN ON THESE PLANS OR STATED IN THE STANDARD CITY SPECIFICATIONS.
13. A ROUND MANHOLE COVER MEETING CITY SPECIFICATIONS SHALL BE PLACED IN ALL INLET TOPS NEAR THE OUTLET PIPE.
14. ALL CONCRETE FOR INLETS AND DRAINAGE STRUCTURES SHALL CONFORM TO NCTCOG ITEM 702.2.4, CLASS "A" (3000 PSI) UNLESS OTHERWISE SHOWN ON THESE PLANS OR STATED IN STANDARD CITY SPECIFICATIONS.
15. CRUSHED STONE BEDDING OR APPROVED EQUAL SHALL BE PROVIDED BY THE CONTRACTOR WHEN ROCK IS ENCOUNTERED IN TRENCHES. THERE SHALL BE NO ADDITIONAL PAY ITEM FOR CRUSHED STONE BEDDING.
16. IF REQUIRED DUE TO CONSTRUCTION, POWER POLES TO BE BRACED OR RELOCATED AT CONTRACTOR'S EXPENSE.

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

BM# 1 " • — • " CUT SET ON THE SOUTHWEST EDGE OF A CONCRETE SIDEWALK ON THE SOUTHWEST SIDE OF THE ENTRANCE TO VANGUARD HIGHSCHOOL, ±61 FEET NORTHWEST OF THE CENTERLINE OF FAITHON P LUCAS SR. BOULEVARD, ±37 FEET SOUTHWEST OF A CONCRETE INLET, AND ±5 SOUTHWEST OF THE BACK OF CURB.

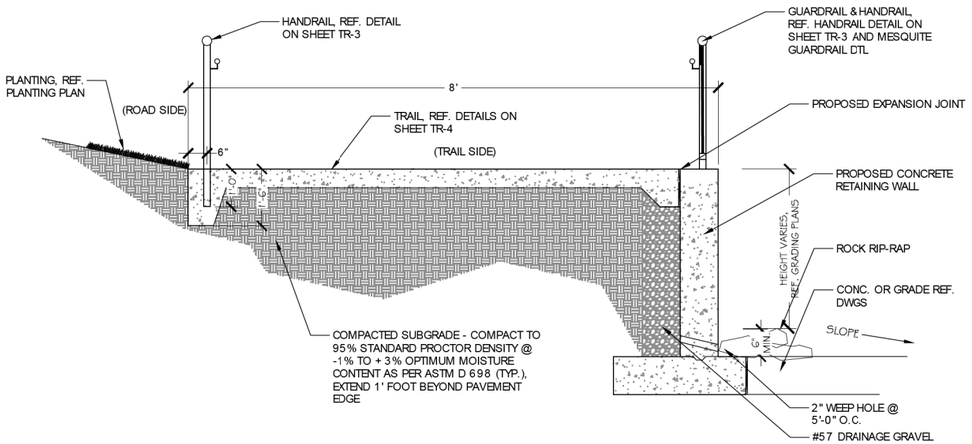
SURFACE NORTHING: 6,951,601.08
SURFACE EASTING: 2,560,403.09
ELEV=471.49

BM# 2 " • — • " CUT SET ON THE BACK OF A CONCRETE CURB ON THE NORTHEAST SIDE OF A CONCRETE DRIVEWAY, ±57 FEET NORTHEAST OF A SANITARY SEWER MANHOLE, ±34 FEET NORTHWEST OF A CONCRETE HEADWALL, AND ±20 FEET SOUTHEAST OF THE CENTERLINE OF FAITHON P LUCAS SR. BOULEVARD.

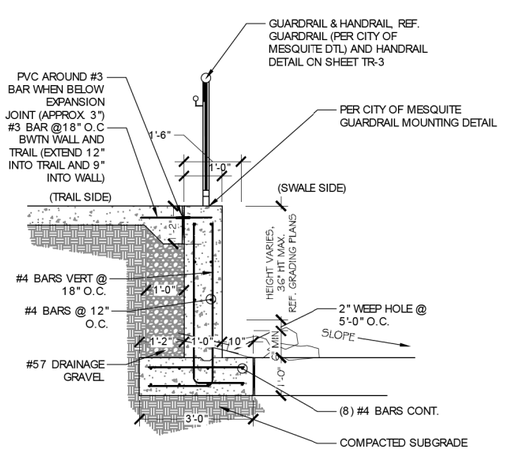
SURFACE NORTHING: 6,951,629.63
SURFACE EASTING: 2,560,541.44
ELEV=463.21

PROPOSED CONCRETE PAVEMENT
PROPOSED 6' CONCRETE TRAIL
PROPOSED 6' & 12' CONCRETE SIDEWALK

EXPANSION JOINT SPACING SHALL BE 15' MAXIMUM EACH WAY WITH NO KEYWAYS IN RAMPED /LANDING TRAIL CONDITION. WHILE EXPANSION JOINT SPACING SHALL BE 60' MAXIMUM EACH WAY WITH NO KEYWAYS AND SAWED DUMMY JOINTS SHALL BE 15' EACH WAY IN NORMAL TRAIL CONDITIONS, UNLESS OTHERWISE NOTED.



1 RETAINING WALL SECTION A
1/2" = 1'-0"
P-MU1-PAR-64



2 RETAINING WALL - 36" HT MAX. @ SWALE
1/2" = 1'-0"
P-MU1-PAR-66

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
CHRISTOPHER J. CHA
112732
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY CHRISTOPHER J. CHA, P.E. 112732 ON 01/04/2023. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

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DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
TRAIL GRADING PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-084	84 OF 252

MATCH LINE STA. 2+50

MATCH LINE STA. 6+50

FAITHON P. LUCAS BLVD.

EXPANSION JOINT SPACING SHALL BE 15' MAXIMUM EACH WAY WITH NO KEYWAYS IN RAMPED /LANDING TRAIL CONDITION. WHILE EXPANSION JOINT SPACING SHALL BE 60' MAXIMUM EACH WAY WITH NO KEYWAYS AND SAWED DUMMY JOINTS SHALL BE 15' EACH WAY IN NORMAL TRAIL CONDITIONS, UNLESS OTHERWISE NOTED.

PROPOSED CONCRETE PAVEMENT
PROPOSED 6' CONCRETE TRAIL
PROPOSED 6' & 12' CONCRETE SIDEWALK

PROPOSED ROW
PROPOSED CONCRETE SWALE
PROPOSED 6' CONCRETE TRAIL
PROPOSED 12' TRAIL (REFER TO PAVING PLANS)
PROPOSED TRAIL BY OTHERS (END AT ROW)(REFER TO SOLTERRA PLANS FOR CONTINUATION)
PROPOSED CONCRETE FLUME WITH METAL PLATE (REFER TO DTL. #5 ON SH. TR-4 FOR DETAILS)
PROPOSED TURN DOWN WALL WITH PROPOSED MESQUITE GUARDRAIL (PER DTL #8 ON SH. TR-4)
BEGIN VARIABLE HEIGHT CURB (REFER TO DETAIL 7 ON SHEET TR-4)
END PROPOSED CONCRETE SWALE
END VARIABLE HEIGHT CURB (REFER TO DETAIL 7 ON SHEET TR-4)
BEGIN PROPOSED WALL (REFER TO DTL. #1 & 2 ON SH. TR-1 FOR WALL)
PROPOSED HANDRAIL & THICKENED EDGE (PER DTL #4 ON SH. TR-3)(REINFORCING PER MESQUITE DTL P-6)
PROPOSED GUARD RAIL & HANDRAIL (REFER TO MESQUITE GUARD-RAIL DTL) (HAND-RAIL DTL #3 ON SH. TR-3)
PROPOSED LANDING (MAX 2% IN ALL DIRECTIONS)(TYP.)
PROPOSED BRIDGE STRUCTURAL SUPPORT (REFER TO STRUCTURAL PLANS
EXISTING BRIDGE STRUCTURAL SUPPORT
EXISTING WATER (CONTRACTOR TO USE FLOWABLE FILL IN LIEU OF COMPACTED SUBGRADE WHEN ABOVE PIPE)
EXISTING TREE TO BE REMOVED
PROPOSED 42" RCP (REFER TO STORM PLANS) (CONTRACTOR TO USE FLOWABLE FILL IN LIEU OF COMPACTED SUBGRADE WHEN ABOVE PIPE)
PROPOSED HEADWALL (REFER TO STORM PLANS)
PROPOSED THICKENED EDGE WITH PROPOSED GUARDRAIL WITHOUT HANDRAIL (PER MESQUITE GUARDRAIL DTL)(REINFORCING PER MESQUITE DTL P-6)(EXPOSE SMALL PORTION OF THICKENED EDGE TO GET TO GABION BASKET GRADE)
EXISTING GABION BASKETS TO REMAIN (CONTRACTOR TO PROTECT IN PLACE)
PROPOSED THICKENED EDGE WITH PROPOSED GUARDRAIL WITHOUT HANDRAIL (PER MESQUITE GUARDRAIL DTL)(REINFORCING PER MESQUITE DTL P-6)(TYP.)
EXISTING SEWER (CONTRACTOR TO USE FLOWABLE FILL IN LIEU OF COMPACTED SUBGRADE WHEN ABOVE PIPE)
CONCRETE SLOPE
RIP-RAP

0 5 10 20 30
GRAPHIC SCALE IN FEET
1"=10'

LEGEND

BOLLARD	PROPOSED CONTOUR
ELECTRIC METER	PROPOSED TOP OF CURB EL. PROPOSED GUTTER ELEVATION
POWER POLE	
LIGHT STANDARD	
WATER METER	PROPOSED SPOT ELEVATION
WATER VALVE	
IRRIGATION CONTROL VALVE	PROPOSED TOP OF WALL ELEVATION
FIRE HYDRANT	
CLEANOUT	PROPOSED GROUND ELEVATION AT BOTTOM OF WALL
MANHOLE	
TRAFFIC SIGNAL CONTROL	
TRAFFIC SIGNAL POLE	MATCH EXISTING GRADE
TELEPHONE BOX	
FLOOD LIGHT	PROPOSED SWALE
FLAG POLE	PROPOSED GRADE BREAK
TRAFFIC SIGN	
PROPERTY LINE	PROPOSED DRAINAGE FLOW DIRECTION
FENCE	
OVERHEAD UTILITY LINE	PROPOSED 100-YR FLOODPLAIN LIMITS
EXIST CONTOUR	
EXIST SPOT ELEVATION	
EXIST TOP OF CURB EL	
EXIST GUTTER ELEVATION	

GRADING & DRAINAGE GENERAL NOTES

1. REFER TO GEOTECHNICAL REPORT FOR REQUIREMENTS REGARDING FILL COMPACTION AND MOISTURE CONTENT.
2. UNLESS NOTED, ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY WITHIN 3% OF OPTIMUM MOISTURE CONTENT. FILL TO BE PLACED IN MAXIMUM LIFTS OF 6 INCHES.
3. SIDEWALKS AND ACCESSIBLE ROUTES SHALL HAVE A RUNNING SLOPE NO GREATER THAN 5% (UNLESS OTHERWISE NOTED) AND A CROSS SLOPE NO GREATER THAN 2%.
4. GRADING OF ALL HANDICAPPED SPACES AND ROUTES TO CONFORM TO FEDERAL, STATE, AND LOCAL GUIDELINES.
5. ALL PROPOSED AND EXISTING GRADES IN NON-PAVED AREAS ARE "FINISHED GRADE" (i.e. IN LANDSCAPE BEDS, TOP OF MULCH/BEDDING MATERIAL).
6. UNLESS NOTED, STORM DRAIN LINES SHALL BE OF THE FOLLOWING MATERIALS AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS:
   - 6.A. RCP C-76, CLASS III
   - 6.B. ADS N-12
   - 6.C. HANCOR HI-Q
   - 6.D. CONTECH ALUMINIZED ULTRA FLOW
7. UNLESS NOTED, GRATE INLETS TO BE "FORTERRA PIPE AND PRECAST" CATCH BASIN SIZED AS SHOWN, OR APPROVED EQUAL.
8. FINAL PAVING, CURB, AND SIDEWALK ELEVATIONS WILL BE PLACED AT PLUS OR MINUS 0.03 FOOT.
9. REFER TO LANDSCAPE SPECIFICATIONS FOR SEEDING AND SODDING REQUIREMENTS.
10. ANY CONCRETE, ROCK, OR MATERIAL DEEMED BY THE ENGINEER TO BE UNSUITABLE FOR SUBGRADE SHALL BE DISPOSED OF OFFSITE AT CONTRACTOR'S EXPENSE.
11. TRENCH BACKFILL MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF NCTCOG ITEM 504.2 AND SHALL BE MECHANICALLY COMPACTED IN 6-INCH LIFTS TO THE TOP OF SUBGRADE TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY IN ACCORDANCE WITH NCTCOG ITEM 504.5 UNLESS OTHERWISE SHOWN ON THESE PLANS OR STATED IN THE STANDARD CITY SPECIFICATIONS.
12. EMBEDMENT SHALL CONFORM TO THE REQUIREMENTS OF NCTCOG ITEM 504.5 UNLESS OTHERWISE SHOWN ON THESE PLANS OR STATED IN THE STANDARD CITY SPECIFICATIONS.
13. A ROUND MANHOLE COVER MEETING CITY SPECIFICATIONS SHALL BE PLACED IN ALL INLET TOPS NEAR THE OUTLET PIPE.
14. ALL CONCRETE FOR INLETS AND DRAINAGE STRUCTURES SHALL CONFORM TO NCTCOG ITEM 702.2.4, CLASS "A" (3000 PSI) UNLESS OTHERWISE SHOWN ON THESE PLANS OR STATED IN STANDARD CITY SPECIFICATIONS.
15. CRUSHED STONE BEDDING OR APPROVED EQUAL SHALL BE PROVIDED BY THE CONTRACTOR WHEN ROCK IS ENCOUNTERED IN TRENCHES. THERE SHALL BE NO ADDITIONAL PAY ITEM FOR CRUSHED STONE BEDDING.
16. IF REQUIRED DUE TO CONSTRUCTION, POWER POLES TO BE BRACED OR RELOCATED AT CONTRACTOR'S EXPENSE.

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

BM# 1 " · - · " CUT SET ON THE SOUTHWEST EDGE OF A CONCRETE SIDEWALK ON THE SOUTHWEST SIDE OF THE ENTRANCE TO VANGUARD HIGHSCHOOL, ±61 FEET NORTHWEST OF THE CENTERLINE OF FAITHON P LUCAS SR. BOULEVARD, ±37 FEET SOUTHWEST OF A CONCRETE INLET, AND ±5 SOUTHWEST OF THE BACK OF CURB.

SURFACE NORTHING: 6,951,601.08
SURFACE EASTING: 2,560,403.09
ELEV=471.49

BM# 2 " · - · " CUT SET ON THE BACK OF A CONCRETE CURB ON THE NORTHEAST SIDE OF A CONCRETE DRIVEWAY, ±57 FEET NORTHEAST OF A SANITARY SEWER MANHOLE, ±34 FEET NORTHWEST OF A CONCRETE HEADWALL, AND ±20 FEET SOUTHEAST OF THE CENTERLINE OF FAITHON P LUCAS SR. BOULEVARD.

SURFACE NORTHING: 6,951,629.63
SURFACE EASTING: 2,560,541.44
ELEV=463.21

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
CHRISTOPHER J. CHA
112732
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY CHRISTOPHER J. CHA, P.E. 112732 ON 01/04/2023. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

Pacheco Koch
a Westwood company
7557 RAMBLER ROAD SUITE 1400
DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10006000

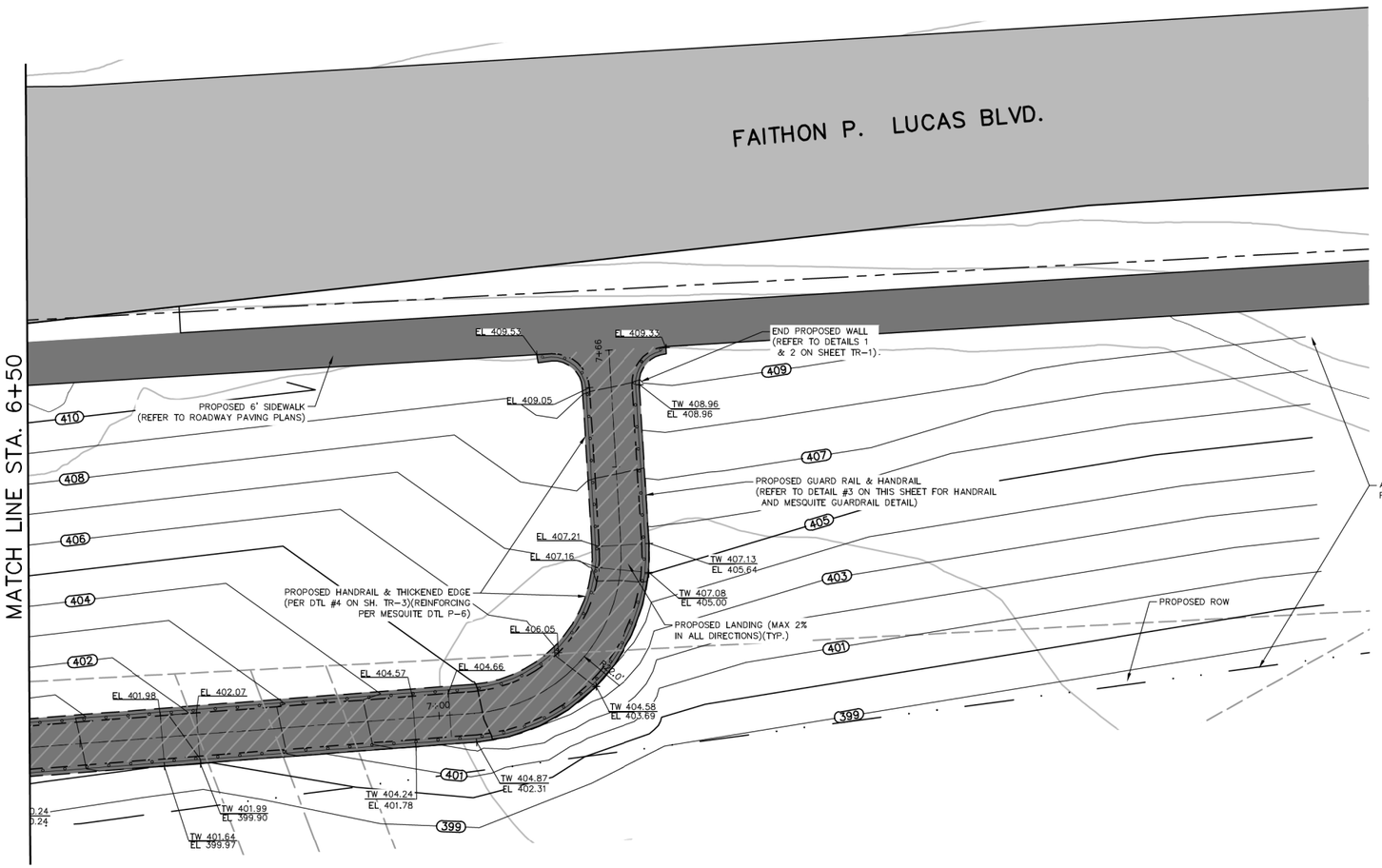
CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
TRAIL GRADING PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-085	85 OF 252

PK-1190-21.458_GRAD TRAIL.DWG

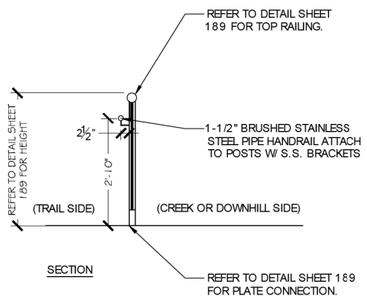


EXPANSION JOINT SPACING SHALL BE 15' MAXIMUM EACH WAY WITH NO KEYWAYS IN RAMPED /LANDING TRAIL CONDITION. WHILE EXPANSION JOINT SPACING SHALL BE 60' MAXIMUM EACH WAY WITH NO KEYWAYS AND SAWED DUMMY JOINTS SHALL BE 15' EACH WAY IN NORMAL TRAIL CONDITIONS, UNLESS OTHERWISE NOTED.

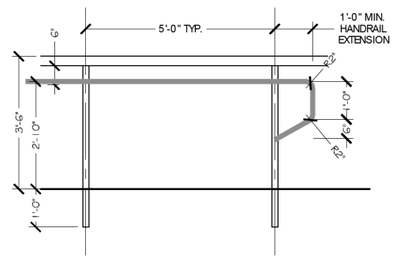
PROPOSED CONCRETE PAVEMENT
PROPOSED 6' CONCRETE TRAIL
PROPOSED 6' & 12' CONCRETE SIDEWALK

NOTE:
WHERE HANDRAIL EXTENSIONS OCCUR, RETURN HANDRAIL TO POST AS SHOWN BELOW PER CODE

NOTE:
1. CONTRACTOR SHOP DRAWINGS TO INCLUDE ADA HANDRAIL INSTALLATION WHERE APPLICABLE.



3 HANDRAIL ON GUARDRAIL FENCE
1/2" = 1'-0"



4 HANDRAIL
1/2" = 1'-0"

0 5 10 20 30
GRAPHIC SCALE IN FEET
1"=10'

LEGEND

BL	BOLLARD	400	PROPOSED CONTOUR
EM	ELECTRIC METER	TC 614.50 / G 614.00	PROPOSED TOP OF CURB EL. PROPOSED GUTTER ELEVATION
PP	POWER POLE		
LS	LIGHT STANDARD		
WM	WATER METER		
WV	WATER VALVE	EL 614.25	PROPOSED SPOT ELEVATION
ICV	IRRIGATION CONTROL VALVE		
FH	FIRE HYDRANT		
CO	CLEANOUT		PROPOSED TOP OF WALL ELEVATION
MH	MANHOLE	TW 620.50 / EL 614.00	PROPOSED GROUND ELEVATION AT BOTTOM OF WALL
TSC	TRAFFIC SIGNAL CONTROL		
TSP	TRAFFIC SIGNAL POLE		
TELE	TELEPHONE BOX		
FL	FLOOD LIGHT	M.G.	MATCH EXISTING GRADE
FP	FLAG POLE		
SIGN	TRAFFIC SIGN		
	PROPERTY LINE		PROPOSED SWALE
X	FENCE		PROPOSED GRADE BREAK
OHL	OVERHEAD UTILITY LINE		
613	EXIST CONTOUR		PROPOSED DRAINAGE FLOW DIRECTION
612.39	EXIST SPOT ELEVATION		
TC 612.39 / G 611.89	EXIST TOP OF CURB EL. EXIST GUTTER ELEVATION		PROPOSED 100-YR FLOODPLAIN LIMITS

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REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

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SURFACE NORTHING: 6,951,601.08
SURFACE EASTING: 2,560,403.09
ELEV=471.49

BM# 2 " • - • " CUT SET ON THE BACK OF A CONCRETE CURB ON THE NORTHEAST SIDE OF A CONCRETE DRIVEWAY, ±57 FEET NORTHEAST OF A SANITARY SEWER MANHOLE, ±34 FEET NORTHWEST OF A CONCRETE HEADWALL, AND ±20 FEET SOUTHEAST OF THE CENTERLINE OF FAITHON P LUCAS SR. BOULEVARD.

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STATE OF TEXAS
CHRISTOPHER J. CHA
112732
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REFERENCES

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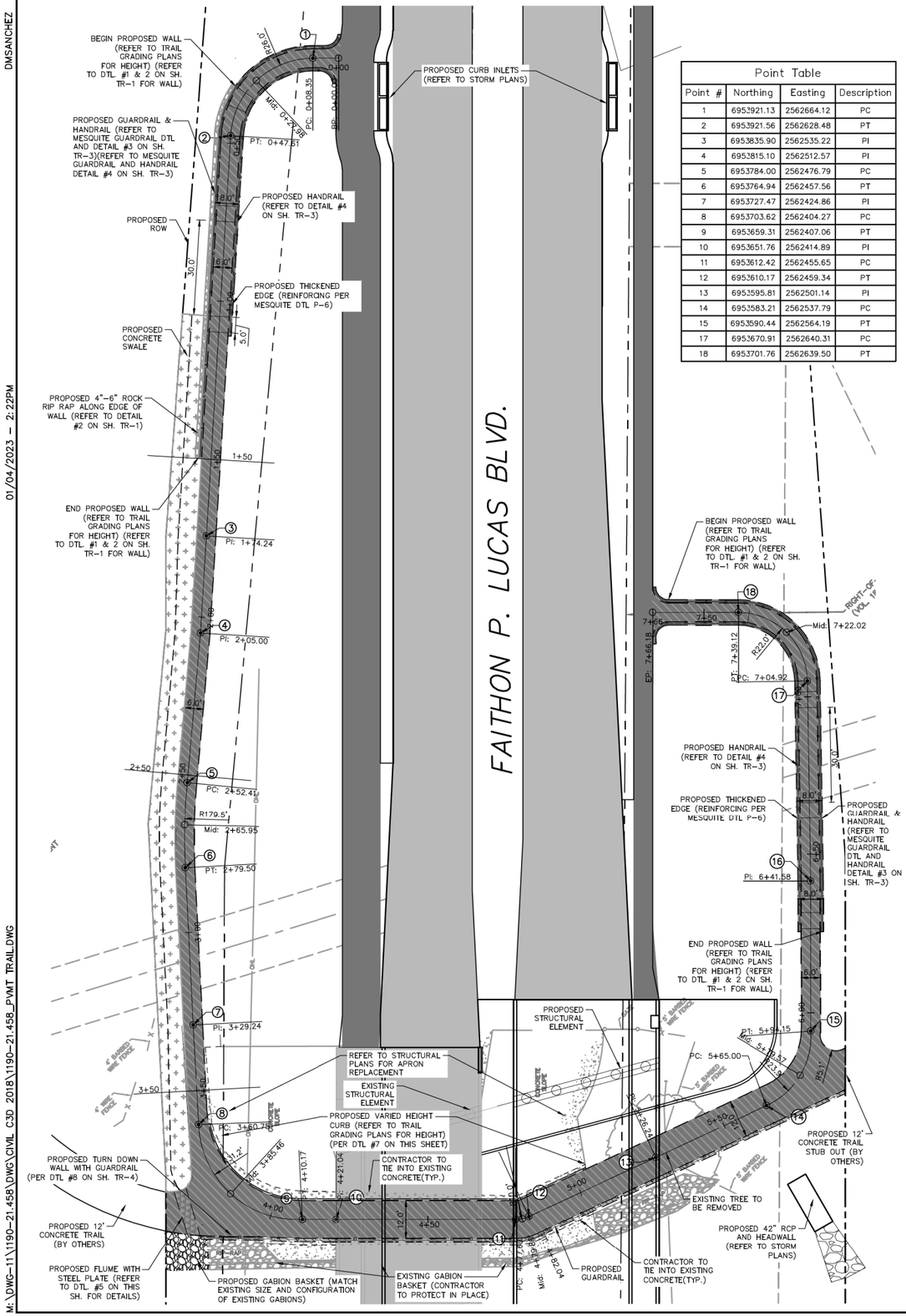
CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD
MCKENZIE ROAD TO E. CARTWRIGHT
TRAIL GRADING PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-086	86 OF 252

PK-1190-21.458_GRAD TRAIL.DWG



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Point #	Northing	Easting	Description
1	6953921.13	2562664.12	PC
2	6953921.56	2562628.48	PT
3	6953835.90	2562535.22	PI
4	6953815.10	2562512.57	PI
5	6953784.00	2562476.79	PC
6	6953764.94	2562457.56	PT
7	6953727.47	2562424.86	PI
8	6953703.62	2562404.27	PC
9	6953659.31	2562407.06	PT
10	6953651.76	2562414.89	PI
11	6953612.42	2562455.65	PC
12	6953610.17	2562459.34	PT
13	6953595.81	2562501.14	PI
14	6953583.21	2562537.79	PC
15	6953590.44	2562564.19	PT
17	6953670.91	2562640.31	PC
18	6953701.76	2562639.50	PT

4" REINFORCED CONC (CLASS "A", 3600 PSI)

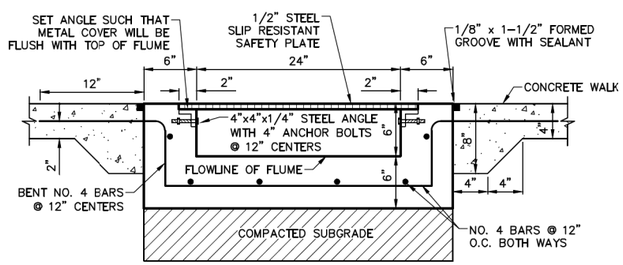
6" REINFORCED CONC TRAIL (CLASS "C", 4000 PSI)

PROPOSED SIDEWALK (REFER TO ROADWAY SECTONS FOR DTLS)

PROPOSED CLEAN WELL GRADED RIP-RAP OR GABION BASKETS

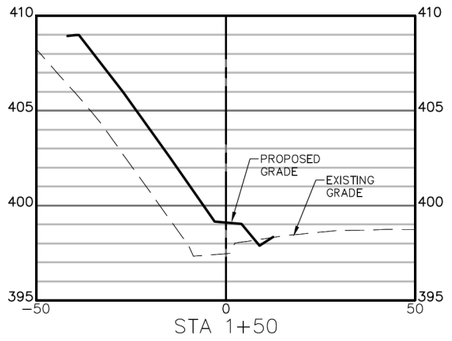
PROPOSED STEEL PLATE (PER DTL 5)

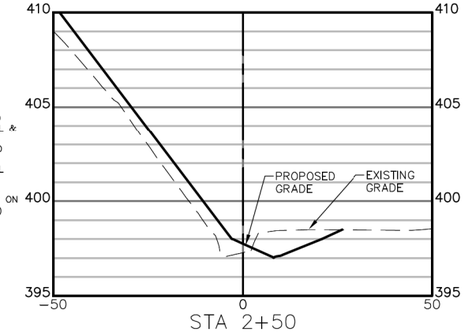
CONTRACTOR TO RELOCATE OR ADJUST ANY EXISTING WEEP HOLES ENCOUNTERED DURING CONSTRUCTION

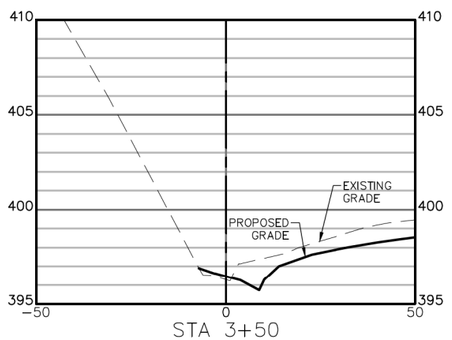


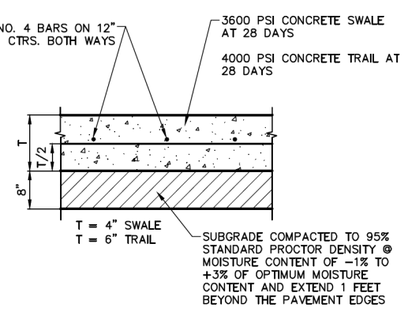
5 FLUME AT SIDEWALK

NOT TO SCALE



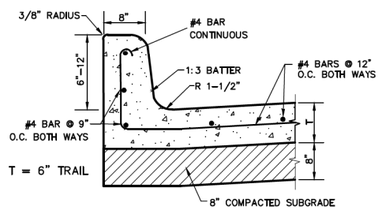






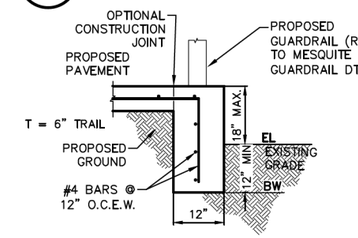
6 CONCRETE PAVEMENT SECTION

NOT TO SCALE



7 VARIABLE HEIGHT CURB DETAIL

NOT TO SCALE



SECTION

8 TURN DOWN WALL

NOT TO SCALE

0 10 20 40 60

GRAPHIC SCALE IN FEET

1"=20'

LEGEND

BL	BOLLARD		PROPERTY LINE
EM	ELECTRIC METER	X	FENCE
PP	POWER POLE	FH	FIRE HYDRANT
LS	LIGHT STANDARD	CO	CLEANOUT
WM	WATER METER	MH	MANHOLE
WV	WATER VALVE	TSC	TRAFFIC SIGNAL CTRL
ICV	IRRIGATION CTRL VALVE	TSP	TRAFFIC SIGNAL POLE
		TELE	TELEPHONE BOX
		SIGN	TRAFFIC SIGN

PAVING GENERAL NOTES

1. ALL DIMENSIONS ARE FROM BACK OF CURB UNLESS OTHERWISE NOTED.
2. ALL CONCRETE SHALL CONFORM TO NCTCOG ITEM 303.3.4, CLASS "A" (3000 PSI) UNLESS OTHERWISE SHOWN ON THESE PLANS, STATED IN STANDARD CITY SPECIFICATIONS OR STATED IN TXDOT STANDARD SPECIFICATIONS.
3. SUBGRADE PREPARATION IN RIGHT OF WAY SHALL CONFORM TO STANDARD CITY SPECIFICATIONS OR TXDOT STANDARD SPECIFICATIONS.
4. ALL FILL PLACED UNDER PAVING SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY IN 6 INCH LIFTS, UNLESS OTHERWISE NOTED, OR STATED IN GEOTECH REPORT. REFER TO STRUCTURAL SPECIFICATIONS FOR FILL PLACED BENEATH BUILDING AREAS. ALL OTHER FILL AREAS TO BE COMPACTED TO 90% STANDARD PROCTOR.
5. THE CONTRACTOR SHALL SUBMIT A JOINT SPACING PLAN TO THE ENGINEER FOR APPROVAL. EXPANSION JOINT SPACING SHALL BE 15' MAXIMUM EACH WAY WITH NO KEYWAYS IN RAMPED/LANDING TRAIL CONDITION. WHILE EXPANSION JOINT SPACING SHALL BE 60' MAXIMUM EACH WAY WITH NO KEYWAYS AND SAWED DUMMY JOINTS SHALL BE 15' EACH WAY IN NORMAL TRAIL CONDITIONS, UNLESS OTHERWISE NOTED.
6. TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED AT THE END OF EACH DAYS PAVING AND WHERE INTERRUPTIONS SUSPEND OPERATIONS FOR 30 MINUTES OR MORE.
7. ALL PAVING TO BE REMOVED SHALL BE SAWCUT TO A NEAT LINE, MINIMUM 1-1/2" DEEP, AND THE PAVEMENT REMOVED IN SUCH A MANNER AS TO PRESERVE THE EXISTING TRANSVERSE REINFORCING STEEL TO THE MAXIMUM EXTENT POSSIBLE.
8. ALL CURB AND GUTTER SHALL BE INTEGRAL WITH THE PAVEMENT AND HAVE THE SAME COMPRESSIVE STRENGTH.
9. PAVEMENT REINFORCEMENT SHALL BE #3 BARS, SPACED AT 18 INCHES CENTER TO CENTER EACH WAY EXCEPT WHERE OTHERWISE NOTED IN THE PLANS OR GEOTECH REPORT.
10. BAR LAPS SHALL BE 30 DIAMETERS IN LENGTH.
11. ALL STRIPES SHALL BE 4 INCHES WIDE, UNLESS OTHERWISE NOTED.
12. INSTALLATION AND PLACEMENT OF IRRIGATION SLEEVES AND UTILITY CONDUITS SHALL BE IN ACCORDANCE WITH LANDSCAPE ARCHITECT AND MEP PLANS. CONTRACTOR TO VERIFY ALL SLEEVES HAVE BEEN PLACED PRIOR TO PAVING BEING PLACED.
13. SIDEWALKS AND ACCESSIBLE ROUTES SHALL HAVE A RUNNING SLOPE NO GREATER THAN 5% (UNLESS OTHERWISE NOTED) AND A CROSS SLOPE NO GREATER THAN 2%.

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

BM# 1 " ☒ " CUT SET ON THE SOUTHWEST EDGE OF A CONCRETE SIDEWALK ON THE SOUTHWEST SIDE OF THE ENTRANCE TO VANGUARD HIGHSCHOOL ±61 FEET NORTHWEST OF THE CENTERLINE OF FAITHON P LUCAS SR. BOULEVARD, ±37 FEET SOUTHWEST OF A CONCRETE INLET, AND ±5 SOUTHWEST OF THE BACK OF CURB.

SURFACE NORTHING: 6,951,601.08
SURFACE EASTING: 2,560,403.09
ELEV=471.49

BM# 2 " ☒ " CUT SET ON THE BACK OF A CONCRETE CURB ON THE NORTHEAST SIDE OF A CONCRETE DRIVEWAY, ±57 FEET NORTHEAST OF A SANITARY SEWER MANHOLE, ±34 FEET NORTHWEST OF A CONCRETE HEADWALL AND ±20 FEET SOUTHEAST OF THE CENTERLINE OF FAITHON P LUCAS SR. BOULEVARD.

SURFACE NORTHING: 6,951,629.63
SURFACE EASTING: 2,560,541.44
ELEV=463.21

0 10 20 40

HORIZONTAL SCALE IN FEET

0 2 4

VERTICAL SCALE IN FEET

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
CHRISTOPHER J. CHA
112732
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY CHRISTOPHER J. CHA, P.E. 112732 ON 01/04/2023. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

Pacheco Koch
a Wsudenood company
7557 RAMBLER ROAD SUITE 1400
DALLAS, TX 75231
972.235.3031
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008000

CITY CONTRACT NO. 2023-029

F.P. LUCAS BOULEVARD

MCKENZIE ROAD TO E. CARTWRIGHT

TRAIL PAVING & DIMENSIONAL CONTROL PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
DMS/JCI	DMS/JCI	JAN 2023	2023-029-087	87 OF 252

PK-1190-21.458_PVMT TRAIL.DWG

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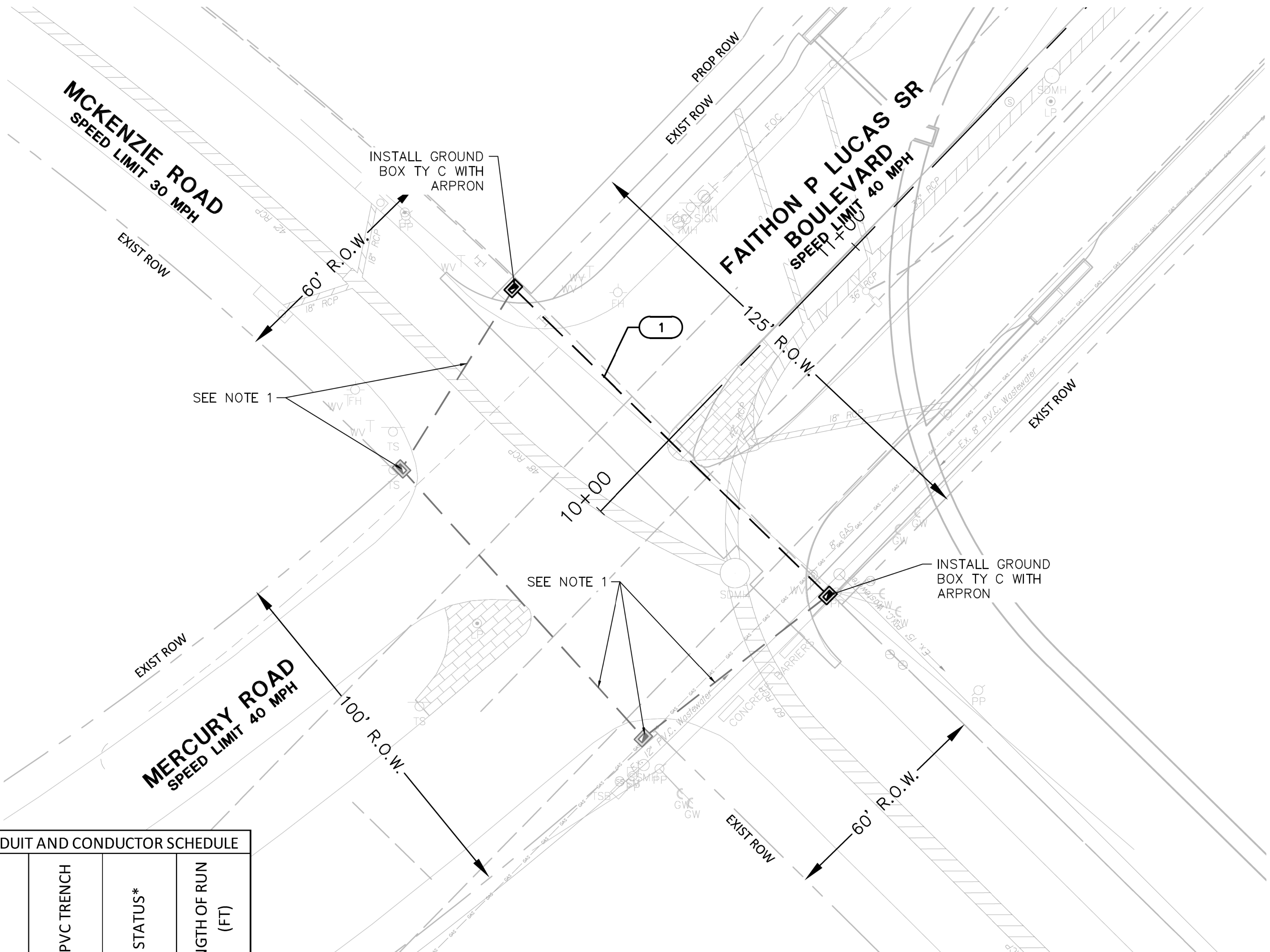
01/04/2023 - 2:22PM DMSANCHEZ
1/4/2023 4:30:32 PM ttanos
j:\2021\21106 fp lucas blvd - pkce\SHEETS-RAB\Trail Sheets 04.dgn



0 15 30 60 90

GRAPHIC SCALE IN FEET

LEGEND

- TRAFFIC SIGNAL POLE
- PEDESTRIAN POLE WITH PUSHBUTTON
- GROUNDBOX WITH/WITHOUT APRON
- CONDUIT RUN
- FENCELINES
- OVERHEAD ELECTRIC
- WATERLINE
- SANITARY SEWER
- STORM DRAIN
- ROW LINE
- #-# PROPOSED CONDUIT RUN

BLACK - PROPOSED SIGNAL
GREY - REFERENCE INFORMATION

NOTES:
1. GROUND BOXES WEST OF MCKENZIE ROAD AND CONDUIT RUNS TO AND FROM THOSE GROUND BOXES ARE TO BE INSTALLED BY OTHERS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES AND FACILITIES.

STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED
PROFESSIONAL ENGINEER

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CONDUIT AND CONDUCTOR SCHEDULE

CONDUIT RUN	4" PVC TRENCH	STATUS*	LENGTH OF RUN (FT)
1	1	I	125
TOTAL	125		

*INSTALL

GROUNDBOX SUMMARY

TYPE	QTY
GROUND BOX TY C WITH APRON	2

NO.	DATE	REVISION

Pacheco Koch
a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

SIGNAL LAYOUT (1 OF 2)

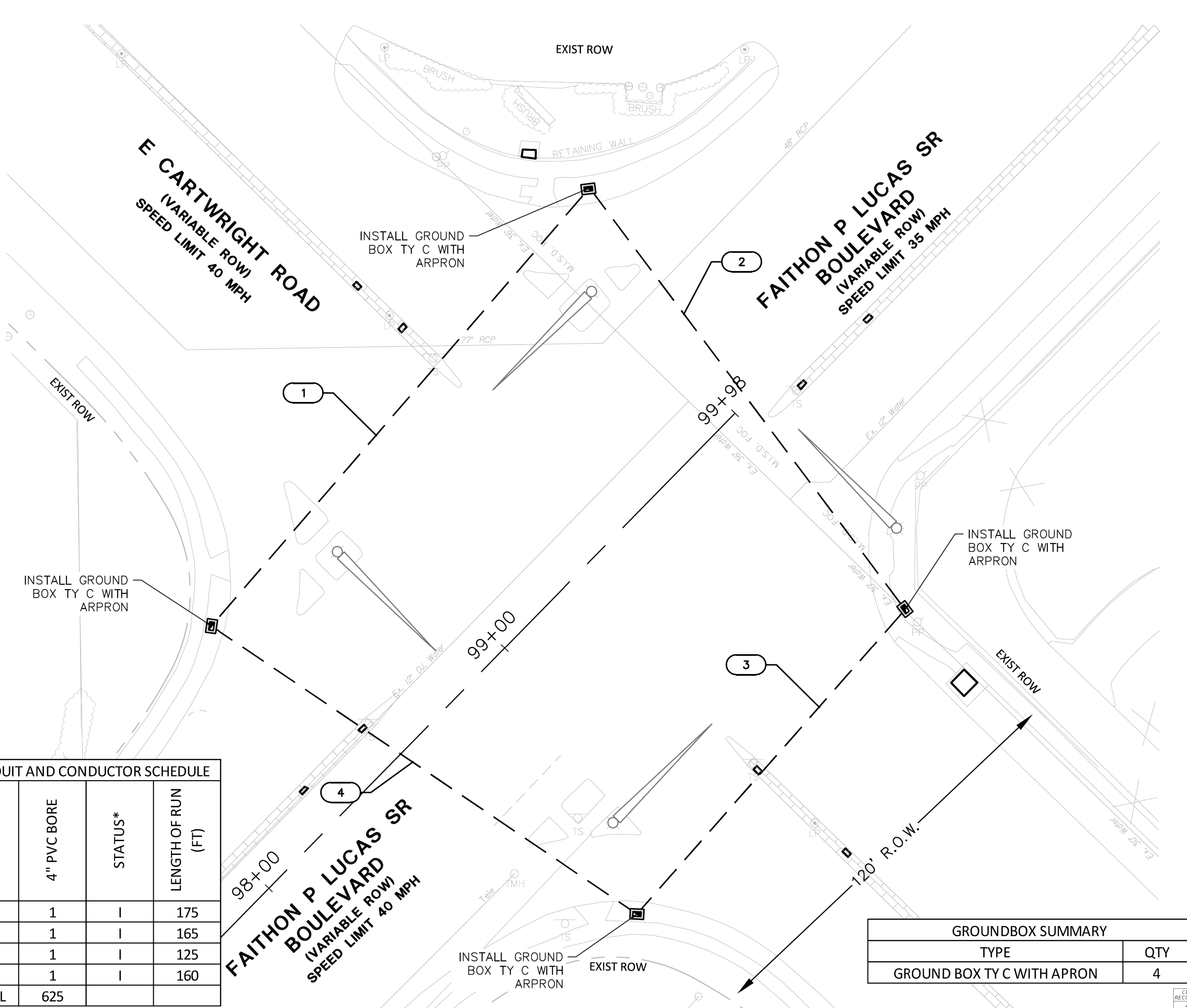
MCKENZIE RD
FP LUCAS BOULEVARD
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

CITY OF MESQUITE, DALLAS COUNTY, TEXAS

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-088

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=30'			88 OF 252



0 15 30 60 90

GRAPHIC SCALE IN FEET

LEGEND

- TRAFFIC SIGNAL POLE
- PEDESTRIAN POLE WITH PUSHBUTTON
- GROUNDBOX WITH/WITHOUT APRON
- CONDUIT RUN
- FENCELINES
- OVERHEAD ELECTRIC
- WATERLINE
- SANITARY SEWER
- STORM DRAIN
- ROW LINE
- PROPOSED CONDUIT RUN

BLACK - PROPOSED SIGNAL
GREY - REFERENCE INFORMATION

NOTES:

1. CONDUIT RUNS FROM PROPOSED GROUND BOXES TO EQUIPMENT ARE TO BE INSTALLED BY OTHERS. THE EXISTING SIGNAL POLES SHOWN ARE TO BE REMOVED.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES AND FACILITIES.

STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED
PROFESSIONAL ENGINEER

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CONDUIT AND CONDUCTOR SCHEDULE

CONDUIT RUN	4" PVC BORE	STATUS*	LENGTH OF RUN (FT)
1	1	I	175
2	1	I	165
3	1	I	125
4	1	I	160
TOTAL	625		

*INSTALL

GROUNDBOX SUMMARY

TYPE	QTY
GROUND BOX TY C WITH APRON	4

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-089

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001

NO.	DATE	REVISION

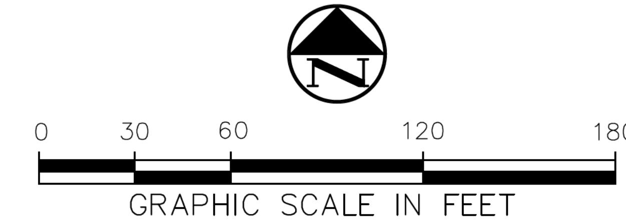
Pacheco Koch a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

SIGNAL LAYOUT (2 OF 2)

E CARTWRIGHT RD
FP LUCAS BOULEVARD
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

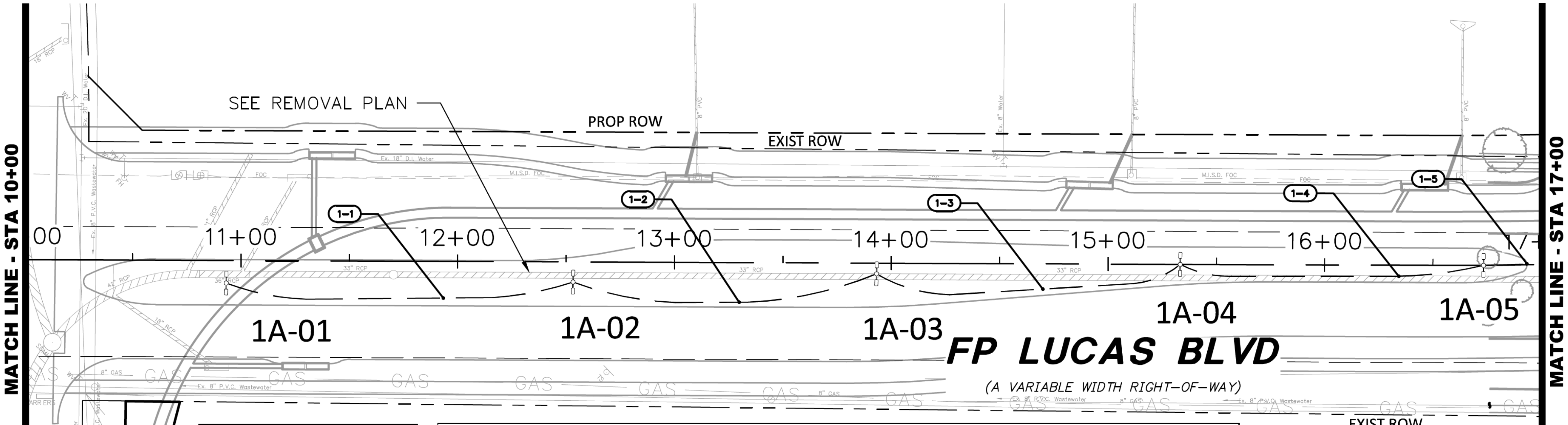
CITY OF MESQUITE, DALLAS COUNTY, TEXAS

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=30'			89 OF 252



LEGEND

	LUMINAIRE
	ELECTRICAL METER SYMBOLS
	GROUNDBOX
	CONDUIT RUN
	FENCELINES
	OVERHEAD ELECTRIC
	WATERLINE
	SANITARY SEWER
	STORM DRAIN
	ROW LINE
	STRUCTURAL POLE
	TRANSFORMER
	PROPOSED CONDUIT RUN



NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES AND FACILITIES.
2. CITY/ONCOR TO DETERMINE LED/POLE/FOUNDATION TYPE AND PROVIDE ONCOR/LIGHTING STANDARDS AS NEEDED.
3. LIGHTING SPACING IS BASED ON CITY REQUIREMENTS (140' INTERVALS BUT NO FURTHER APART THAN 180').
4. EXISTING LIGHT POLES ARE TO BE REMOVED. SEE REMOVAL PLAN FOR MORE DETAILS.
5. ONCOR SHALL INSTALL ALL POLES, FIXTURES, AND WIRING. CONTRACTOR TO INSTALL ALL CONDUIT, GROUND BOXES, AND POLE FOUNDATIONS.
6. CONTRACTOR TO VERIFY POLE FOUNDATION IS COMPATIBLE WITH POLE THAT ONCOR WILL INSTALL.

CONDUIT AND CONDUCTOR RUN

RUN NO.	CONDUIT (FEET) 2 IN. PVC SCH 40	COMMENTS
1-1	165	
1-2	145	
1-3	145	
1-4	145	
1-5	160	
1-6	175	
1-7	10	
1-8	55	
1-9	15	
1-10	145	
1-11	160	
1-12	145	
SHEET TOTALS	1465	

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

POLE NUMBER	POLE STATION	OFFSET (FEET)	FOUNDATIONS	DRILL SHAFT DIAMETER/ LENGTH	CKT NO.	NOTES
1A-01	10+93.30	10.43R	ONCOR	30"/8'	1A	
1A-02	12+53.34	9.29R		30"/8'	1A	
1A-03	13+93.38	4.94R		30"/8'	1A	
1A-04	15+33.27	00.00		30"/8'	1A	
1A-05	16+73.34	00.00		30"/8'	1A	
1A-06	18+29.71	00.00		30"/8'	1A	
1A-07	19+99.76	00.00		30"/8'	1A	
1A-08	21+39.81	00.00		30"/8'	1A	
1A-09	22+96.94	04.71R		30"/8'	1A	

GROUNDBOX SUMMARY

ONCOR STANDARD GROUND BOX	2

STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED
PROFESSIONAL ENGINEER

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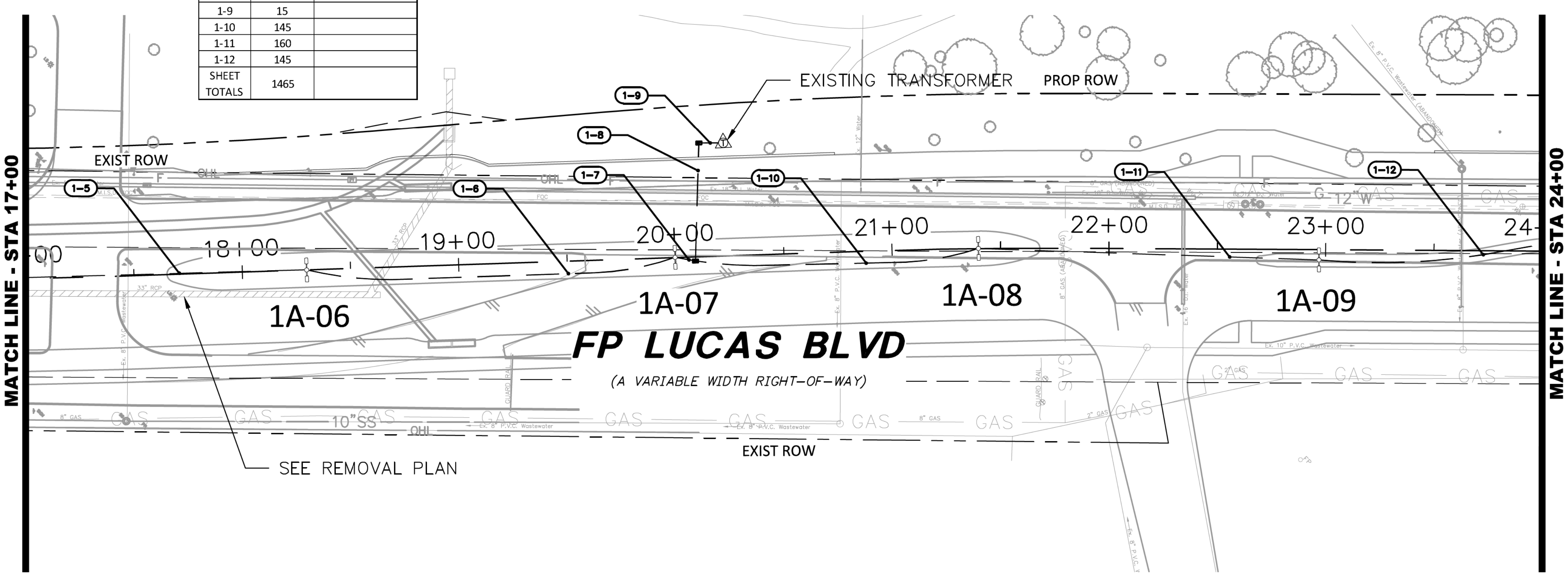

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NO.	DATE	REVISION

Pacheco Koch a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

ILLUMINATION PLAN (1 OF 6)

STA 10+00 TO STA 24+00

FP LUCAS BOULEVARD

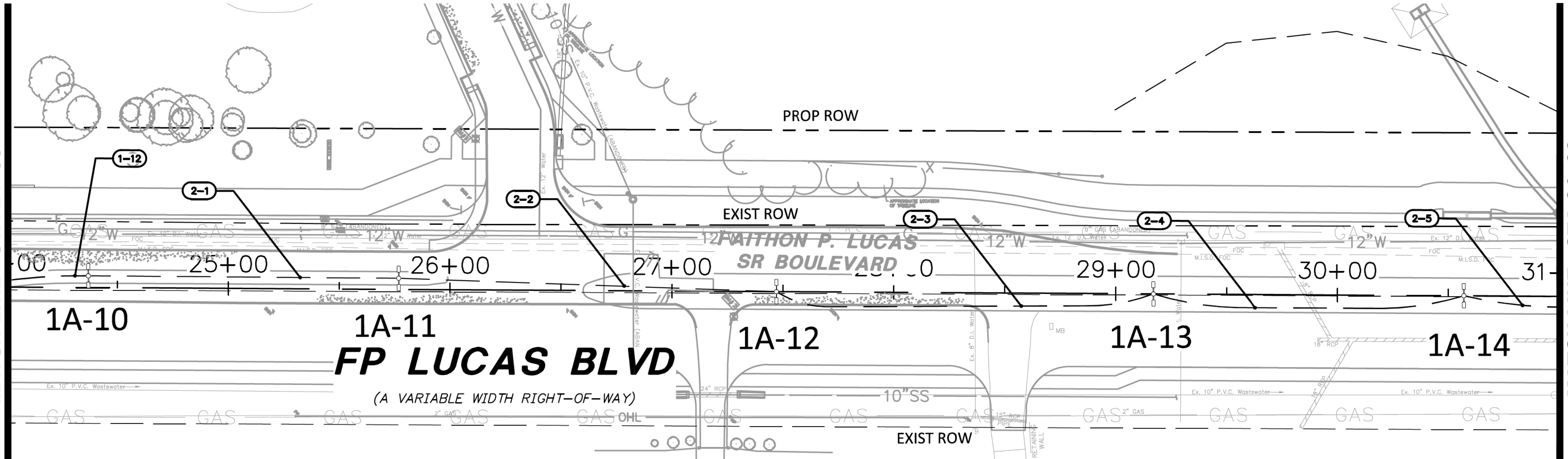
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

CITY OF MESQUITE, DALLAS COUNTY, TEXAS

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-090

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=60'			90 OF 252

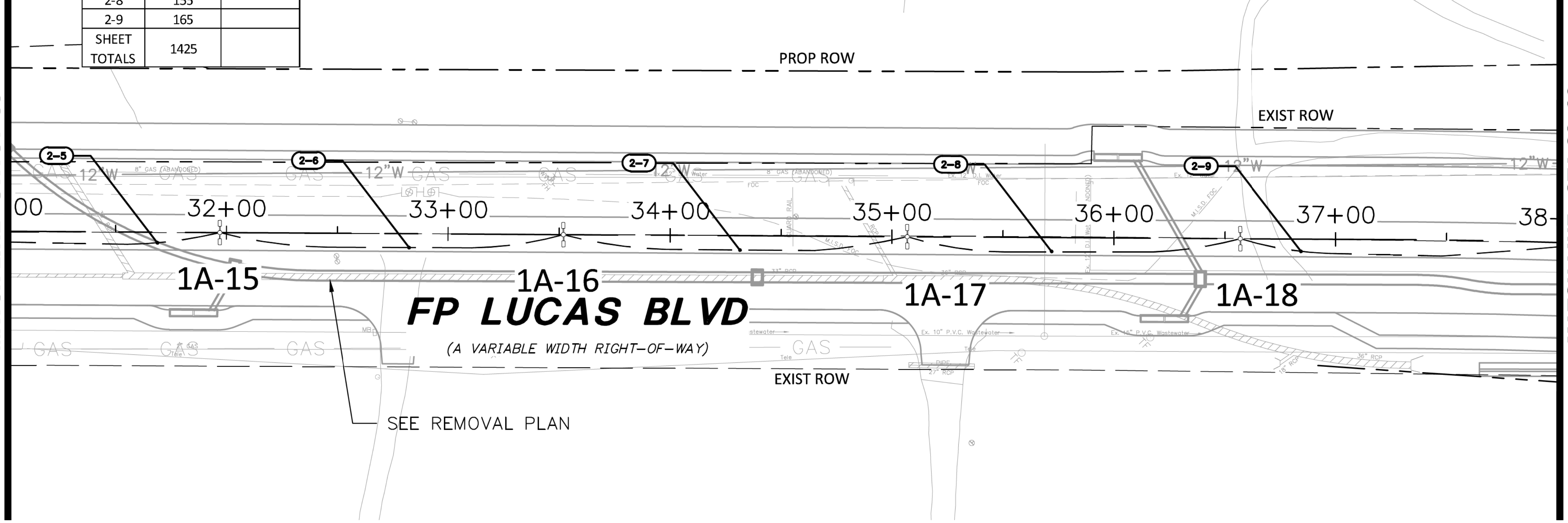


CONDUIT AND CONDUCTOR RUN

RUN NO.	CONDUIT (FEET) 2 IN. PVC SCH 40	COMMENTS
2-1	145	
2-2	175	
2-3	175	
2-4	145	
2-5	145	
2-6	160	
2-7	160	
2-8	155	
2-9	165	
SHEET TOTALS	1425	

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

POLE NUMBER	POLE STATION	OFFSET (FEET)	FOUNDATIONS	DRILL SHAFT DIAMETER/ LENGTH	CKT NO.	NOTES
1A-10	24+36.89	05.29L	ONCOR	30"/8'	1A	
1A-11	25+76.90	05.02L		30"/8'	1A	
1A-12	27+47.05	00.00		30"/8'	1A	
1A-13	29+16.99	00.00		30"/8'	1A	
1A-14	30+57.01	00.00		30"/8'	1A	
1A-15	31+97.01	00.00		30"/8'	1A	
1A-16	33+51.94	00.00		30"/8'	1A	
1A-17	35+06.92	00.00		30"/8'	1A	
1A-18	36+56.92	00.00		30"/8'	1A	



0 30 60 120 180

GRAPHIC SCALE IN FEET

LEGEND

- LUMINAIRE
- ELECTRICAL METER SYMBOLS
- GROUNDBOX
- CONDUIT RUN
- FENCELINES
- OVERHEAD ELECTRIC
- WATERLINE
- SANITARY SEWER
- STORM DRAIN
- ROW LINE
- STRUCTURAL POLE
- TRANSFORMER
- PROPOSED CONDUIT RUN

NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES AND FACILITIES.
2. CITY/ONCOR TO DETERMINE LED/POLE/FOUNDATION TYPE AND PROVIDE ONCOR/LIGHTING STANDARDS AS NEEDED.
3. LIGHTING SPACING IS BASED ON CITY REQUIREMENTS (140' INTERVALS BUT NO FURTHER APART THAN 180').
4. EXISTING LIGHT POLES ARE TO BE REMOVED. SEE REMOVAL PLAN FOR MORE DETAILS.
5. ONCOR SHALL INSTALL ALL POLES, FIXTURES, AND WIRING. CONTRACTOR TO INSTALL ALL CONDUIT, GROUND BOXES, AND POLE FOUNDATIONS.
6. CONTRACTOR TO VERIFY POLE FOUNDATION IS COMPATIBLE WITH POLE THAT ONCOR WILL INSTALL.

STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED
PROFESSIONAL ENGINEER

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NO.	DATE	REVISION

Pacheco Koch a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

ILLUMINATION PLAN (2 OF 6)

STA 24+00 TO STA 38+00

FP LUCAS BOULEVARD

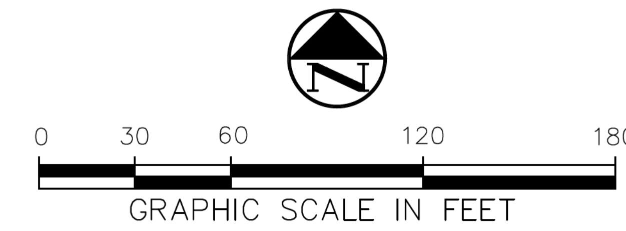
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

CITY OF MESQUITE, DALLAS COUNTY, TEXAS

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=60'			91 OF 252

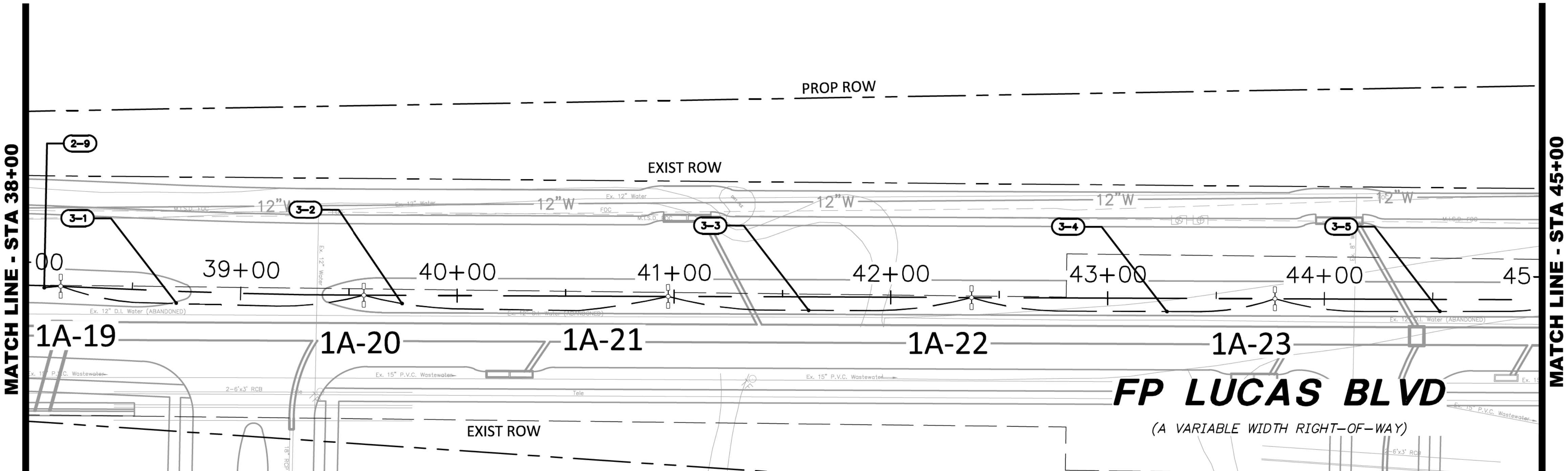
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-091

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001



LEGEND

- LUMINAIRE
- ELECTRICAL METER SYMBOLS
- GROUNDBOX
- CONDUIT RUN
- FENCELINES
- OVERHEAD ELECTRIC
- WATERLINE
- SANITARY SEWER
- STORM DRAIN
- ROW LINE
- STRUCTURAL POLE
- TRANSFORMER
- PROPOSED CONDUIT RUN

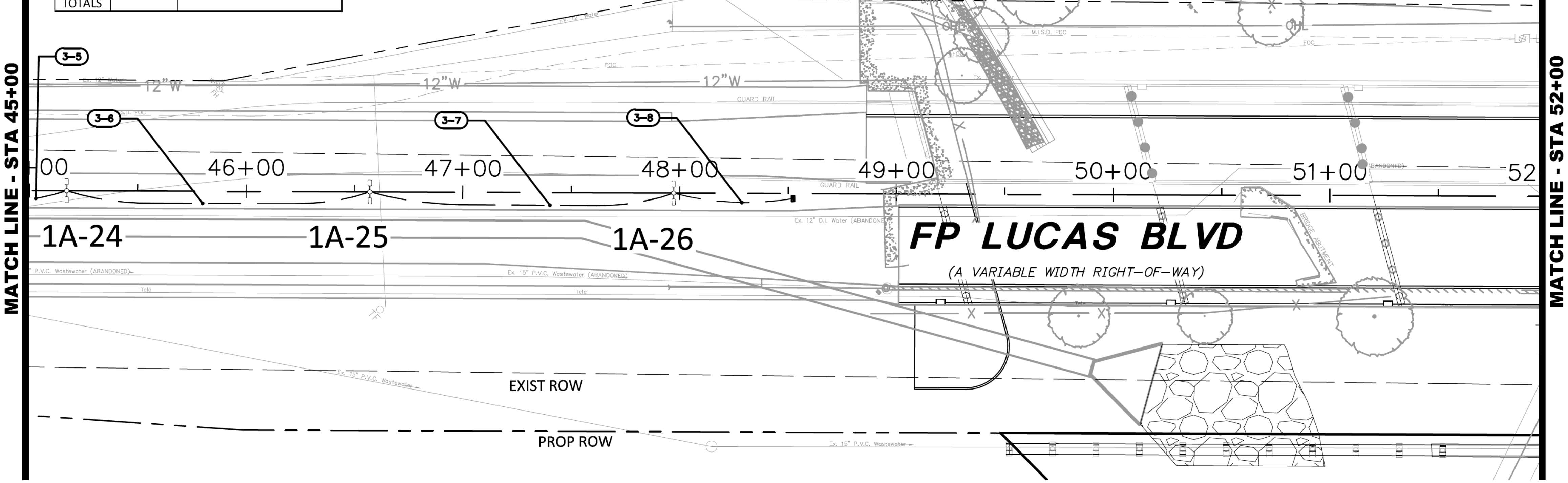


CONDUIT AND CONDUCTOR RUN		
RUN NO.	CONDUIT (FEET) 2 IN. PVC SCH 40	COMMENTS
3-1	145	
3-2	145	
3-3	145	
3-4	145	
3-5	145	
3-6	145	
3-7	145	
3-8	60	
SHEET TOTALS	1075	

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

POLE NUMBER	POLE STATION	OFFSET (FEET)	FOUNDATIONS	DRILL SHAFT DIAMETER/ LENGTH	CKT NO.	NOTES
1A-19	38+16.94	00.00	ONCOR	30"/8'	1A	
1A-20	39+56.93	00.00		30"/8'	1A	
1A-21	40+97.22	00.00		30"/8'	1A	
1A-22	42+37.22	00.00		30"/8'	1A	
1A-23	43+77.20	00.00		30"/8'	1A	
1A-24	45+17.20	00.00		30"/8'	1A	
1A-25	46+57.22	00.00		30"/8'	1A	
1A-26	47+97.17	00.00		30"/8'	1A	

GROUNDBOX SUMMARY	
ONCOR STANDARD GROUND BOX	1



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1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES AND FACILITIES.
2. CITY/ONCOR TO DETERMINE LED/POLE/FOUNDATION TYPE AND PROVIDE ONCOR/LIGHTING STANDARDS AS NEEDED.
3. LIGHTING SPACING IS BASED ON CITY REQUIREMENTS (140' INTERVALS BUT NO FURTHER APART THAN 180').
4. EXISTING LIGHT POLES ARE TO BE REMOVED. SEE REMOVAL PLAN FOR MORE DETAILS.
5. ONCOR SHALL INSTALL ALL POLES, FIXTURES, AND WIRING. CONTRACTOR TO INSTALL ALL CONDUIT, GROUND BOXES, AND POLE FOUNDATIONS.
6. CONTRACTOR TO VERIFY POLE FOUNDATION IS COMPATIBLE WITH POLE THAT ONCOR WILL INSTALL.

STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED
PROFESSIONAL ENGINEER

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NO.	DATE	REVISION

Pacheco Koch
a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

ILLUMINATION PLAN (3 OF 6)

STA 38+00 TO STA 52+00

FP LUCAS BOULEVARD

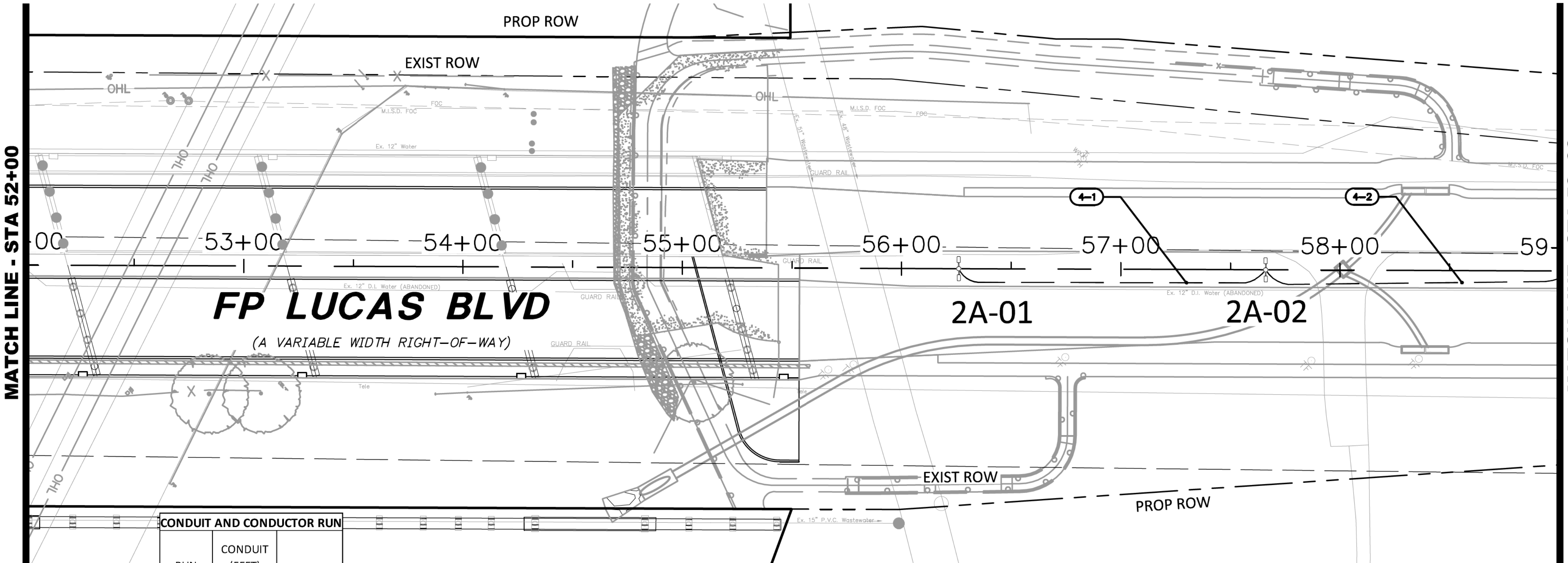
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

CITY OF MESQUITE, DALLAS COUNTY, TEXAS

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-092

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=60'			92 OF 252

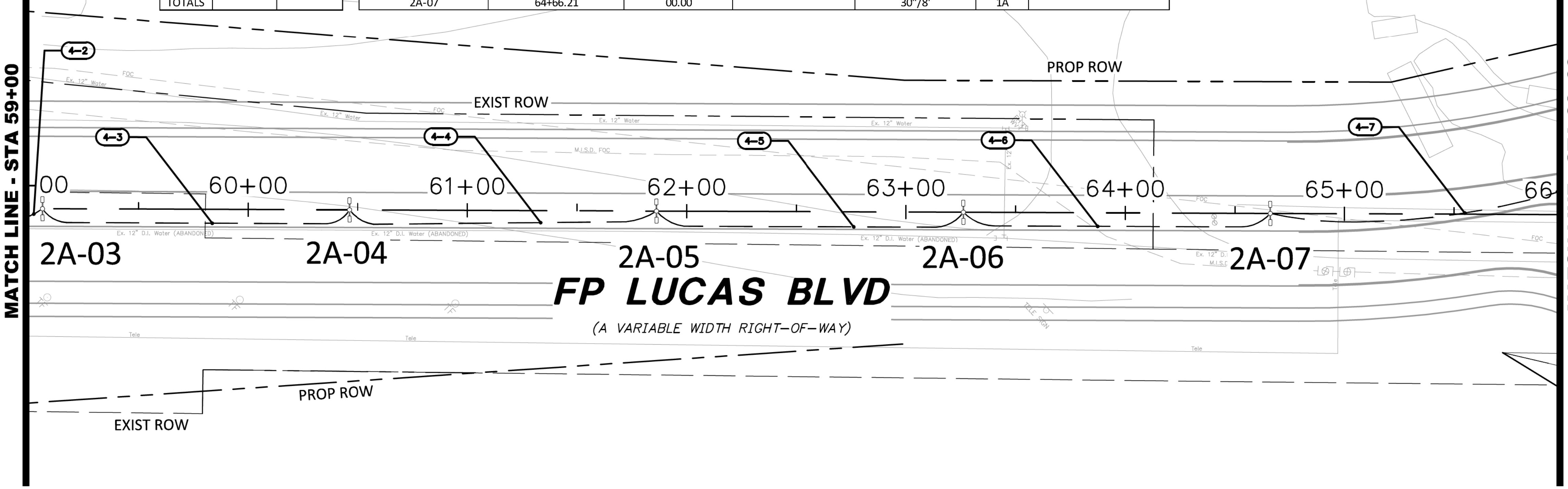
TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001



CONDUIT AND CONDUCTOR RUN		
RUN NO.	CONDUIT (FEET) 2 IN. PVC SCH 40	COMMENTS
4-1	150	
4-2	150	
4-3	150	
4-4	150	
4-5	150	
4-6	150	
4-7	150	
SHEET TOTALS	1050	

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

POLE NUMBER	POLE STATION	OFFSET (FEET)	FOUNDATIONS	DRILL SHAFT DIAMETER/ LENGTH	CKT NO.	NOTES
2A-01	56+26.19	00.00	ONCOR	30"/8'	1A	
2A-02	57+66.22	00.00		30"/8'	1A	
2A-03	59+06.19	00.00		30"/8'	1A	
2A-04	60+46.21	00.00		30"/8'	1A	
2A-05	61+86.21	00.00		30"/8'	1A	
2A-06	63+26.19	00.00		30"/8'	1A	
2A-07	64+66.21	00.00		30"/8'	1A	



0 30 60 120 180

GRAPHIC SCALE IN FEET

LEGEND

- LUMINAIRE
- ELECTRICAL METER SYMBOLS
- GROUNDBOX
- CONDUIT RUN
- FENCELINES
- OVERHEAD ELECTRIC
- WATERLINE
- SANITARY SEWER
- STORM DRAIN
- ROW LINE
- STRUCTURAL POLE
- TRANSFORMER
- PROPOSED CONDUIT RUN

NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES AND FACILITIES.
2. CITY/ONCOR TO DETERMINE LED/POLE/FOUNDATION TYPE AND PROVIDE ONCOR/LIGHTING STANDARDS AS NEEDED.
3. LIGHTING SPACING IS BASED ON CITY REQUIREMENTS (140' INTERVALS BUT NO FURTHER APART THAN 180').
4. EXISTING LIGHT POLES ARE TO BE REMOVED. SEE REMOVAL PLAN FOR MORE DETAILS.
5. ONCOR SHALL INSTALL ALL POLES, FIXTURES, AND WIRING. CONTRACTOR TO INSTALL ALL CONDUIT, GROUND BOXES, AND POLE FOUNDATIONS.
6. CONTRACTOR TO VERIFY POLE FOUNDATION IS COMPATIBLE WITH POLE THAT ONCOR WILL INSTALL.

STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY TAYLOR N. BATES, P.E. 140982 ON 01/04/2023. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

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NO.	DATE	REVISION

Pacheco Koch a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

ILLUMINATION PLAN (4 OF 6)

STA 52+00 TO STA 66+00

FP LUCAS BOULEVARD

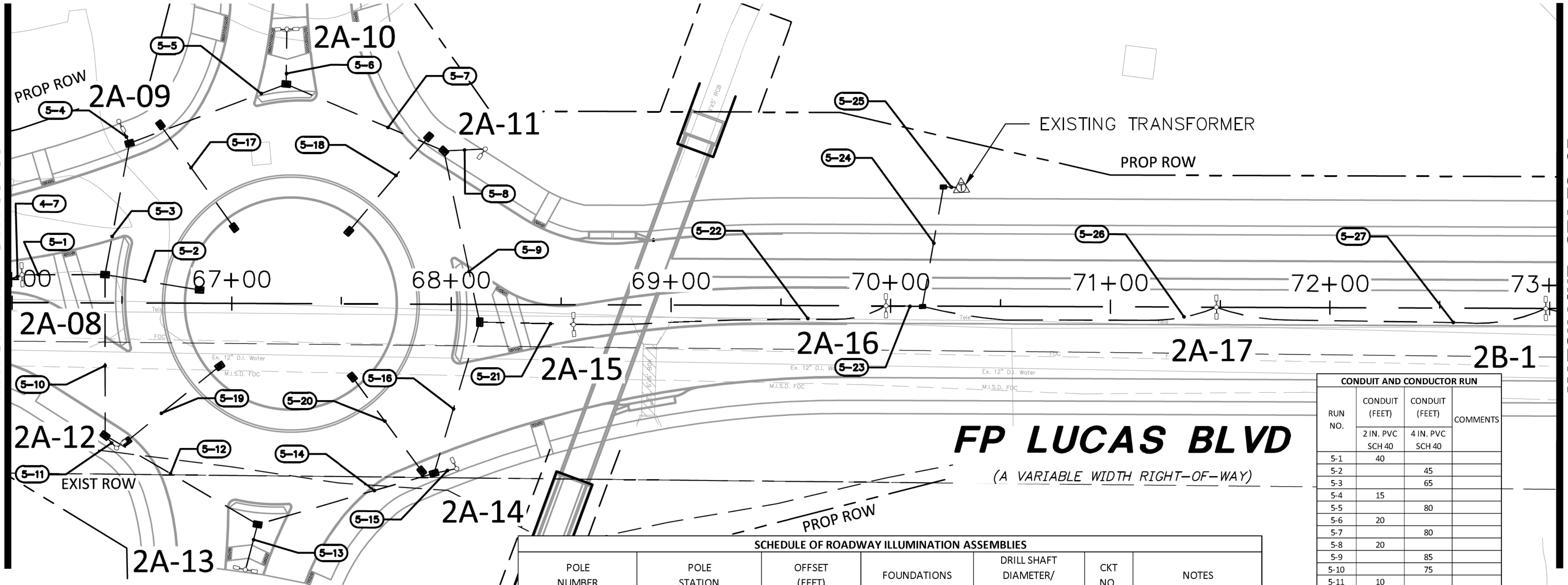
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

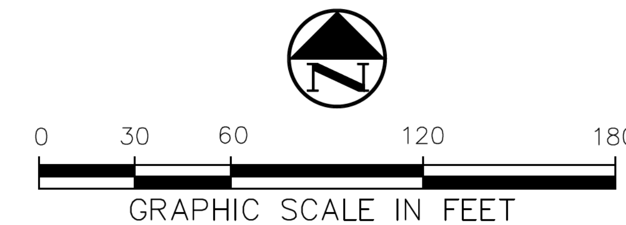
CITY OF MESQUITE, DALLAS COUNTY, TEXAS

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=60'			93 OF 252

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-093

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001





LEGEND

- LUMINAIRE
- ELECTRICAL METER SYMBOLS
- GROUNDBOX
- CONDUIT RUN
- FENCELINES
- OVERHEAD ELECTRIC
- WATERLINE
- SANITARY SEWER
- STORM DRAIN
- ROW LINE
- STRUCTURAL POLE
- TRANSFORMER
- PROPOSED CONDUIT RUN

NOTES:

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5. CONTRACTOR TO VERIFY POLE FOUNDATION IS COMPATIBLE WITH POLE THAT ONCOR WILL INSTALL.
6. CONDUIT RUNS 5–17, 5–18, 5–19, AND 5–20 ARE EMPTY SLEEVES PROVIDED FOR FUTURE IRRIGATION ACCESS TO THE CENTER ISLAND OF THE ROUNDABOUT.
7. RUN 5–2 IS AN EMPTY CONDUIT SLEEVE PROVIDED FOR FUTURE ELECTRICAL TO ROUNDABOUT CENTER ISLAND.

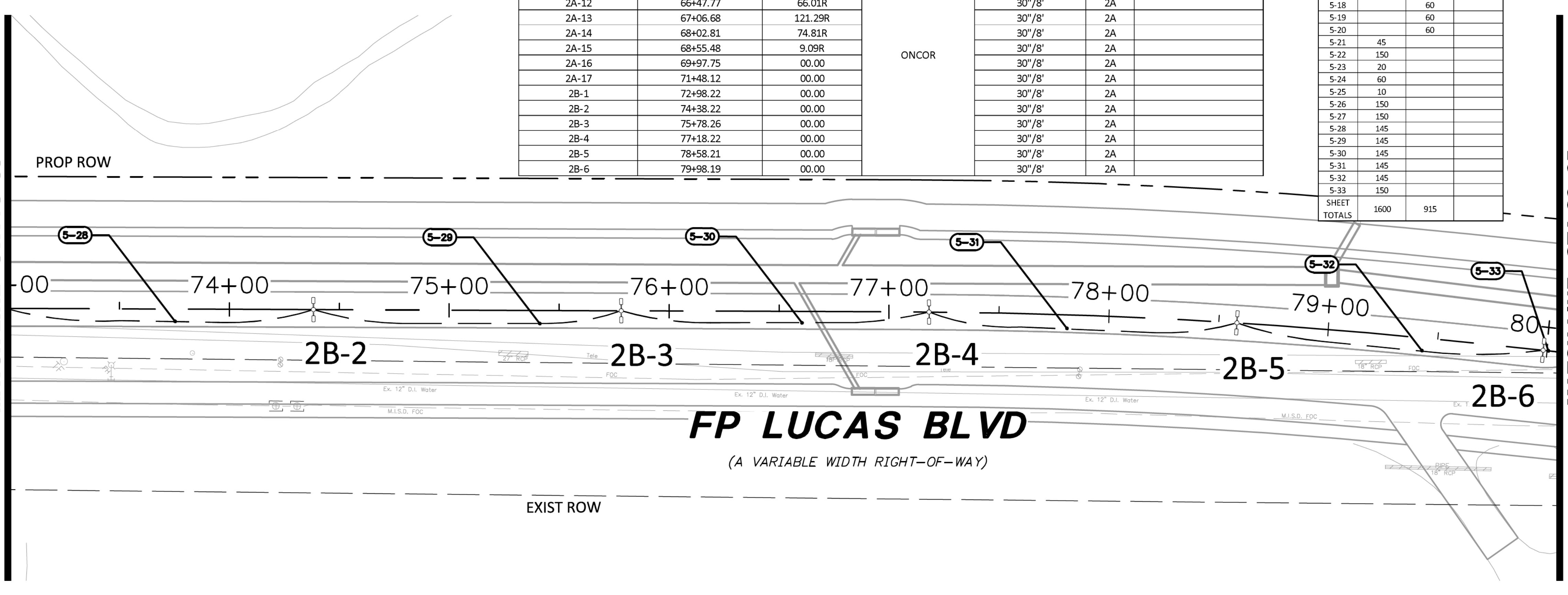
GROUNDBOX SUMMARY	
ONCOR STANDARD GROUND BOX	10
IRRIGATION GROUND BOX	8

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

POLE NUMBER	POLE STATION	OFFSET (FEET)	FOUNDATIONS	DRILL SHAFT DIAMETER/ LENGTH	CKT NO.	NOTES
2A-08	66+04.44	12.66L	ONCOR	30"/8'	2A	
2A-09	66+48.24	82.66L		30"/8'	2A	
2A-10	67+24.56	124.93L		30"/8'	2A	
2A-11	68+15.21	70.73L		30"/8'	2A	
2A-12	66+47.77	66.01R		30"/8'	2A	
2A-13	67+06.68	121.29R		30"/8'	2A	
2A-14	68+02.81	74.81R		30"/8'	2A	
2A-15	68+55.48	9.09R		30"/8'	2A	
2A-16	69+97.75	00.00		30"/8'	2A	
2A-17	71+48.12	00.00		30"/8'	2A	
2B-1	72+98.22	00.00		30"/8'	2A	
2B-2	74+38.22	00.00		30"/8'	2A	
2B-3	75+78.26	00.00		30"/8'	2A	
2B-4	77+18.22	00.00		30"/8'	2A	
2B-5	78+58.21	00.00		30"/8'	2A	
2B-6	79+98.19	00.00		30"/8'	2A	

CONDUIT AND CONDUCTOR RUN

RUN NO.	CONDUIT (FEET) 2 IN. PVC SCH 40	CONDUIT (FEET) 4 IN. PVC SCH 40	COMMENTS
5-1	40		
5-2		45	
5-3		65	
5-4	15		
5-5		80	
5-6	20		
5-7		80	
5-8	20		
5-9		85	
5-10		75	
5-11	10		
5-12		85	
5-13	25		
5-14		85	
5-15	10		
5-16		75	
5-17		60	
5-18		60	
5-19		60	
5-20		60	
5-21	45		
5-22	150		
5-23	20		
5-24	60		
5-25	10		
5-26	150		
5-27	150		
5-28	145		
5-29	145		
5-30	145		
5-31	145		
5-32	145		
5-33	150		
SHEET TOTALS	1600	915	



STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED
PROFESSIONAL ENGINEER

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NO.	DATE	REVISION

Pacheco Koch a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

ILLUMINATION PLAN (5 OF 6)

STA 66+00 TO STA 80+05

FP LUCAS BOULEVARD

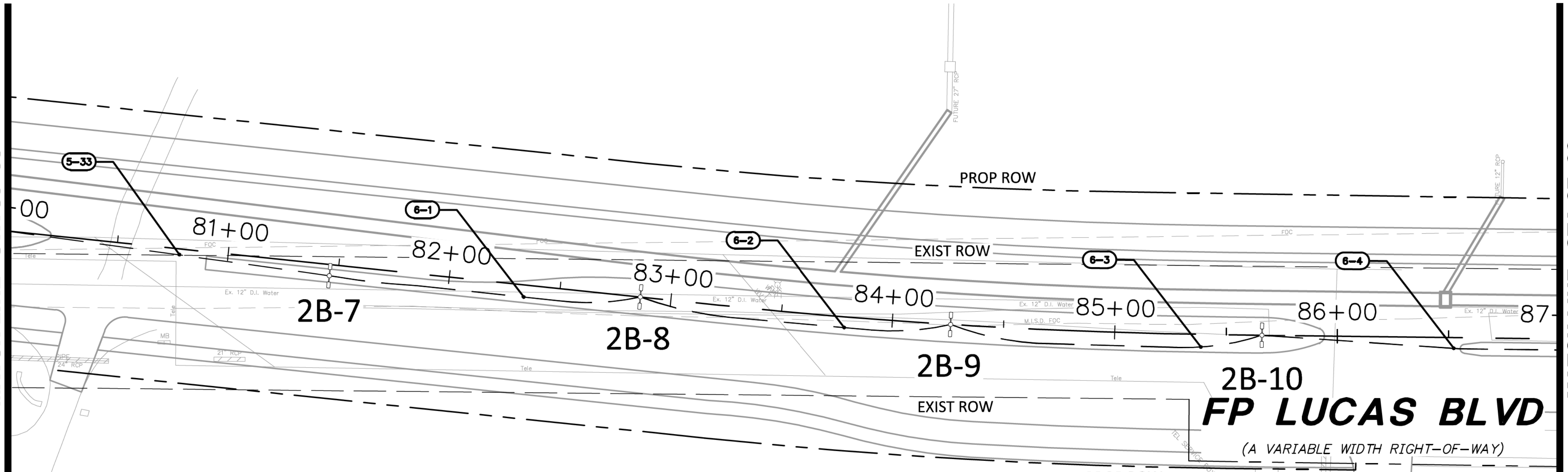
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

CITY OF MESQUITE, DALLAS COUNTY, TEXAS

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-094

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=60'			94 OF 252



GRAPHIC SCALE IN FEET (0, 30, 60, 120, 180)

LEGEND

- LUMINAIRE
- ELECTRICAL METER SYMBOLS
- GROUNDBOX
- CONDUIT RUN
- FENCELINES
- OVERHEAD ELECTRIC
- WATERLINE
- SANITARY SEWER
- STORM DRAIN
- ROW LINE
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6. CONTRACTOR TO VERIFY POLE FOUNDATION IS COMPATIBLE WITH POLE THAT ONCOR WILL INSTALL.

CONDUIT AND CONDUCTOR RUN

RUN NO.	CONDUIT (FEET) 2 IN. PVC SCH 40	COMMENTS
6-1	145	
6-2	145	
6-3	145	
6-4	170	
6-5	145	
6-6	145	
6-7	145	
6-8	145	
6-9	15	
6-10	115	
SHEET TOTALS	1315	

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

POLE NUMBER	POLE STATION	OFFSET (FEET)	FOUNDATIONS	DRILL SHAFT DIAMETER/ LENGTH	CKT NO.	NOTES
2B-7	81+46.19	00.00		30"/8'	2A	
2B-8	82+86.20	00.00		30"/8'	2A	
2B-9	84+26.20	00.00		30"/8'	2A	
2B-10	85+66.23	00.00		30"/8'	2A	
2B-11	87+32.77	04.98R		30"/8'	2A	
2B-12	88+72.75	4.99R		30"/8'	2A	
2B-13	90+14.18	04.56R		30"/8'	2A	
2B-14	91+52.75	5.01L		30"/8'	2A	
2B-15	92+92.75	05.01L		30"/8'	2A	

GROUNDBOX SUMMARY

ONCOR STANDARD GROUND BOX	2

STATE OF TEXAS
TAYLOR N. BATES
140982
LICENSED PROFESSIONAL ENGINEER

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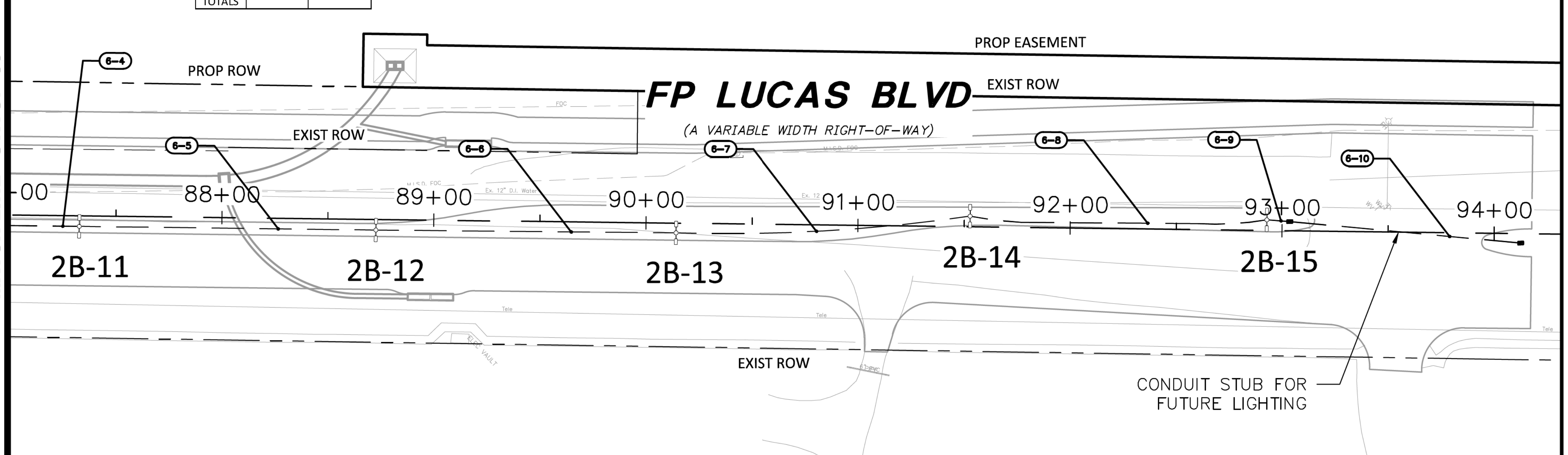

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NO.	DATE	REVISION

Pacheco Koch
a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

ILLUMINATION PLAN (6 OF 6)

STA 80+05 TO STA 94+00

FP LUCAS BOULEVARD

(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

CITY OF MESQUITE, DALLAS COUNTY, TEXAS

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-095

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023	1"=60'			95 OF 252

DATE: 1/4/2023 3:59:16 PM ttanos
FILE: j:\2021\21106 fp lucas blvd - pkce\SHEETS-RAB\Signaland Roadway Lighting Sheets 09.dgn

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.

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-096

Texas Department of Transportation | Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

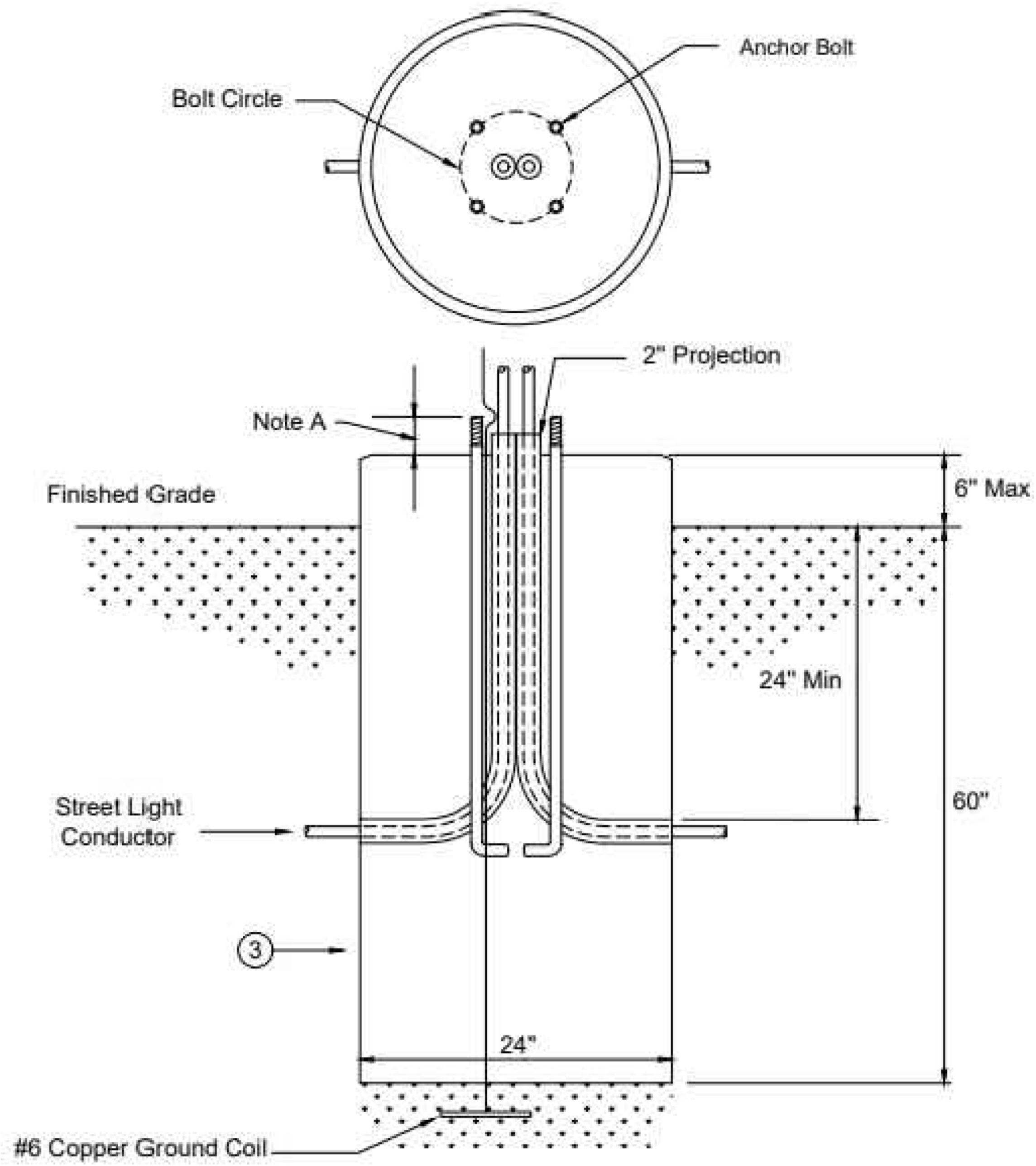
ED(1)-14

FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
	REVISIONS				
		DIST	COUNTY		SHEET NO.
					96 OF 252

71A

Rectangular Luminaire Anchor Bolt Foundation Detail

213 - 122
04 - 22



Note:
A. The bolt projection for TSN 398698 is 3". The bolt projection for TSN 398700 is 3.5"

Item	Description	TSN/Ref	CU
1	Precast Foundation, 14" Bolt Circle, 1" Anchor Bolts	398698	SLFPSQ25/SLFPSQ30
1	Precast Foundation, 14" Bolt Circle, 1 1/4" Anchor Bolts	398700	SLFP40

NOTE:
1. FOUNDATION DETAIL WAS PROVIDED BY ONCOR WHO WILL BE INSTALLING THE POLES, WIRING, AND FIXTURES.
2. CONTRACTOR TO INSTALL TSN: 398698 WHICH WILL FIT A 25 OR 30 FOOT TALL POLE.
3. CONTRACTOR TO CONFIRM BOLT CIRCLE WITH ONCOR/CITY PRIOR TO INSTALLING LIGHT POLE FOUNDATIONS.

NO.	DATE	REVISION

Pacheco Koch
a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

FOUNDATION DETAIL

STANDARD DETAIL

FP LUCAS BOULEVARD

(FROM MCKENZIE ROAD TO E. CARTWRIGHT)

CITY OF MESQUITE, DALLAS COUNTY, TEXAS

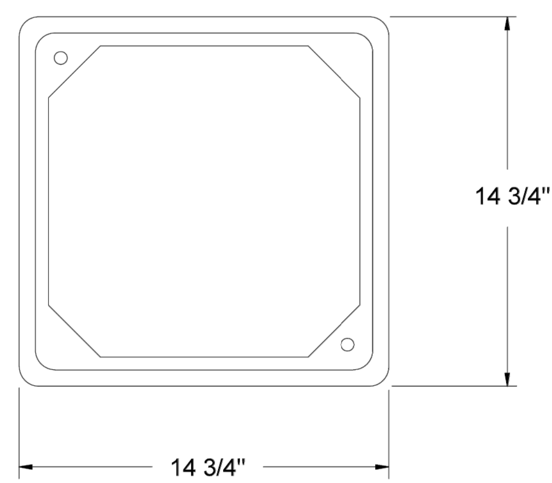
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-097

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001

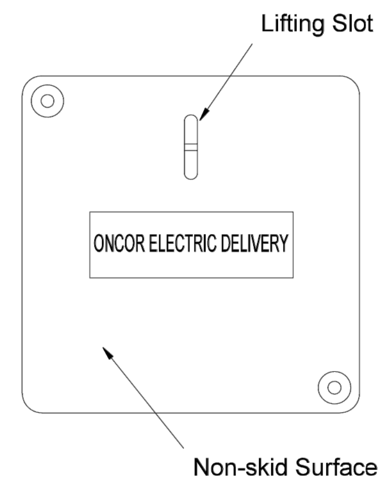
DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023				97 OF 252

Street Light Secondary Connection Box

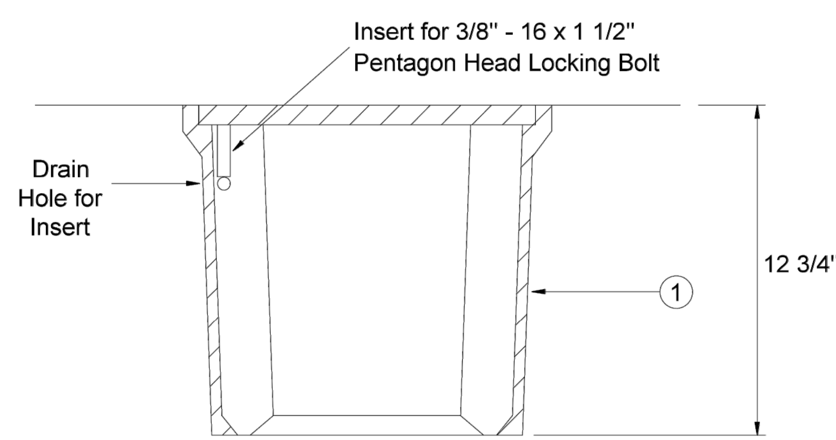
213 - 040
12 - 19



Top View
With Cover Removed



Cover



Cross Section

Notes :

A. For use when conductor size and number of terminations warrant.
B. H-10 (light vehicular traffic loading).
C. Replacement cover TSN is 326507.

Item	Description	TSN/Ref	CU
1	Box, Secondary 12" x 12" x 12"	300306	SLSCB

ONCOR

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NO.	DATE	REVISION

Pacheco Koch
a Westwood company
4060 BRYANT IRVIN ROAD
FORT WORTH, TX 76109
817.412.7155

ONCOR GROUND BOX DETAIL
STANDARD DETAIL
FP LUCAS BOULEVARD
(FROM MCKENZIE ROAD TO E. CARTWRIGHT)
CITY OF MESQUITE, DALLAS COUNTY, TEXAS

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-098

TX REG. ENGINEERING FIRM F-469
TX REG. SURVEYING FIRM LS-10008001

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
TNB	BAH	Jan 2023				98 OF 252

j:\2021\21106 fp lucas blvd - pkce\SHEETS-RAB\Signal and Roadway Lighting Sheets 12.dgn 1/4/2023 3:59:39 PM ttapas
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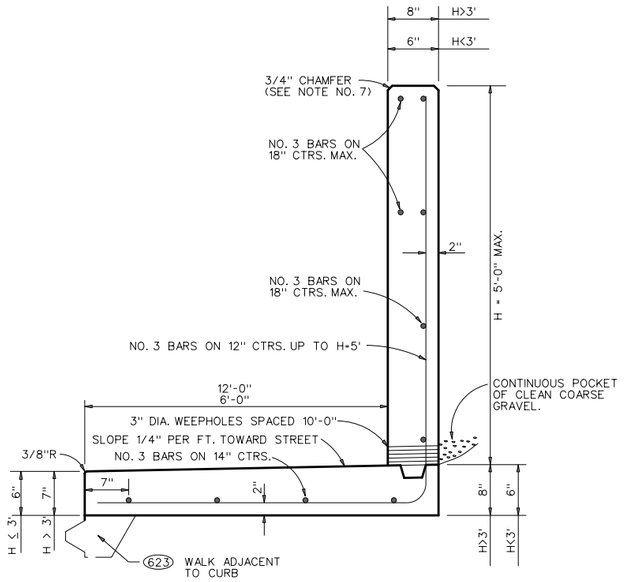
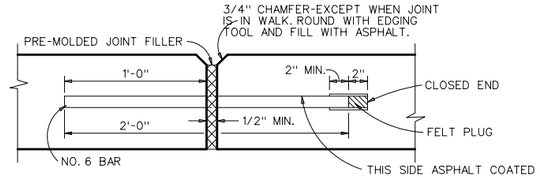


TYPE 6 RETAINING WALL

COMBINATION CANTILEVER & WALK

WALL GREATER THAN H=5'-0" REQUIRES SPECIAL ENGINEERING ANALYSIS



EXPANSION JOINT DETAIL IN WALL

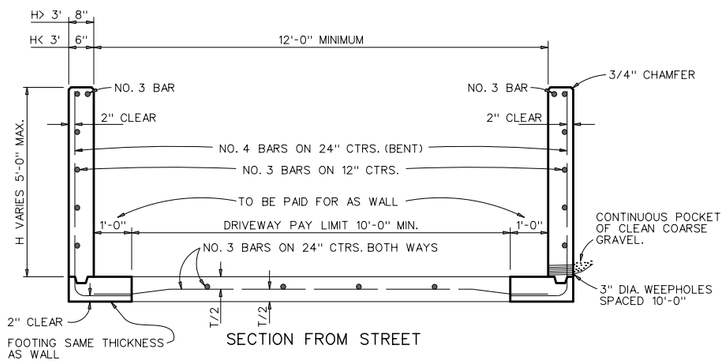
THE DOWELS SHALL BE SPACED 1'-0" MAXIMUM BEGINNING 1'-0" ABOVE FOOTING. A MINIMUM OF 2 DOWELS TO BE USED IN EACH JOINT, THE SLEEVE FOR DOWEL SHALL HAVE AN INSIDE DIAMETER OF 7/8" AND BE OF A QUALITY AND DESIGN TO PROVIDE FREE MOVEMENT OF THE DOWEL. THE ENTIRE DOWEL AND SLEEVE ASSEMBLY SHALL BE SECURED IN POSITION PRIOR TO POURING OPERATIONS.

THE EXPANSION JOINT SHALL EXTEND THROUGHOUT THE STEM AND WALK SECTION IN CONTINUOUS VERTICAL PLANE. ALL OTHER DETAILS TO BE AS ABOVE.

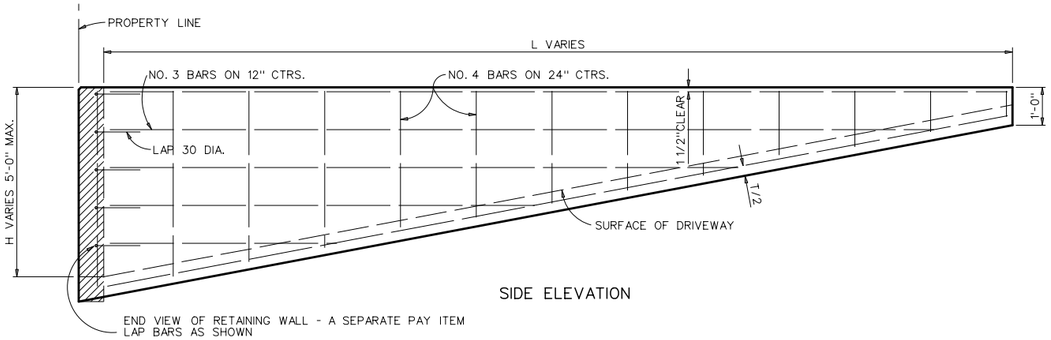
SPACING OF JOINTS SHALL BE 45' MAXIMUM FOR TYPES 6 THRU 8.

GENERAL NOTES FOR RETAINING WALLS, ALL TYPES (U.N.O.)

1. RETAINING WALLS SHALL BE BUILT WITH PERFORATED DRAIN SYSTEM INSTEAD OF WEEP HOLES WHENEVER FEASIBLE.
2. ALL CONCRETE SHALL BE CLASS "C". ALL REINFORCING SHALL BE GRADE 60.
3. BAR LAPS SHALL BE 30 TIMES THE DIAMETER OF THE BAR.
4. ALL EXPOSED SURFACES EXCEPT DRIVEWAYS SHALL RECEIVE A CARBORUNDUM OR APPROVED PAINTED FINISH.
5. DRIVEWAYS SHALL RECEIVE A HORSE HAIR OF FINE BROOM FINISH.
6. EXPOSED EDGES AND CORNERS TO BE ROUNDED OR CHAMFERED AS INDICATED HEREIN. (CHAMFER ON BACK OF WALL MAY BE ELIMINATED TO PERMIT MOWING)
7. WEEP HOLES SHALL BE FORMED BY PVC 3" O.D.
8. WEEP HOLES OR PERFORATED DRAIN SYSTEM MAY BE DELETED FOR RETAINING WALLS NOT EXCEEDING 3' IN HEIGHT WHEN APPROVED BY THE ENGINEER.
9. EXPANSION JOINTS SHALL BE CONSTRUCTED BETWEEN STREET CURB AND RETAINING WALL FOOTINGS ABUTTING BACK OF CURBS WHEN RETAINING WALL HEIGHT EXCEEDS 5' (SEE DETAIL ABOVE). FOR WALLS LESS THAN OR EQUAL TO 5' IN HEIGHT, SIDEWALK LUGS SHALL SHALL BE CONSTRUCTED AT BACK OF CURB INTEGRAL WITH THE RETAINING WALL FOOTING (NO EXPANSION MATERIAL).
10. ADD FABRIC INSIDE OF WALL TO PREVENT CLUGGING.



SECTION FROM STREET



SIDE ELEVATION

TYPE 8 RETAINING WALL

FOR DRIVEWAY THROUGH PROPERTY LINE RETAINING WALL

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

DRIVEWAY WALL DETAILS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-099	99 OF 252

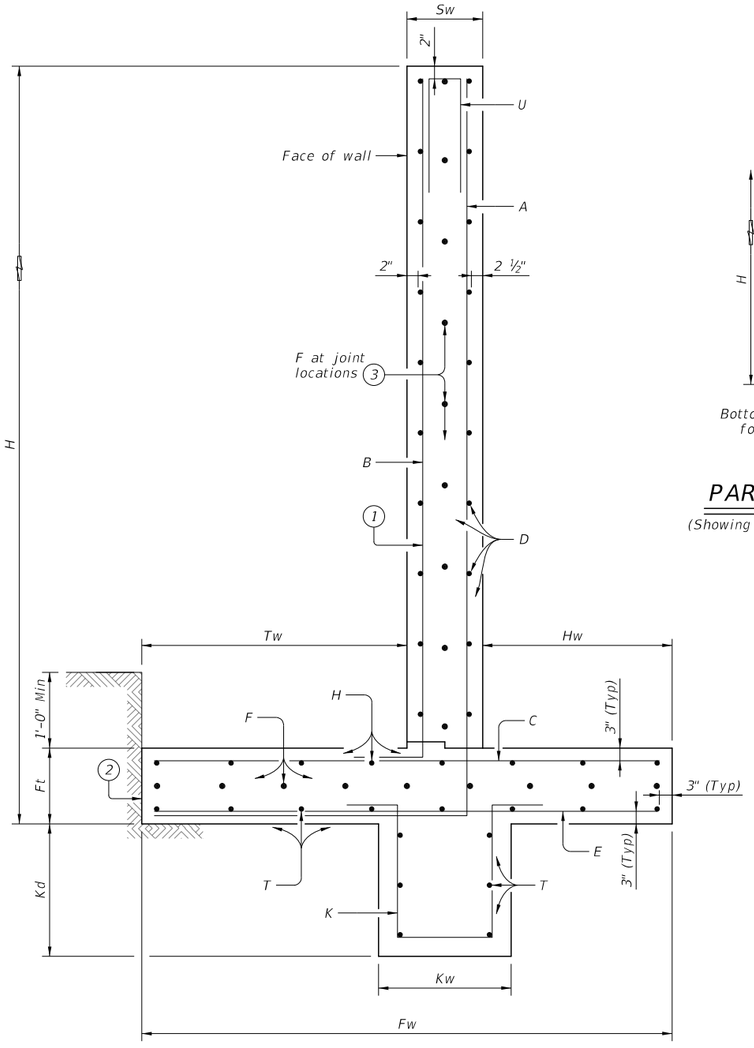
DATE: 1/4/2023 4:00:00 PM
FILE: j:\2021\21106 lp lucas blvd - pkce\SHEETS-TxDOT\RETAINING WALL\RW-SFC-22.dgn

PROPERTIES

Wall Height "H"	WALL DIMENSIONS							MAX SOIL PRESS
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	Kd	T/SF
2	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.218
4	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.321
6	5'-6"	1'-6"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.395
8	7'-4"	1'-9"	1'-1"	4'-6"	1'-0"	1'-0"	1'-0"	0.500
10	8'-8"	2'-4"	1'-1"	5'-3"	1'-2"	1'-6"	1'-6"	0.590
12	10'-4"	2'-11"	1'-2"	6'-3"	1'-4"	1'-9"	1'-9"	0.684
14	11'-8"	3'-6"	1'-4"	6'-10"	1'-7"	2'-0"	2'-0"	0.769
16	13'-1"	4'-0"	1'-6"	7'-7"	1'-9"	2'-0"	2'-0"	0.853
18	14'-7"	4'-6"	1'-8"	8'-5"	1'-9"	2'-0"	2'-0"	0.937
20	16'-5"	5'-0"	1'-10"	9'-7"	2'-0"	2'-0"	2'-0"	1.039

REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)

Wall Height "H"	Bars A1					Bars A2					Bars B					Bars C					Bars E					Bars K					D (#5) at 12" Max.		Dowel F at 12" Max.		H (#5) at 12" Max.		T (#5) at 12" Max.		U ~ 39 #5 at 10" Max		QUANTITY FOR ONE 32' PANEL		Wall Height "H"
	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Weight	No.	Weight	No.	Weight	No.	Weight	Length	Weight	Conc (CY)	REINF (LB)	
(Ft)																																									(Ft)
2	39	#4	10"	3'-2"	83	39	#4	10"	3'-2"	83	39	#4	10"	1'-11"	50	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	4	132	8	65	6	198	6	198	2'-0"	82	8.3	1227	2
4	39	#4	10"	5'-2"	135	39	#4	10"	5'-2"	135	39	#4	10"	3'-11"	103	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	8	263	10	81	6	198	6	198	6'-0"	245	10.7	1694	4
6	39	#4	10"	7'-8"	200	39	#4	10"	7'-8"	200	39	#4	10"	5'-11"	155	39	#4	10"	5'-0"	131	39	#4	10"	5'-0"	131	39	#4	10"	3'-10"	100	12	395	12	97	6	198	6	198	8'-5"	343	13.7	2148	6
8	39	#4	10"	10'-0"	261	39	#4	10"	10'-0"	261	39	#4	10"	7'-11"	207	39	#4	10"	6'-10"	179	39	#4	10"	6'-10"	179	39	#4	10"	3'-10"	100	16	526	16	129	8	263	8	263	8'-6"	346	18.9	2714	8
10	39	#4	10"	12'-7"	512	39	#4	10"	12'-7"	328	39	#4	10"	9'-9"	255	39	#5	10"	8'-2"	333	39	#4	10"	8'-2"	213	39	#4	10"	5'-4"	139	20	658	20	161	10	329	10	329	8'-6"	346	26.0	3603	10
12	39	#5	10"	15'-3"	621	39	#4	10"	15'-3"	398	39	#4	10"	11'-7"	302	39	#5	10"	9'-10"	400	39	#4	10"	9'-10"	257	39	#4	10"	6'-1"	159	24	789	23	185	11	362	11	362	8'-7"	350	34.8	4185	12
14	39	#5	10"	18'-0"	733	39	#4	10"	18'-0"	469	39	#4	10"	13'-4"	348	39	#5	10"	11'-2"	455	39	#4	10"	11'-2"	291	39	#4	10"	6'-10"	179	28	920	27	217	13	428	13	428	8'-9"	356	46.3	4824	14
16	39	#5	10"	20'-8"	841	39	#5	10"	20'-0"	841	39	#4	10"	15'-2"	396	39	#6	10"	12'-7"	738	39	#4	10"	12'-7"	329	39	#4	10"	6'-10"	179	32	1052	30	241	14	460	14	460	8'-11"	363	57.3	5900	16
18	39	#6	10"	23'-4"	1367	39	#5	10"	23'-4"	950	39	#4	10"	17'-2"	448	39	#7	10"	14'-1"	1124	39	#4	10"	14'-1"	368	39	#4	10"	6'-10"	179	36	1183	34	273	16	526	16	526	9'-1"	370	67.1	7314	18
20	39	#6	10"	26'-0"	1524	39	#6	10"	26'-0"	1524	39	#4	10"	18'-11"	493	39	#7	10"	17'-11"	1429	39	#4	10"	17'-11"	467	39	#4	10"	6'-10"	179	38	1249	36	289	17	559	17	559	9'-3"	377	82.8	8649	20



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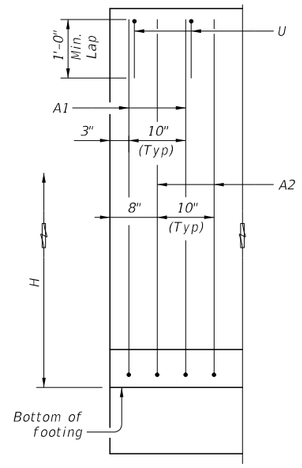
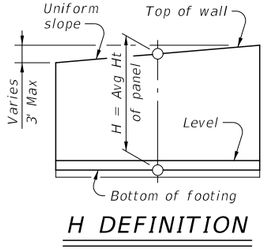
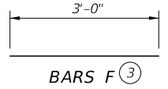


PARTIAL WALL ELEVATION

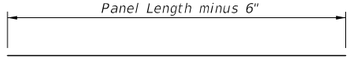
(Showing vertical reinforcing pattern in back face.)



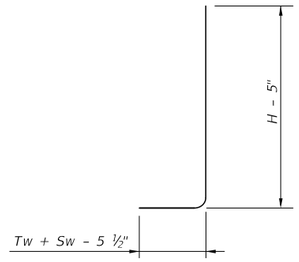
H DEFINITION



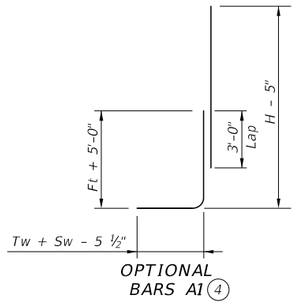
BARS F (3)



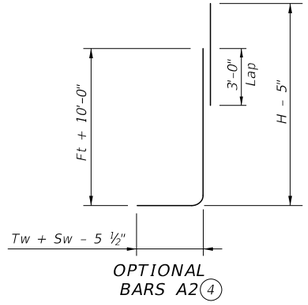
BARS D, H, and T



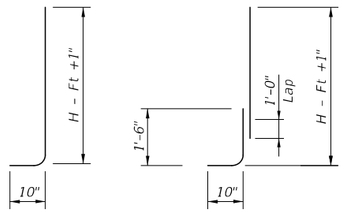
BARS A1 & A2



OPTIONAL BARS A1 (4)

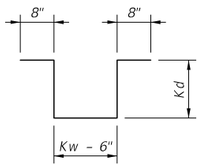


OPTIONAL BARS A2 (4)

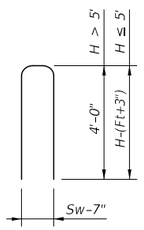


BARS B

OPTIONAL BARS B (4)



BARS K



BARS U

(1) Place vertical bars inside of horizontal bars (Typical both faces).

(2) Place footing toe against undisturbed soil.

(3) See Retaining Wall Miscellaneous Details (RW(SF)) standard for size.

(4) Optional bars splices not included in above table.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.
See Retaining Wall Miscellaneous Details (RW(SF)) standard for details and notes not shown.
These details provide designs for wall heights of 2 to 20 feet. For heights not shown, round up "H" to determine wall dimensions and reinforcing. (For example, a 9-foot high wall would use the 10-foot high dimensions and reinforcing.)
Quantities are based on "H" being average height of panel.
Retaining walls are designed to be coded as follows on Retaining Wall Layout Sheets:

C - 15 - 32
- 32: Panel length ~ 32 ft. is standard; 28 ft. requires special quantities.
- 15: Average height (H) of panel.
- C: Design A = No surcharge or slope above wall.
  Design B = No surcharge; slopes to 3:1.
  Design C = Traffic surcharge; no slope above wall.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

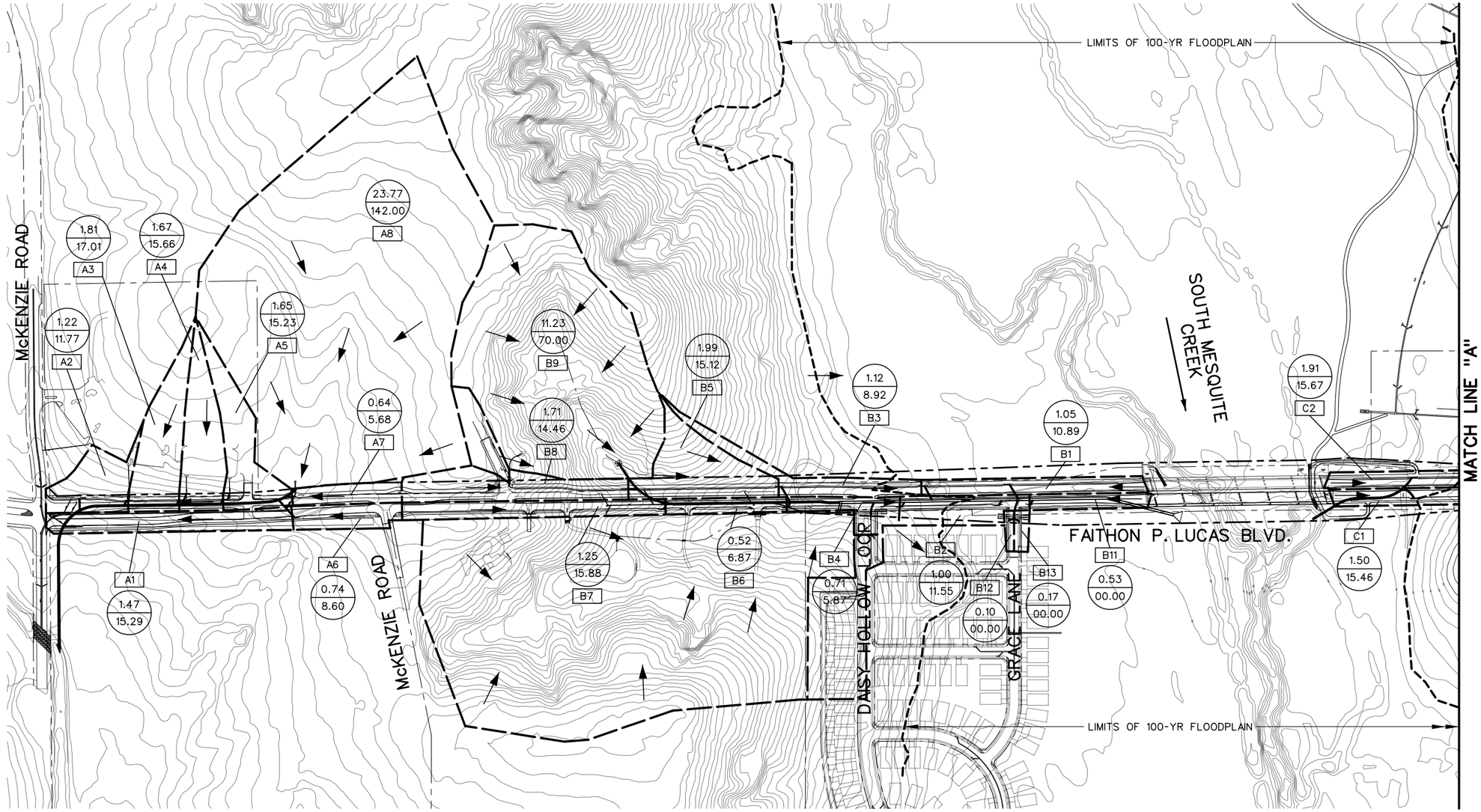
Bridge Division Standard

SPREAD FOOTING RETAINING WALL

RW(SFC)

FILE: RW-SFC-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				
8-22: Constructability update.	DIST	COUNTY		SHEET NO.
				100

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-100



DRAINAGE AREA CALCULATIONS

AREA	C	Tc	I 100	A	Q 100	REMARKS
A1	0.90	10	11.56	1.47	15.30	
A2	0.84	10	11.56	1.22	11.85	
A3	0.81	10	11.56	1.81	16.95	
A4	0.81	10	11.56	1.67	15.64	
A5	0.80	10	11.56	1.65	15.26	
A6	0.89	10	11.56	0.74	7.62	
A7	0.89	10	11.56	0.64	6.59	
A8	0.61	10	9.73	23.77	141.08	MANHOLE
B1	1.00	10	11.56	1.05	12.14	
B2	1.00	10	11.56	1.00	11.56	
B3	0.79	10	11.56	1.12	10.23	
B4	0.90	10	11.56	0.71	7.39	
B5	0.72	10	11.56	1.99	16.57	
B6	0.89	10	11.56	0.52	5.35	
B7	0.90	10	11.56	1.25	13.01	
B8	0.81	10	11.56	1.71	16.02	
B9		00	00.00	2.33	00.00	
B10		00	00.00	22.87	00.00	
B11		10	11.56	0.53	00.00	
B12		10	11.56	0.10	00.00	
B13		10	11.56	0.17	00.00	
B14	0.60	10	9.73	11.23	65.56	SPL Y-INLET
C1	1.00	10	11.56	1.50	17.34	
C2	1.00	10	11.56	1.91	22.09	

LEGEND

- D20 — DRAINAGE AREA NUMBER
- 1.00 / 10.40 — DRAINAGE AREA (ACRES) / DISCHARGE (CUBIC FEET PER SECOND)
- EXISTING STORM SEWER LINE
- PROPOSED STORM SEWER LINE
- PROPOSED DRAINAGE BOUNDARY
- ZONING BOUNDARY
- DRAINAGE FLOW ARROWS

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS — ERIC K. KRONER — 88551 — LICENSED PROFESSIONAL ENGINEER — 12/27/22

APM & Associates, Inc. Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

DRAINAGE AREA MAP

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-101	101 OF 252

xx DRAINAGE AREA D1'S CALCULATIONS, UTILIZED THE CALCULATED FLOW (Q) FOR TRIBUTARY #3 IN THE "FLOODPLAIN STUDY FOR LUCAS FARMS TRIBUTARIES OF SOUTH MESQUITE CREEK", DATED JUNE 2007.

SINCE APM & ASSOCIATES, INC. WAS NOT INVOLVED IN THE ABOVE MENTIONED STUDY OR HAD ANY RESPONSIBLE SUPERVISION OVER THE ABOVE MENTIONED STUDY. APM & ASSOCIATES, INC INCREASED THE CALCULATED Q OF 490 CFS FOR DRAINAGE AREA D1 BY 5%.

N

0 200 400
SCALE IN FEET

DRAINAGE AREA CALCULATIONS

AREA	C	Tc	I 100	A	Q 100	REMARKS
C1	1.00	10	11.56	1.50	17.34	
C2	1.00	10	11.56	1.91	22.08	
D1					515.00**	CULVERT
D1A	0.90	10	11.56	3.91	40.69	
D2	0.90	10	11.56	1.33	13.84	
D3	0.90	10	11.56	1.44	14.99	
D4	0.90	10	11.56	1.13	11.76	
D5	0.90	10	11.56	1.11	11.55	
D6	0.90	10	11.56	7.47	77.74	
D7	0.90	10	11.56	2.62	27.27	
D8	0.90	10	11.56	2.44	25.39	
D9	0.90	10	11.56	1.90	19.77	
D10	0.90	10	11.56	1.82	18.94	
D11	0.90	10	11.56	18.16	188.99	SPL "Y" INLET

LEGEND

- D20 — DRAINAGE AREA NUMBER
- 1.00 / 10.40 — DRAINAGE AREA (ACRES) / DISCHARGE (CUBIC FEET PER SECOND)
- EXISTING STORM SEWER LINE
- PROPOSED STORM SEWER LINE
- PROPOSED DRAINAGE BOUNDARY
- ZONING BOUNDARY
- DRAINAGE FLOW ARROWS

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
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REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
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12/27/22

APM & Associates, Inc.
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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE AREA MAP

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-102	102 OF 252

STORM SEWER COMPUTATIONS

LINE	RUNOFF COLLECTION POINT			DISTANCE BETWEEN COLLECTION POINTS	INCREMENTAL DRAINAGE AREA				ACCUMULATED "CA"	TIME AT UPSTREAM STATION (MINUTES)	DESIGN STORM FREQUENCY (YEARS)	INTENSITY "I" (INCHES/HR)	STORMWATER RUNOFF "Q" (CFS)	SLOPE OF HYDRAULIC GRADIENT (FT/FT)	SELECTED STORM SEWER SIZE (INCHES)	VELOCITY IN SEWER "V" (FPS)	HEAD LOSS COEFFICIENT (K)	VELOCITY HEAD LOSS UPSTREAM (FEET)	FLOW TIME IN SEWER DISTANCE / V x 60	TIME AT DOWNSTREAM STATION (MINUTES)	HGL ELEVATION		REMARKS
	LOCATION	DOWNSTREAM STATION	UPSTREAM STATION		DRAINAGE AREA NUMBER	DRAINAGE AREA (ACRES)	RUNOFF COEFFICIENT "C"	INCREMENTAL "CA"													DOWNSTREAM STATION	UPSTREAM STATION	
LINE A	A1	0+02.27	4+40.38	438.11	A1	32.95	0.90	1.32	22.20	16.35	100	9.39	208.46	0.0064	60	10.62	0.46	0.00	0.23	16.58	443.30	446.06	
	A2 MH	4+40.38	5+24.37	83.99	A2	31.48	0.84	1.02	20.88	16.13	100	9.44	197.08	0.0057	60	10.62	0.28	-0.23	0.23	16.35	446.06	446.63	
	A3	5+24.37	6+81.28	156.91	A3	30.26	0.81	1.47	19.85	15.90	100	9.49	188.40	0.0092	54	11.95	0.57	0.00	0.26	16.13	448.09	449.57	
	A4	6+81.28	8+67.28	186.00	A4	28.45	0.81	1.35	18.39	15.64	100	9.57	175.96	0.0080	54	11.95	0.48	0.00	0.22	15.90	449.57	451.06	
	A5	8+67.28	10+22.26	154.98	A5	26.78	0.80	1.31	17.03	15.43	100	9.62	163.87	0.0069	54	11.95	0.45	0.00	0.27	15.64	451.06	452.14	
	A6	10+22.26	12+27.72	205.46	A6	25.14	0.89	0.74	15.72	15.15	100	9.70	152.50	0.0060	54	11.95	0.14	0.00	0.06	15.43	452.14	453.31	
	A7	12+27.72	12+62.10	34.38	A7	24.31	0.89	0.49	14.98	15.09	100	9.73	145.79	0.0103	48	11.97	0.12	0.00	0.09	15.15	453.32	453.79	
	A8	12+62.10	13+35.65	73.55	A8	23.76	0.61	14.49	14.49	15.00	100	9.73	141.02	0.0096	48	11.97	0.00	0.00	-	15.09	453.79	454.40	
LINE B	B1	1+51.89	7+53.89	602.00	B1	21.10	1.00	1.05	15.08	17.44	100	9.12	137.53	0.0017	66	11.83	0.29	0.00	0.39	17.83	401.57	402.58	
	B2 MH	7+53.89	8+14.62	60.72	B2	20.05	1.00	1.11	14.03	17.05	100	9.22	129.36	0.0015	66	11.83	0.32	-0.02	0.39	17.44	402.58	402.61	
	B3	8+14.62	10+57.43	242.82	B3	18.94	0.79	0.77	12.92	16.66	100	9.31	120.29	0.0037	54	11.95	0.15	0.00	0.14	17.05	402.21	405.26	
	B4	10+57.43	11+54.42	96.99	B4	17.97	0.90	0.50	12.15	16.52	100	9.34	113.52	0.0033	54	11.95	0.24	0.00	0.57	16.66	405.26	405.59	
	B5 & B6 MH	11+54.42	15+60.07	405.65	B5 & B6	17.41	0.77	1.91	11.65	15.95	100	9.49	110.56	0.0032	54	11.95	0.45	0.00	0.28	16.52	405.59	406.87	
	MH	15+60.07	17+59.68	199.61	-	14.93	0.00	0.00	9.74	15.68	100	9.57	93.99	0.0023	54	11.95	0.09	0.00	0.33	15.95	408.53	408.99	
	B7 MH	17+59.68	19+95.79	236.11	B7	14.93	0.90	1.38	9.74	15.35	100	9.65	93.99	0.0023	54	11.95	0.50	0.12	0.21	15.68	416.72	417.26	
	B8 MH	19+95.79	21+42.48	146.69	B8	13.40	0.81	1.25	8.36	15.14	100	9.70	81.12	0.0148	36	11.61	0.41	0.53	0.14	15.35	421.87	424.04	
	B9	21+42.48	22+24.50	82.02	B9	11.86	0.60	7.12	7.12	15.00	100	9.73	69.24	0.0108	36	10.03	0.00	0.00	-	15.14	428.27	429.26	
LINE C	C1 MH	1+65.80	5+10.63	344.83	C1	3.00	1.00	1.49	3.00	10.08	100	11.56	34.68	0.0012	42	11.97	0.24	0.21	0.08	10.16	401.57	401.98	
	C2	5+10.63	5+56.30	45.67	C2	1.51	1.00	1.51	1.51	10.00	100	11.56	17.46	0.0018	30	11.40	0.00	0.00	-	10.08	403.90	404.01	
LINE D	MH	0+98.79	2+00.00	101.21	-	24.09	0.00	0.00	19.87	12.76	100	10.41	213.36	0.0067	60	11.50	0.47	0.00	0.95	13.71	415.32	416.00	
	D5	2+00.00	8+56.89	656.89	D5	24.09	0.90	1.02	19.87	11.81	100	10.74	213.36	0.0067	60	11.50	0.45	0.00	0.03	12.76	419.73	424.14	
	D4 MH	8+56.89	8+78.25	21.36	D4	22.96	0.90	1.01	18.85	11.78	100	10.78	203.19	0.0061	60	11.50	0.27	0.00	0.76	11.81	424.14	424.27	
	MH	8+78.25	14+00.00	521.75	-	21.84	0.00	0.00	17.84	11.02	100	11.07	205.35	0.0062	60	11.50	0.27	0.00	0.87	11.78	427.11	430.35	
	D6 MH	14+00.00	20+00.90	600.90	D6	21.84	0.90	1.71	17.84	10.15	100	11.51	205.35	0.0062	60	11.50	0.77	0.00	0.11	11.02	431.90	435.63	
	D7	20+00.90	20+79.60	78.70	D7	19.94	0.90	1.61	16.13	10.04	100	11.56	186.47	0.0051	60	11.50	0.68	0.00	0.04	10.15	437.17	437.58	
	D8	20+79.60	21+04.32	24.72	D8	18.15	0.80	14.52	14.52	10.00	100	11.56	167.85	0.0042	60	11.50	0.00	0.00	-	10.04	437.58	437.68	

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM SEWER COMPUTATIONS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-103	103 OF 252

INLET COMPUTATIONS

LINE	INLET NO.	LOCATION	DRAINAGE AREA NO.	INLET TYPE	Q (CFS)	CARRYOVER (CFS)	Qa (CFS)	Z	Z/N (N=0.0175)	N	S (FT/FT)	Y (FT)	W (FT)	A (FT)	q/Lr (CFS/FT)	Lr (FT)	La (FT)	La/Lr	A/Y	Qi/Qa	Qi (CFS)	Qa-Qi (CFS)	CARRYOVER TO:	REMARKS
LINE A	A1	11+30 (RT)	A1	SAG	15.29	0.00	15.29	48	2747	0.0175	0.00	0.39	18.83	0.33	1.89	8.08	20	2.47	0.84	1.00	15.29	0.00	-	SAG INLET
	A2	11+42 (LT)	A2	SAG	11.77	3.04	14.81	48	2747	0.0175	0.00	0.38	18.43	0.33	1.86	7.97	20	2.51	0.86	1.00	14.81	0.00	-	SAG INLET
	A3	13+06.54 (LT)	A3	GRADE	17.01	1.98	18.99	48	2747	0.0175	0.0180	0.41	19.65	0.33	0.70	27.27	20	0.73	0.81	0.84	15.94	3.04	A2	
	A4	14+91.34 (LT)	A4	GRADE	15.66	1.17	16.83	48	2747	0.0175	0.0195	0.38	18.50	0.33	0.67	25.04	20	0.80	0.86	0.88	14.85	1.98	A3	
	A5	16+46.07 (LT)	A5	GRADE	15.23	0.00	15.23	48	2747	0.0175	0.0195	0.37	17.82	0.33	0.66	23.15	20	0.86	0.89	0.92	14.06	1.17	A4	
	A6	18+95.63 (RT)	A6	GRADE	8.60	0.00	8.60	48	2747	0.0175	0.0195	0.30	14.39	0.33	0.59	14.62	20	1.37	1.10	1.00	8.60	0.00	-	
	A7	18+87.11 (LT)	A7	GRADE	5.68	0.00	5.68	48	2747	0.0175	0.0195	0.26	12.31	0.33	0.55	10.38	20	1.93	1.29	1.00	5.68	0.00	-	
LINE B	B1	44+06.77 (LT)	B1	SAG	12.14	0.00	12.14	48	2747	0.0175	0.00	0.34	16.43	0.33	1.70	7.14	20	2.80	0.97	1.00	12.14	0.00	-	SAG INLET
	B2	43+67.70 (RT)	B2	SAG	12.83	0.00	12.83	48	2747	0.0175	0.00	0.35	16.83	0.33	1.73	7.41	20	2.70	0.94	1.00	12.83	0.00	-	SAG INLET
	B3	41+05.90 (LT)	B3	GRADE	8.92	2.47	11.39	48	2747	0.0175	0.0080	0.39	18.88	0.33	0.68	16.74	20	1.19	0.84	1.00	11.39	0.00	-	
	B4	40+24.22 (RT)	B4	GRADE	5.87	0.00	5.87	48	2747	0.0175	0.0080	0.31	14.73	0.33	0.60	9.86	20	2.03	1.08	1.00	5.87	0.00	-	
	B5	36+01.64 (LT)	B5	GRADE	15.12	1.73	16.86	48	2747	0.0175	0.0297	0.36	17.11	0.33	0.64	26.21	20	0.76	0.93	0.85	14.39	2.47	B3	
	B6	36+22.94 (RT)	B6	GRADE	6.87	2.46	9.32	48	2747	0.0175	0.0254	0.29	14.11	0.33	0.58	16.00	20	1.25	1.12	1.00	9.32	0.00	-	
	B7	31+85.37 (RT)	B7	GRADE	15.88	0.00	15.88	48	2747	0.0175	0.0500	0.32	15.17	0.33	0.60	26.29	20	0.76	1.05	0.85	13.42	2.46	B7	
	B8	30+58.22 (LT)	B8	GRADE	14.46	0.00	14.46	48	2747	0.0175	0.0560	0.30	14.34	0.33	0.59	24.62	20	0.81	1.11	0.88	12.73	1.73	B5	
LINE C	C1	58+38.95 (RT)	C1	SAG	17.34	0.00	17.22	48	2747	0.0175	0.00	0.43	20.43	0.33	2.03	8.51	20	2.35	0.78	1.00	17.22	0.00	-	SAG INLET
	C2	58+38.91 (LT)	C2	SAG	17.57	0.00	17.46	48	2747	0.0175	0.00	0.43	20.83	0.33	2.06	8.48	20	2.36	0.76	1.00	17.46	0.00	-	SAG INLET
LINE D	D2	68+73.19 (LT)	D2	SAG	13.84	0.00	15.52	48	2747	0.0175	0.00	0.40	19.23	0.33	1.93	8.06	20	2.48	0.83	1.00	15.52	0.00	-	SAG INLET
	D3	68+91.07 (RT)	D3	SAG	14.98	0.00	15.19	48	2747	0.0175	0.00	0.39	18.83	0.33	1.89	8.03	20	2.49	0.84	1.00	15.19	0.00	-	SAG INLET
	D4	76+93.95 (RT)	D5	GRADE	11.78	0.00	11.78	48	2747	0.0175	0.0083	0.40	18.99	0.33	0.68	17.26	20	1.16	0.84	1.00	11.78	0.00	-	
	D5	76+93.95 (LT)	D4	GRADE	11.60	0.00	11.60	48	2747	0.0175	0.0083	0.39	18.89	0.33	0.68	17.06	20	1.17	0.84	1.00	11.60	0.00	-	
	D6	88+98.86 (RT)	D6	SAG	19.80	0.00	19.80	48	2747	0.0175	0.00	0.47	22.44	0.33	2.20	9.02	20	2.22	0.71	1.00	19.80	0.00	-	SAG INLET
	D7	89+15.86 (LT)	D7	SAG	18.60	0.00	18.60	48	2747	0.0175	0.00	0.45	21.63	0.33	2.13	8.75	20	2.29	0.73	1.00	18.60	0.00	-	SAG INLET

Y - INLET COMPUTATIONS

INLET NO.	LOCATION	SIZE	Q (CFS)	LENGTH (FT)	CAL'C HEAD (FT)	REMARKS
B9	30+36.47 128.06' LT	2 - 3 x 3	69.24	9.0	1.87	DESIGN 50% CLOGGED
B9	30+36.47 128.06' LT	2 - 3 x 3	69.24	18.0	1.18	DESIGN UNCLOGGED
D8	88+80.85 72.50' LT	2 - 3 x 3	192.84	9.0	3.38	DESIGN 50% CLOGGED
D8	88+80.85 72.50' LT	2 - 3 x 3	192.84	18.0	2.13	DESIGN UNCLOGGED

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

INLET COMPUTATIONS

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-104	104 OF 252

ttanos
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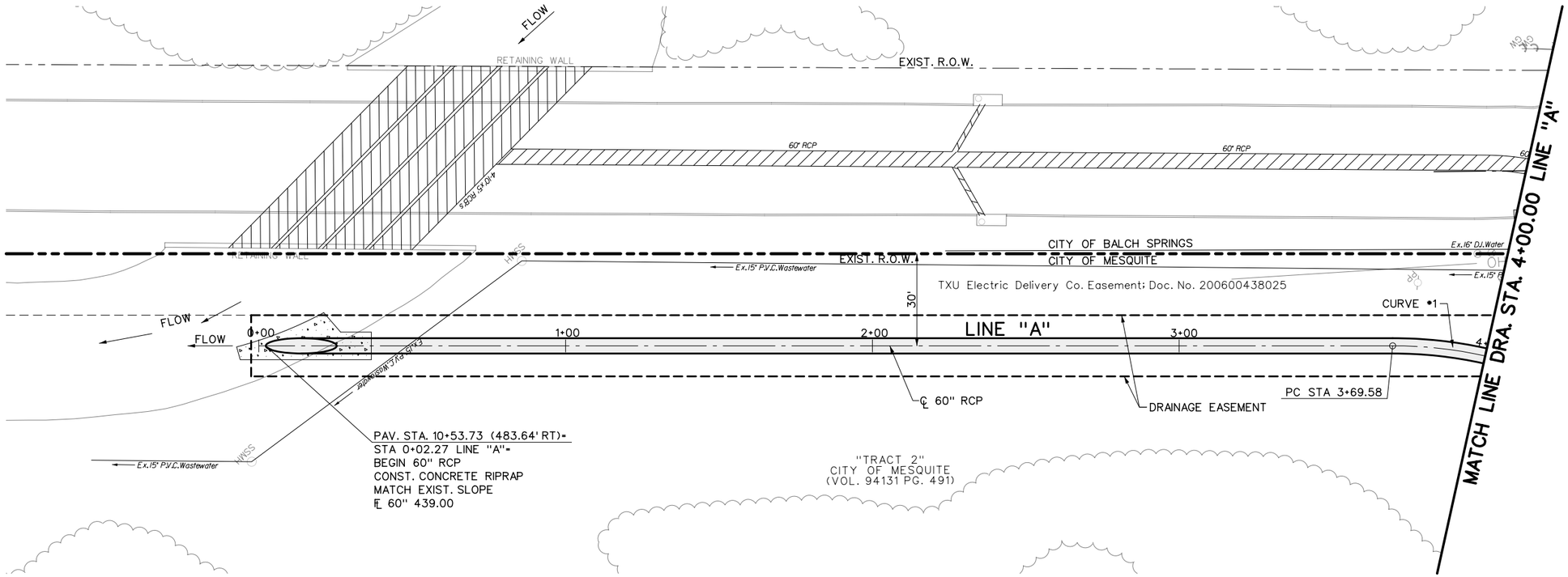
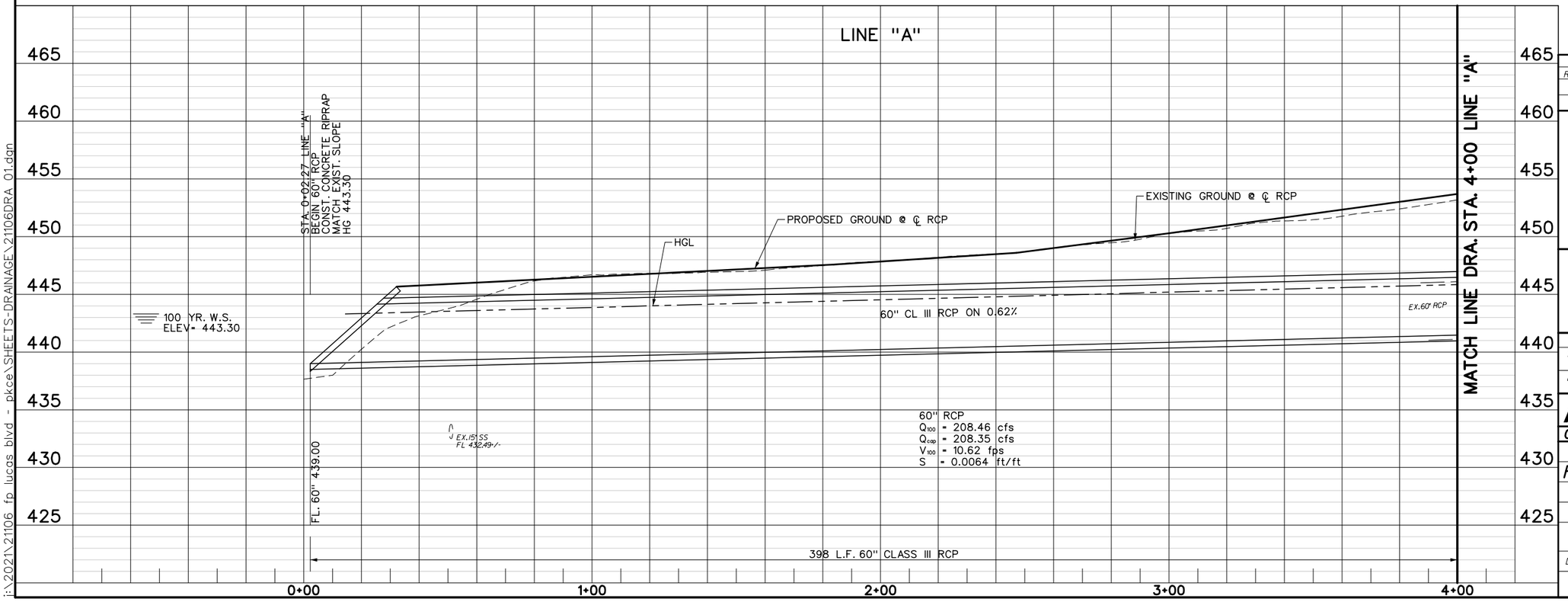
1/4/2023

DRAINAGE CENTER LINE
CURVE #1 DATA

PI STA.	5+08.43
N	6,950,440.7340
E	2,559,368.8162
Δ	89° 31' 37" (RT)
R	140.00'
Lc	218.76'
T	138.85'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET





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REVISIONS

REV NO.	DATE	DESCRIPTION	BY
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2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "A"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-105	105 OF 252

ttanos
4:00:29 PM
1/4/2023

McKENZIE ROAD
MERCURY RD.
CITY OF MESQUITE
CITY OF BALCH SPRINGS
℄ McKENZIE RD.
FAITHON P. LUCAS BLVD.
LINE "A"
"TRACT 1" MESQUITE CITY OF (VOL. 94131 PG. 491)
"TRACT 2" CITY OF MESQUITE (VOL. 94131 PG. 491)

INLET A2
PAV. STA. 11+42 LT
℄ 20' REC. INLET
T.C. 453.66
℄ 449.66

INLET A3
PAV. STA. 13+06.54 LT
℄ 20' REC. INLET
T.C. 455.12
℄ 451.12

CONN. TO EXIST. 8" PVC MATCH ℄
CONN. 8" PVC TO INLET ℄ 451.19
PROP. 12' CONC. SIDEWALK
PROP. R.O.W.
EXIST. R.O.W.
PROP 18" WATER
LAT "A-3" 24" RCP
LAT "A-2" 24" RCP
LAT "A-1" 24" RCP
PT STA 5+96.83
CURVE #1
℄ 54" RCP
℄ 60" RCP
PAV. STA. 12+89.70 (22.50' LT)
STA 6+81.28 LINE "A" -
STA 0+00 LAT "A-3"
PAV. STA. 10+74.84 (48.67' RT)
STA 4+40.38 LINE "A" -
STA 0+00 LAT "A-1"
PAV. STA. 11+34.99 (8.14' LT)
STA 5+24.37 LINE "A" -
STA 0+00 LAT "A-2"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 453.91
2" STREET LIGHTING CONDUIT
PROP 8" WASTEWATER
PROP. 6' CONC. SIDEWALK
DRAINAGE EASEMENT
INLET A1
PAV. STA. 11+30 RT
℄ 20' REC. INLET
T.C. 453.77
℄ 449.77

MATCH LINE DRA. STA. 4+00.00 LINE "A"
MATCH LINE DRA. STA. 8+40.00 LINE "A" - PAV. STA. 14+48.42

DRAINAGE CENTER LINE CURVE #1 DATA
PI STA. 5+08.43
N 6,950,440.7340
E 2,559,368.8162
Δ 89° 31' 37" (RT)
R 140.00'
Lc 218.76'
T 138.85'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

LINE "A"

STA. 4+40.38 LINE "A"
STA. 0+00 LAT. "A-1"
HG 446.06

STA. 5+24.37 LINE "A"
STA. 0+00 LAT. "A-2"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 453.91
HG 446.63
HG 448.09

STA. 6+81.28 LINE "A"
STA. 0+00 LAT. "A-3"
HG 449.57

EXISTING GROUND @ ℄ RCP
PROPOSED PAVEMENT @ ℄ RCP
HGL

60" CL III RCP ON 0.62%
54" CL III RCP ON 0.93%

PROP.8" SS FL 438.97

60" RCP
Q_{100} = 208.46 cfs
Q_{cap} = 208.35 cfs
V_{100} = 10.62 fps
S = 0.0064 ft/ft

60" RCP
Q_{100} = 197.08 cfs
Q_{cap} = 208.35 cfs
V_{100} = 10.62 fps
S = 0.0057 ft/ft

54" RCP
Q_{100} = 188.40 cfs
Q_{cap} = 189.64 cfs
V_{100} = 11.95 fps
S = 0.0092 ft/ft

54" RCP
Q_{100} = 175.96 cfs
Q_{cap} = 189.64 cfs
V_{100} = 11.95 fps
S = 0.0080 ft/ft

FL 60" 441.72
FL 24" 443.22
FL 60" 442.24
FL 24" 447.38
FL 54" 444.88
FL 54" 446.33
FL 24" 447.58

123 L.F. 60" CLASS III RCP
314 L.F. 54" CLASS III RCP

470 465 460 455 450 445 440 435 430
4+00 5+00 6+00 7+00 8+00

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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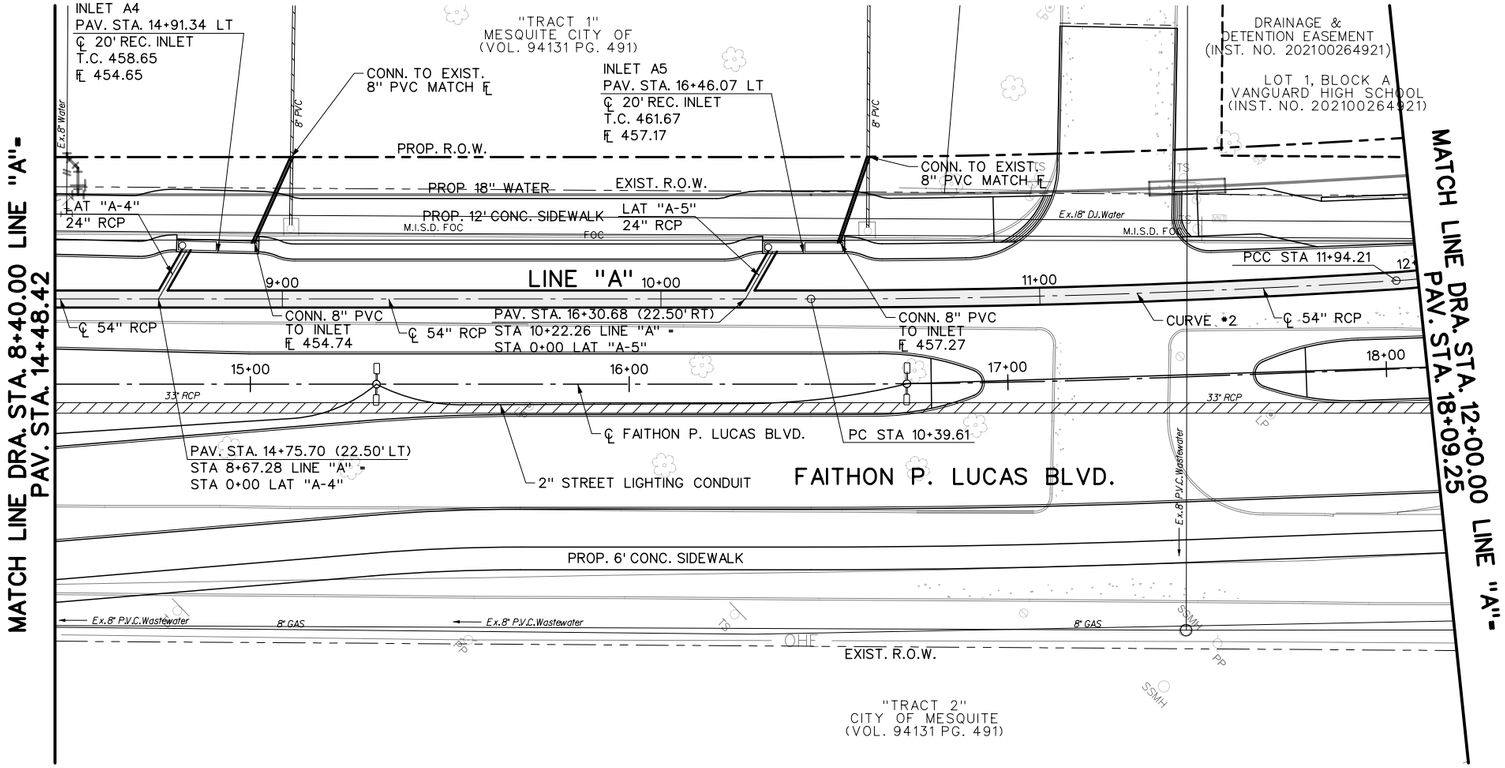
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "A"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-106	106 OF 252

i:\2021\21106 fp lucas blvd - pkce\SHEETS-DRAINAGE\21106DRA 02.dgn



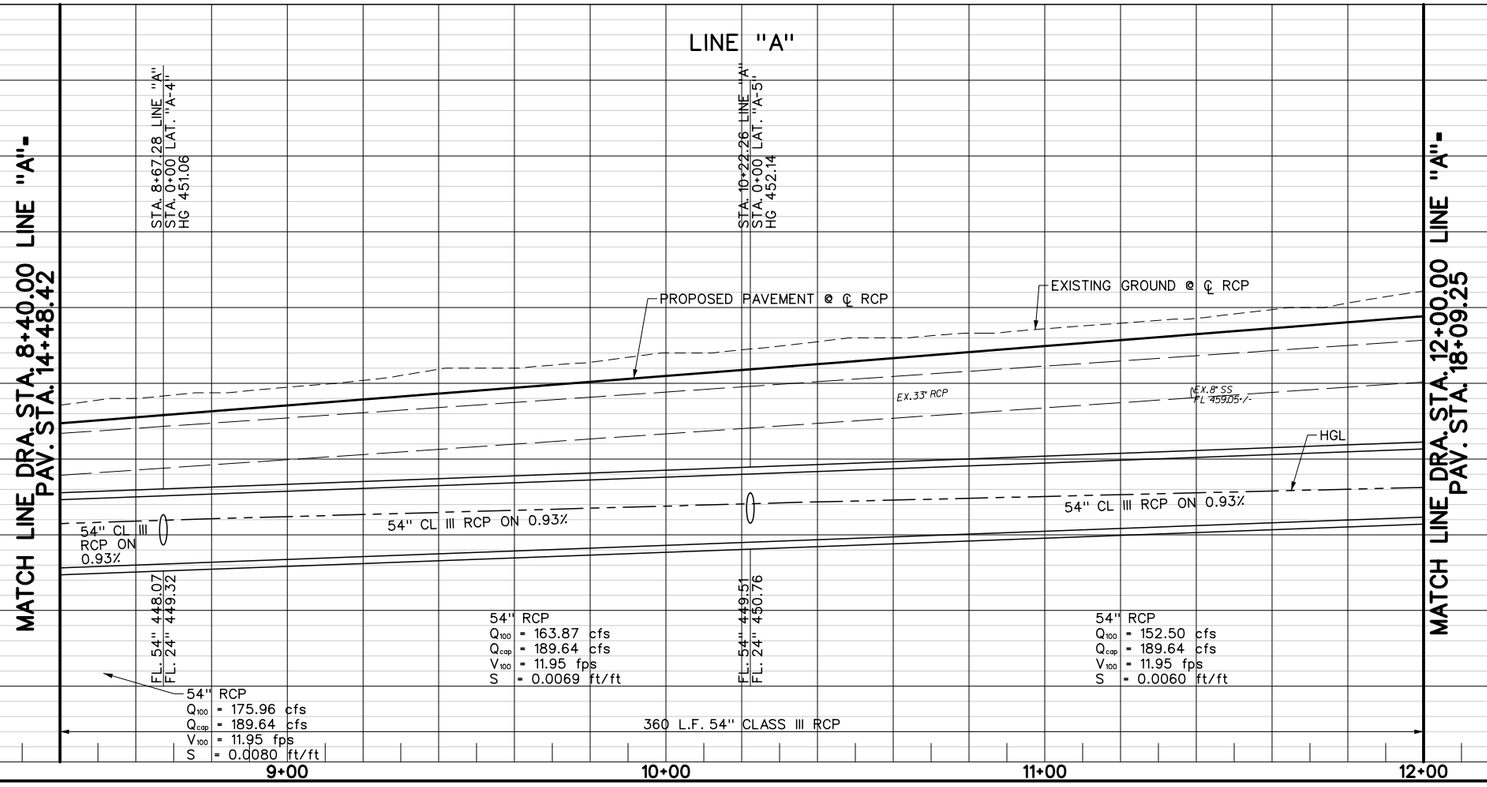
DRAINAGE CENTER LINE
CURVE #2 DATA

PI STA.	11+16.94
N	6,950,921.0796
E	2,559,832.2415
Δ	3° 35' 15" (LT)
R	2469.00'
Lc	154.60'
T	77.32'

DRAINAGE CENTER LINE
CURVE #3 DATA

PI STA.	12+44.41
N	6,951,018.2132
E	2,559,914.8657
Δ	39° 27' 03" (LT)
R	140.00'
Lc	95.81'
T	50.20'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET



REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "A"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-107	107 OF 252

DRAINAGE & DETENTION EASEMENT
(INST. NO. 202100264921)

LOT 1, BLOCK A
VANGUARD HIGH SCHOOL
(INST. NO. 202100264921)

PT STA 12+90.61

PAV. STA. 18+68.30 (41.06' LT)
STA 12+62.10 LINE "A" -
STA 0+00 LAT "A-7"

PAV. STA. 18+97.65 (60.85' LT)
STA 12+97.98 LINE "A" -
CONST. 7'x4' TYPE "B" MANHOLE
RIM 468.64

MATCH LINE DRA. STA. 12+00.00 LINE "A"-
PAV. STA. 18+09.25

PROP. R.O.W.
PROP 18" WATER
15' WATER EASEMENT
Ex.12" Water
LAT "A-7"
24" RCP
CURVE #3
EXIST. R.O.W.
PROP. 12' CONC. SIDEWALK
℄ 54" RCP
Ex.18" DJ.Water
FOC
M.I.S.D. FOC
INLET A7
PAV. STA. 18+87.11 LT
℄ 20' REC. INLET
T.C. 466.39
℄ 461.89
℄ 48" RCP
33" RCP
LINE "A"
℄ FAITHON P. LUCAS BLVD.
19+00
20+00
21+00
PAV. STA. 18+36.55 (28.11' LT)
STA 12+27.72 LINE "A" -
STA 0+00 LAT "A-6"
2" STREET LIGHTING CONDUIT
FAITHON P. LUCAS BLVD.
Ex.8" P.V.C.Wastewater
LAT "A-6"
24" RCP
PROP. 6' CONC. SIDEWALK
INLET A6
PAV. STA. 18+95.63 RT
℄ 20' REC. INLET
T.C. 466.53
℄ 462.53
GUARD RAIL
METAL GUARDRAIL
8" GAS
Ex.8" P.V.C.Wastewater
Ex.8" P.V.C.Wastewater
SSMH
OHE
OHE
EXIST. R.O.W.
"TRACT 2"
CITY OF MESQUITE
(VOL. 94131 PG. 491)

DRAINAGE CENTER LINE
CURVE #3 DATA
PI STA. 12+62.90
N 6,951,031.9269
E 2,559,915.0894
Δ 39° 12' 35" (LT)
R 140.00'
Lc 95.81'
T 49.87'

N

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

LINE "A"

MATCH LINE DRA. STA. 12+00.00 LINE "A"-
PAV. STA. 18+09.25

STA. 12+27.72 LINE "A"
STA. 0+00 LAT. "A-6"
HG 453.31
HG 453.32
STA. 12+32.72 LINE "A"
END 54" RCP
BEGIN 48" RCP
STA. 12+62.10 LINE "A"
STA. 0+00 LAT. "A-7"
HG 453.79
STA. 12+97.98 LINE "A"
CONST. 7'x4'
TYPE "B" MANHOLE
RIM 468.64
HG 446.63
HG 448.09

PROPOSED PAVEMENT @ ℄ RCP
EXISTING GROUND @ ℄ RCP
EX.M.I.S.D.FIBER
EX.33" RCP
PROP.18" WATER
FL 459.64
EX.18" WATER TO BE ABANDONED
HGL
54" CL III RCP ON 0.93%
48" CL III RCP ON 1.11%
48" CL III RCP ON 1.11%

48" RCP
Q_{100} = 145.79 cfs
Q_{cap} = 149.97 cfs
V_{100} = 11.97 fps
S= 0.0103 ft/ft

48" RCP
Q_{100} = 141.02 cfs
Q_{cap} = 149.97 cfs
V_{100} = 11.97 fps
S= 0.0096 ft/ft

FL. 54" 451.42
FL. 24" 452.67
FL. 54" 451.47
FL. 48" 451.97
FL. 48" 452.30
FL. 24" 453.30
FL. 48" 452.71
FL. EX. 33" 462.57+/-

54" RCP
Q_{100} = 152.50 cfs
Q_{cap} = 189.64 cfs
V_{100} = 11.95 fps
S = 0.0060 ft/ft

33 L.F. 54" CLASS III RCP
64 L.F. 48" CLASS III RCP

480 475 470 465 460 455 450 445 440
12+00 13+00 14+00

REVISIONS

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BENCHMARKS & CONTROL POINTS

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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "A"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-108	108 OF 252

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1/4/2023

PAV. STA. 30+36.47 (128.06' LT)
STA 22+24.69 LINE "B"
END 36" RCP
CONST. DBL SPECIAL 'Y' INLET B14
THROAT 428.00
℄ 423.50

℄ EXISTING DITCH

DENSE TREES

LOT 1, BLOCK A
VANGUARD HIGH SCHOOL
(INST. NO. 202100264921)

"TRACT 1"
MESQUITE CITY OF
(VOL. 94131 PG. 491)

DENSE TREE

INLET B8
PAV. STA. 30+58.22 LT
℄ 20' REC. INLET
T.C. 440.95
℄ 436.45

22+00

PT STA 21+59.13

PROP. R.O.W.

℄ 36" RCP

PAV STA 31+02.15 (36.17' LT)
STA. 21+11.42 LINE "B"
STA. 0+00 LAT. "B-8"

PAV STA 32+03.48 (15.73' RT)
STA 19+95.98 LINE "B" -
STA 0+00 LAT "B-7"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 433.11

LAT "B-8"
24" RCP

PROP. 12' CONC. SIDEWALK

EXIST. R.O.W.

21+00

8" GAS (ABANDONED)

Ex.12" DI.Water

FOC
M.I.S.D. FOC

CURVE #4

30+00
31+00
32+00
33+00

℄ 36" RCP

2" STREET LIGHTING CONDUIT

PC STA 19+58.83

20+00

℄ 54" RCP

19+00

℄ FAITHON P. LUCAS BLVD.

18" RCP
33" RCP

Ex.8" DI.Water

FAITHON P. LUCAS BLVD.

LINE "B"

LAT "B-7"
24" RCP

Ex.10" P.V.C.Wastewater

PROP. 6' CONC. SIDEWALK

INLET B7
PAV. STA. 31+85.37 RT
℄ 20' REC. INLET
T.C. 434.16
℄ 429.66

EXIST. R.O.W.

MATCH LINE DRA. STA. 18+20.00 LINE "B"-
PAV. STA. 33+79.06

DRAINAGE CENTER LINE
CURVE #4 DATA
PI STA. 20+68.48
N 6,951,913.6755
E 2,560,827.2866
Δ 57° 19' 36" (RT)
R 200.00'
Lc 200.11'
T 109.33'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

LINE "B"

EXISTING GROUND @ ℄ RCP

PROPOSED PAVEMENT @ ℄ RCP

STA. 22+24.69 LINE "B"
END 36" RCP
CONST. DBL SPECIAL
'Y' INLET B14
THROAT 428.00
HG 429.16

STA. 21+11.42 LINE "B"
STA. 0+00 LAT. "B-8"
HG 000.00

STA. 19+95.98 LINE "B"
STA. 0+00 LAT. "B-7"
CONST. 6'x4' TYPE "B"
MANHOLE
RIM 433.11
HG 421.87
HG 417.26

18" RCP
EX.12" WATER
33" RCP
HGL

WS_{100} (50% CLOGGED) = 432.44
WS_{100} (FULLY OPEN) = 431.75

36" CL III RCP ON 1.36%
36" CL IV RCP ON 1.36%
36" CL IV RCP ON 1.36%
54" CL IV RCP ON 0.93%
54" CL III RCP ON 0.93%

FL. 36" 423.50

36" RCP
Q_{100} = 69.24 cfs
Q_{cap} = 70.59 cfs
V_{100} = 10.03 fps
S = 0.0108 ft/ft

FL. 36" 421.96
FL. 24" 422.46

36" RCP
Q_{100} = 81.12 cfs
Q_{cap} = 81.69 cfs
V_{100} = 11.61 fps
S = 0.0148 ft/ft

FL. 36" 420.38
FL. 24" 425.54
FL. 54" 416.45

54" RCP
Q_{100} = 93.99 cfs
Q_{cap} = 189.64 cfs
V_{100} = 11.95 fps
S = 0.0023 ft/ft

44 L.F. 36" CLASS III RCP
182 L.F. 36" CLASS IV RCP
54 L.F. 54" CLASS IV RCP
120 L.F. 54" CLASS III RCP

MATCH LINE DRA. STA. 18+20.00 LINE "B"-
PAV. STA. 33+79.06

22+00 21+00 20+00 19+00

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "B"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-109	109 OF 252

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"TRACT 1"
MESQUITE CITY OF
(VOL. 94131 PG. 491)

PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

PROP. R.O.W.

DENSE TREES

PAV. STA. 34+39.57 (18.70' RT)
STA 17+59.68 LINE "B" -
CONST. 6'x4' TYPE "B" MANHOLE
RIM 421.51

INLET B5
PAV. STA. 36+01.64 LT
℄ 20' REC. INLET
T.C. 415.76
FL 411.76

PAV. STA. 36+39.00 (18.28' RT)
STA 15+60.26 LINE "B" -
STA 0+00 LAT "B-5" & "B-6"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 414.55

PAV. STA. 38+18.25 (20.60' RT)
STA 13+81.45 LINE "B" -
STA 0+00 LAT "B-10"
CONST. 8'x8' JUNCTION BOX
RIM 411.74

EXIST. R.O.W.

PROP. 12' CONC. SIDEWALK

Ex.12" DI.Water
8" GAS (ABANDONED)
Ex.12" DI.Water
FOC
Ex.12" Water
LAT "B-5"
24" RCP
M.I.S.D. FOC
2" STREET LIGHTING CONDUIT
FAITHON P. LUCAS BLVD.
℄ FAITHON P. LUCAS BLVD.
33" RCP
Ex.12" DI.Water (ABANDONED)
34+00
35+00
36+00
37+00 PT STA 14+61.82
38+00
℄ 7'x6' RCB
18+00
℄ 54" RCP
17+00
LINE "B"
16+00
15+00
℄ 54" RCP
CURVE •1
14+00
CURVE •2
PRC STA 14+39.43
18" RCP
℄ 54" RCP
LAT "B-6"
24" RCP
PC STA 14+17.03
LAT "B-10"
6'x6' RCB
Ex.10" P.V.C.Wastewater
2" GAS
MB
CONCRETE
Tele
SSMH
TS
PROP. 6' CONC. SIDEWALK
36" RCP
18" RCP
27" RCP
R.O.W.
EXIST. R.O.W.
PROP. R.O.W.
PROP. 30" RCP
DENSE TREES
GRAVEL
DENSE TREES

PAV. STA. 34+93.07 (57.59' RT)
END 30" RCP
CONST. TxDOT SETP-PD
(4:1 SIDE SLOPE)
℄ 30" RCP 413.50

PAV. STA. 35+52.47 (58.36' RT)
BEGIN 30" RCP
CONST. TxDOT SETP-PD
(4:1 SIDE SLOPE)
℄ 30" RCP 412.06

INLET B6
PAV. STA. 36+22.94 RT
℄ 20' REC. INLET
T.C. 415.18
FL 411.18

PAV. STA. 38+10.50 (57.88' RT)
STA. 0+38.17
CONST. TxDOT PW (3:1)
W/ 1' EXTENSION
℄ 402.10

BILL BLAIR
(VOL. 83029 PG. 1983)

KLLB AIG, LLC
(INST. NO. 202200041048)

MATCH LINE DRA. STA. 18+20.00 LINE "B"-
PAV. STA. 33+79.06

MATCH LINE DRA. STA. 13+60.00 LINE "B"-
PAV. STA. 38+39.67

DRAINAGE CENTER LINE
CURVE •1 DATA
PI STA. 14+28.07
N 6,952,371.3265
E 2,561,274.4840
Δ 10° 15' 59" (RT)
R 125.00'
Lc 22.40'
T 11.23'

DRAINAGE CENTER LINE
CURVE •2 DATA
PI STA. 14+50.47
N 6,952,358.1978
E 2,561,256.2631
Δ 10° 15' 59" (RT)
R 125.00'
Lc 22.40'
T 11.23'

N

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

LINE "B"

STA. 17+59.68 LINE "B"
CONST. 6'x4' TYPE "B"
MANHOLE
RIM 421.51
HG 416.72
HG 408.99

STA. 15+60.26 LINE "B"
STA. 0+00 LAT. "B-5" & "B-6"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 414.55
HG 408.57
HG 406.87

STA. 13+81.45 LINE "B"
STA. 0+00 LAT. "B-10"
CONST. 8'x8' JUNCTION BOX
RIM 411.74
HG 40
HG 40

PROPOSED PAVEMENT @ ℄ RCP
EXISTING GROUND @ ℄ RCP
HGL

54" CL III RCP ON 0.93%
33" RCP
36" RCP
54" CL III RCP ON 0.93%
54" CL III RCP ON 0.93%
54" CL III RCP ON 0.93%
Ex.12" WATER (ABANDONED)
7'x6' RCB ON 0.93%

54" RCP
Q_{100} = 93.99 cfs
Q_{cap} = 189.64 cfs
V_{100} = 11.95 fps
S = 0.0023 ft/ft

54" RCP
Q_{100} = 93.99 cfs
Q_{cap} = 189.64 cfs
V_{100} = 11.95 fps
S = 0.0023 ft/ft

54" RCP
Q_{100} = 110.56 cfs
Q_{cap} = 189.64 cfs
V_{100} = 11.95 fps
S = 0.0032 ft/ft

7'x6' RCB
Q_{100} = xxx.xx cfs
Q_{cap} = 602.00 cfs
V_{100} = 14.29 fps
S = 0.0003 ft/ft

FL. 54" 414.25
FL. 54" 408.18

FL. 54" 406.32
FL. 24" 408.82

FL. 54" 404.66
FL. 8'x8' 401.91
FL. 7'x6' 401.91

59 L.F. 54" CLASS III RCP
196 L.F. 54" CLASS III RCP
173 L.F. 54" CLASS III RCP
18 L.F. 7'x6' RCB

435 430 425 420 415 410 405 400 395
430 425 420 415 410 405 400 395 390

18+00 17+00 16+00 15+00 14+00

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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BENCHMARKS & CONTROL POINTS

REFERENCES
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SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

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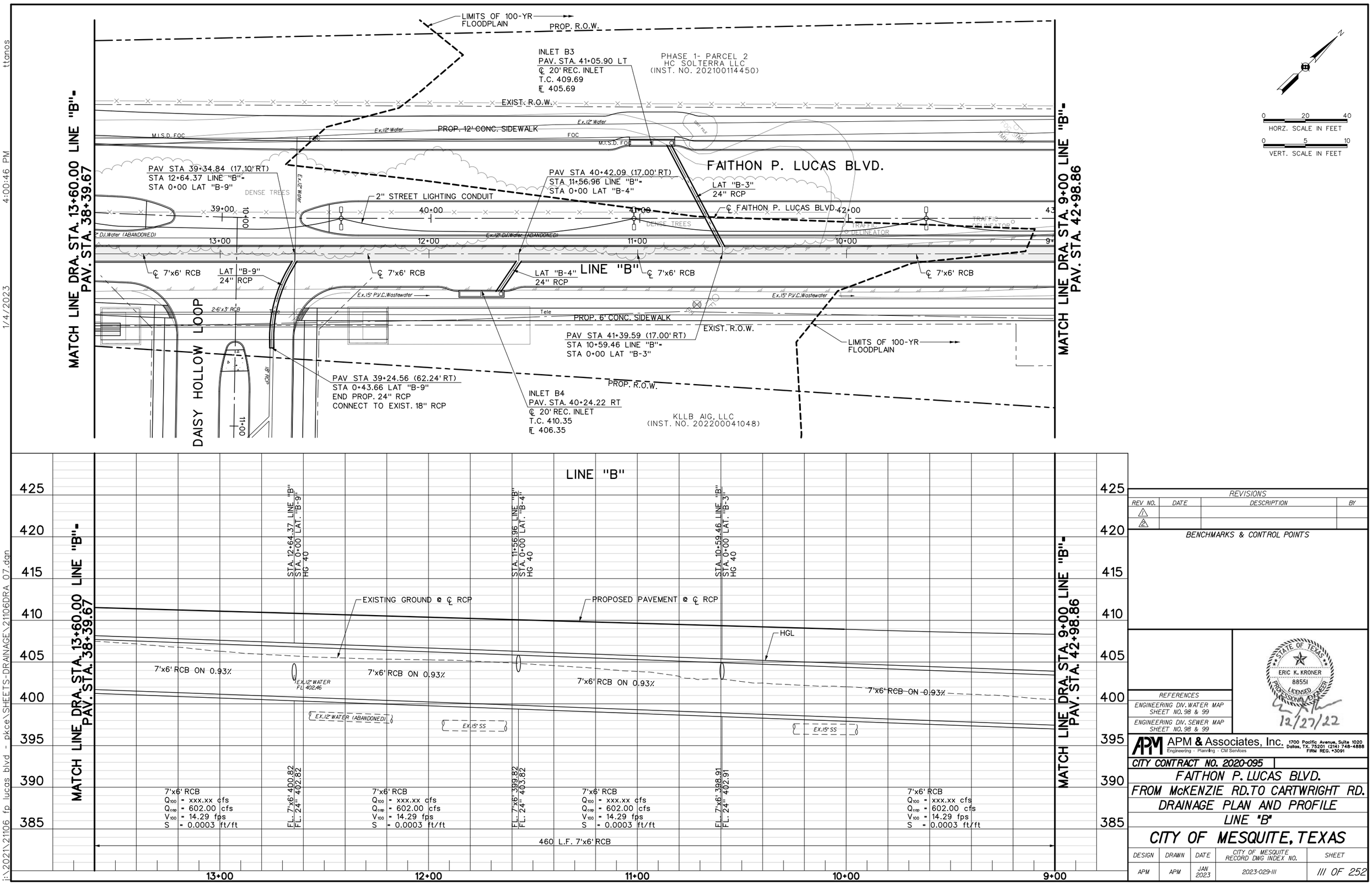
FIRM REG. •3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "B"

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-110	110 OF 252



REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

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DRAINAGE PLAN AND PROFILE
LINE "B"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-111	111 OF 252

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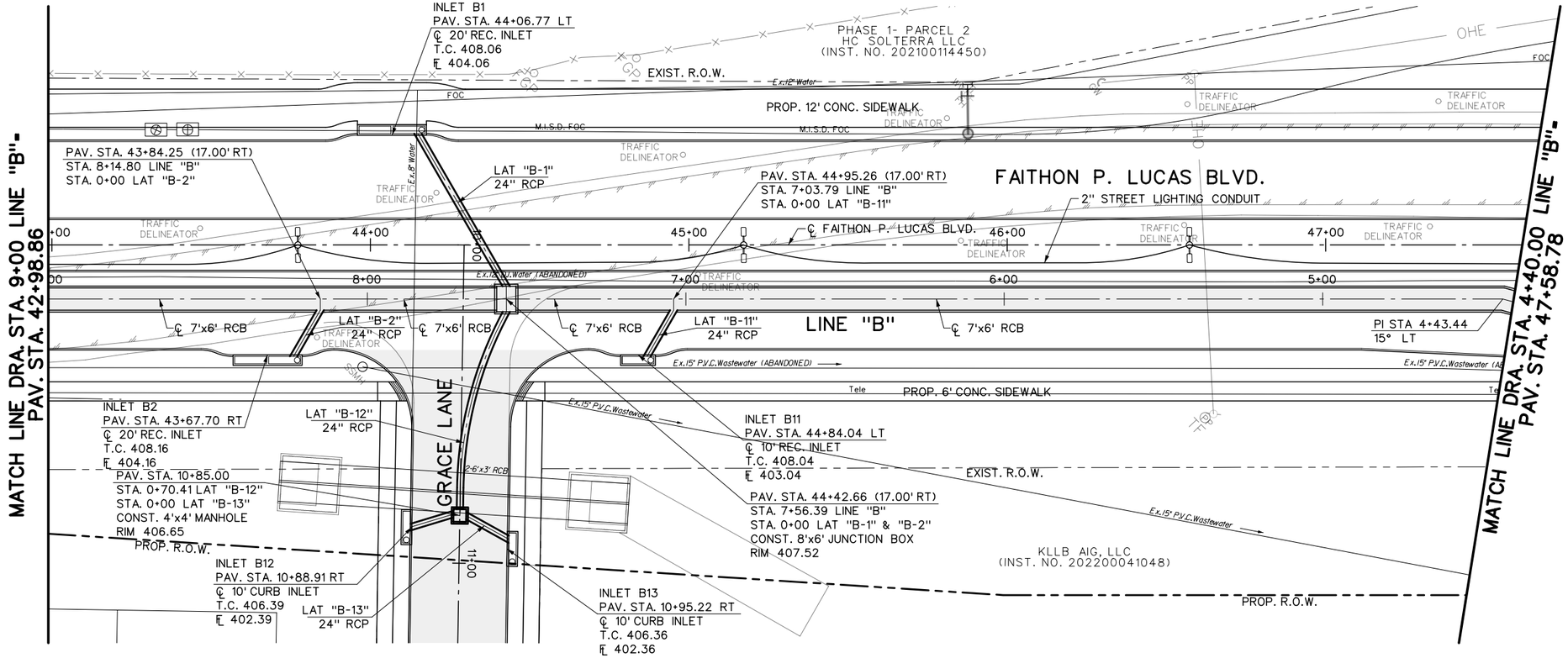
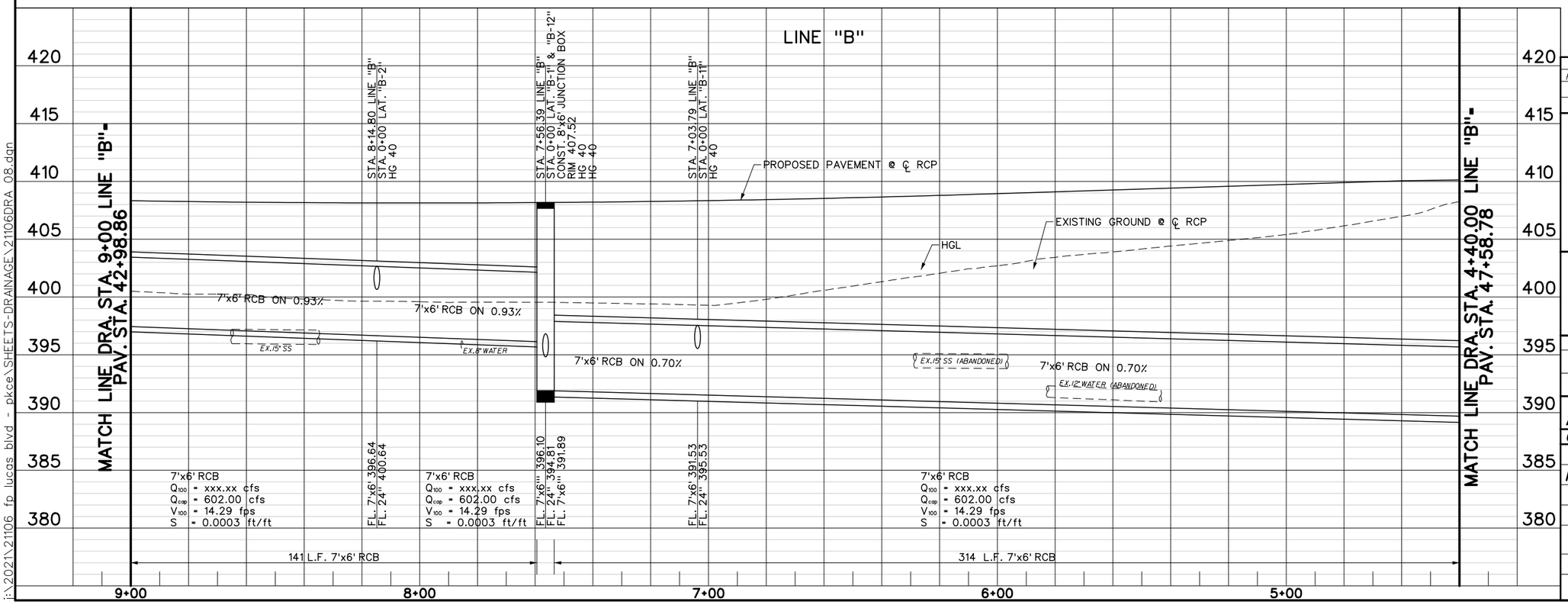


DRAINAGE CENTER LINE
CURVE #1 DATA
PI STA. 4+43.44
N 6,953,080.2202
E 2,561,958.0958
Δ 15° 00' 00" (LT)
R 125.00'
Lc 32.72'
T 16.46'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET



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REV NO.	DATE	DESCRIPTION	BY
1			
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FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "B"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-112	112 OF 252

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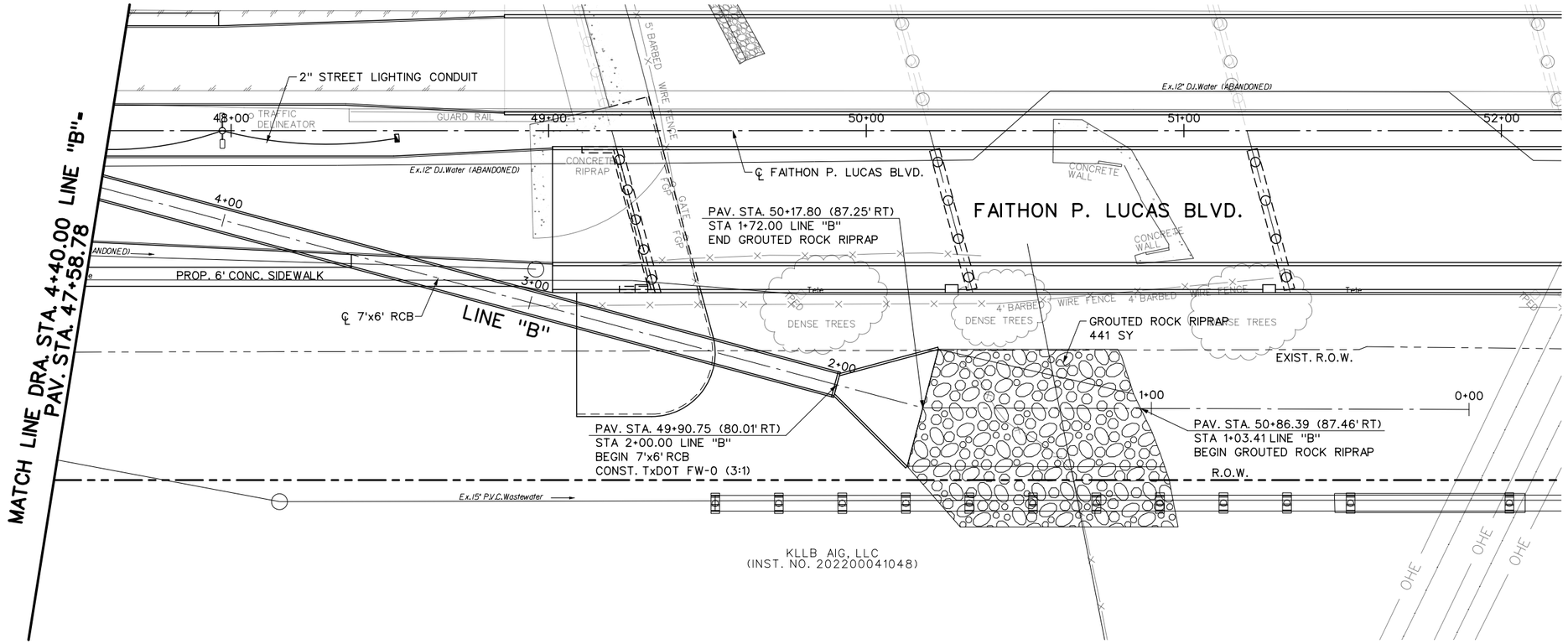
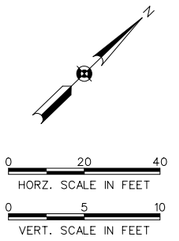
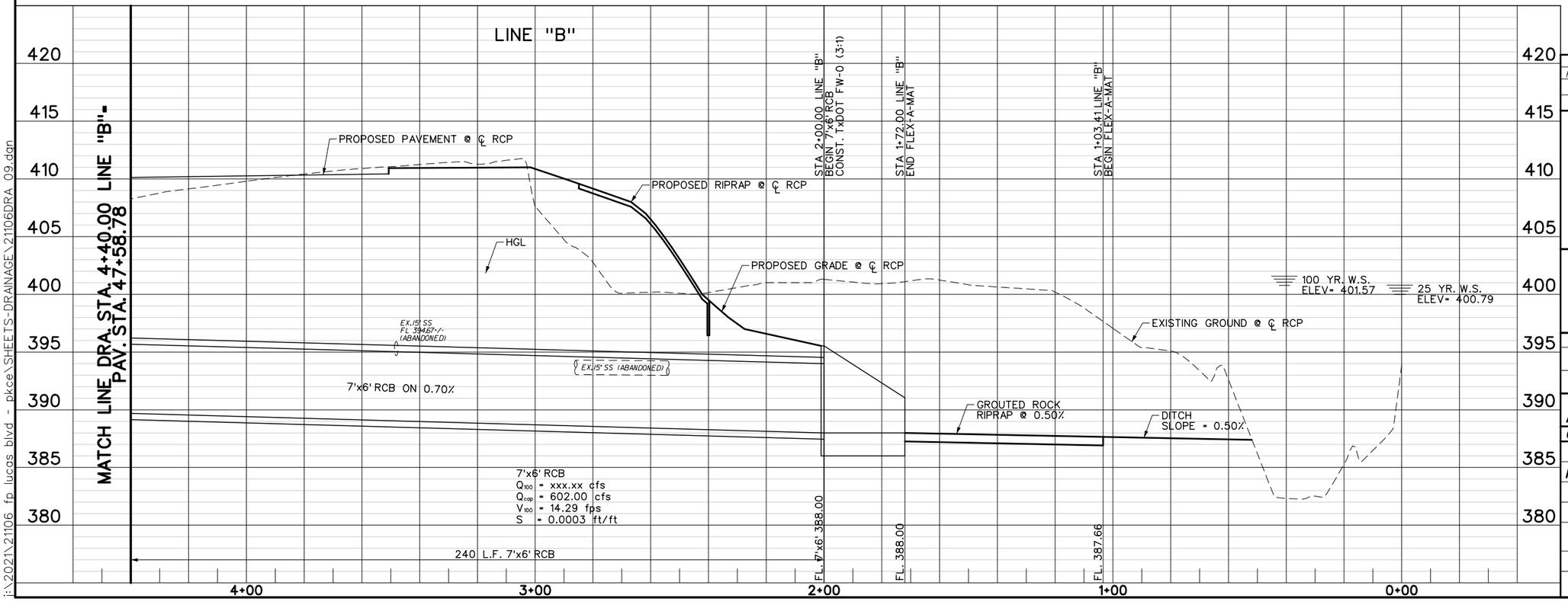
1/4/2023







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FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "B"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-113	113 OF 252

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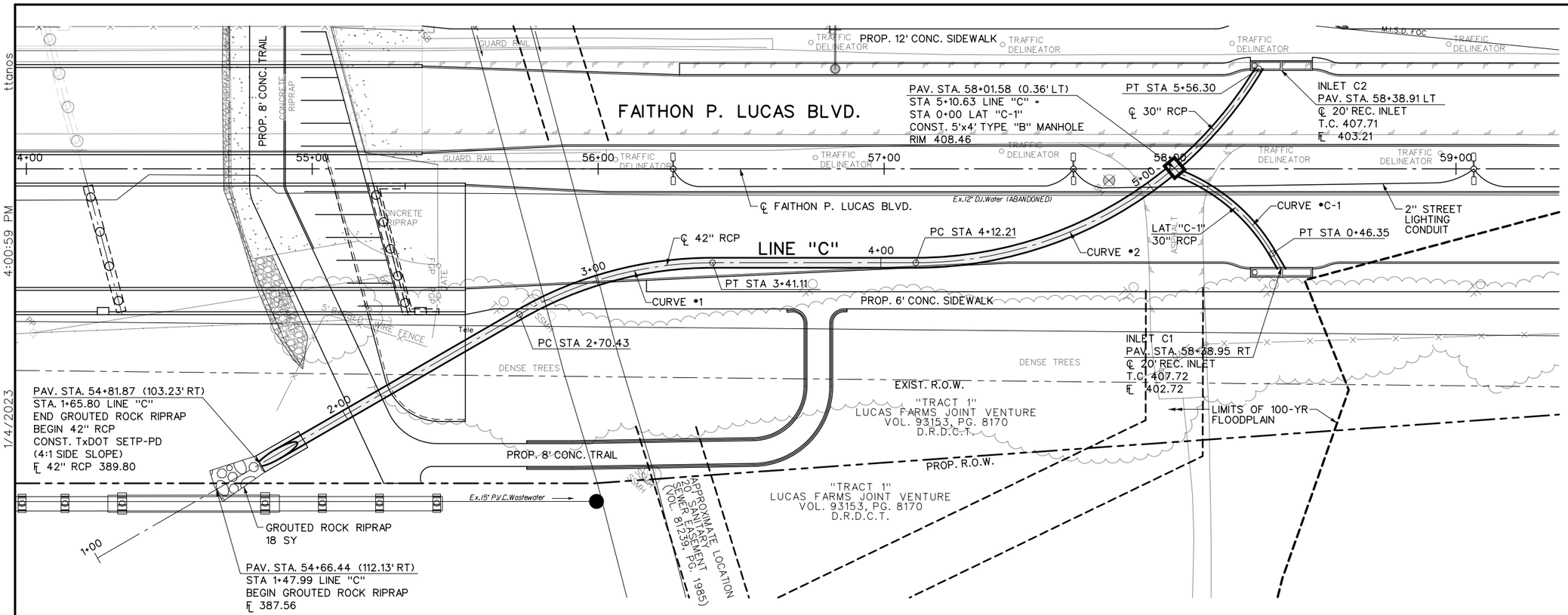
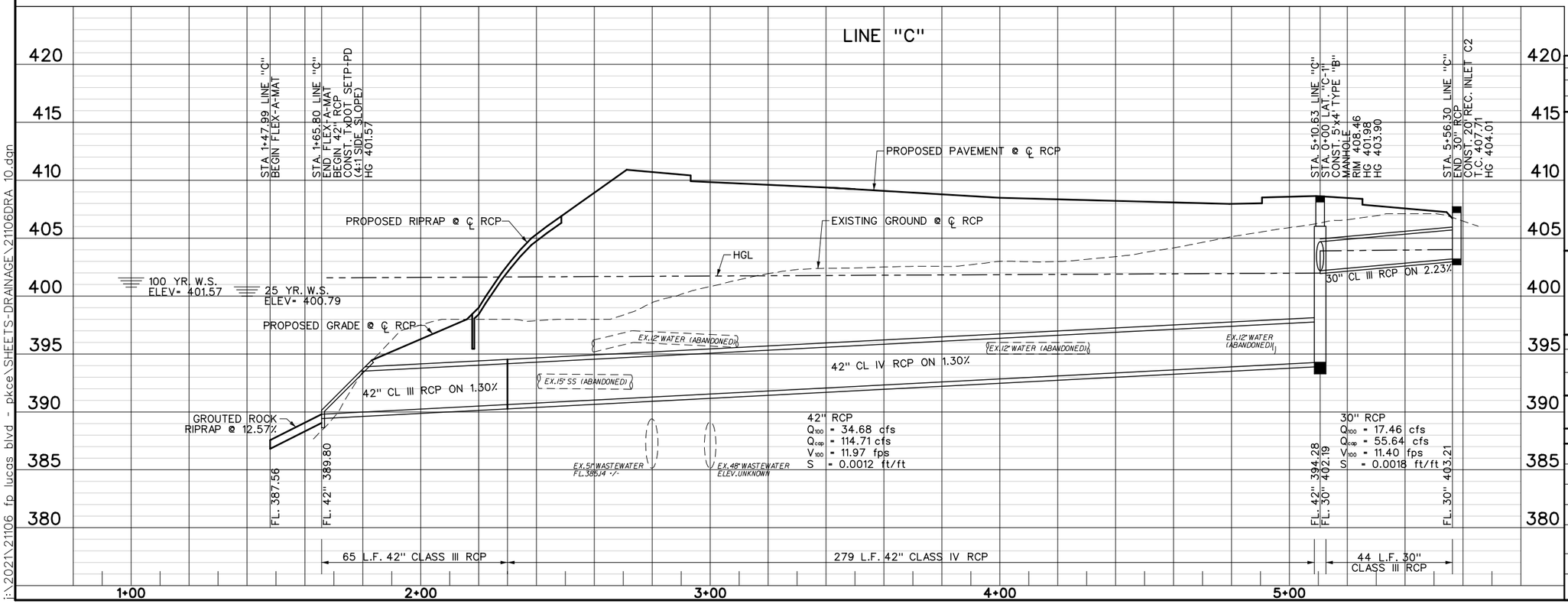


DRAINAGE CENTER LINE
CURVE •1 DATA
PI STA. 3+06.60
N 6,953,679.7868
E 2,562,558.2699
Δ 30° 00' 00" (RT)
R 135.00'
Lc 70.69'
T 36.17'

DRAINAGE CENTER LINE
CURVE •2 DATA
PI STA. 4+91.37
N 6,953,813.9834
E 2,562,687.6805
Δ 58° 58' 08" (LT)
R 140.00'
Lc 144.09'
T 79.16'

DRAINAGE CENTER LINE
CURVE •C-1 DATA
PI STA. 0+25.30
N 6,953,854.5553
E 2,562,694.8759
Δ 38° 39' 43" (LT)
R 65.00'
Lc 43.85'
T 22.80'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET



REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. •3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "C"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-114	114 OF 252

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PAV. STA. 68+40.34, 100.08' LT
STA. 0+69.16 LINE "S"
CONN. TO EXIST. 27" RCP
END 30" RCP

PAV. STA. 69+07.45, 83.38' LT
CONST. 15'x10' JUNCTION BOX
STA. 0+00.00 LINE "S"
BEGIN 30" RCP
RIM 422.00

27" RCP
LINE "S"
9'x5' RCB
PROP. R.O.W.
Ex.8" P.V.C. Wastewater
CONC. COLLAR
INLET D2
PAV. STA. 68+73.19, 30.06' LT
℄ 20' REC. INLET
T.C. 421.08
℄ 416.58
2" STREET LIGHTING CONDUIT
SEE SHEET 120 FOR CULVERT "D" PLAN & PROFILE
SLOPE EASEMENT
DRAINAGE EASEMENT
PROP. R.O.W.
PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 20210011445O)
DENSE TREES
PROP. 12' CONC. SIDEWALK
LINE "D"
℄ 7'x6' RCB
PAV. STA. 68+92.02, 19.05' LT
STA. 0+98.79 LINE "D"
STA. 2+20.27 CULVERT "D"
1+00
2+00
3+
67+00
68+00
69+00
70+00
71
Tele
OHE
℄ FAITHON P. LUCAS BLVD.
FOC
Ex.12" DI.Water
M.I.S.D. FOC
CULVERT "D"
PROP 12" WATER
FAITHON P. LUCAS BLVD.
EXIST. R.O.W.
℄ 12'x8' BOX CULVERT
PROP. 6' CONC. SIDEWALK
INLET D3
PAV. STA. 68+91.07, 43.17' RT
℄ 20' REC. INLET
T.C. 421.34
℄ 417.34
"TRACT 1"
LUCAS FARMS JOINT VENTURE
VOL. 93153, PG. 8170
D.R.D.C.T.

MATCH LINE DRA. STA. 3+00.00 LINE "D"-
PAV. STA. 70+98.86

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

LINE "S"

STA. 0+69.16 LINE "S"
END 30" RCP
CONN. TO EXIST. 27" RCP
HG 415.32

STA. 0+00.00 LINE "S"
CONST. 15'x10' JUNCTION BOX
BEGIN 30" RCP
RIM 422.00
HG 40
HG 40

EX. 27" RCP
30" RCP ON 1.50%
CONC COLLAR
EX. 8" SS
FL 405.00+/-
FL. EXIST 27" RCP 415.72+/-
FL. 30" RCP 415.72+/-
FL. 30" 414.68
FL. EXIST. 9'x5' RCB 407.58+/-
FL. 12'x8' RCB 407.58+/-
70 L.F. 30" RCP

LINE "D"

STA. 0+98.79 LINE "D"
BEGIN 7'x6' RCB
CONN. TO 12'x8' RCB
HG 415.32

PROPOSED PAVEMENT @ ℄ RCP
EXISTING GROUND @ ℄ RCP
HGL
7'x6' RCB ON 0.75%
FL. 12'x8' 407.32
FL. 7'x6' 406.82
202 L.F. 7'x6' RCB

7'x6' RCB
Q_{100} = XXX.XX cfs
Q_{cap} = 366.77 cfs
V_{100} = 12.97 fps
S = 0.0054 ft/ft

435 430 425 420 415 410 405 400 395
0+00 1+00 2+00 3+00

MATCH LINE DRA. STA. 3+00.00 LINE "D"-
PAV. STA. 70+98.86

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "D" & LINE "S"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-115	115 OF 252

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1/4/2023

PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

DENSE TREES

PAV. STA. 73+98.86 (17.00' LT)
STA 6+00.00 LINE "D" -
CONST. 8'x4' JUNCTION BOX
RIM 432.06

PROP. R.O.W.

PROP. 12' CONC. SIDEWALK

MATCH LINE DRA. STA. 3+00.00 LINE "D"-
PAV. STA. 70+98.86

MATCH LINE DRA. STA. 7+60.00 LINE "D"-
PAV. STA. 75+58.86

LINE "D"

℄ 7'x6' RCB

℄ FAITHON P. LUCAS BLVD.

3+00 4+00 5+00 6+00 7+00

72+00 73+00 74+00 75+00

Tele OHE FOC DENSE TREES

2" STREET LIGHTING CONDUIT

EXIST. R.O.W.

FAITHON P. LUCAS BLVD.

27" RCP

Ex.12" DJ.Water

M.I.S.D. FOC

PROP. 6' CONC. SIDEWALK

PROP 12" WATER

"TRACT 3"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

N

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

LINE "D"

EXISTING GROUND ℄ RCP

PROPOSED PAVEMENT ℄ RCP

HGL

PROP. 6'W
ELEV UNKNOWN

STA 6+00.00 LINE "D"
CONST. 8'x4' JUNCTION BOX
RIM 432.06
HG 40
HG 40

FL. 7'x6' 412.56
FL. 7'x6' 418.54

7'x6' RCB ON 0.75%

7'x6' RCB
Q_{100} = XXX.XX cfs
Q_{cap} = 366.77 cfs
V = 12.97 fps
S_{100} = 0.0054 ft/ft

298 L.F. 7'x6' RCB

158 L.F. 7'x6' RCB

445 440 435 430 425 420 415 410 405

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "D"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-116	116 OF 252

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PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

MATCH LINE DRA. STA. 7+60.00 LINE "D"-
PAV. STA. 75+58.86

PAV. STA. 76+57.77 (17.00' LT)
STA 8+58.91 LINE "D" -
STA 0+00 LAT "D-4"

INLET D5
PAV. STA. 76+93.95 LT
℄ 20' REC INLET
T.C. 437.54
FL 433.54

PAV. STA. 78+99.73 (24.28' LT)
STA 11+02.53 LINE "D" -
STA 0+00 LAT "D-6"
CONST. 8'x5' JUNCTION BOX
RIM 438.95

PAV STA 79+09.03 (48.77' LT)
STA 0+22.62 LAT "D-6"
END PROP. 36" RCP

FUTURE STREET

PROP. R.O.W.

PROP. 12' CONC. SIDEWALK

FAITHON P. LUCAS BLVD. LINE "D"

℄ 7'x6' RCB

LAT "D-5"
24" RCP

LAT "D-6"
36" RCP

℄ 72" RCP

℄ FAITHON P. LUCAS BLVD.

LAT "D-4"
24" RCP

2" STREET LIGHTING CONDUIT

EXIST. R.O.W.

PROP. 6' CONC. SIDEWALK

PROP 12" WATER

PAV. STA. 76+77.12 (17.00' LT)
STA 8+78.25 LINE "D" -
STA 0+00 LAT "D-5"

INLET D4
PAV. STA. 76+93.95 RT
℄ 20' REC INLET
T.C. 437.54
FL 433.54

"TRACT 3"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

"TRACT 4"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

MATCH LINE DRA. STA. 12+20.00 LINE "D"-
PAV. STA. 80+16.60

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

LINE "D"

EXISTING GROUND @ ℄ RCP

PROPOSED PAVEMENT @ ℄ RCP

HGL

STA 8+58.91 LINE "D"
STA 0+00 LAT. "D-4"
HG 424.14

STA 8+78.25 LINE "D"
STA 0+00 LAT. "D-5"
HG 424.14

STA 11+02.53 LINE "D"
STA 0+00 LAT. "D-6"
CONST. 8'x5' JUNCTION BOX
RIM 438.95
HG 440
HG 440

PROP 6'W
ELEV UNKNOWN

7'x6' RCB ON 0.75%

7'x6' RCB ON 0.75%

7'x6' RCB ON 0.75%

72" CL IV RCP ON 0.75%

7'x6' RCB
Q_{100} = XXX.XX cfs
Q_{cap} = 366.77 cfs
V_{100} = 12.97 fps
S = 0.0054 ft/ft

FL 7'x6' 420.48
FL 24" 424.48

FL 7'x6' 420.63
FL 24" 424.63

7'x6' RCB
Q_{100} = XXX.XX cfs
Q_{cap} = 366.77 cfs
V_{100} = 12.97 fps
S = 0.0054 ft/ft

FL 7'x6' 422.31
FL 36" 425.31
FL 72" 423.33

72" RCP
Q_{100} = XXX.XX cfs
Q_{cap} = 623.28 cfs
V_{100} = 14.79 fps
S = 0.0033 ft/ft

340 L.F. 7'x6' RCB

116 L.F. 72" CLASS IV RCP

445 440 435 430 425 420 415 410 405

450 445 440 435 430 425 420 415 410

8+00 9+00 10+00 11+00 12+00

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "D"

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-117	117 OF 252

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DRAINAGE CENTER LINE
CURVE #2 DATA
PI STA. 16+17.78
N 6,955,695.0119
E 2,564,515.6402
Δ 6° 13' 22" (LT)
R 2483.00'
Lc 269.67'
T 134.97'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

MATCH LINE DRA. STA. 12+20.00 LINE "D"-
PAV. STA. 80+16.60

MATCH LINE DRA. STA. 16+80.00 LINE "D"-
PAV. STA. 84+77.61

PAV STA 84+19.41 (95.52' LT)
STA 0+91.16 LAT "D-7"
END PROP. 27" RCP

FUTURE 27" RCP

PROP. R.O.W.

LAT "D-7"
27" RCP

PROP. 12' CONC. SIDEWALK

PC STA 14+82.81

EXIST. R.O.W.

DENSE TREES

OHE

13+00

14+00 LINE "D"

℄ 72" RCP

15+00

16+00

CURVE #2

Ex.12" DJ.Water

M.I.S.D. FOC

GATE

FOC 81+00

82+00

83+00

84+00

2" STREET LIGHTING CONDUIT

℄ FAITHON P. LUCAS BLVD.

PAV. STA. 83+72.02 (17.00' LT)
STA 15+75.12 LINE "D" -
STA 0+00 LAT "D-7"

FAITHON P. LUCAS BLVD.

Tele.

MB

21" RCP

24" RCP

PROP 12" WATER

PROP. 6' CONC. SIDEWALK

GRAVEL

PROP. R.O.W.

R.O.W.

"TRACT 4"
LUCAS FARMS JOINT VENTURE
(VOL. 93153 PG. 8170)

LINE "D"

EXISTING GROUND @ ℄ RCP

PROPOSED PAVEMENT @ ℄ RCP

STA. 15+75.12 LINE "D"
STA. 0+00 LAT. "D-7"
HG - 40

EX.12" WATER

HGL

72" CL IV RCP ON 0.75%

72" CL IV RCP ON 0.75%

FL. 72" 426.87
FL. 27" 428.75

72" RCP
Q_{100} = XXX.XX cfs
Q_{cap} = 623.28 cfs
V = 14.79 fps
S_{100} = 0.0033 ft/ft

460 L.F. 72" CLASS IV RCP

455 450 445 440 435 430 425 420 415

13+00 14+00 15+00 16+00

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

STATE OF TEXAS
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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "D"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-118	118 OF 252

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PHASE 1- PARCEL 2
HC SOLTERRA LLC
(INST. NO. 202100114450)

MATCH LINE DRA. STA. 16+80.00 LINE "D"-
PAV. STA. 84+77.61

PAV. STA. 86+48.49 (17.00' LT)
STA 18+50.38 LINE "D" -
STA 0+00 LAT "D-8"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 443.02

PAV STA 86+73.36 (63.06' LT)
STA 0+49.72 LAT "D-8"
END PROP. 27" RCP

PAV. STA. 88+80.85 (72.50' LT)-
STA. 21+04.93 LINE "D"
END 60" RCP
CONST. DBL. SPECIAL 'Y' INLET D11
THROAT 437.35
℄ 430.85

PAV. STA. 88+61.25 (44.55' LT)
STA 20+70.26 LINE "D" -
STA 0+00 LAT "D-10"

SEE SHEET 61 & 62
FOR PROPOSED DITCH

DRAINAGE EASEMENT

INLET D10
PAV. STA. 89+15.86 LT
℄ 20' REC. INLET
T.C. 441.46
℄ 437.46

DRAINAGE CENTER LINE
CURVE •2 DATA
PI STA. 16+17.78
N 6,955,695.0119
E 2,564,515.6402
Δ 6° 13' 22" (LT)
R 2483.00'
Lc 269.67'
T 134.97'

DRAINAGE CENTER LINE
CURVE •3 DATA
PI STA. 20+54.64
N 6,956,007.0709
E 2,564,821.7418
Δ 62° 17' 23" (LT)
R 100.00'
Lc 108.72'
T 60.43'

DRAINAGE CENTER LINE
CURVE •D-9 DATA
PI STA. 0+54.36
N 6,955,939.4490
E 2,564,829.8856
Δ 79° 48' 57" (LT)
R 65.00'
Lc 90.55'
T 54.36'

0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

PROP. R.O.W.
PROP 12" WATER
FOC
DENSE TREES
PROP. 12' CONC. SIDEWALK
EXIST. R.O.W.
LAT "D-8"
27" RCP
℄ 60" RCP
CURVE •3
LAT "D-10"
24" RCP
PC STA 17+52.48
℄ 72" RCP
LINE "D"
PC STA 19+94.21
M.I.S.D. FOC
Ex.12" DI.Water
℄ FAITHON P. LUCAS BLVD.
CURVE •2
2" STREET LIGHTING CONDUIT
FAITHON P. LUCAS BLVD.
PAV. STA. 88+00.91 (17.37' LT)
STA 20+02.81 LINE "D" -
STA 0+00 LAT "D-9"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 441.79
LAT "D-9"
24" RCP
CURVE •D-9 PT STA 0+99.03
TREES
Tele
DENSE TREES
TPED
TS
ASPHALT
CONCRETE
PROP. 12' CONC. SIDEWALK
TEL SERVICE BOX
ELEC TPAD
EXIST. R.O.W.
LOT 1A, BLOCK A
DR. JOHN D HORN HIGH SCHOOL
(INST. NO. 200503600834)
BRUSH
INLET D9
PAV. STA. 88+98.86 RT
℄ 20' REC INLET
T.C. 441.61
℄ 437.61

LINE "D"

MATCH LINE DRA. STA. 16+80.00 LINE "D"-
PAV. STA. 84+77.61

EXISTING GROUND @ ℄ RCP
PROPOSED PAVEMENT @ ℄ RCP
STA. 18+50.38 LINE "D"
STA. 0+00 LAT. "D-8"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 443.02
IHG 4
IHG 4
STA. 20+02.81 LINE "D"
STA. 0+00 LAT. "D-9"
CONST. 6'x4' TYPE "B" MANHOLE
RIM 441.79
HG 437.63
HG 437.17
STA. 20+70.26 LINE "D"
STA. 0+00 LAT. "D-10"
HG 437.58
STA. 21+04.93 LINE "D"
END 60" RCP
CONST. DBL. SPECIAL 'Y' INLET D11
THROAT 437.35
HG 437.68
WS100 (50% CLOGGED) = 440.94
WS100 (FULLY OPEN) = 439.64
HGL
PROP. 12" WATER
FL 437.57
EX. 12" WATER
PROP. 12" WATER
FL 437.56
72" CL IV RCP ON 0.75%
72" CL III RCP ON 0.75%
60" CL III RCP ON 0.75%
60" CL III RCP ON 0.75%
60" CL III RCP ON 0.75%

72" RCP
Q_{100} = XXX.XX cfs
Q_{cap} = 623.28 cfs
V_{100} = 14.79 fps
S = 0.0033 ft/ft

60" RCP
Q_{100} = 205.35 cfs
Q_{cap} = 225.55 cfs
V_{100} = 11.50 fps
S = 0.0062 ft/ft

60" RCP
Q_{100} = 186.47 cfs
Q_{cap} = 225.55 cfs
V_{100} = 11.50 fps
S = 0.0051 ft/ft

60" RCP
Q_{100} = 167.85 cfs
Q_{cap} = 225.55 cfs
V_{100} = 11.50 fps
S = 0.0042 ft/ft

FL. 72" 428.94
FL. 27" 432.94
FL. 60" 428.94
FL. 60" 433.08
FL. 24" 430.08
FL. 60" 430.08
FL. 60" 430.59
FL. 24" 432.09
FL. 60" 430.85

40 L.F. 60" CLASS IV RCP
128 L.F. 60" CLASS III RCP
149 L.F. 60" CLASS III RCP
99 L.F. 60" CLASS III RCP

455 450 445 440 435 430 425 420 415

18+00 19+00 20+00 21+00

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
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BENCHMARKS & CONTROL POINTS

REFERENCES
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SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
LINE "D"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-119	119 OF 252

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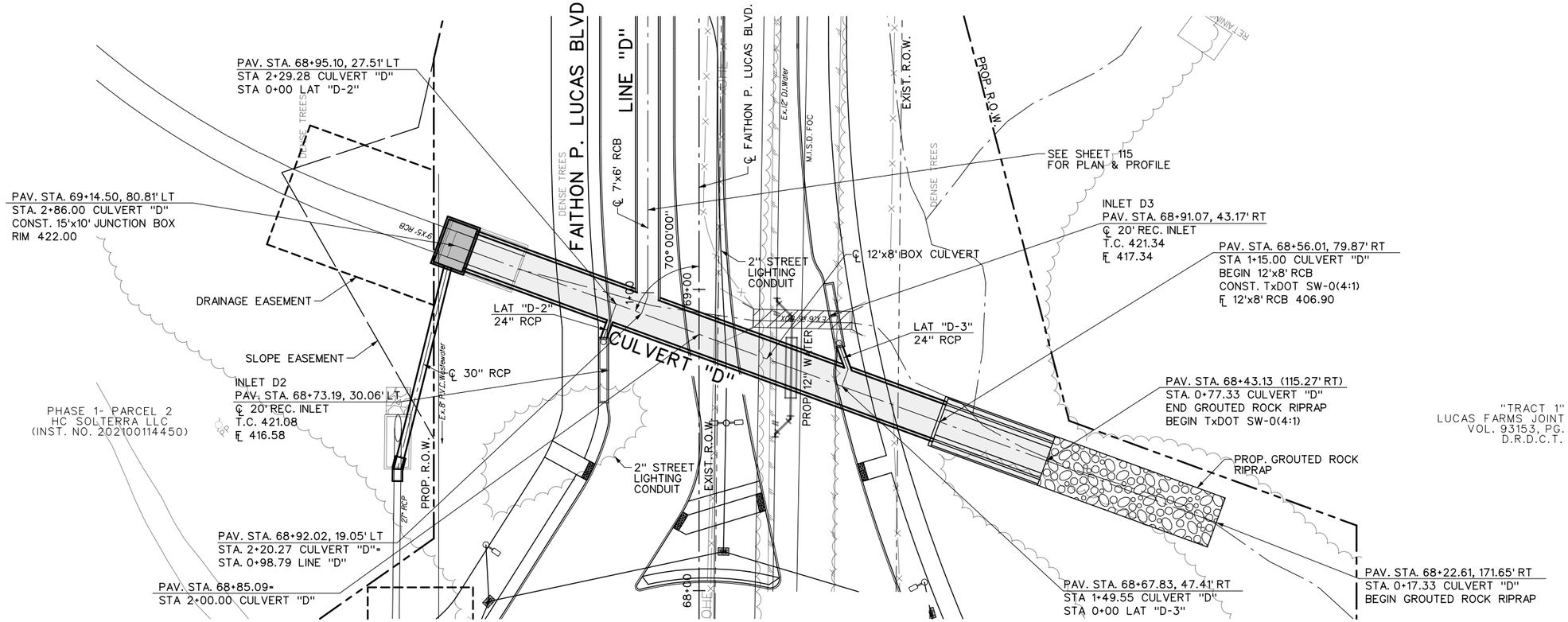

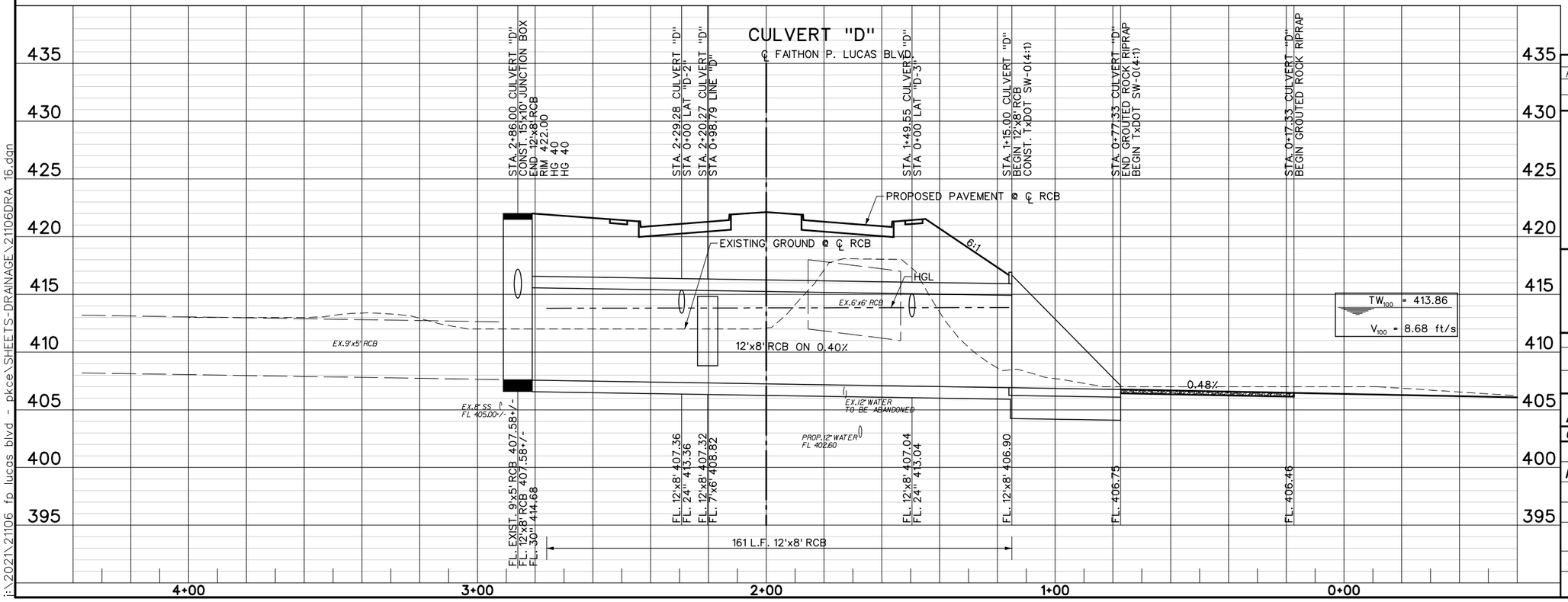

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP
SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP
SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE PLAN AND PROFILE
CULVERT "D"
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-120	120 OF 252

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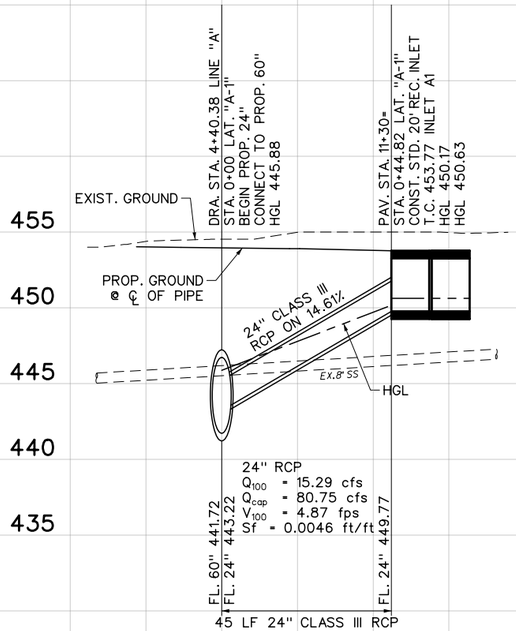

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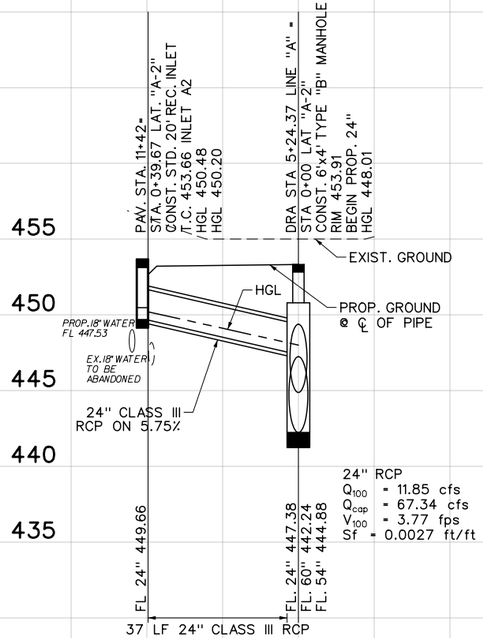

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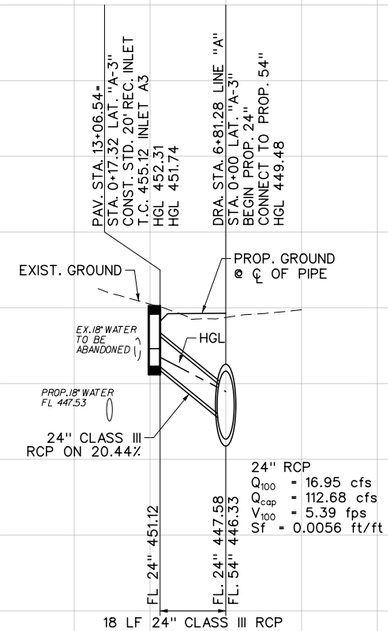

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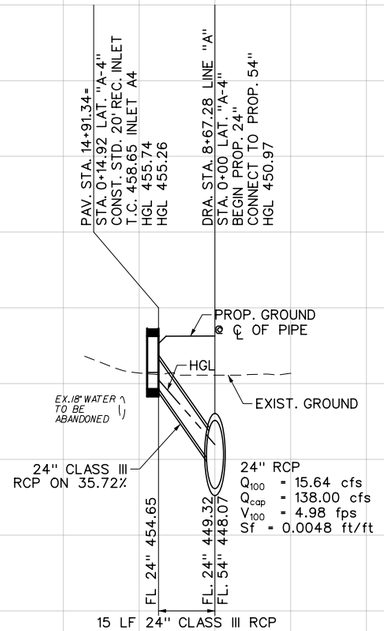

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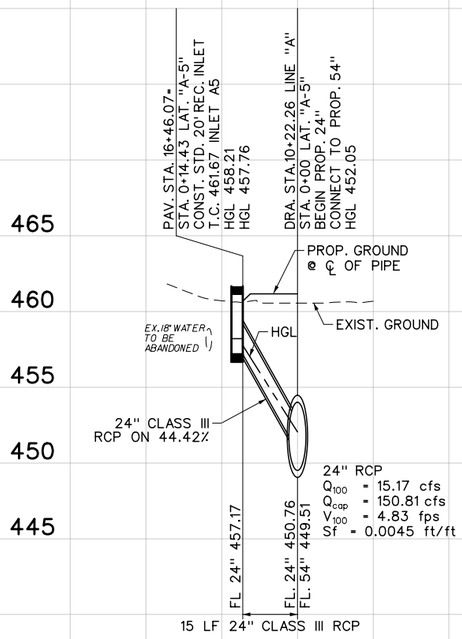

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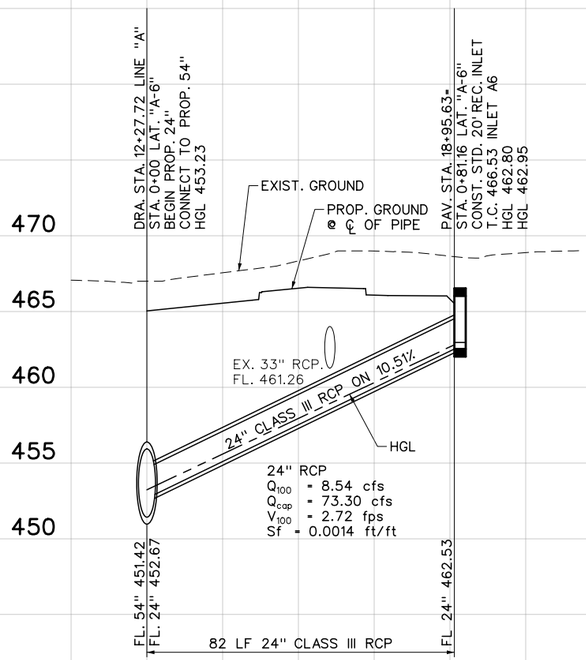

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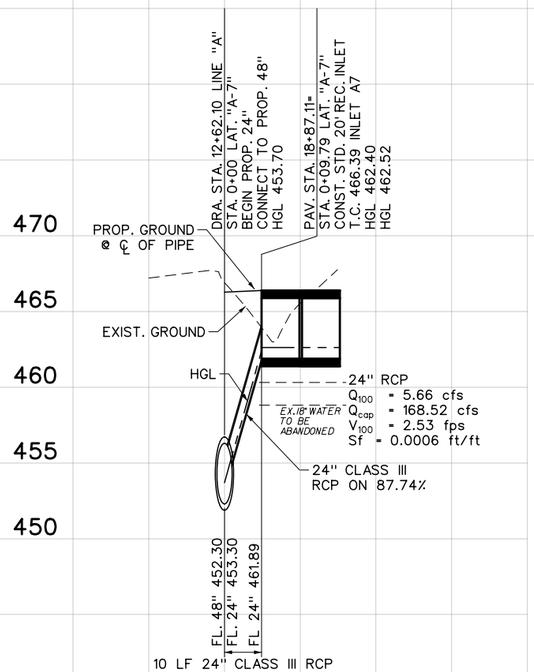

LAT. "A-7"

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

Horizontal Scale: 1" = 20'
0' 20' 40'
Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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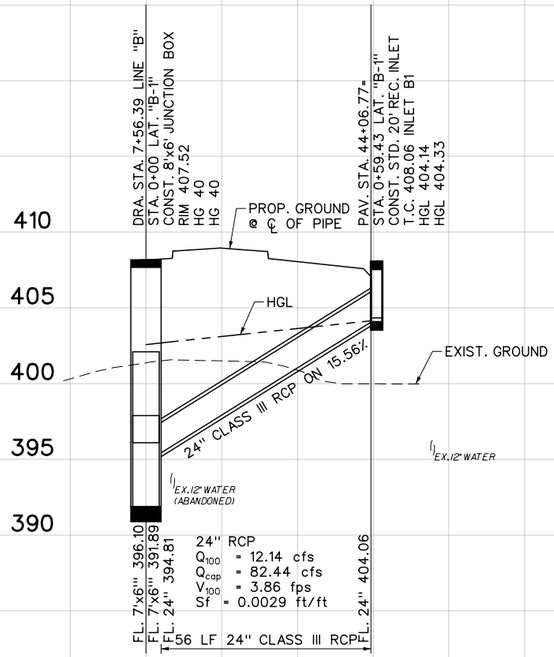
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE LATERAL PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-121	121 OF 252



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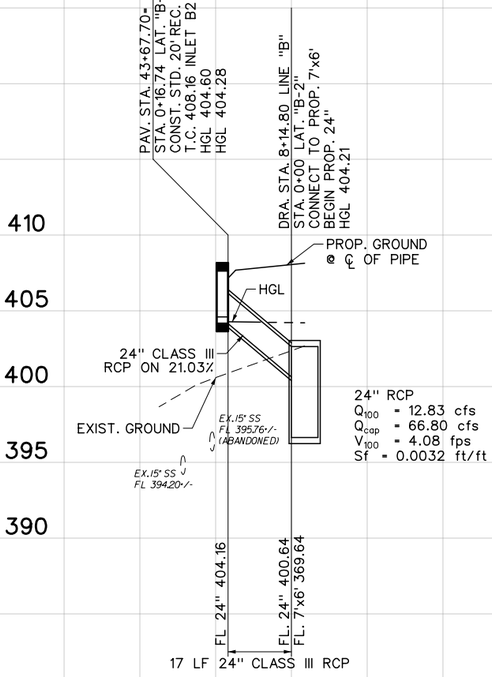

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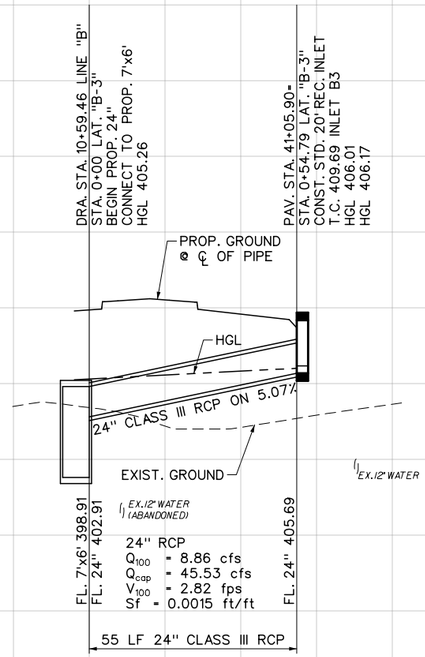

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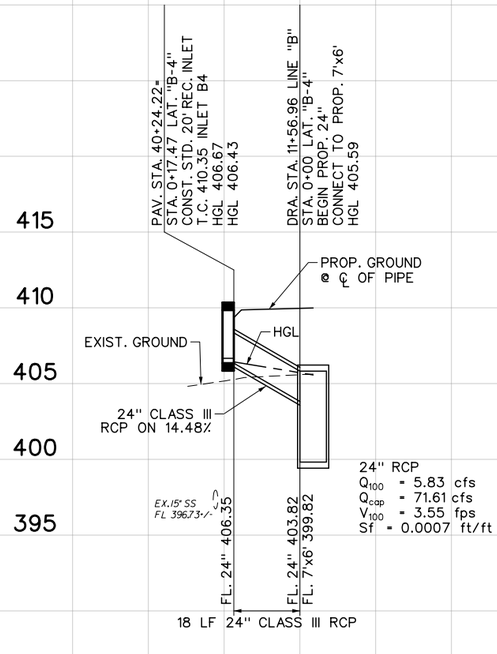

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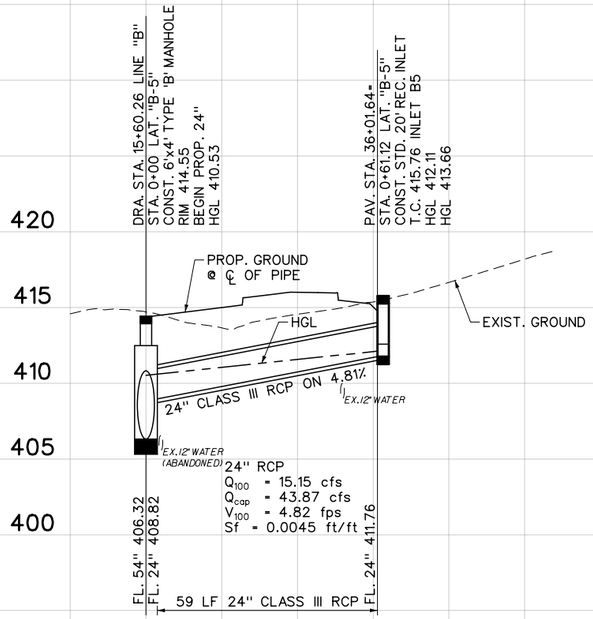

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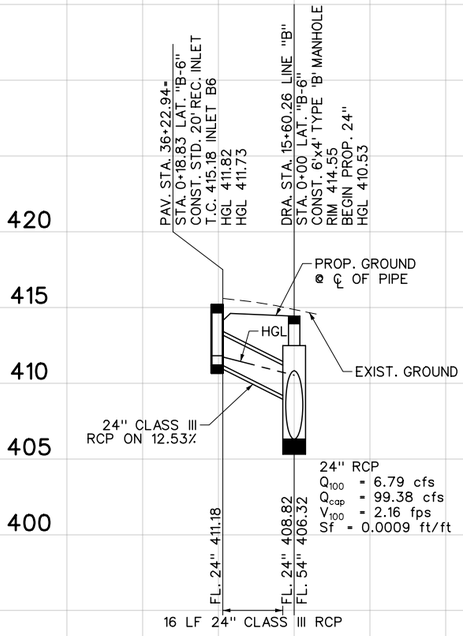

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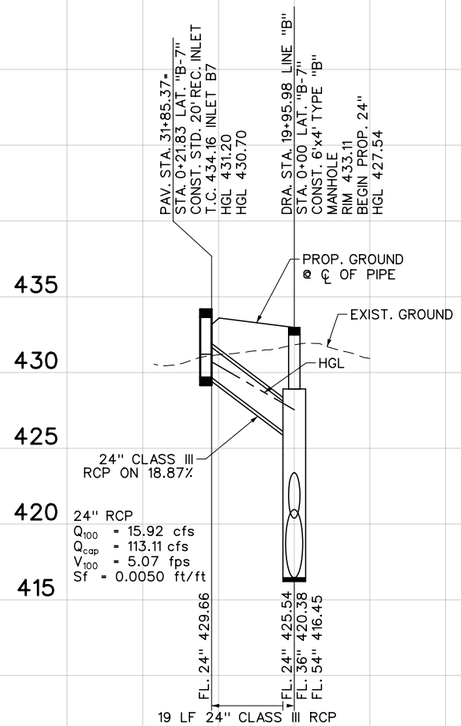

LAT. "B-7"

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

Horizontal Scale: 1" = 20'
0' 20' 40'
Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES
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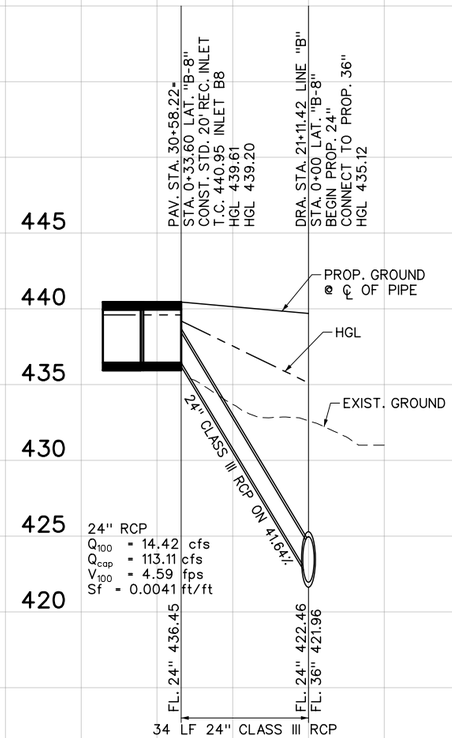
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE LATERAL PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-122	122 OF 252



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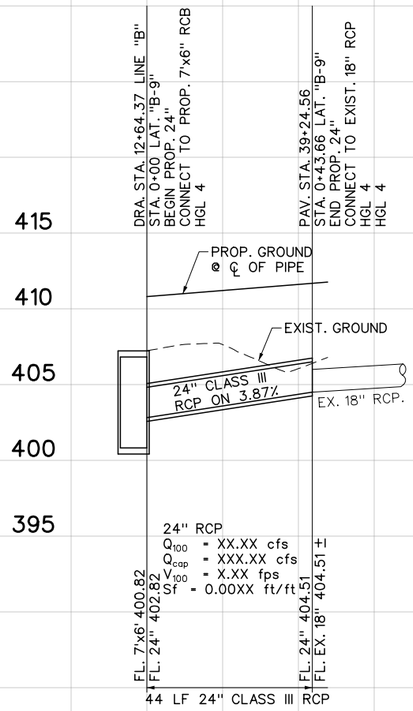

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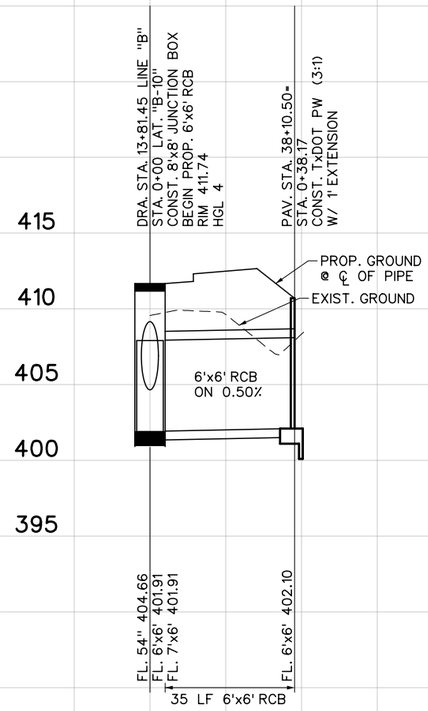

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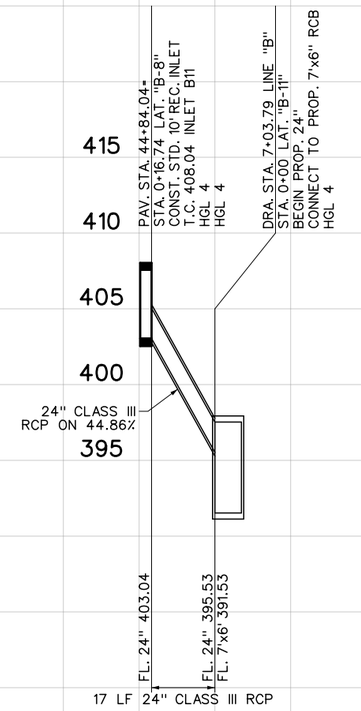

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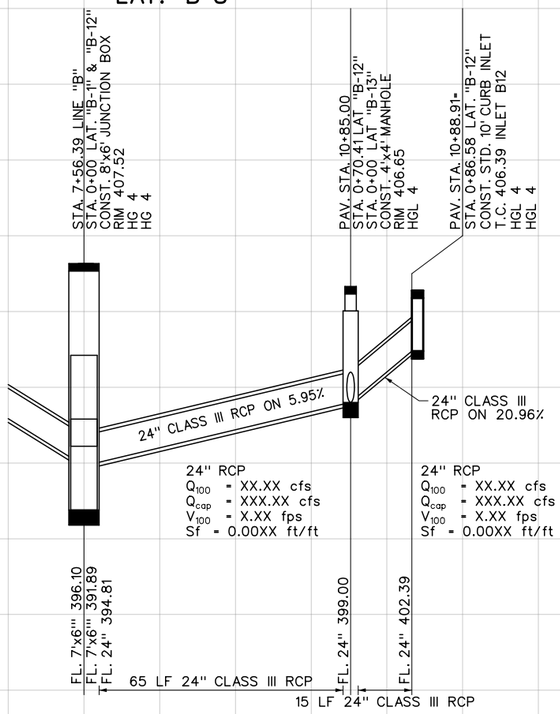

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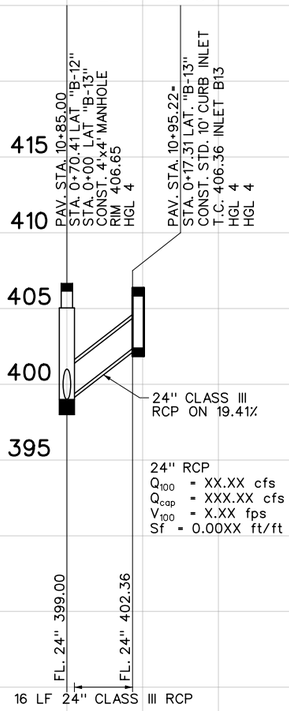

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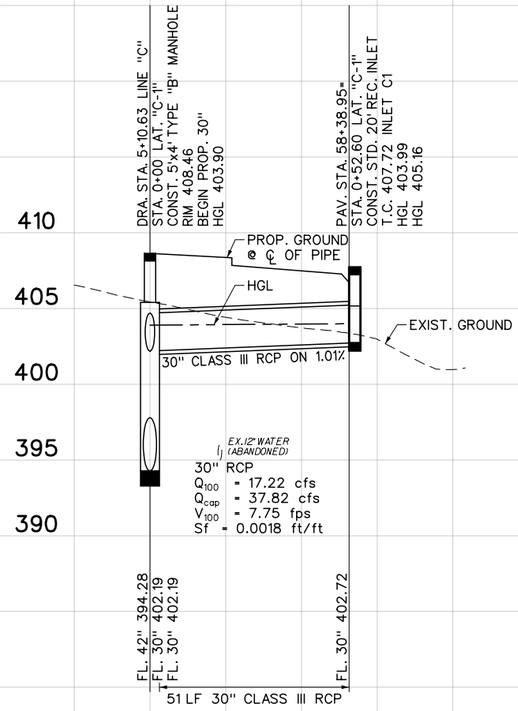

LAT. "C-1"

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

Horizontal Scale: 1" = 20'
0' 20' 40'
Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES
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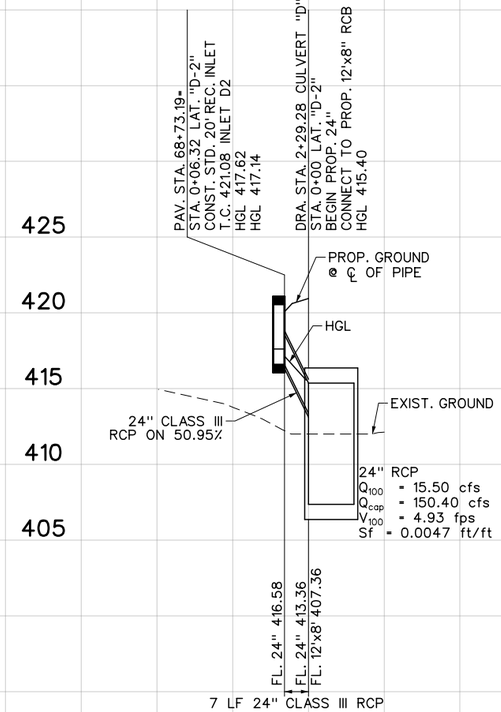
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE LATERAL PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-123	123 OF 252



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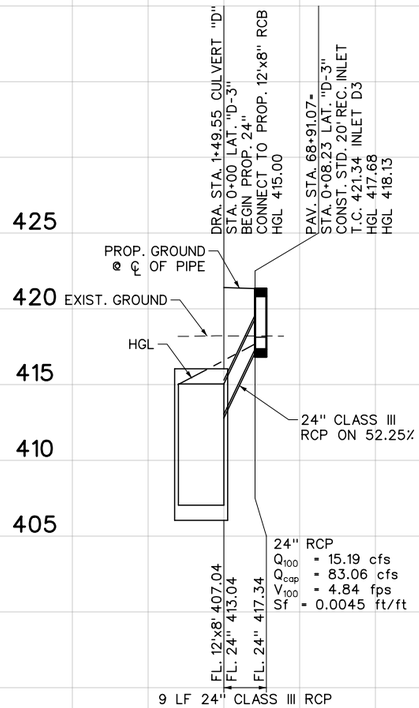

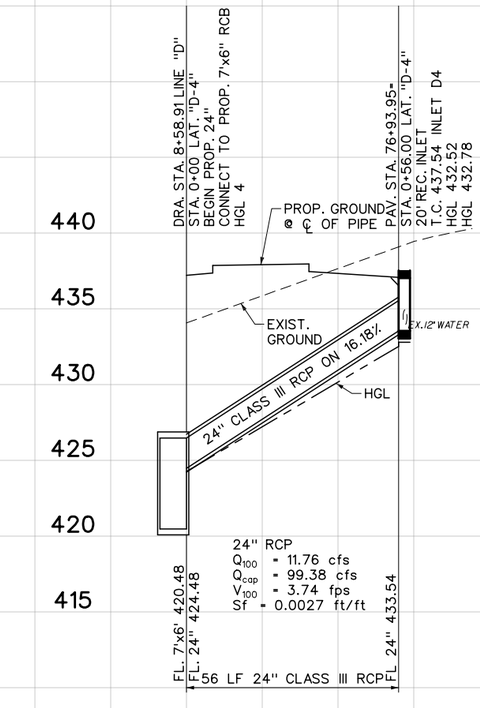

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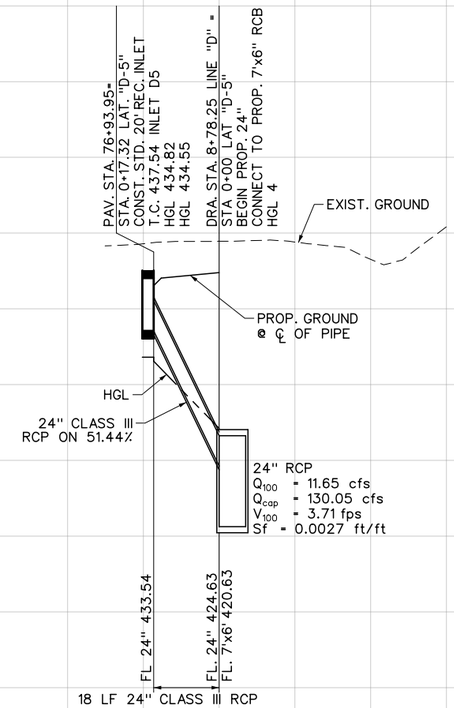

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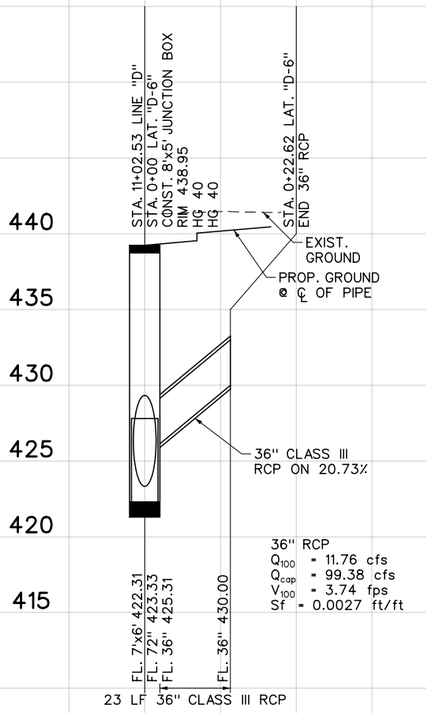

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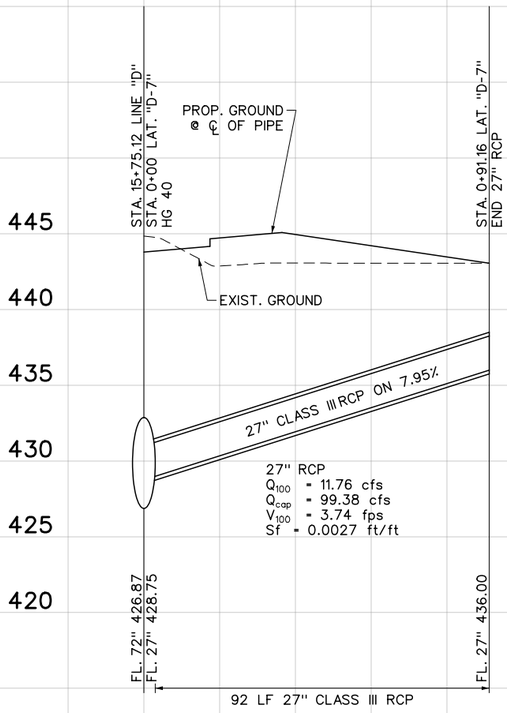

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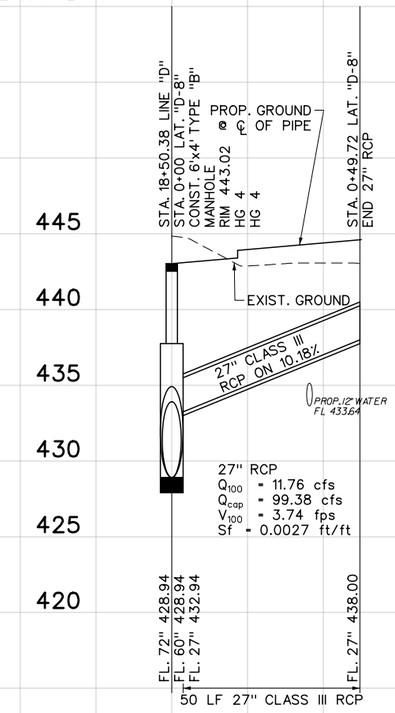

LAT. "D-8"

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

Horizontal Scale: 1" = 20'
0' 20' 40'
Vertical Scale: 1" = 5'
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REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
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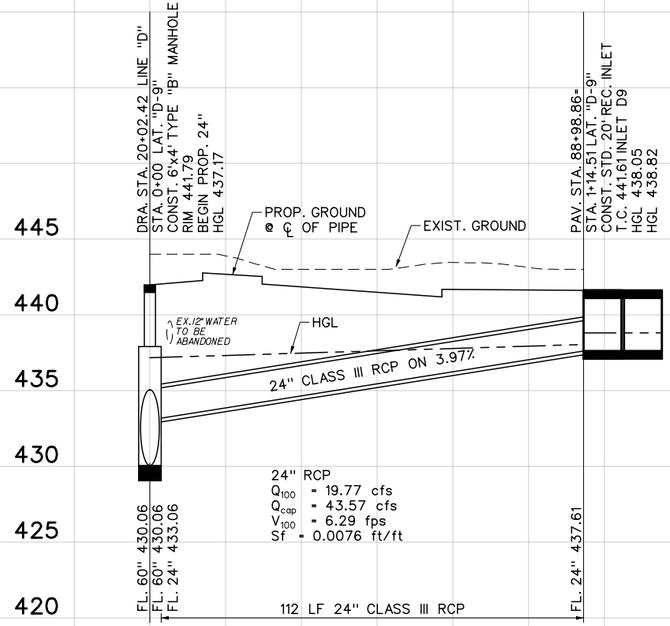
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE LATERAL PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-124	124 OF 252



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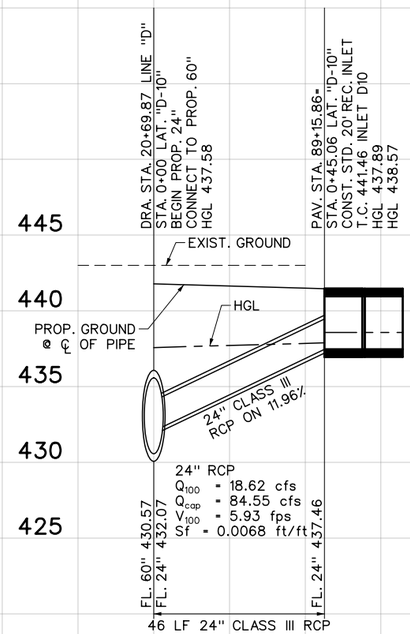

LAT. "D-10"

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

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Vertical Scale: 1" = 5'
0' 5' 10'

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
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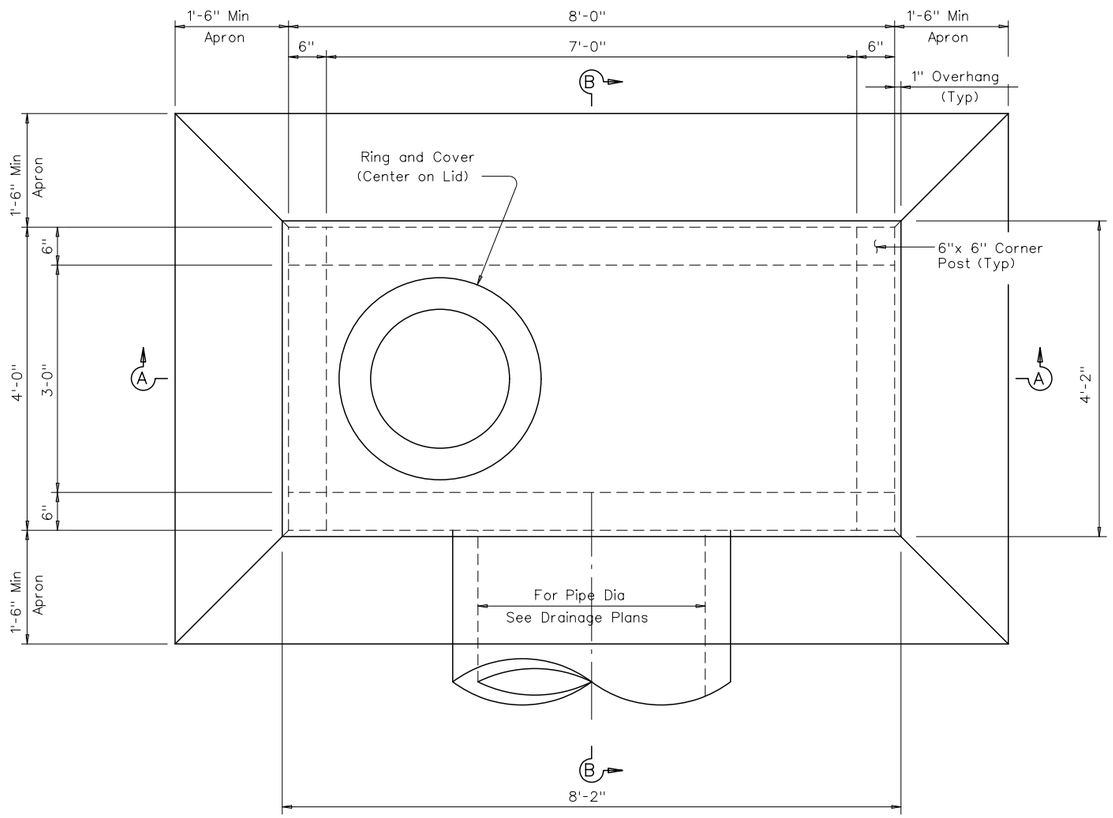
CITY CONTRACT NO. 2020-095

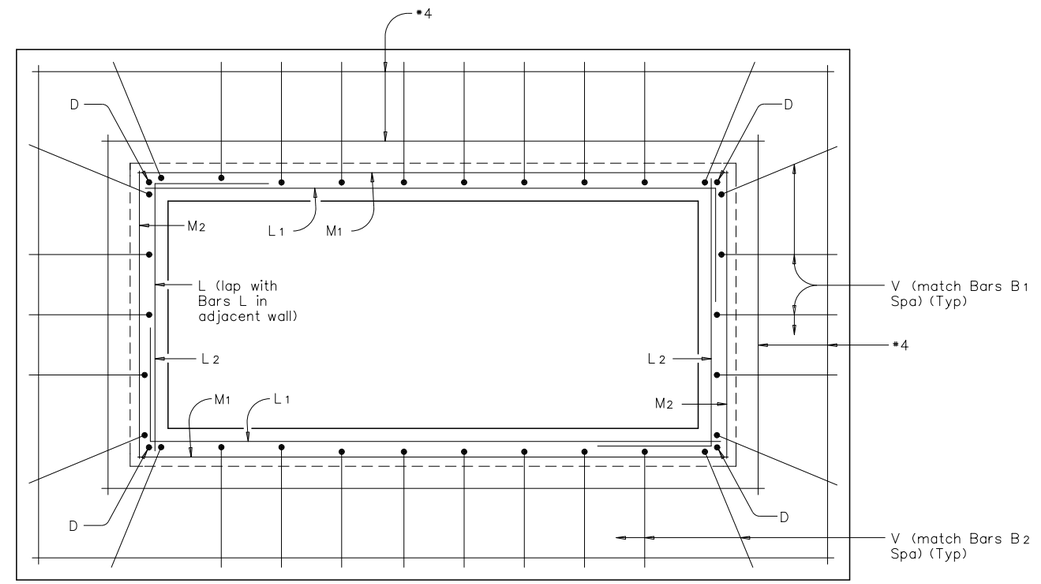
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
DRAINAGE LATERAL PROFILES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-125	125 OF 252

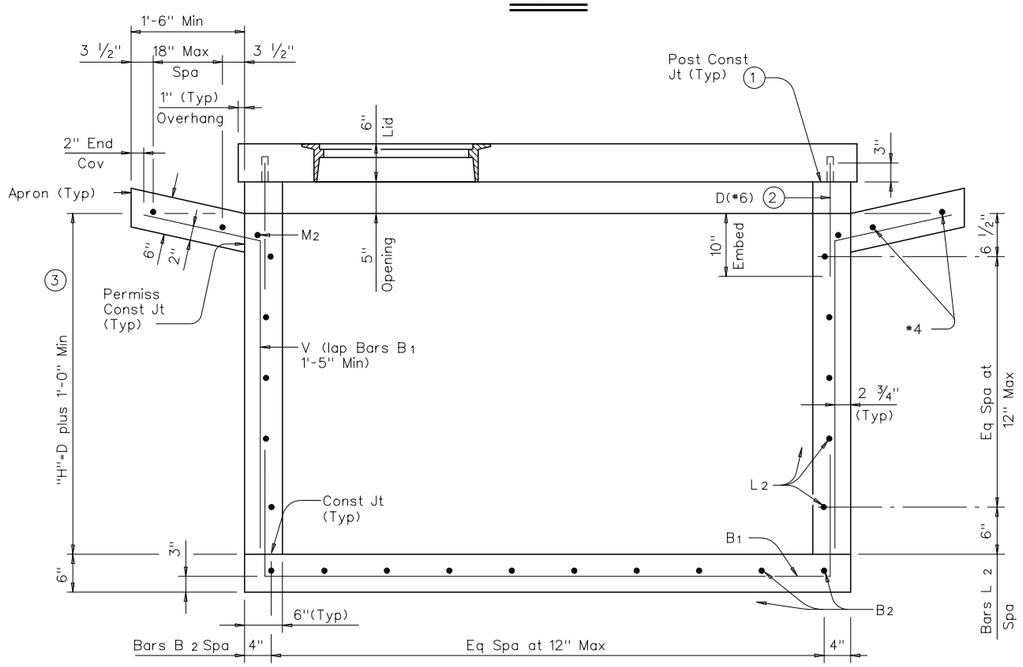


PLAN

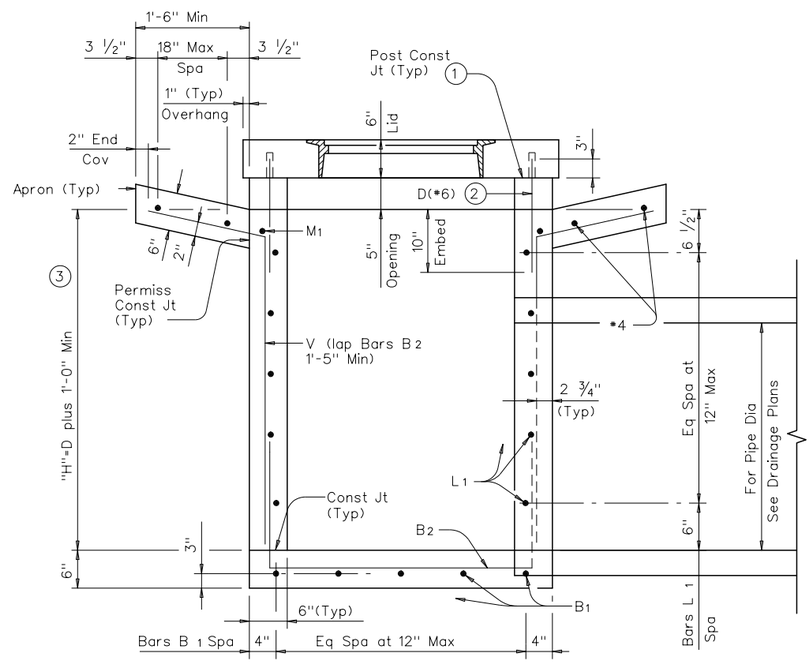


TYPICAL APRON PLAN

(Lid not shown for clarity. Showing reinforcing in walls and in apron.)



SECTION A-A



SECTION B-B

1. Place layer of grout between lid and corner posts to provide stable seating of lid.
2. Center Dowels D in corner posts. (Typ)
3. D equals the maximum inside diameter of any pipe entering the inlet.

APRON TABLE		
INLET	SLOPE	TOP ELEV
A8	3:1	464.70
B9	2:1	429.33
D8	3:1	440.33

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

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CITY CONTRACT NO. 2020-095

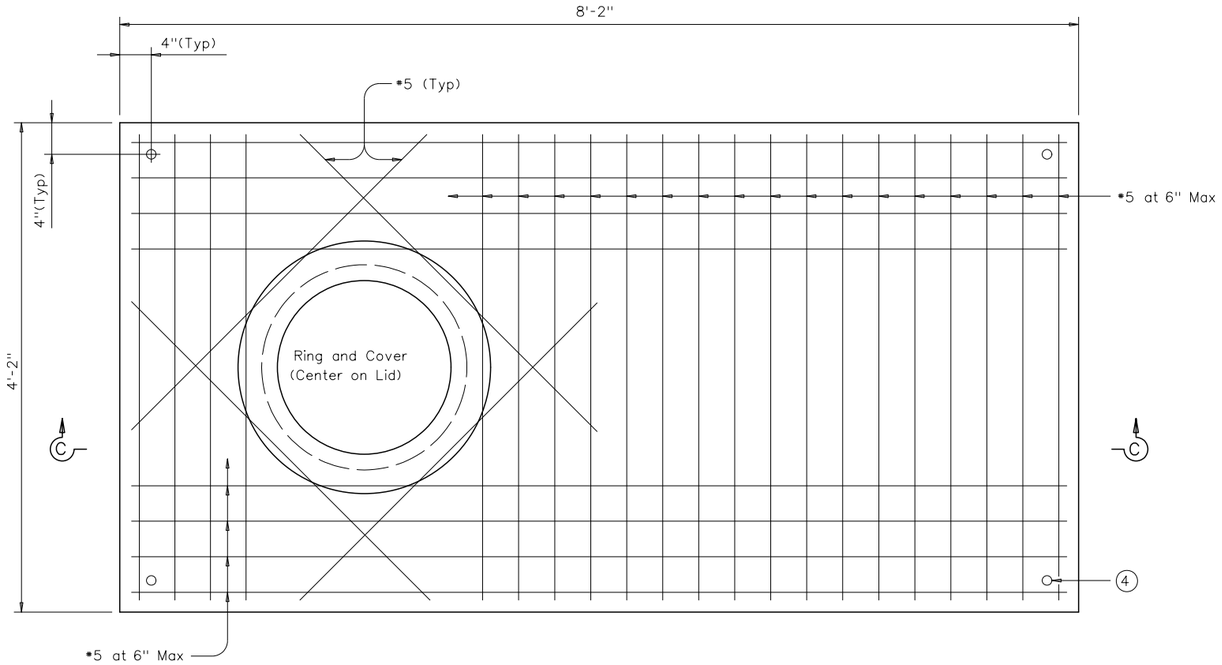
FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

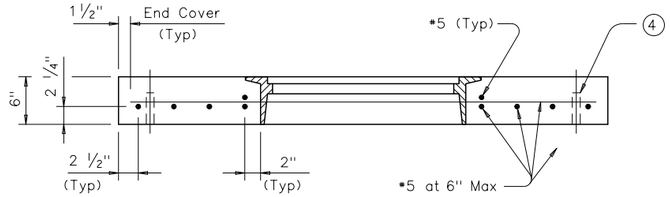
DOUBLE SPECIAL 'Y' INLET DETAIL

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-126	126 OF 252

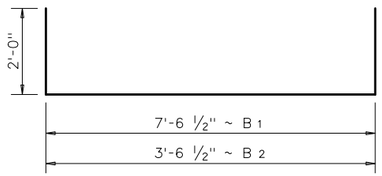


TYPICAL PRECAST LID PLAN



SECTION C-C

(4) Form holes in lid for Dowels D using 1" Dia x 4" PVC Pipe (SCH 40) (Typ)



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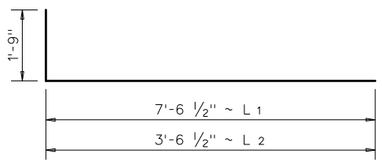

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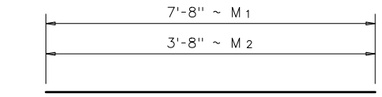
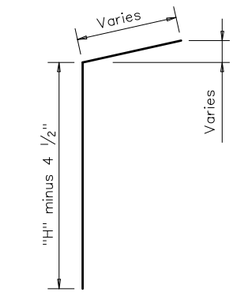


BARS M (*4)



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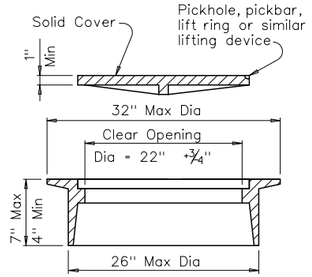

RING AND COVER DETAILS

Approximate Weight = 245 lb

GENERAL NOTES:

When approved, precast inlets with equivalent structural capacity may be furnished. Sealed engineering calculations and drawings shall be submitted for approval prior to construction.

Shop drawings will not be required.

Apron will be cast-in-place.

Lid will be precast.

In areas of conflict between reinforcing steel, blockouts, pipes, anchor bolts or other reinforcing steel, the reinforcement shall be bent or adjusted to clear as directed by the Engineer.

Structural Steel for grates shall conform to the requirements of ASTM Designation A-36 or AISI Designation M1010-M1020.

All reinforcing steel shall be Grade 60 unless otherwise noted.

All concrete shall be Class "A" (f'c = 3,000 psi).

All steel components except reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Inlet is to used in ditches and medians away from the roadway.

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

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Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

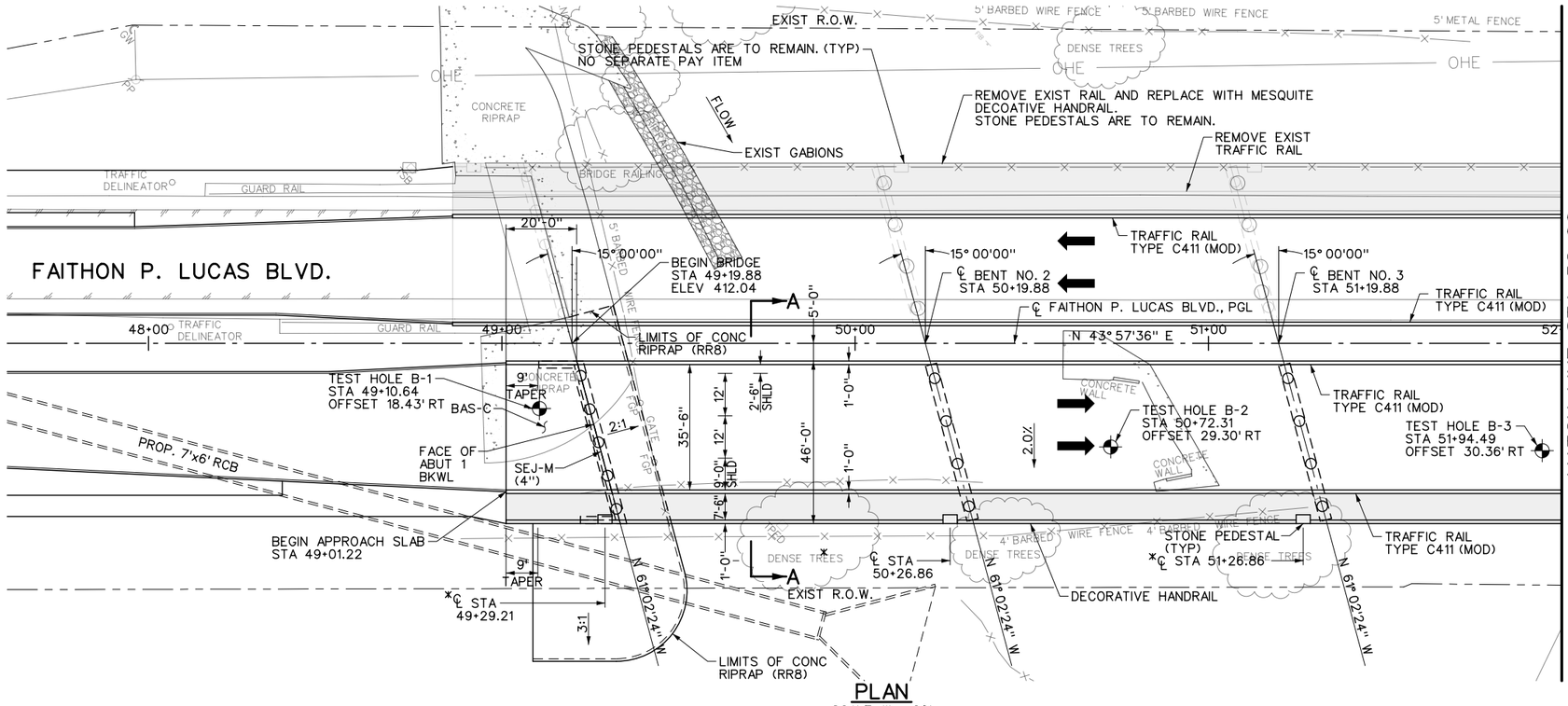
FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

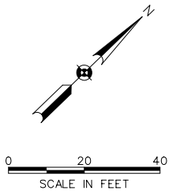
DOUBLE SPECIAL 'Y' INLET DETAIL

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-127	127 OF 252



PLAN
SCALE 1" = 20'



*NOTE:

CONSTRUCT PEDESTALS AT THESE LOCATIONS TO ACCEPT PLACEMENT OF LIGHT POLES AS SHOWN ON PEDESTRIAN RAIL DETAIL SHEET. LIGHT POLES TO BE PLACED ON FUTURE PROJECT. OMIT CONDUIT TURN-UP AND LIGHT POLE ANCHOR BOLTS FOR PEDESTAL LOCATED AT STA. 00+00.00.

VERTICAL CURVE DATA

VPI STA 52+14.00
EL = 416.10
VC = 300.00'
E = (-)1.12

(+)1.500 (-)1.500

DESIGN NOTES:

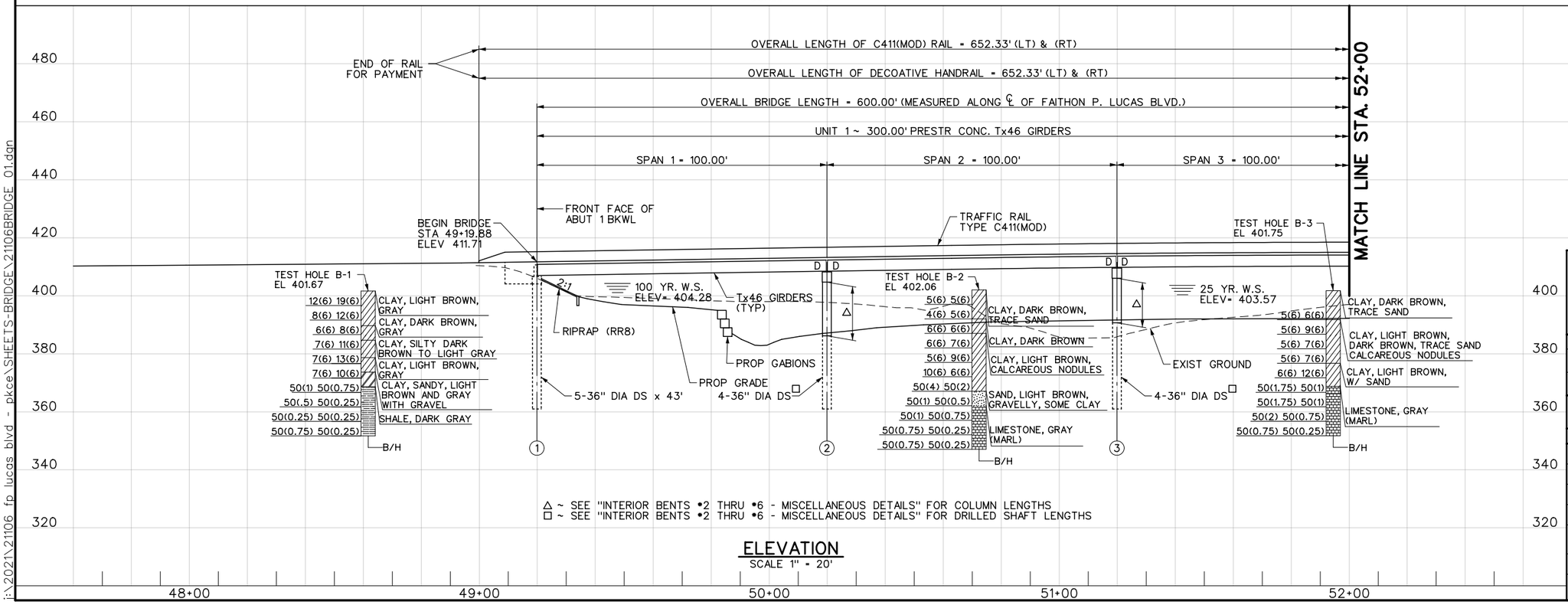
BRIDGE DESIGNED FOR HL 93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE SPECIFICATIONS, 4TH EDITION.

Design Speed = 45 MPH
ADT = 2450 (2003)
ADT = 4465 (2023)
FUNCTIONAL CLASS = MINOR ARTERIAL

NOTE:

1. SEE SHEET 130 OF 252 FOR SECTION A-A.

NEW NBI: 18-057-0-0353-04-412



△ ~ SEE "INTERIOR BENTS •2 THRU •6 - MISCELLANEOUS DETAILS" FOR COLUMN LENGTHS
□ ~ SEE "INTERIOR BENTS •2 THRU •6 - MISCELLANEOUS DETAILS" FOR DRILLED SHAFT LENGTHS

ELEVATION
SCALE 1" = 20'

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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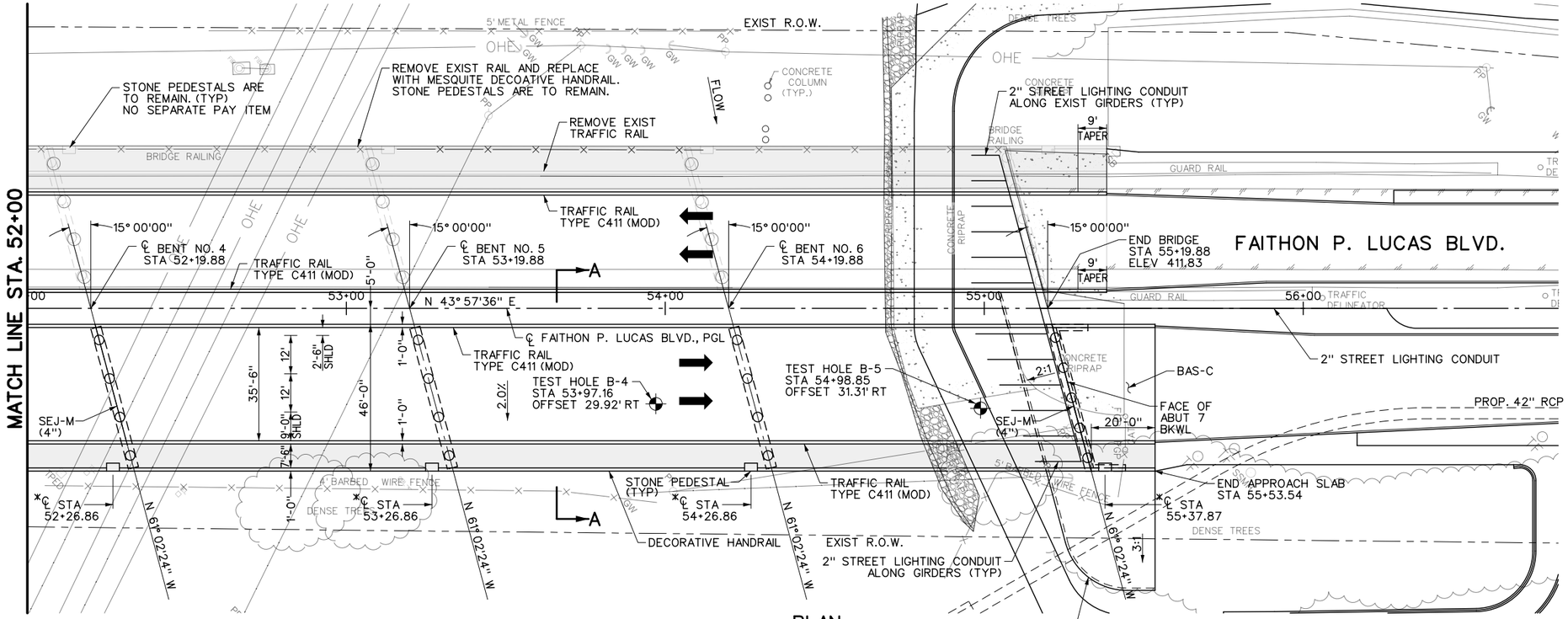
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

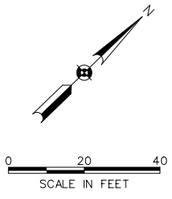
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
BRIDGE LAYOUT

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-128	128 OF 252



PLAN
SCALE 1" = 20'



*NOTE:

CONSTRUCT PEDESTALS AT THESE LOCATIONS TO ACCEPT PLACEMENT OF LIGHT POLES AS SHOWN ON PEDESTRIAN RAIL DETAIL SHEET. LIGHT POLES TO BE PLACED ON FUTURE PROJECT. OMIT CONDUIT TURN-UP AND LIGHT POLE ANCHOR BOLTS FOR PEDESTAL LOCATED AT STA. 00+00.00.

VERTICAL CURVE DATA

VPI STA 52+14.00
EL = 416.10
VC = 300.00'
E = (-)1.12

(+)1.500 (-)1.500

DESIGN NOTES:

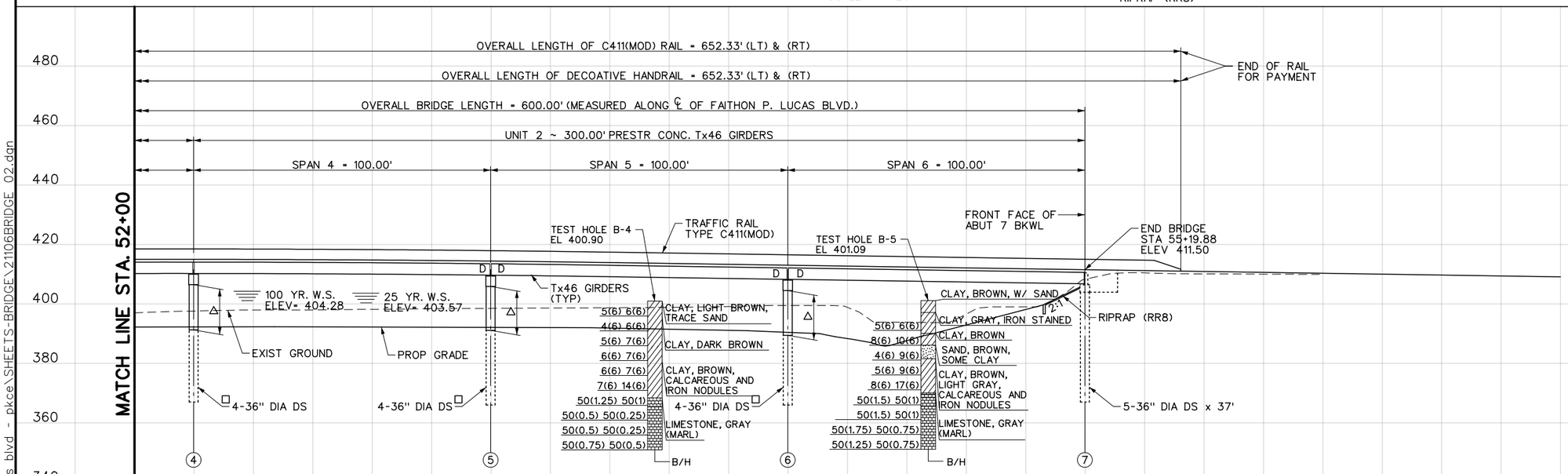
BRIDGE DESIGNED FOR HL 93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE SPECIFICATIONS, 4TH EDITION.

Design Speed = 45 MPH
ADT = 2450 (2003)
ADT = 4465 (2023)
FUNCTIONAL CLASS = MINOR ARTERIAL

NOTE:

1. SEE SHEET 130 OF 252 FOR SECTION A-A.

NEW NBI: 18-057-0-0353-04-412



ELEVATION
SCALE 1" = 20'

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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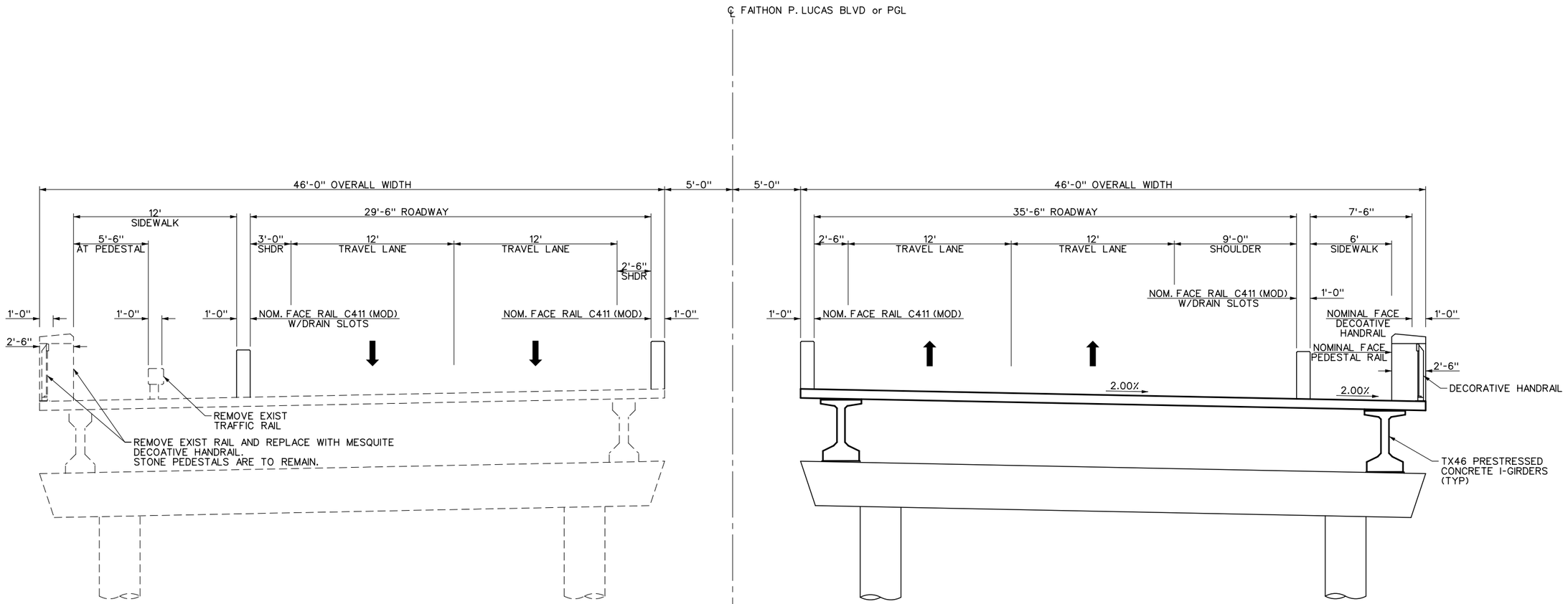
FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
BRIDGE LAYOUT

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-129	129 OF 252



EXISTING BRIDGE

PROPOSED BRIDGE

TYPICAL SECTION A-A
NTS

HL93 LOADING

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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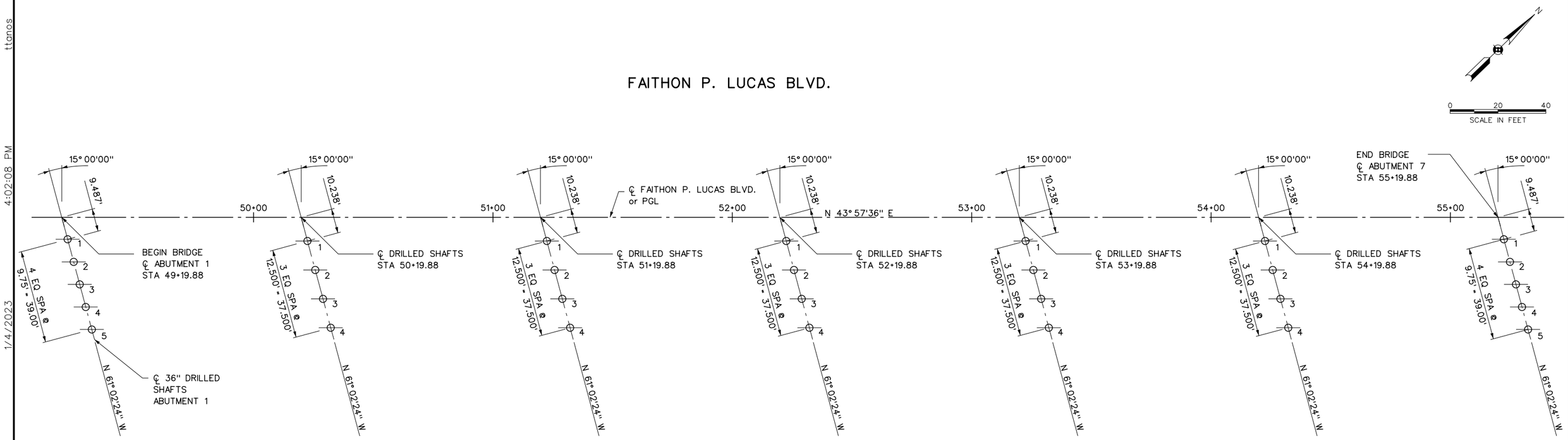
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
BRIDGE LAYOUT

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-130	130 OF 252



PROPOSED FOUNDATION PLAN

SCALE: 1"=20'

DRILLED SHAFTS COORDINATES															
ABUTMENT 1				BENT 2				BENT 3				BENT 4			
SHAFTS	SIZE (in)	N	E	SHAFTS	SIZE (in)	N	E	SHAFTS	SIZE (in)	N	E	SHAFTS	SIZE (in)	N	E
1	36	6953205.8970	2562067.6737	1	36	6953277.0926	2562138.5112	1	36	6953349.0752	2562207.9266	1	36	6953421.0578	2562277.3421
2	36	6953201.0550	2562076.4232	2	36	6953271.1612	2562149.2295	2	36	6953343.1438	2562218.6449	2	36	6953415.1264	2562288.0603
3	36	6953196.2130	2562085.1728	3	36	6953265.2298	2562159.9477	3	36	6953337.2124	2562229.3631	3	36	6953409.1950	2562298.7786
4	36	6953191.3711	2562093.9224	4	36	6953259.2984	2562170.6660	4	36	6953331.2810	2562240.0814	4	36	6953403.2636	2562309.4968
5	36	6953186.5291	2562102.6720												

DRILLED SHAFTS COORDINATES											
BENT 5				BENT 6				ABUTMENT 7			
SHAFTS	SIZE (in)	N	E	SHAFTS	SIZE (in)	N	E	SHAFTS	SIZE (in)	N	E
1	36	6953493.0405	2562346.7575	1	36	6953565.0231	2562416.1729	1	36	6953637.7927	2562484.1663
2	36	6953487.1091	2562357.4758	2	36	6953559.0917	2562426.8912	2	36	6953632.9507	2562492.9159
3	36	6953481.1776	2562368.1940	3	36	6953553.1603	2562437.6094	3	36	6953628.1088	2562501.6654
4	36	6953475.2462	2562378.9123	4	36	6953547.2288	2562448.3277	4	36	6953623.2668	2562510.4150
								5	36	6953618.4248	2562519.1646

HL93 LOADING

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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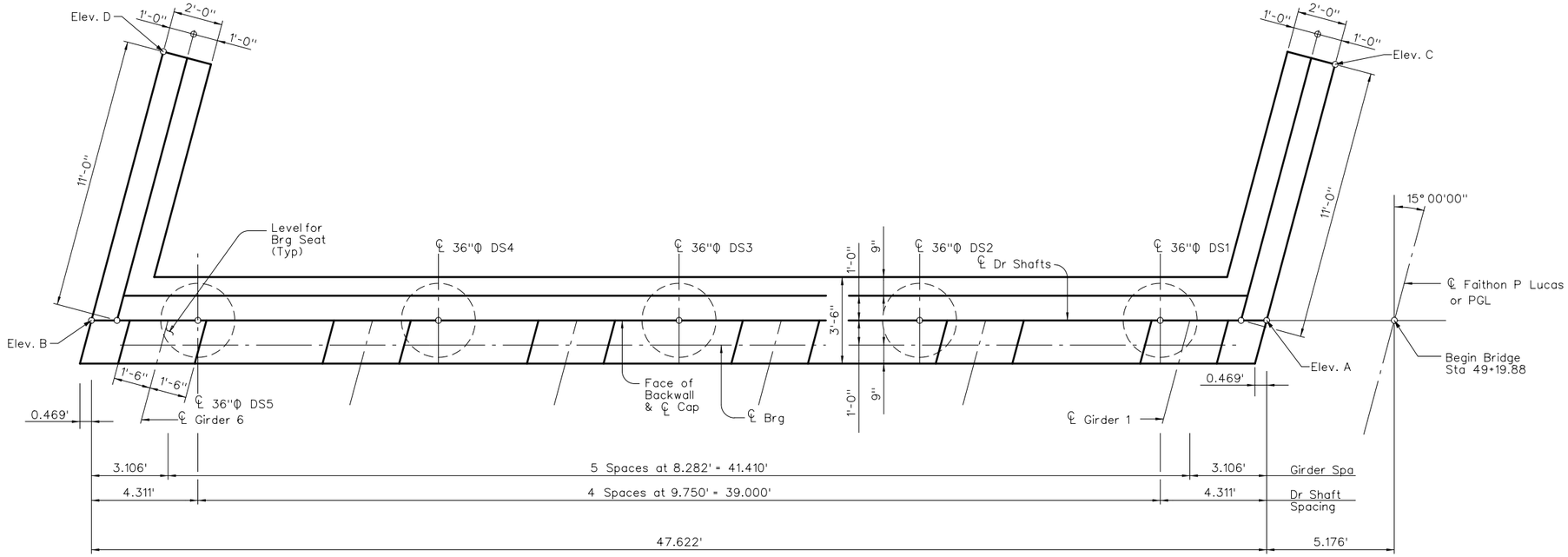
CITY CONTRACT NO. 2020-095

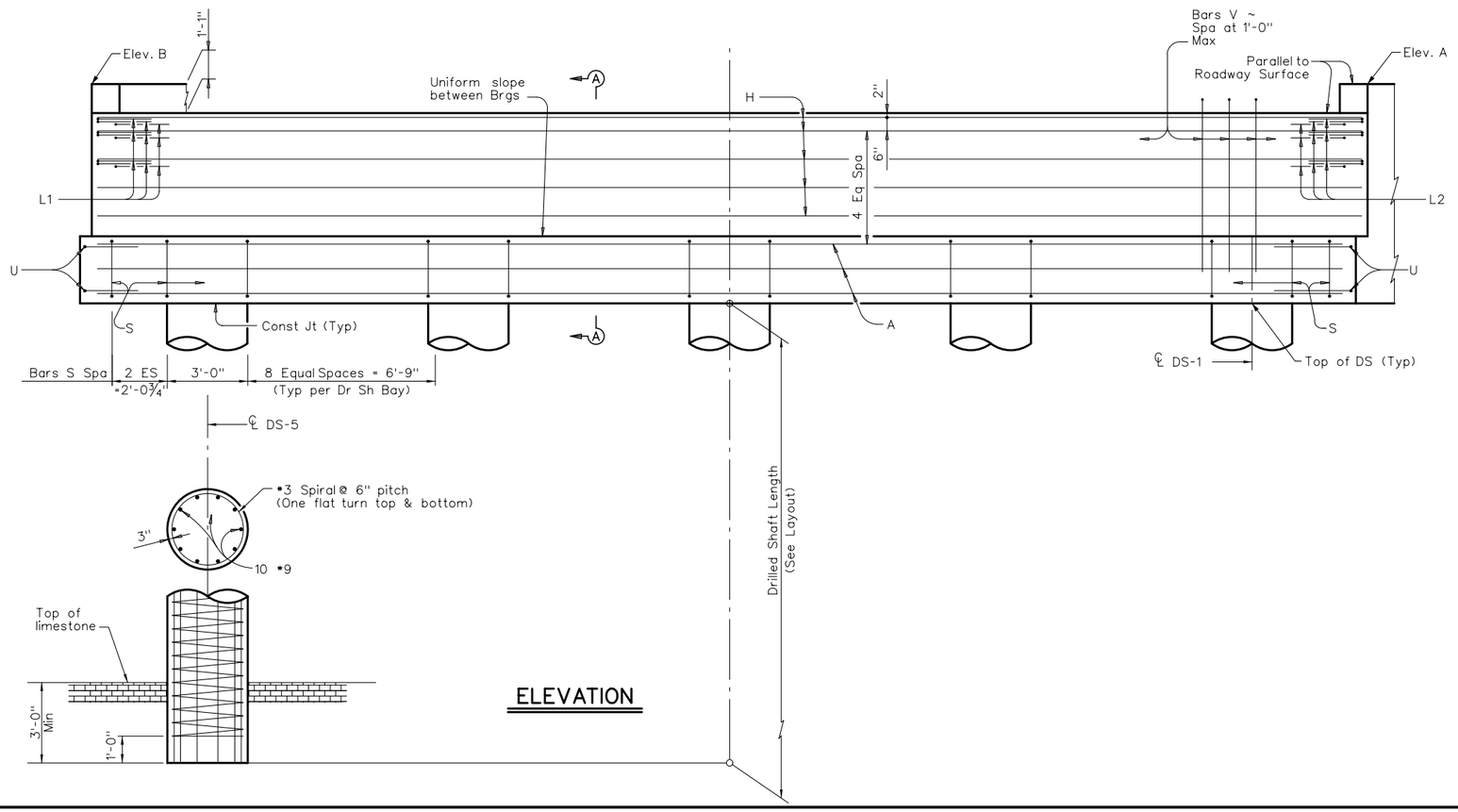
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
FOUNDATION PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-131	131 OF 252



PLAN



ELEVATION

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.
Concrete strength f'c = 3,600 psi.
All cap and wall reinforcing shall be Grade 60.
See Bridge Layout for header slope and Drilled Shaft length.
See Girder Layout sheet for girder angles and locations.
Provide spiral steel with one extra turn at the top, bottom, and at splices.
Include the reinforcing extending from the shaft into the cap in the price bid per foot of drilled shaft.
Finish bearing seats with a wood float.
Drilled Shaft reinforcing may be Grade 40.
Calculated Drilled Shaft Foundation Load = 94 Tons/D.S.

GIRDERS BEARING SEAT ELEVATIONS					
Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
406.61	406.49	406.36	406.23	406.10	405.97

TOP OF DRILLED SHAFT ELEVATIONS				
DS-1	DS-2	DS-3	DS-4	DS-5
403.95	403.80	403.65	403.50	403.35

CONTROL ELEVATIONS			
A	B	C	D
411.63	410.89	411.43	410.70

HL93 LOADING

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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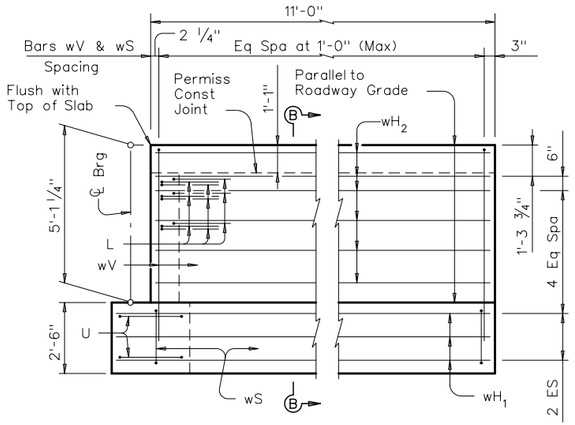
FIRM REG. #3091

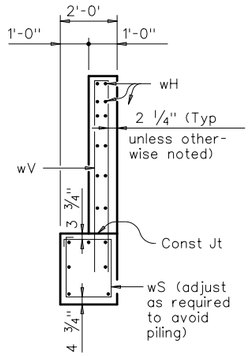
CITY CONTRACT NO. 2020-095
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
ABUTMENT #1

CITY OF MESQUITE, TEXAS

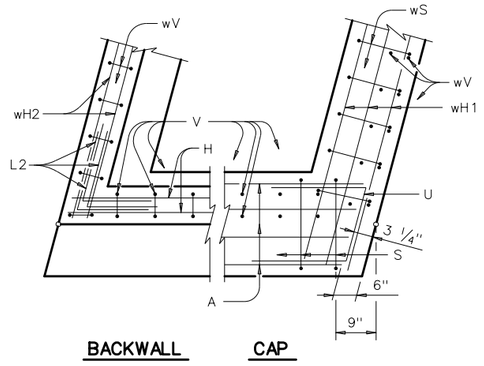
DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-132	132 OF 252



WINGWALL ELEVATION



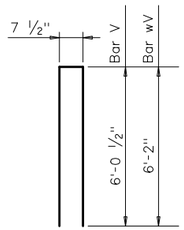
SECTION B-B



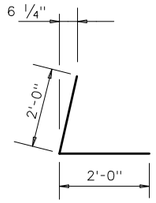
BACKWALL **CAP**

CORNER DETAILS

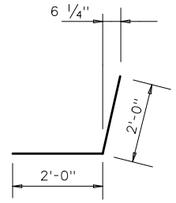
TABLE OF ESTIMATED QUANTITIES				
Bar	No.	Size	Length	Weight
A	10	#11	46'-7"	2,475
H	10	#6	47'-3"	710
L_1	9	#6	4'-0"	54
L_2	9	#6	4'-0"	54
S	42	#5	11'-4"	496
U	4	#6	8'-1"	49
V	47	#5	14'-1"	690
wH_1	14	#6	12'-5"	303
wH_2	24	#6	10'-8"	457
wS	28	#4	7'-8"	143
wV	28	#5	14'-4"	419
Reinforcing Steel			Lb	5,850
Class "C" Concrete			CY	32.2



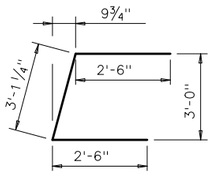
BARS V & wV



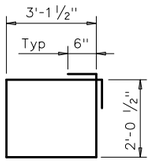
BARS L1



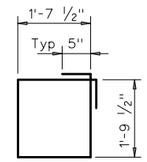
BARS L2



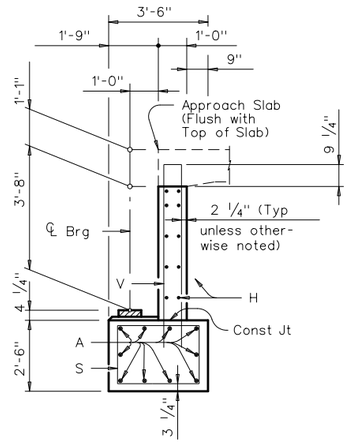
BARS U



BARS S

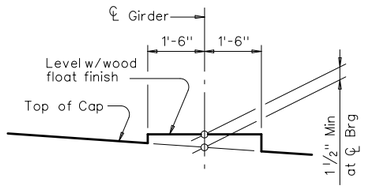


BARS wS



SECTION A-A

(With Approach Slab)



BEARING SEAT DETAIL

(Bearing surface shall be clean and free of all loose material before placing bearing pad.)

HL93 LOADING

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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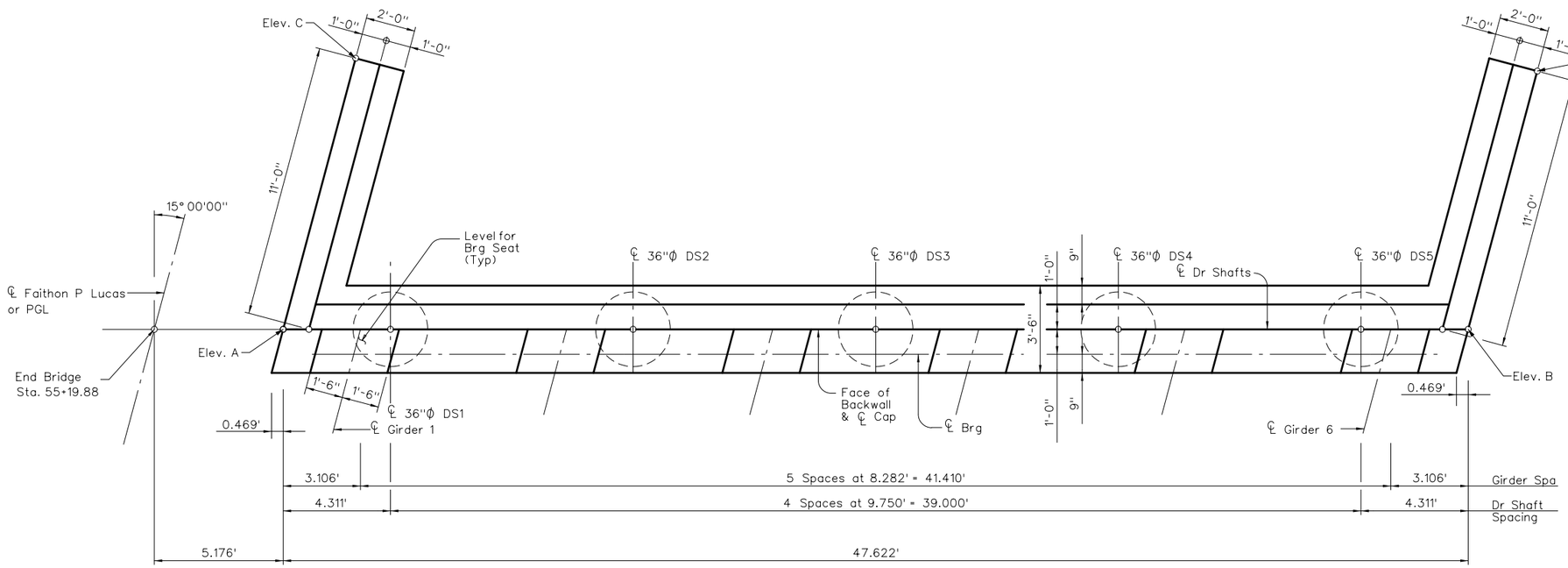
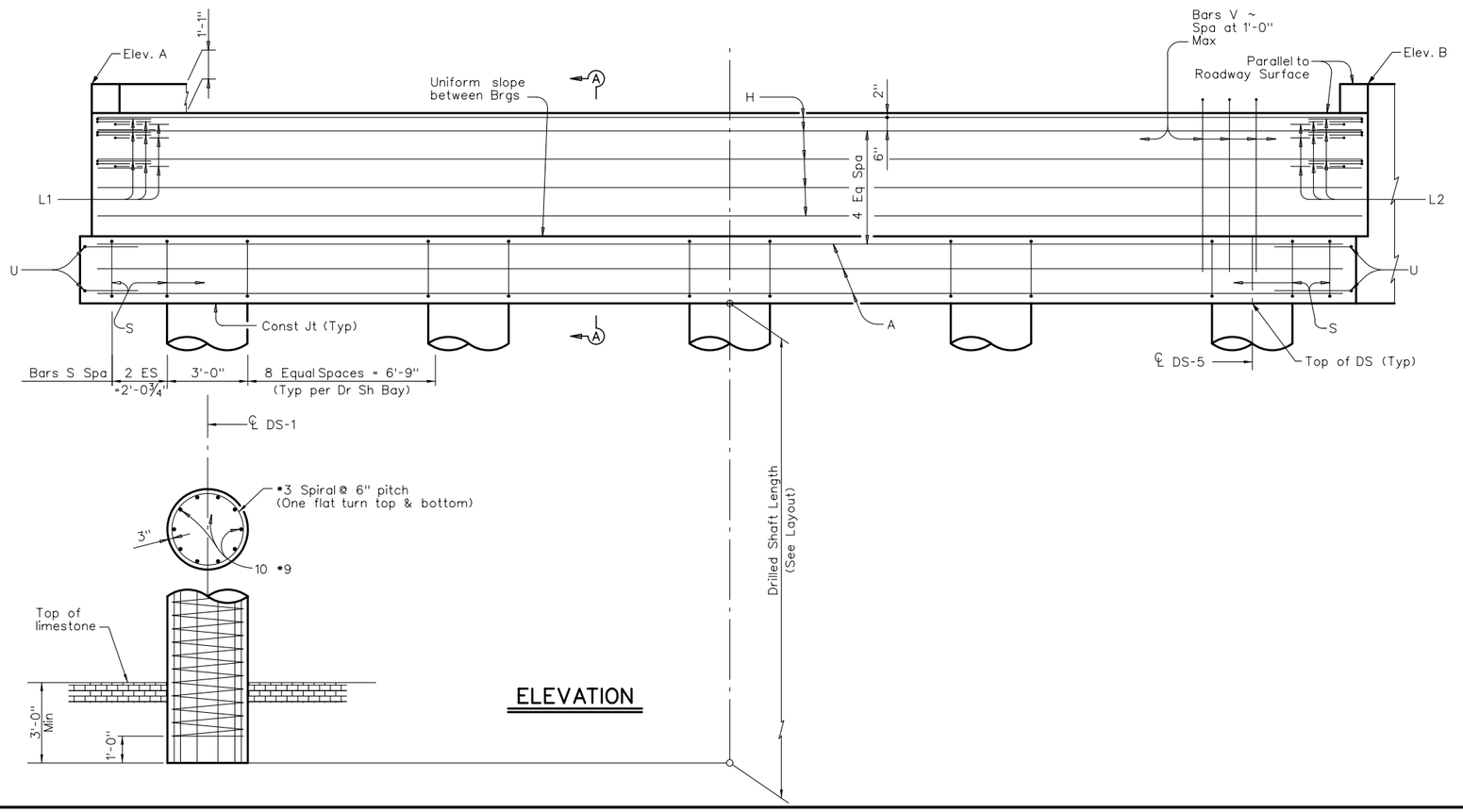
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
ABUTMENT #1
MISCELLANEOUS DETAILS
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-133	133 OF 252



PLAN



ELEVATION

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.
Concrete strength f'c = 3,600 psi.
All cap and wall reinforcing shall be Grade 60.
See Bridge Layout for header slope and Drilled Shaft length.
See Girder Layout sheet for girder angles and locations.
Provide spiral steel with one extra turn at the top, bottom, and at splices.
Include the reinforcing extending from the shaft into the cap in the price bid per foot of drilled shaft.
Finish bearing seats with a wood float.
Drilled Shaft reinforcing may be Grade 40.
Calculated Drilled Shaft Foundation Load = 94 Tons/D.S.

GIRDERS BEARING SEAT ELEVATIONS					
Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
406.34	406.15	405.95	405.76	405.57	405.38

TOP OF DRILLED SHAFT ELEVATIONS				
DS-1	DS-2	DS-3	DS-4	DS-5
403.67	403.44	403.22	402.99	402.77

CONTROL ELEVATIONS			
A	B	C	D
411.38	410.27	411.18	410.08

HL93 LOADING

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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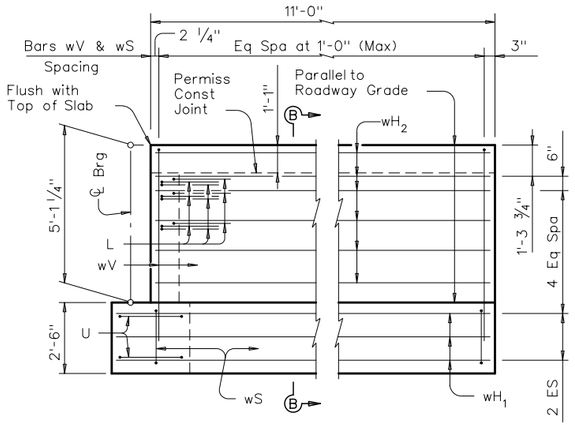
FIRM REG. #3091

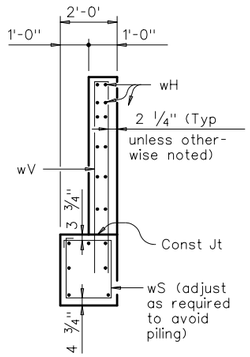
CITY CONTRACT NO. 2020-095
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD.TO CARTWRIGHT RD.
ABUTMENT #7

CITY OF MESQUITE, TEXAS

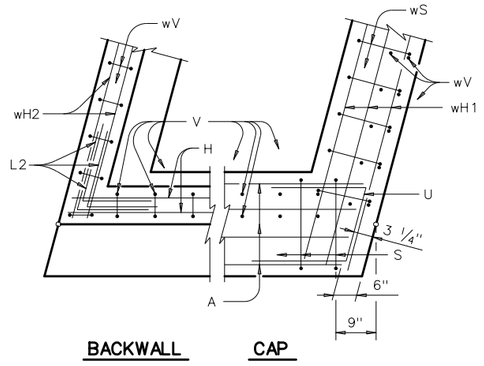
DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-134	134 OF 252



WINGWALL ELEVATION

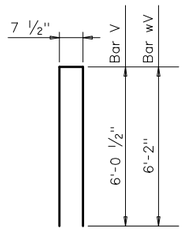


SECTION B-B

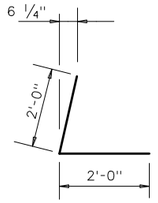


BACKWALL CAP

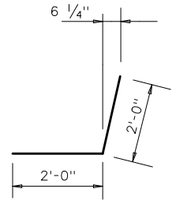
CORNER DETAILS



BARS V & wV



BARS L1



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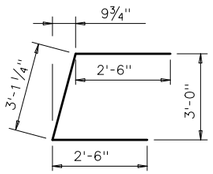
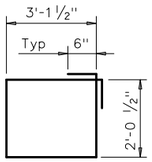
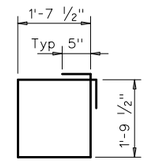


BARS U



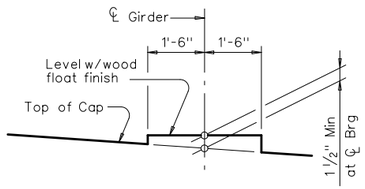
BARS S



BARS wS

SECTION A-A

(With Approach Slab)



BEARING SEAT DETAIL

(Bearing surface shall be clean and free of all loose material before placing bearing pad.)

TABLE OF ESTIMATED QUANTITIES

Bar	No.	Size	Length	Weight
A	10	#11	46'-7"	2,475
H	10	#6	47'-3"	710
L_1	9	#6	4'-0"	54
L_2	9	#6	4'-0"	54
S	42	#5	11'-4"	496
U	4	#6	8'-1"	49
V	47	#5	14'-1"	690
wH_1	14	#6	12'-5"	303
wH_2	24	#6	10'-8"	457
wS	28	#4	7'-8"	143
wV	28	#5	14'-4"	419
Reinforcing Steel			Lb	5,850
Class "C" Concrete			CY	32.2

HL93 LOADING

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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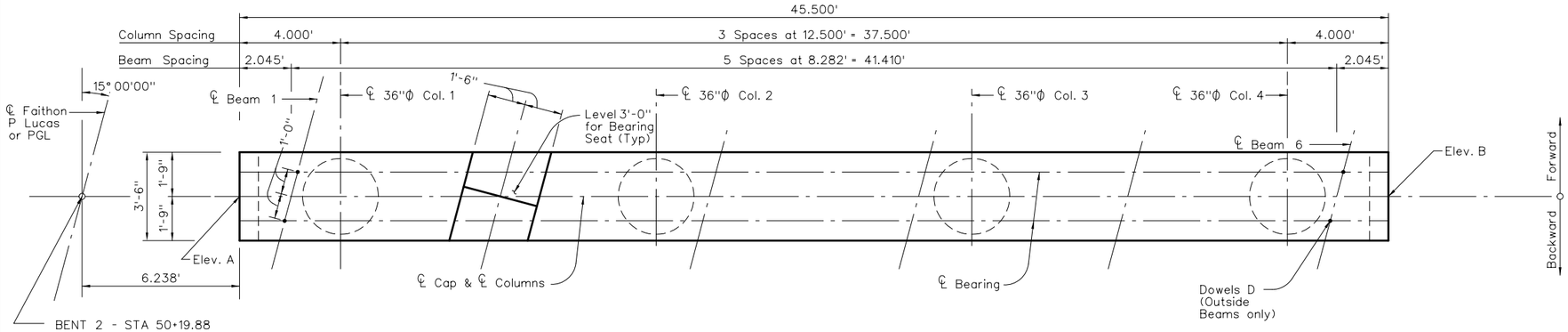
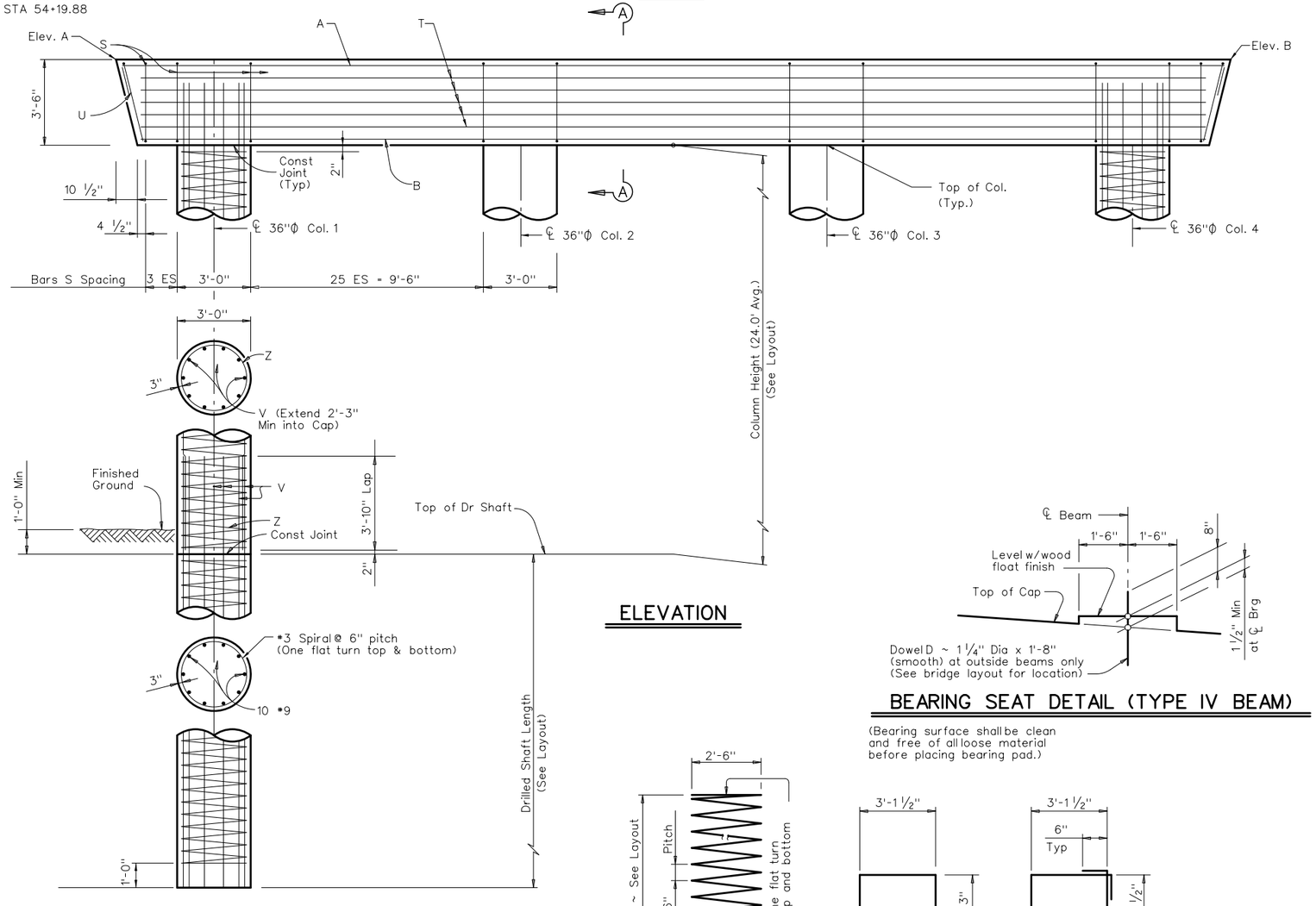
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
ABUTMENT #7
MISCELLANEOUS DETAILS
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-135	135 OF 252



PLAN



ELEVATION

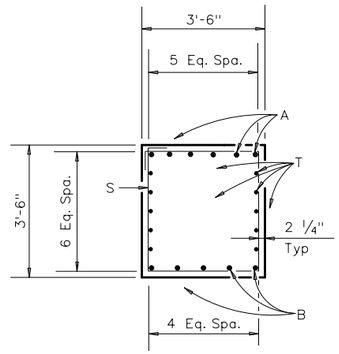
BARS Z

BARS U

BARS S

BEARING SEAT DETAIL (TYPE IV BEAM)

(Bearing surface shall be clean and free of all loose material before placing bearing pad.)



SECTION A-A

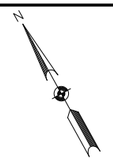


TABLE OF ESTIMATED QUANTITIES~ONE CAP

Bar	No.	Size	Length	Weight
A	6	#11	45'-0"	1,435
B	5	#11	43'-6"	1,156
D	4	1¼"D	1'-8"	28
S	86	#5	13'-6"	1211
T	10	#5	43'-6"	454
U	2	#5	9'-8"	20
Sub Total			Lb	4,304
□ Reinforcing Steel			Lb	4,304
Class "C" Concrete (Cap)			CY	20.5

□ ~ For Contractor's information only.

NOTES:

Designed according to AASHTO LRFD Specifications.
Concrete strength f'c = 3,600 psi.
All Cap reinforcing must be Grade 60.
Column and Drilled Shaft reinforcing be Grade 40.
Left bent is shown, right bent is similar.
For Max. foundation loads, see Foundation Load Table.
Provide spiral steel with one extra turn at the top, bottom, and at splices.
See Girder Layout Sheet for girder angles & locations.
For Bearing Seat Elev., Top of Col. Elev., Control Elev., and other Details and Quantities not shown see "Bents #2 thru #6 Miscellaneous Detail" sheet.

HL93 LOADING

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD.TO CARTWRIGHT RD.
INTERIOR BENTS #2 THRU #6

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-136	136 OF 252

FOUNDATION LOAD (Tons/D.S.)				
BENT 2	BENT 3	BENT 4	BENT 5	BENT 6
226	225	224	224	224

COLUMN LENGTHS (FT)				
BENT NO.	COL. 1	COL. 2	COL. 3	COL. 4
2	19.0	19.5	20.0	21.0
3	15.5	15.5	16.0	15.5
4	15.5	15.5	15.5	15.5
5	15.0	15.0	15.0	15.5
6	15.0	15.5	16.0	16.5

DRILLED SHAFT LENGTHS (FT)				
BENT NO.	D.S. 1	D.S. 2	D.S. 3	D.S. 4
2	25.0	24.0	23.0	22.0
3	30.0	29.0	29.0	29.0
4	24.0	24.0	24.0	23.0
5	25.0	25.0	24.0	24.0
6	24.0	23.0	22.0	21.0

TOP OF COLUMN ELEVATIONS				
	COL. 1	COL. 2	COL. 3	COL. 4
BENT #2	404.44	404.25	404.06	403.86
BENT #3	405.76	405.55	405.34	405.12
BENT #4	406.17	405.92	405.68	405.43
BENT #5	405.57	405.29	405.01	404.74
BENT #6	404.15	403.86	403.57	403.28

CONTROL ELEVATIONS		
	ELEV. A	ELEV. B
BENT #2	408.80	407.30
BENT #3	409.33	408.55
BENT #4	409.75	408.85
BENT #5	409.16	408.15
BENT #6	407.75	406.69

COLUMN SCHEDULE ~ ONE COLUMN					Est. Quant. ~4 Col.	
COLUMN HEIGHT, H	BARS V ~ 10-#9		BARS Z ~ #3 Spiral		CLASS "C" CONC(BENT) (MASS PLACE)(HPC)	REINF STEEL
FT	LENGTH	WEIGHT	LENGTH	WEIGHT	CY	Lb
14	16'-3"	553	231'	87	3.7	640
15	17'-3"	587	247'	93	3.9	680
16	18'-3"	621	262'	99	4.2	720
17	19'-3"	655	278'	105	4.5	760
18	20'-3"	689	294'	111	4.7	800
19	21'-3"	723	310'	117	5.0	840
20	22'-3"	757	325'	122	5.2	879
21	23'-3"	791	341'	128	5.5	919
22	24'-3"	825	357'	134	5.8	959

Adjust spiral Z length by 7.9 ft. and bars V length by 0.5 ft. for each 0.5 ft. variation in "H" value.
Adjust Estimated Quantity of Concrete for each column by 0.1 CY for each 0.5 ft. variation in "H" value.
Adjust Estimated Quantity of Reinforcing Steel for each column by 20.0 LB for each 0.5 ft. variation in "H" value.

	ESTIMATED QUNATITY		QUANTITY				
	ITEM	UNIT	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6
	DRILL SHAFT (36")	LF	94	117	95	98	90
	CL C CONC (BENT)	CY	41.3	36.7	36.5	36.2	36.9
□	REINF STL	LB	7402	7124	7104	7044	7124

□ ~ For Contractor's information only.

BEAMS BEARING SEAT ELEVATIONS							
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5	BEAM 6
BENT #2	FORWARD	408.11	407.99	407.86	407.73	407.60	407.47
	BACKWARD	408.08	407.96	407.83	407.70	407.57	407.44
BENT #3	FORWARD	409.43	409.29	409.15	409.01	408.87	408.72
	BACKWARD	409.41	409.27	409.13	408.99	408.85	408.71
BENT #4	FORWARD	409.83	409.67	409.51	409.34	409.18	409.01
	BACKWARD	409.83	409.67	409.51	409.35	409.18	409.02
BENT #5	FORWARD	409.23	409.05	408.86	408.68	408.49	408.31
	BACKWARD	409.25	409.07	408.88	408.70	408.51	408.33
BENT #6	FORWARD	407.81	407.62	407.42	407.23	407.04	406.85
	BACKWARD	407.84	407.65	407.45	407.26	407.07	406.88

HL93 LOADING

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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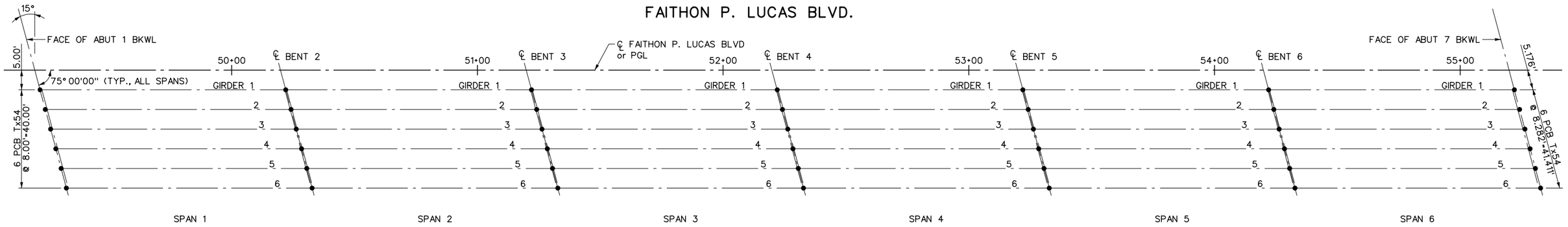
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
INTERIOR BENTS #2 THRU #6
MISCELLANEOUS DETAILS
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-137	137 OF 252



PROPOSED GIRDER LAYOUT

SCALE: 1"=20'

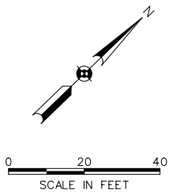
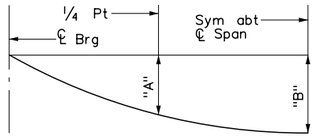


TABLE OF GIRDER ANGLES & LENGTHS

SPAN	GIRDER	GIRDER ANGLE	DISTANCE C-C BENT	DISTANCE C-C BRG	TRUE GIRDER LENGTH BOTTOM FLANGE	GIRDER SLOPE
	ABUTMENT 1 N 61° 02'24.00" W					
1	1 - 6	75° 00'00.00"	100.00'	97.93'	99.49'	0.0150
	BENTS 2 THRU 6 N 61° 02'24.00" W					
2	1 - 6	75° 00'00.00"	100.00'	97.93'	99.49'	0.0130
3	1 - 6	75° 00'00.00"	100.00'	97.93'	99.49'	0.0036
4	1 - 6	75° 00'00.00"	100.00'	97.93'	99.49'	-0.0065
5	1 - 6	75° 00'00.00"	100.00'	97.93'	99.49'	-0.0144
	ABUTMENT 7 N 61° 02'24.00" W					
6	1 - 6	75° 00'00.00"	100.00'	97.93'	99.49'	-0.0150
				TOTAL	3,581.64'	

TABLE OF DEAD LOAD DEFLECTIONS

SPAN	GIRDER	"A" FT	"B" FT
1-6	1	0.058	0.081
1-6	2-5	0.066	0.092
1-6	6	0.058	0.081



DEAD LOAD DEFLECTION DIAGRAM

Calculated deflections shown are due to the concrete slab on interior Girders only (Ec = 5000 ksi). Adjust values as required for exterior Girders and if optional slab forming is used. These values may require field verification.

HL93 LOADING

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

GIRDER LAYOUT

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-138	138 OF 252

TABLE OF ESTIMATED QUANTITIES

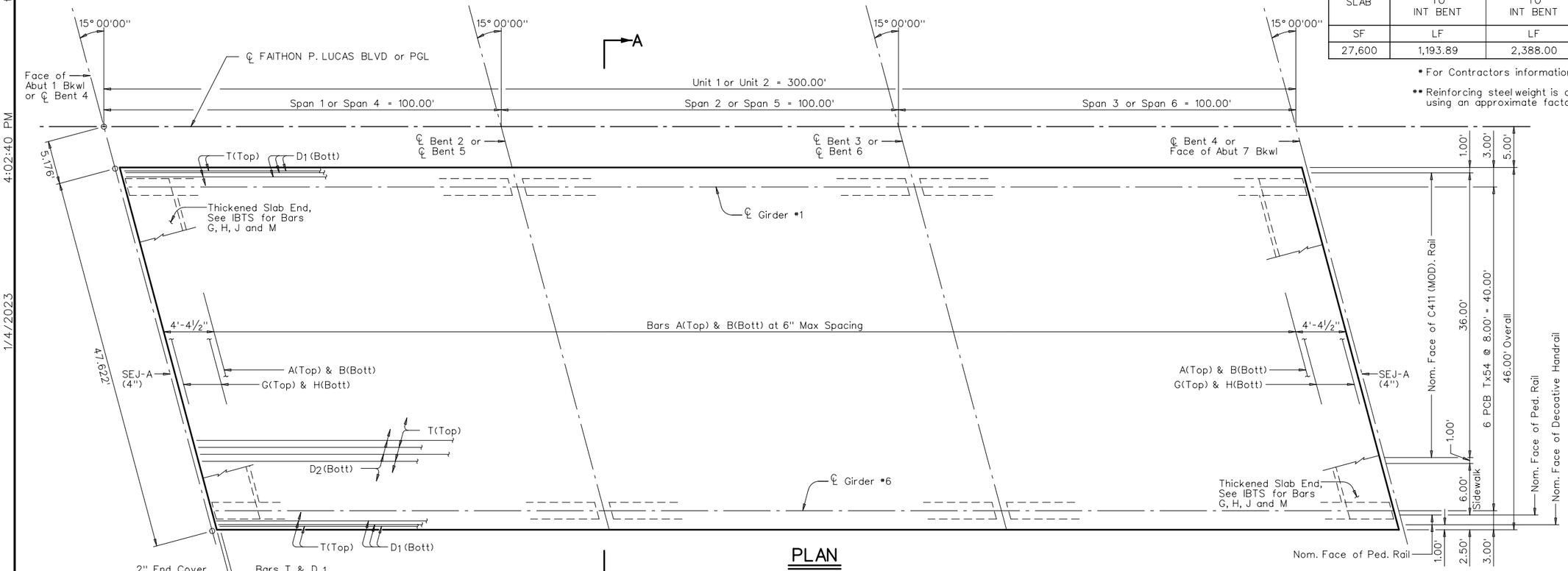
REINF CONCRETE SLAB	PRESTR CONC GIRDER (TX 46) ABUTMENT TO INT BENT	PRESTR CONC GIRDER (TX 46) INT BENT TO INT BENT	* CLASS "S" CONCRETE	** TOTAL REINF STEEL
SF	LF	LF	CY	Lb
27,600	1,193.89	2,388.00	847.3	179,400

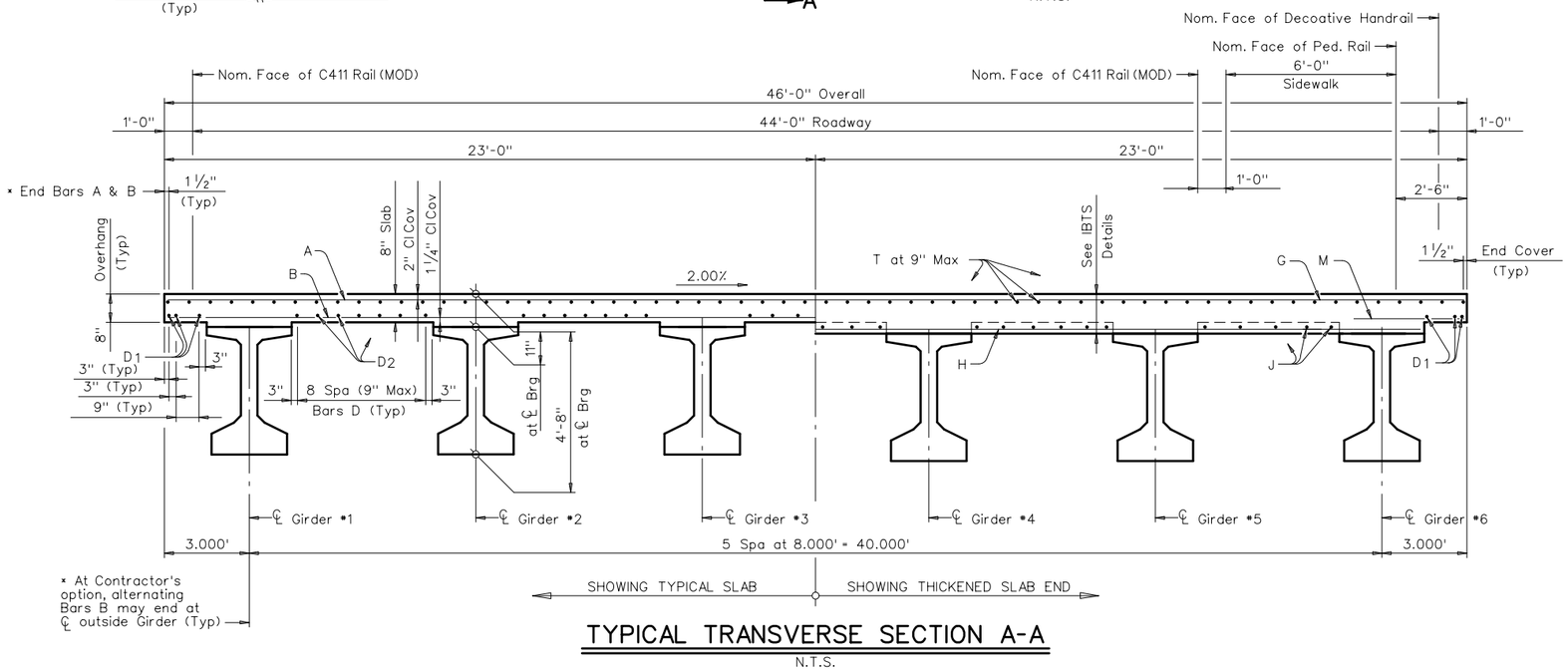
* For Contractors information only.

** Reinforcing steel weight is calculated using an approximate factor of 6.5 lb/sf for slab.

BAR TABLE

BAR	SIZE
A	#5
B	#5
D	#5
G	#5
H	#5
J	#5
M	#5
T	#4





TYPICAL TRANSVERSE SECTION A-A

N.T.S.

HL93 LOADING

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Multi-span units, with slab continuous over interior bents, may be formed with the details on this sheet and Standard IBCS.

This standard is drawn showing right forward skew. See Bridge Layout for actual skew direction.

See IBTS Standard for Thickened Slab End Details and quantity adjustments.

See PCP or PMDF Standards for details and quantity adjustments if either of these options are used.

See IBMS Standard for miscellaneous details.

All reinforcing shall be Grade 60.

Concrete strength f'c = 4,000 psi.

Bar laps, where required, shall be as follows:

Uncoated ~ #4 = 1'-5"
~ #5 = 1'-9"

Epoxy Coated ~ #4 = 2'-1"
~ #5 = 2'-7"

See railing details for rail anchorage in slab.

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

SLAB DETAILS - UNIT 1 & 2

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-139	139 OF 252

STRUCTURE	DESIGNED GIRDERS								DEPRESSED STRAND PATTERN		CONCRETE		OPTIONAL DESIGN					LOAD RATING FACTORS		
	SPAN NO.	GIRDER NO.	GIRDER TYPE	PRESTRESSING STRANDS					NO.	TO END (in)	RELEASE STRGTH (1) f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)	DESIGN LOAD COMP STRESS (TOP ℄) (SERVICE I) fct(ksi)	DESIGN LOAD TENSILE STRESS (BOTT ℄) (SERVICE III) fcb(ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (kip-ft)	LIVE LOAD DISTRIBUTION FACTOR (2)		STRENGTH I		SERVICE III
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" ℄ (in)	"e" END (in)							Moment	Shear	Inv	Opr	Inv
		1, 6	Tx46		46	½	270	15.25	9.34	8	42.5	4.936	5.715	3.365	-3.527	5.533	0.853	0.639			
	2-6	2-5	Tx46		48	½	270	15.10	9.43	8	42.5	5.163	6.155	3.506	3.657	5.689	0.853	0.639			

NON-STANDARD STRAND PATTERNS

PATTERN	STRAND ARRANGEMENT AT ℄ OF GIRDER

(1) Based on the following allowable stresses (ksi):

Compression = 0.65 f'ci

Tension = $0.24\sqrt{f'ci}$

Optional designs must likewise conform.

(2) Portion of full HL93.

DESIGN NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications. Load rated using Load and Resistance Factor Rating according to AASHTO Manual for Bridge Evaluation.

Optional designs for girders 120 feet or longer must have a calculated residual camber equal to or greater than that of the designed girder.

Prestress losses for the designed girders have been calculated for a relative humidity of __ percent. Optional designs must likewise conform.

FABRICATION NOTES:

Provide Class H concrete.

Provide Grade 60 reinforcing steel bars.

Use low relaxation strands, each pretensioned to 75 percent of fpu.

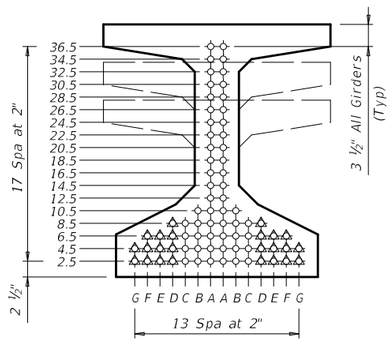
Strand debonding must comply with Item 424.4.2.2.2.4. Full-length debonded strands are only permitted in positions marked △. Double wrap full-length debonded strands in outer most position of each row.

When shown on this sheet, the Fabricator has the option of furnishing either the designed girder or an approved optional design. All optional design submittals must be signed, sealed and dated by a Professional Engineer registered in the State of Texas.

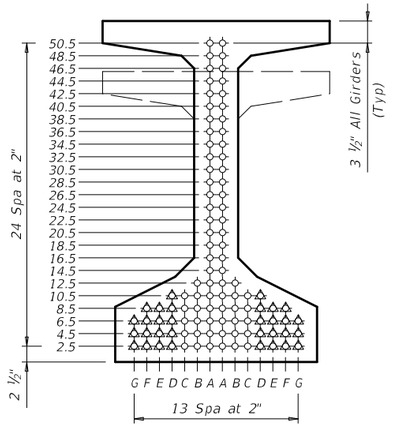
Seal cracks in girder ends exceeding 0.005" in width as directed by the Engineer. The fabricator is permitted to decrease the spacing of Bars R and S by providing additional bars to help limit crack width provided the decreased spacing results in no less than 1" clear between bars. The fabricator must take an approved corrective action if cracks greater than 0.005" form on a repetitive basis.

DEPRESSED STRAND DESIGNS:

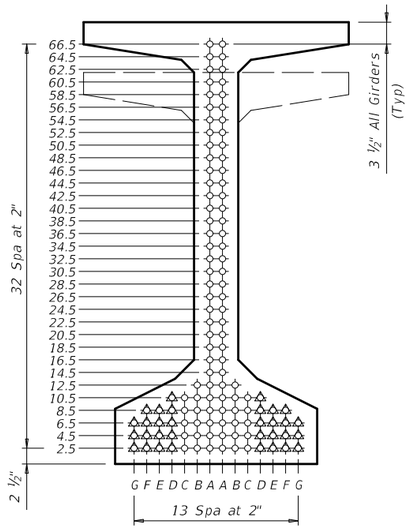
Locate strands for the designed girder as low as possible on the 2" grid system unless a non-standard strand pattern is indicated. Fill row "2.5", then row "4.5", then row "6.5", etc., beginning each row in the "A" position and working outward until the required number of strands is reached. All strands in the "A" position must be depressed, maintaining the 2" spacing so that, at the girder ends, the upper two strands are in the position shown in the table.



TYPE Tx28, Tx34 & Tx40



TYPE Tx46 & Tx54



TYPE Tx62 & Tx70

HL93 LOADING

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

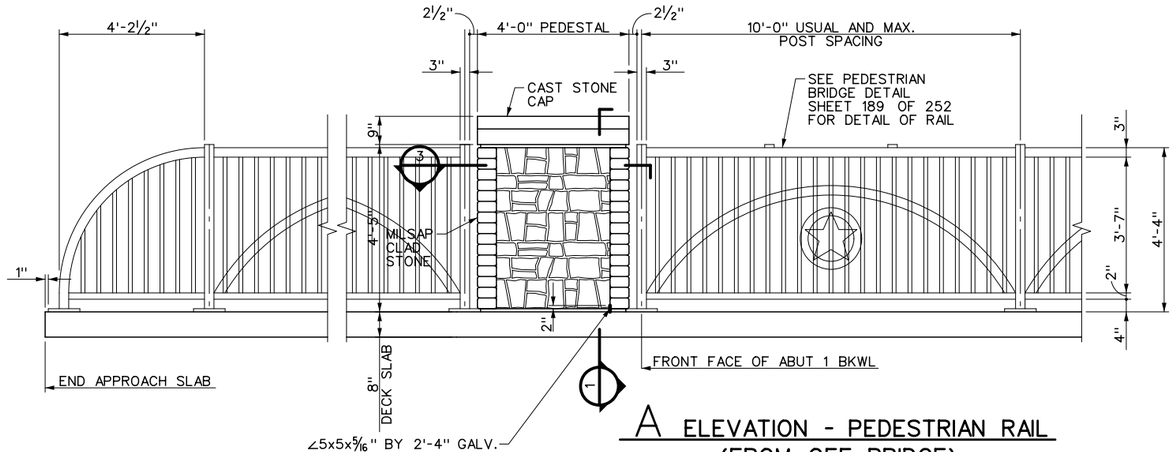
FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

PRESTRESSED CONCRETE I-GIRDER

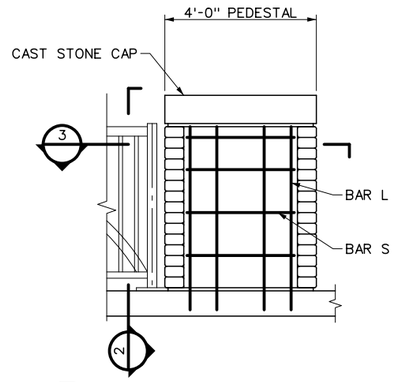
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-140	140 OF 252



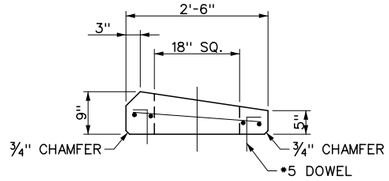
A ELEVATION - PEDESTRIAN RAIL (FROM OFF BRIDGE)

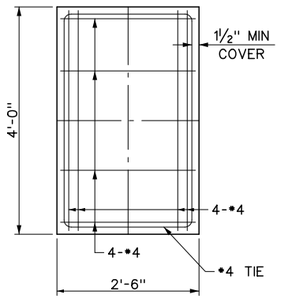
½"=1'-0"



B ELEVATION - PEDESTAL AT LIGHT POLE

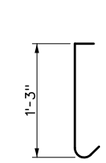
½"=1'-0"





CAST STONE CAP DETAIL

¾"=1'-0"



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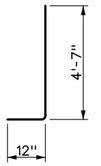

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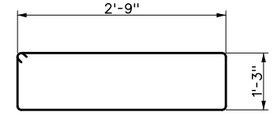

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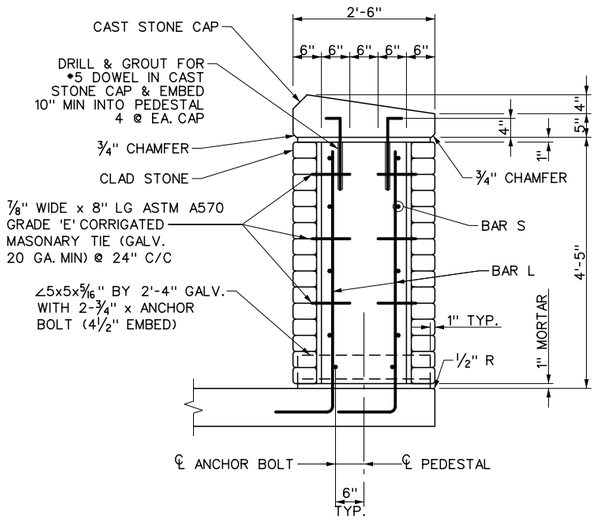
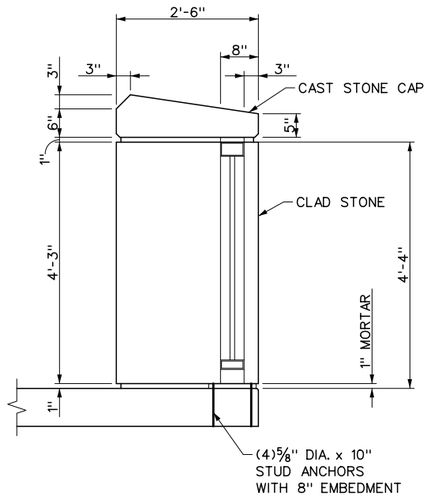


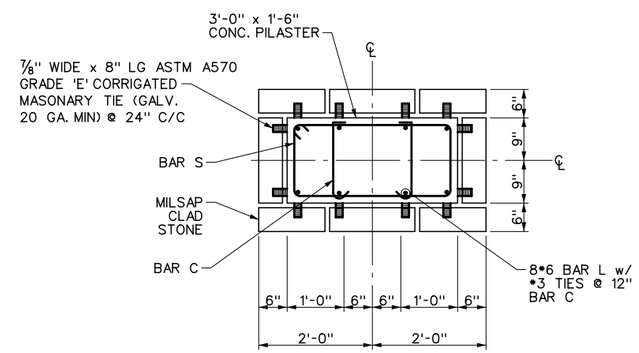
1 SECTION

¾"=1'-0"



2 SECTION

¾"=1'-0"



3 SECTION-PEDESTAL

¾"=1'-0"

1. DESIGNED ACCORDING TO AASHTO 2002 17th EDITION. RAIL & PEDESTAL ARE NOT DESIGNED FOR TRAFFIC LOAD.
2. PROVIDE RAIL EXPANSION JOINTS AT END OF UNITS WHERE BRIDGE SLAB EXPANSION CONDITION EXIST AND AT SPLICES BETWEEN PANELS.
3. PANEL LENGTH OF RAIL SHALL NOT BE LESS THAN 10' & SHALL BE ATTACHED TO A MINIMUM OF TWO POSTS.
4. ALL CONSTRUCTION SHALL BE AS PER TxDOT STANDARD SPECIFICATIONS, 2004.
5. CONCRETE SHALL BE CLASS 'S' WITH fc' = 4000 PSI.
6. REINFORCEMENT SHALL BE GRADE 60.
7. STONE VENEER SHALL BE "MILSAP" NATURAL SANDSTONE. STONE VENEER SHALL BE MINIMUM 4" THICKNESS PLACED IN RANDOM ASHLAR FACING PATTERN. GROUT ALL STONE VENEER JOINTS.
8. CONTRACTOR SHALL SUBMIT ONE STONE SAMPLE, NOT LESS THAN 5 SQ FT FOR APPROVAL OF ENGINEER.
9. CAST STONE SHALL BE PRECAST IN ACCORDANCE WITH TxDOT ITEM 424 & 427. COLOR SHALL BE ACHIEVED THROUGH INTEGRAL ADMIXTURE AND OR SELECT AGGREGATE TO ATTAIN AN OFF WHITE/BUFF COLOR. PROVIDE A FINE GRADE, LIGHT SAND BLAST FINISH. COLOR AND FINISH SHALL BE APPROVED BY THE ENGINEER FROM CONTRACTOR PROVIDED SAMPLES.
10. METAL RAIL SHALL BE PAINTED CONFORMING TO THE REQUIREMENTS FOR PAINTING GALVANIZED STEEL IN TxDOT ITEM 446, "CLEANING AND PAINTING". THE COLOR OF PAINT IS SPECIFIED ELSEWHERE IN THE PLANS.
11. FOR PEDESTAL LOCATION SEE BRIDGE LAYOUT.
12. HANDRAIL, PEDESTAL AND OTHER SURFACES ADJACENT TO THEM SHALL BE FREE OF ANY SHARP OR ABRASIVE ELEMENTS.
13. FABRICATION, ERECTION AND PAYMENT FOR THIS RAIL SHALL BE IN ACCORDANCE WITH TxDOT ITEM 450, "RAILING". PEDESTRIAN RAIL SHALL BE PAIN PER LINEAR FOOT OF INSTALLED FINISHED RAIL. THIS WILL INCLUDE PEDESTALS, STONE CLADDING AND ANCHOR BOLTS.
14. EXISTING BRIDGE STONE PEDESTALS ARE TO REMAIN. NO SEPARATE PAY ITEM.

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

STONE PEDESTAL DETAILS

CITY OF MESQUITE, TEXAS

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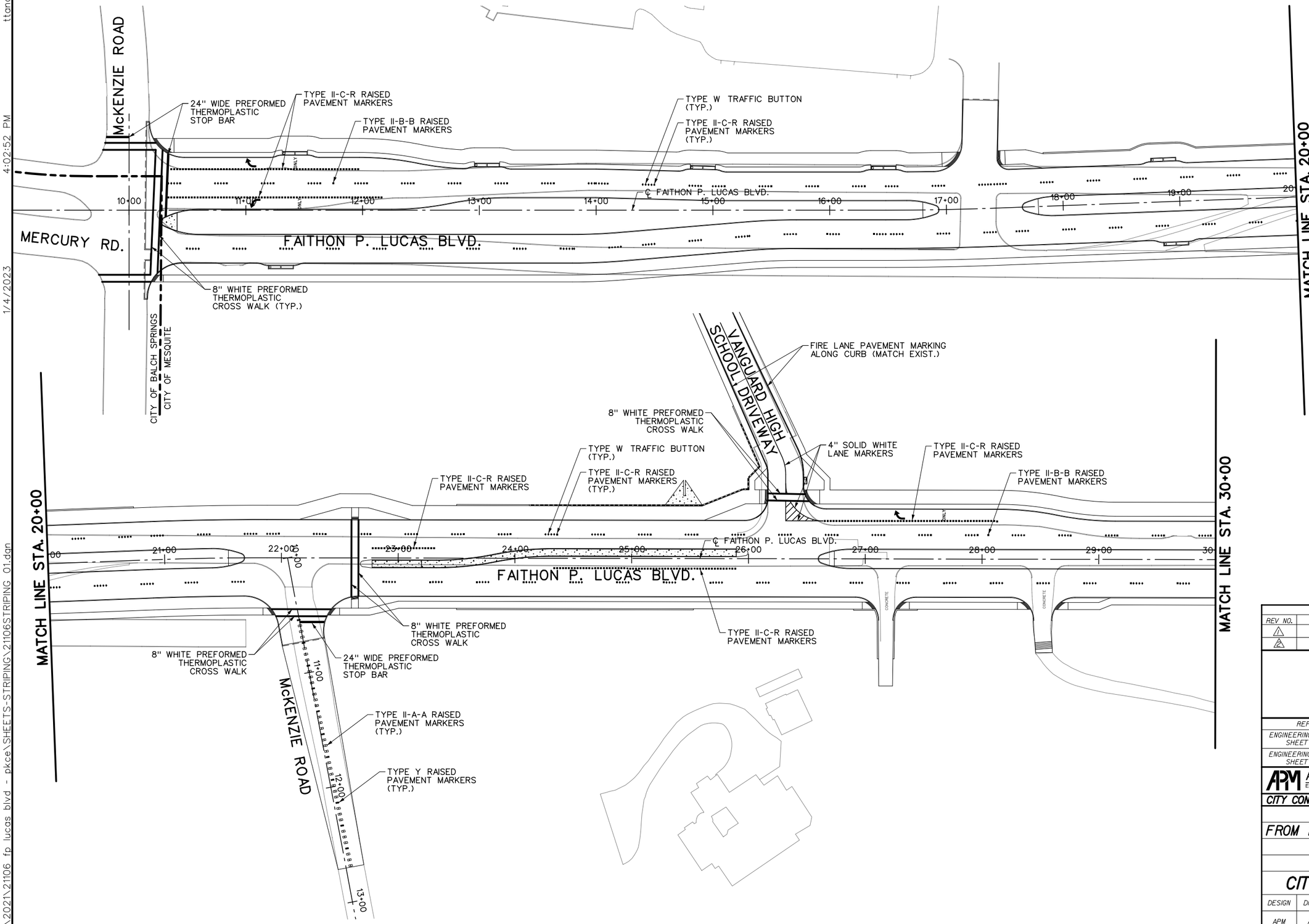

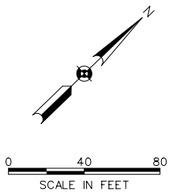

NOTE:

SEE CITY OF MESQUITE STD. DETAIL PAVEMENT MARKINGS AND SIGNAGE SHEET 181

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVEMENT MARKING PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
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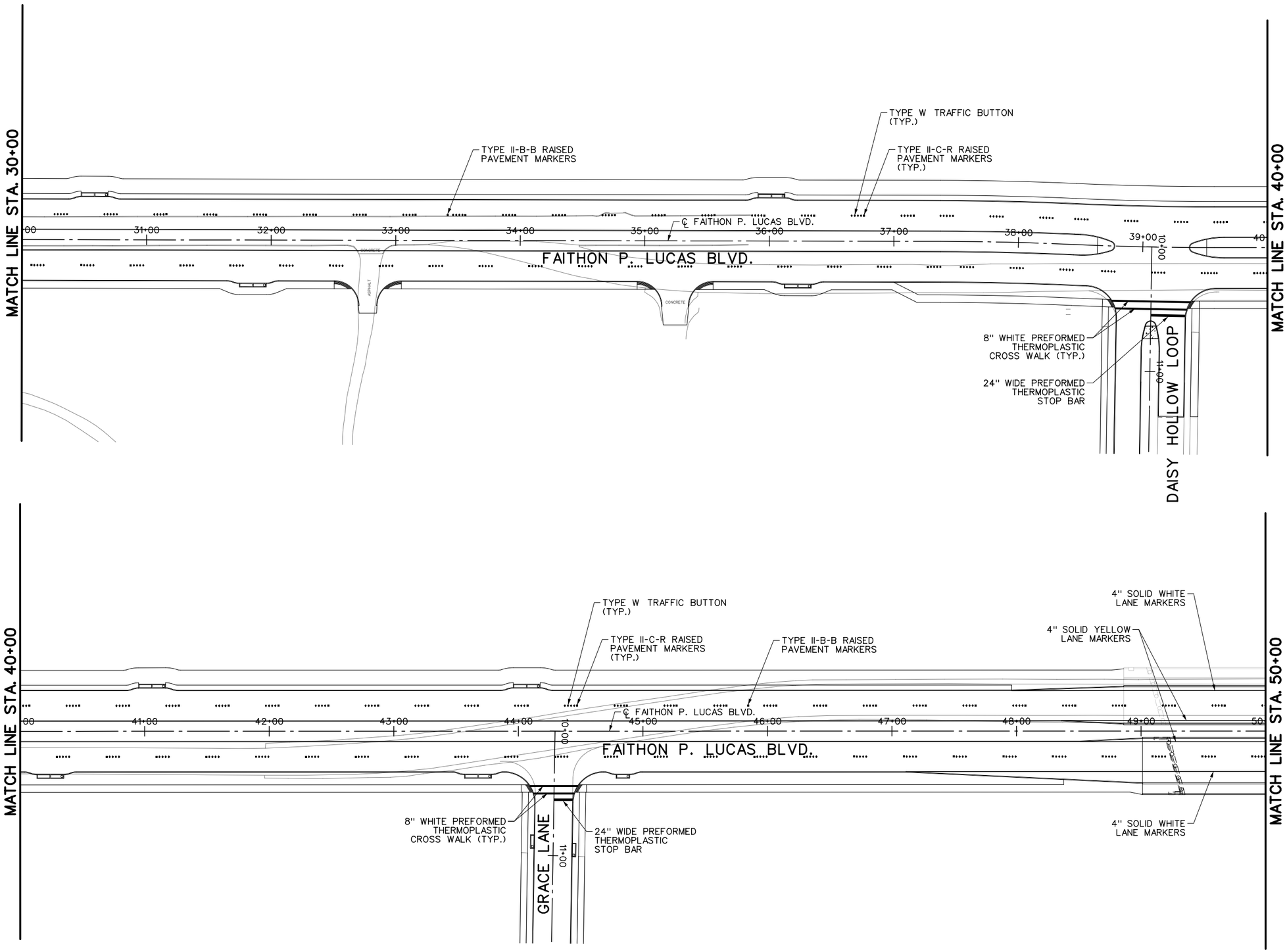

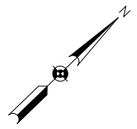

NOTE:

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1700 Pacific Avenue, Suite 1020
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FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVEMENT MARKING PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
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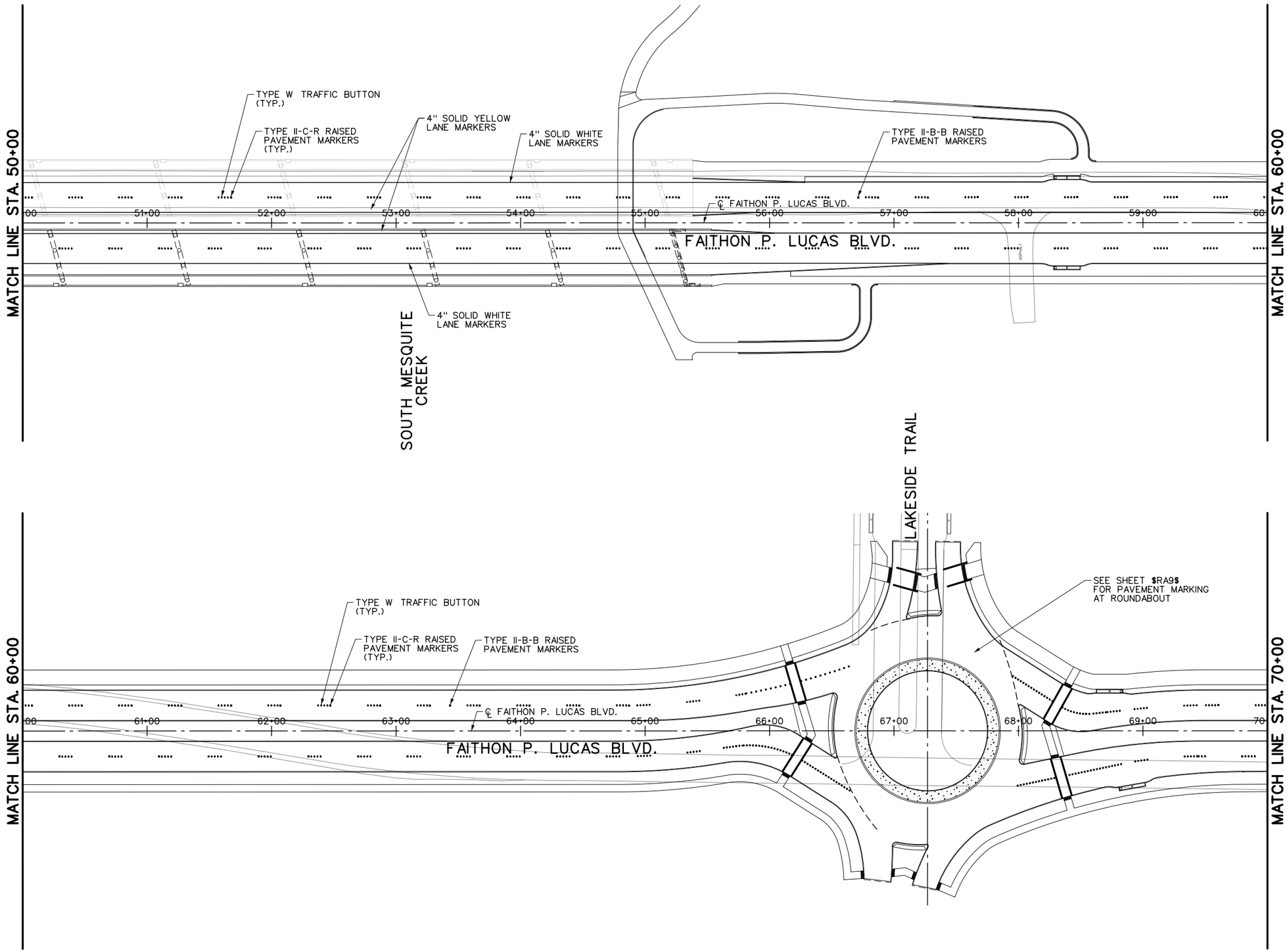

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NOTE:

SEE CITY OF MESQUITE STD. DETAIL PAVEMENT MARKINGS AND SIGNAGE SHEET 181

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FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVEMENT MARKING PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
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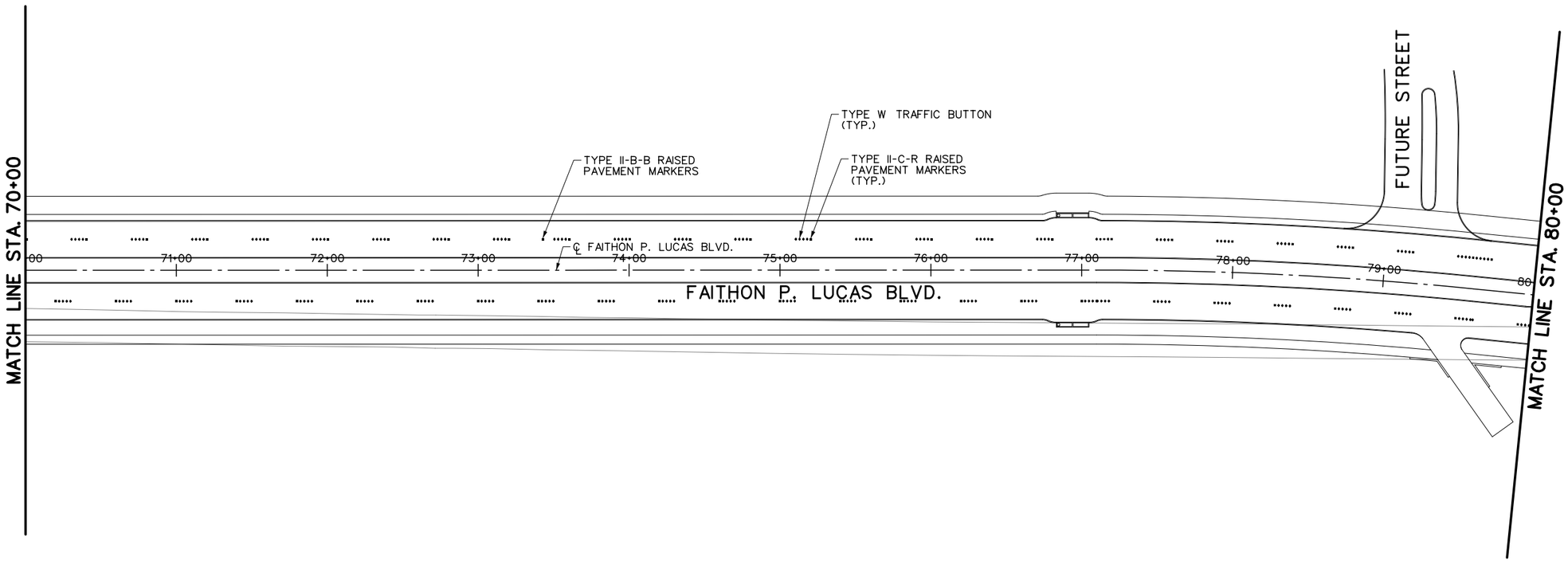

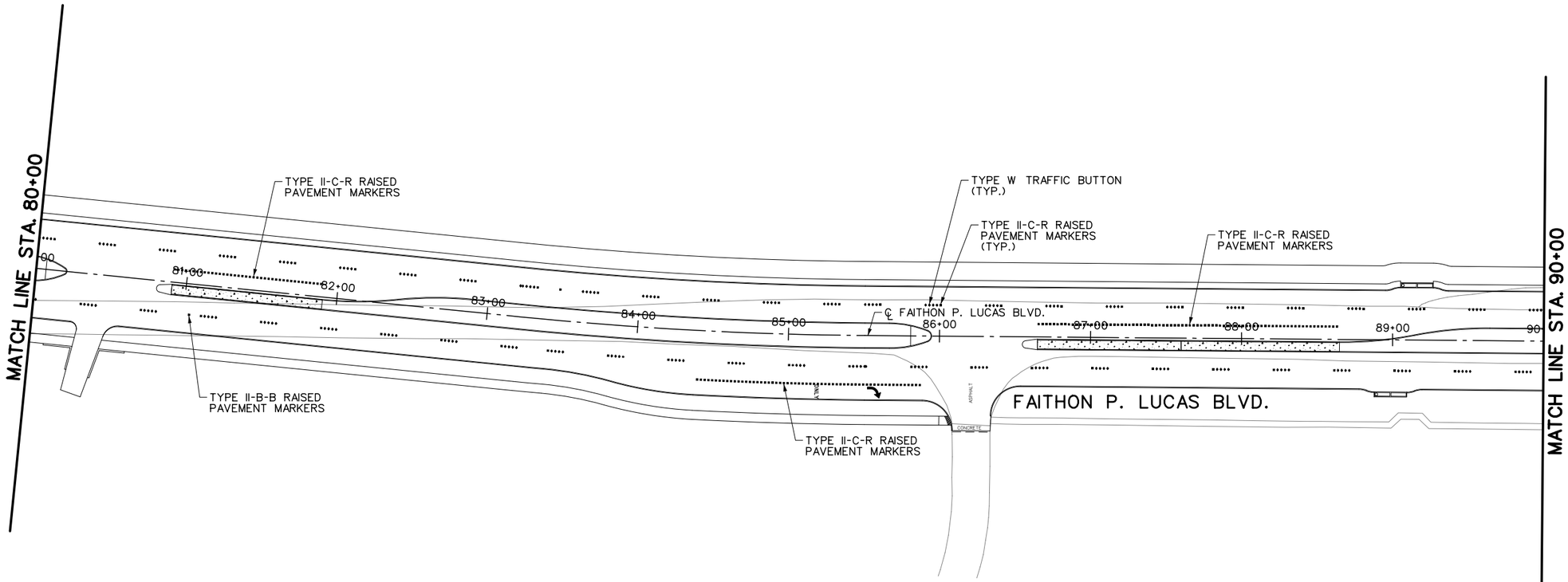

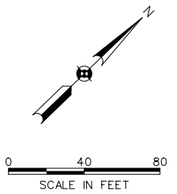

NOTE:

SEE CITY OF MESQUITE STD. DETAIL PAVEMENT MARKINGS AND SIGNAGE SHEET 181

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88551
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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVEMENT MARKING PLAN

CITY OF MESQUITE, TEXAS

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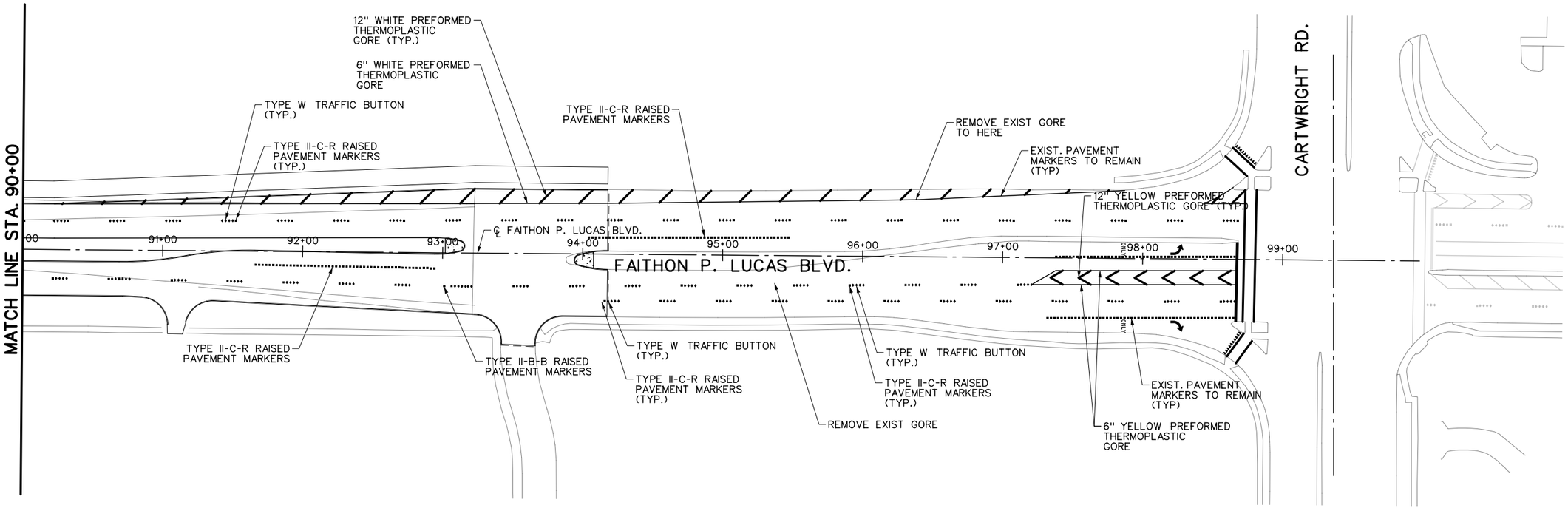

NOTE:

SEE CITY OF MESQUITE STD. DETAIL PAVEMENT MARKINGS AND SIGNAGE SHEET 181

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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FROM McKENZIE RD. TO CARTWRIGHT RD.
PAVEMENT MARKING PLAN

CITY OF MESQUITE, TEXAS

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A. GENERAL SITE DATA

1. PROJECT LIMITS: *Faithon P. Lucas Boulevard from McKenzie Road to Cartwright Road In Dallas County, Texas*

2. PROJECT SITE MAPS:

- *Project Location Map: The Title Sheet*
- *Slopes Anticipated After Major Gradings or Areas of Soil Disturbance: Typical Sections (Sheet 7 & 8)*
- *Location of Erosion and Sediment Controls: SW3P Site Maps (Sheets 148-153)*
- *Project Specific Locations: To be specified by the Project Field Office during construction and located in the Project SW3P File. Reference Section C-8 on this sheet.*

3. PROJECT DESCRIPTION:

Reconstruction of a City street facility, consisting of removal, grading, concrete paving, inlets and storm sewer. Planting and irrigation and appurtenance adjustments. Regrading of existing creek.

4. MAJOR SOIL DISTURBING ACTIVITIES:

Prepare right-of-way; roadway excavation and embankment; bridge construction; channel grading; temporary erosion and sediment control.

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:

Clay and sandy clay with road side grasses, broad leaf weeds, brush and trees.

6. TOTAL PROJECT AREA: *32.02* Acres

7. TOTAL AREA TO BE DISTURBED: *31.85* Acres (*99 %*)

8. WEIGHTED RUNOFF COEFFICIENT:

BEFORE CONSTRUCTION: *0.69*
AFTER CONSTRUCTION: *0.69*

9. NAME OF RECEIVING WATERS:

This project will drain into South Mesquite Creek.

10. ENDANGERED SPECIES, DESIGNATED CRITICAL HABITAT AND HISTORIC PROPERTY:

A. No Endangered Species, Designated Critical Habitat or Historic Property has been found on this project site.

B. EROSION AND SEDIMENT CONTROLS

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

T	TEMPORARY SEEDING	____	PRESERVATION OF NATURAL RESOURCES
____	MULCHING (Hay or Straw)	____	FLEXIBLE CHANNEL LINER
____	BUFFER ZONES	____	RIGID CHANNEL LINER
P	PLANTING	____	SOIL RETENTION BLANKET
P	SEEDING	P	COMPOST MANUFACTURED TOPSOIL
P	SODDING	____	OTHER:

B. EROSION AND SEDIMENT CONTROLS (CONT'D)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

T	SILT FENCES
____	HAY BALES
T	ROCK FILTER DAMS
____	DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
____	DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
____	DIVERSION DIKE AND SWALE COMBINATIONS
____	PIPE SLOPE DRAINS
P	PAVED FLUMES
____	ROCK BEDDING AT CONSTRUCTION EXIT
____	TIMBER MATTING AT CONSTRUCTION EXIT
____	CHANNEL LINERS
____	SEDIMENT TRAPS
____	SEDIMENT BASINS
T	STORM INLET SEDIMENT TRAP
____	STONE OUTLET STRUCTURES
P	CURBS AND GUTTERS
P	STORM SEWERS
____	VELOCITY CONTROL DEVICES
____	OTHER:

3. STORM WATER MANAGEMENT:

1. Runoff will be provided by curb and gutter and storm sewer system and grassed ditches with side slopes ranging from 3:1 to 6:1. Side slopes shall have permanent sodding or planting. The Storm sewer system and side slopes and ditches shall convey the runoff to the creek and away from the project.

4. STORM WATER MANAGEMENT ACTIVITIES: (Sequence of Construction)

The Storm Water Management Activies by Phases are as follows:

1. All SW3P control measures will remain in place during all construction activities.

2. Stockpile all existing topsoil that need to be removed during construction. The topsoil will be used throughout the project to stabilize and cover disturbed areas. These stockpiles as with any stockpile shall be surrounded by settlement control fence to intercept and detain water-borne sediment from storm water runoff.

3. As soon as possible when appropriate grades are achieved the soil shall be stabilized. That area shall be permanently seeded. When permanent seeding is established, temporary controls may be removed.

4. Make utility adjustments and install new utilities including inlets and storm drains. Install inlet protection devices around all inlets as soon as they are functional.

5. Prepare subgrade, cement treated base course and construct concrete pavement.

6. Construct sidewalks, finished grades, planting and irrigation and grass seeding or block sodding.

7. When construction activity is stabilized and approved by the County, remove all temporary erosion controls and block sod any areas disturbed by the removal.

5. NON-STORM WATER DISCHARGES:

Non-storm water discharges should be filtered, or held in retention basins, before being allowed to mix with storm water. These discharges consist of non-polluted ground water, spring water, foundation and/or footing drain water; and water used for dust control, pavement washing and vehicle wastwater containing no detergents.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

All erosion and sediment controls shall be maintained in good working order. If a repair is necessary, it shall be performed at the earliest date possible but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by devices protecting storm sewer inlets.

C. OTHER REQUIREMENTS & PRACTICES (CONT'D)

2. INSPECTION:

Inspections shall be performed by a Contractor and County Inspector on a schedule as designated below:

__✓__ every 7 calendar days or;
___ every 14 calendar days and after each half inch rain, or more, as recorded on a non-freezing rain gauge located at the project site.

An Inspection and Maintenance Report shall be filed for each inspection and the controls revised or repaired, as may be required, per the Inspection report and Section C-1 above.

3. WASTE MATERIALS:

All waste materials shall be collected in a metal dumpster having a secure cover. The dumpster shall meet all state and local city solid waste management regulations. All trash and debris from construction shall be deposited in the dumpster. The dumpster shall be emptied, as necessary or as required by local regulation, and hauled to a local approved land fill site. The burying of construction waste on the project site shall not be permitted.

4. HAZARDOUS WASTE & SPILL REPORTING:

As a minimum, any products in the following categories are considered to be hazardous: paints, acids, solvents, asphalt products, chemical additives for soil stabilization and concrete curing compounds or additives. In the event of a spill which may be hazardous, the spill coordinator shall be contacted immediately.

5. SANITARY WASTE:

All sanitary waste shall be collected from the portable units, as necessary or as required by local regulation, by a licensed sanitary waste management contractor.

6. OFFSITE VEHICLE TRACKING:

The Contractor shall be required, on a regular basis or as may be directed by the Engineer, to dampen haul roads for dust control, stabilize construction entrances and to remove excess dirt from the roadway.

7. MANAGEMENT PRACTICES:

1. Disposal areas, stockpiles and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, waterbody or streambed.
2. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants.
3. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.

8. OTHER:

Contractor shall maintain a SW3P file at the field office of each project. If disturbing one acre or more, which contains the following: Index Sheet, TPDES N.O.I., TCEQ Signature Authority, TCEQ Fee Payment Form, TPDES Storm Water Program or Construction Site Notice, TPDES Permit Coverage Notice, SW3P Inspector Qualification Statements, Inspection and Maintenance Reports, Required Location Maps, Stored Materials List specifying associated control measures, and the Appendix, which contains the TPDES Construction General Permit Language and the Contractor's PSL Permits.

REVISIONS			
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REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM WATER POLLUTION PREVENTION PLAN

CITY OF MESQUITE, TEXAS

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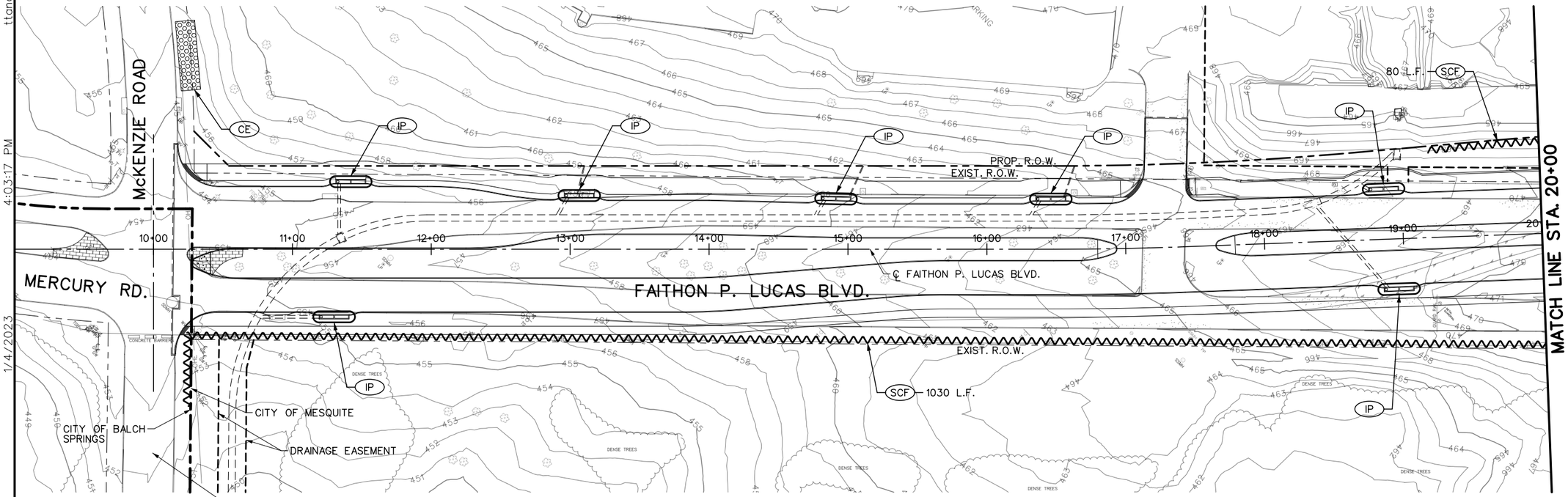

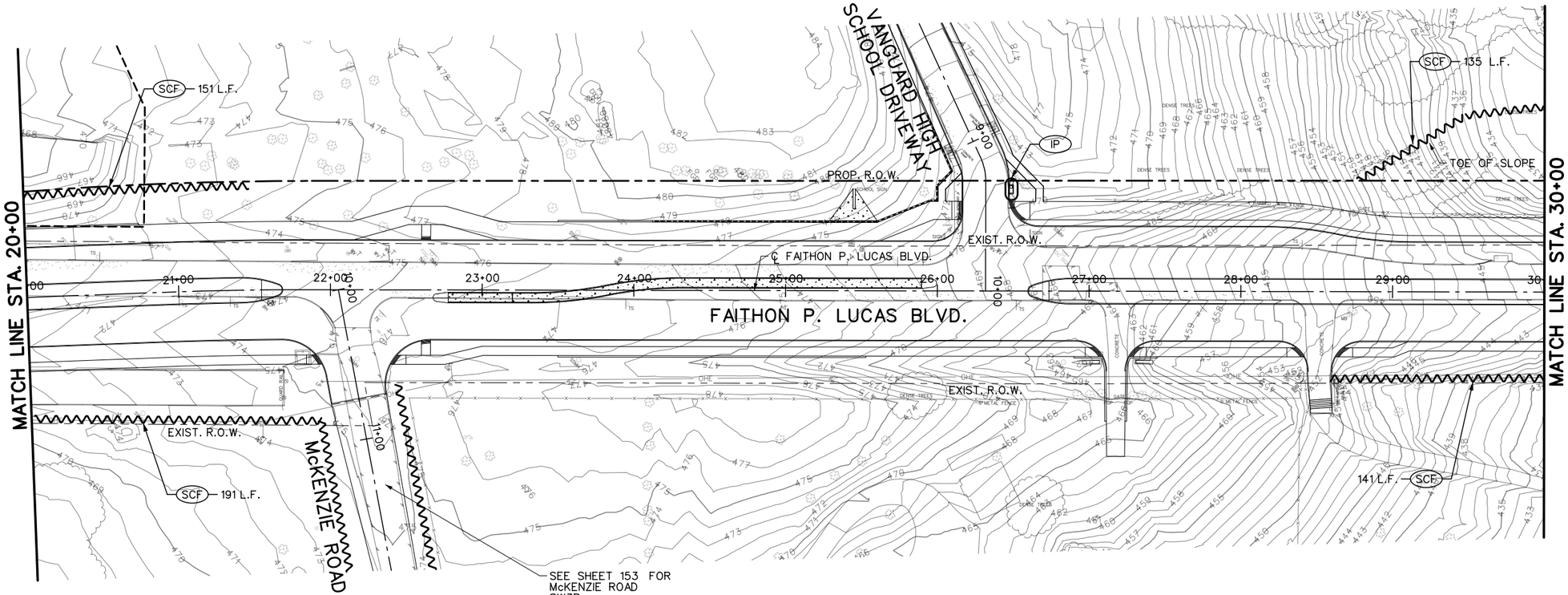

0 40 80
SCALE IN FEET

LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD* — ROCK FILTER DAM (TYPE 1, 2 & 3) OR SACK GABIONS (TYPE 4)
- IP — INLET PROTECTION (SILT FENCE FOR AREA INLETS EST. @ LENGTH + 4 L.F. AND SILT FENCE FOR CURB INLETS EST. @ LENGTH + 2 L.F.)
- CE — CONSTRUCTION ENTRANCE AND EXIT

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

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FIRM REG. #3091

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM WATER POLLUTION PREVENTION PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-148	148 OF 252

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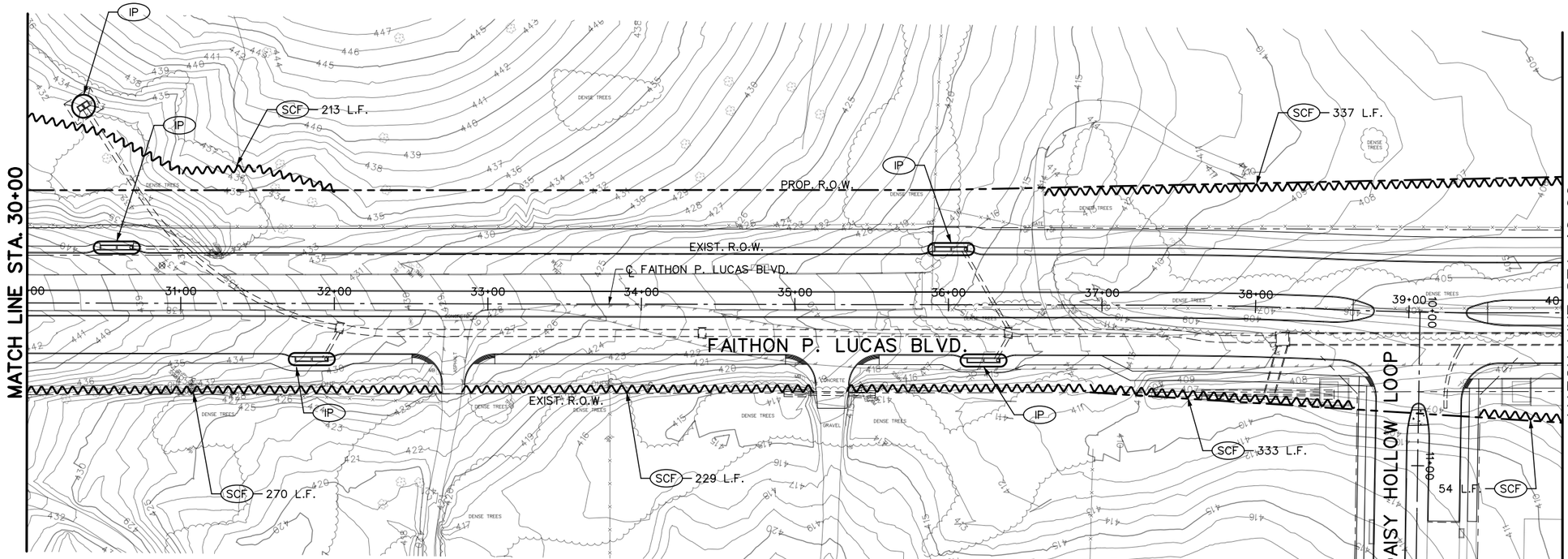

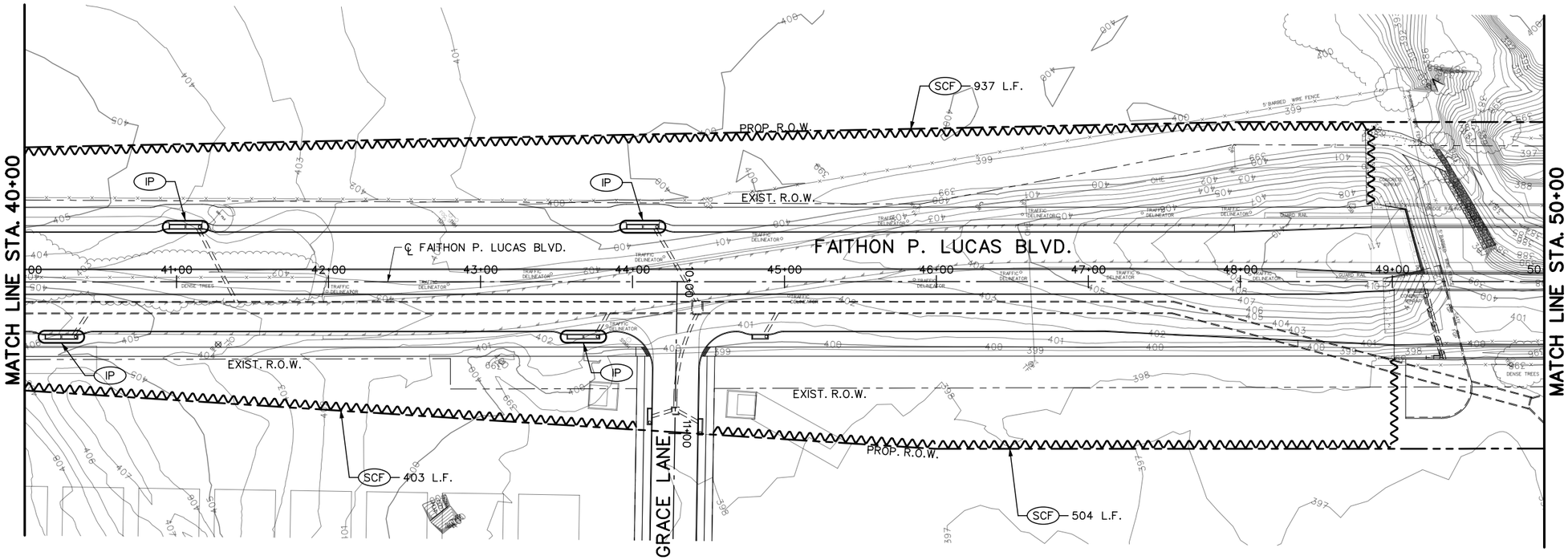

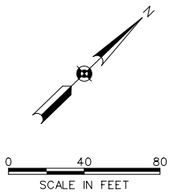

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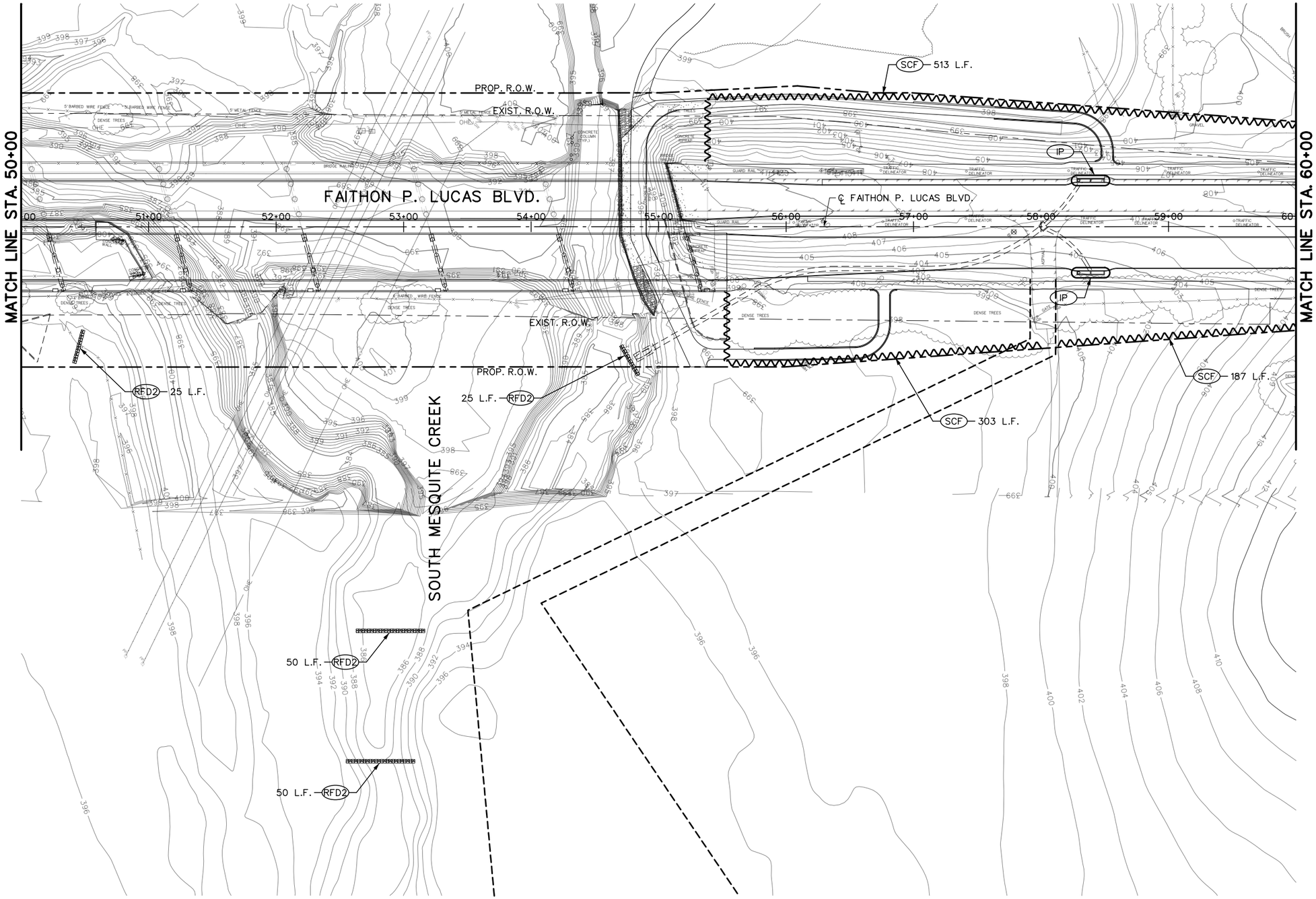
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM WATER POLLUTION PREVENTION PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-149	149 OF 252



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0 40 80
SCALE IN FEET

LEGEND

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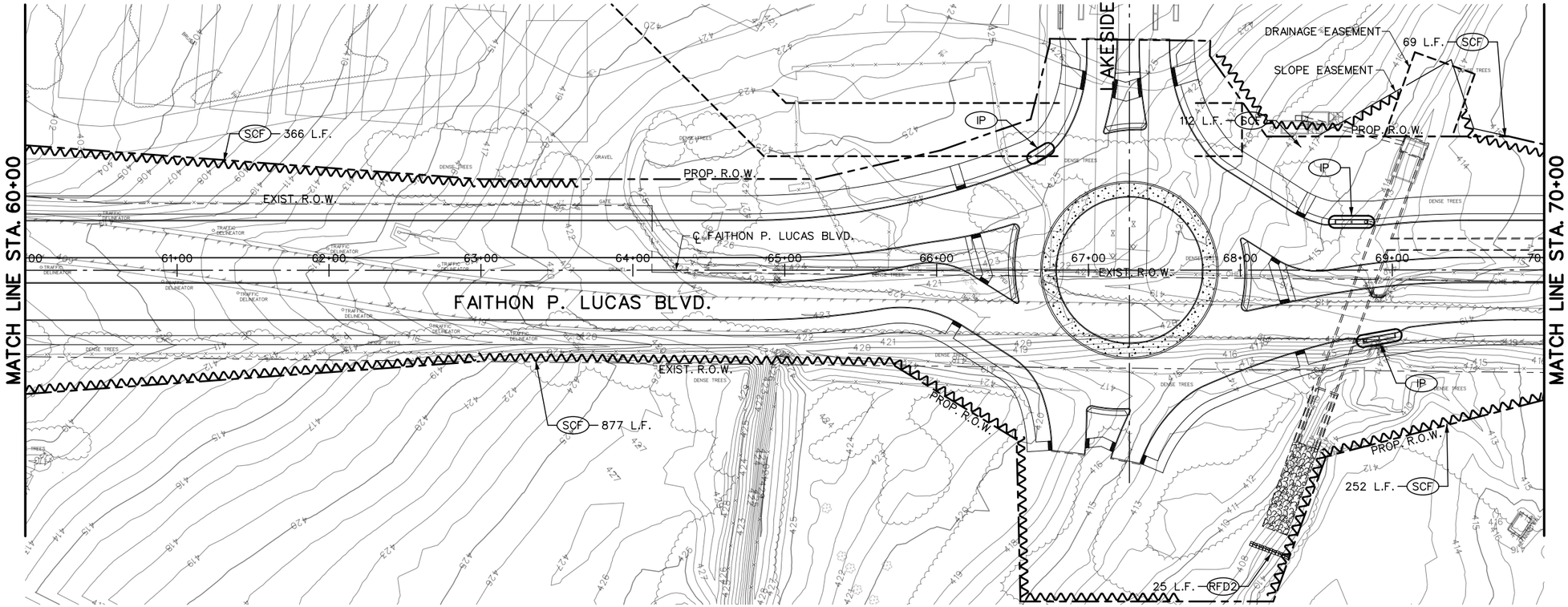
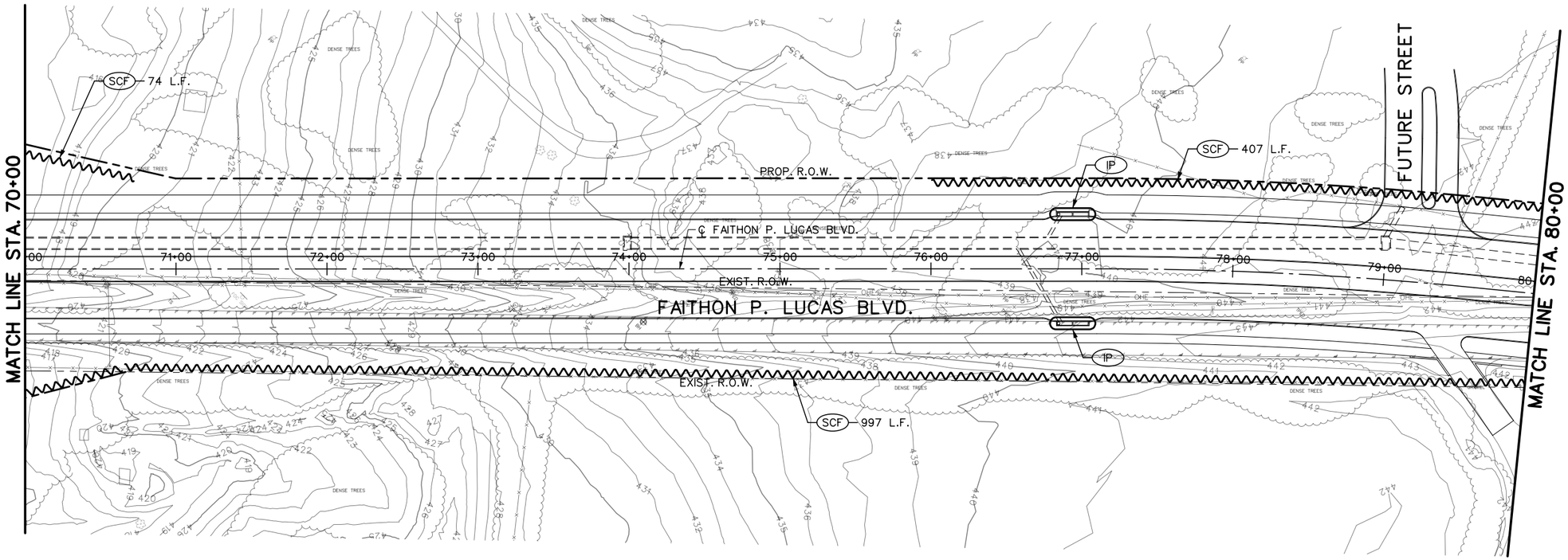
CITY CONTRACT NO. 2020-095

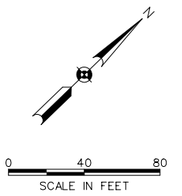
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM WATER POLLUTION PREVENTION PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-150	150 OF 252







LEGEND

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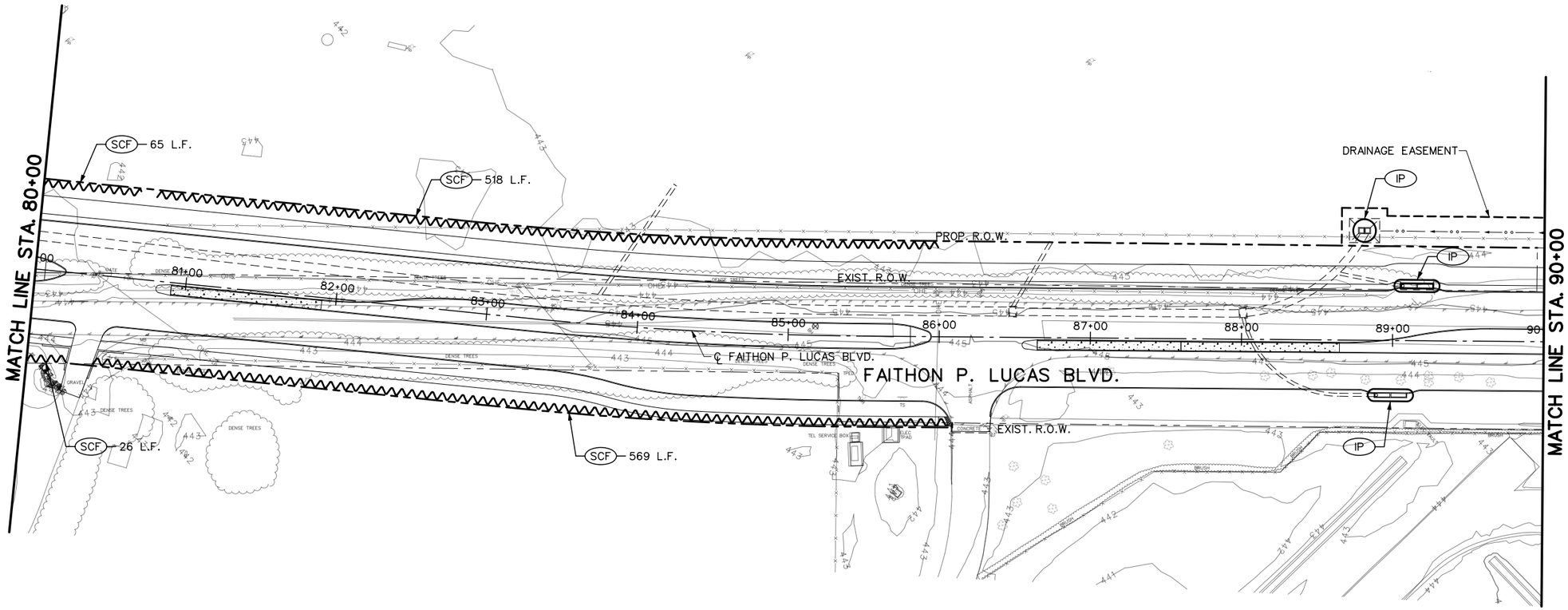
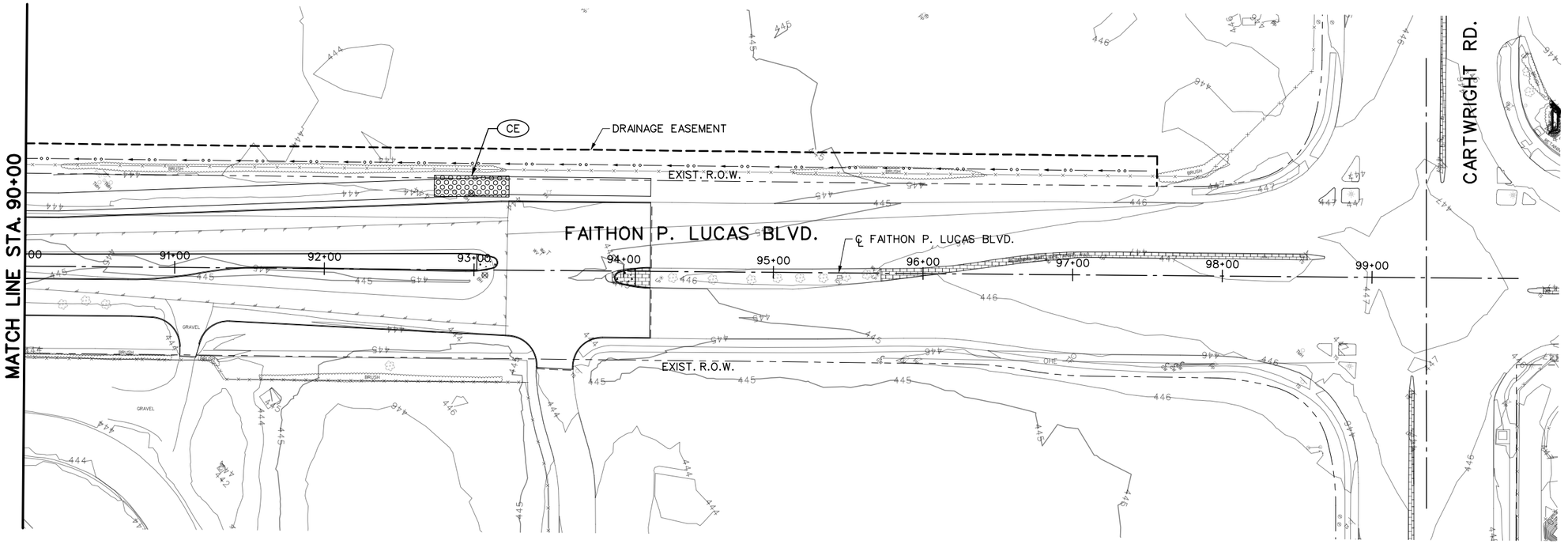
CITY CONTRACT NO. 2020-095

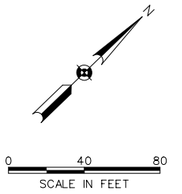
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM WATER POLLUTION PREVENTION PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-151	151 OF 252







LEGEND

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REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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REFERENCES

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ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

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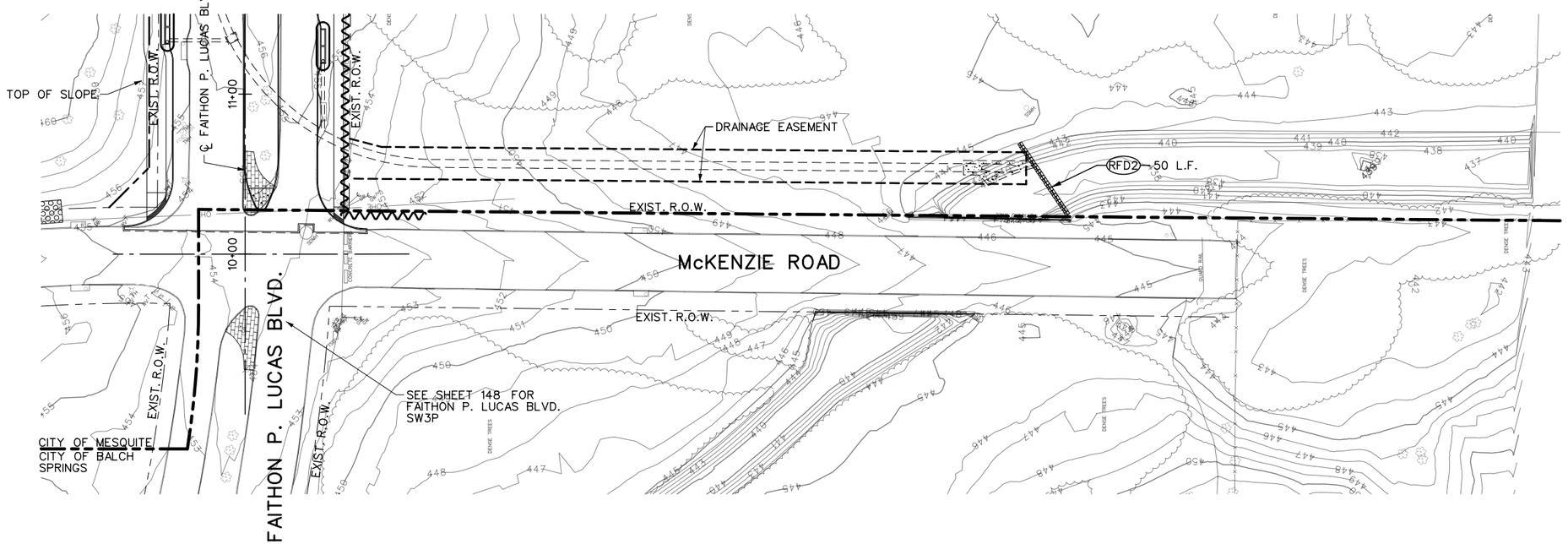
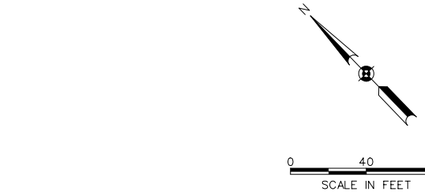
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM WATER POLLUTION PREVENTION PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-152	152 OF 252





LEGEND

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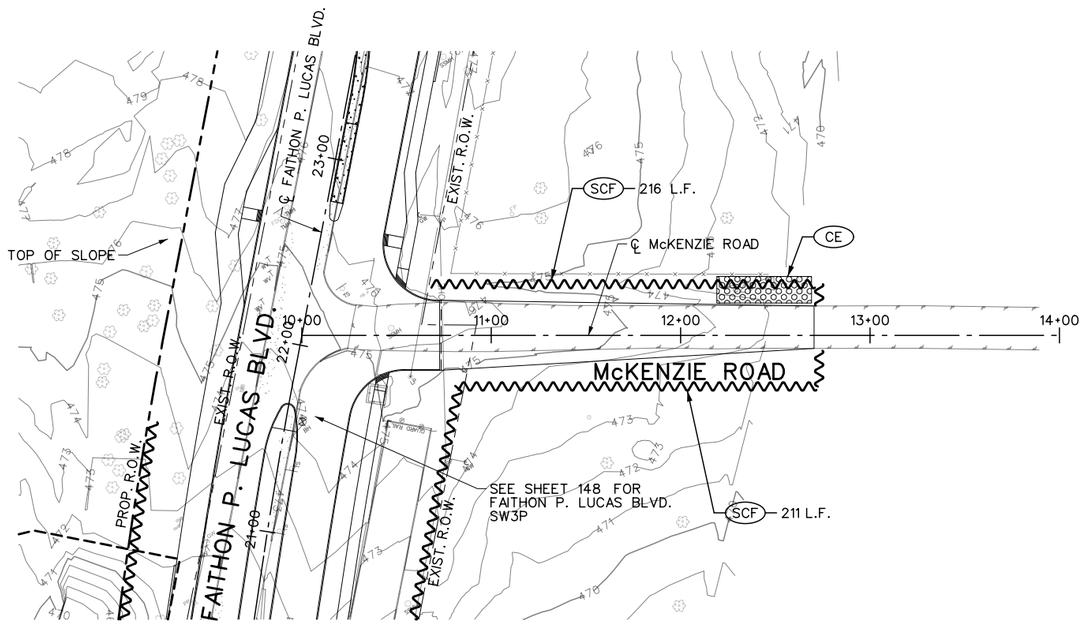

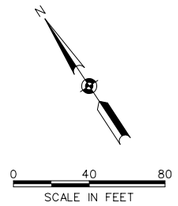

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

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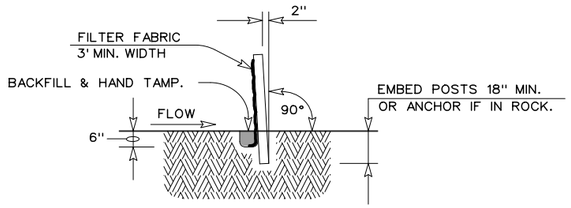
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
STORM WATER POLLUTION PREVENTION PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-153	153 OF 252

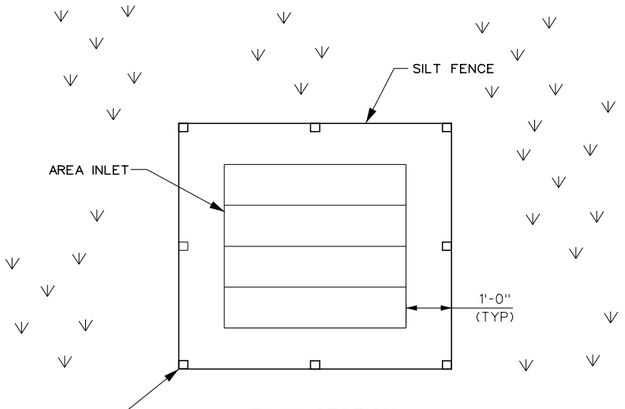


SECTION A-A

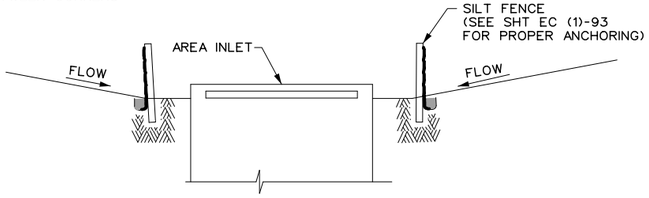
SEDIMENT CONTROL FENCE USAGE GUIDELINES

A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAX. FLOW THROUGH RATE OF 100 GPM/FT . SEDIMENT CONTROL FENCE AREA LARGER THAN 2 ACRES.

IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.



PLAN SECTION

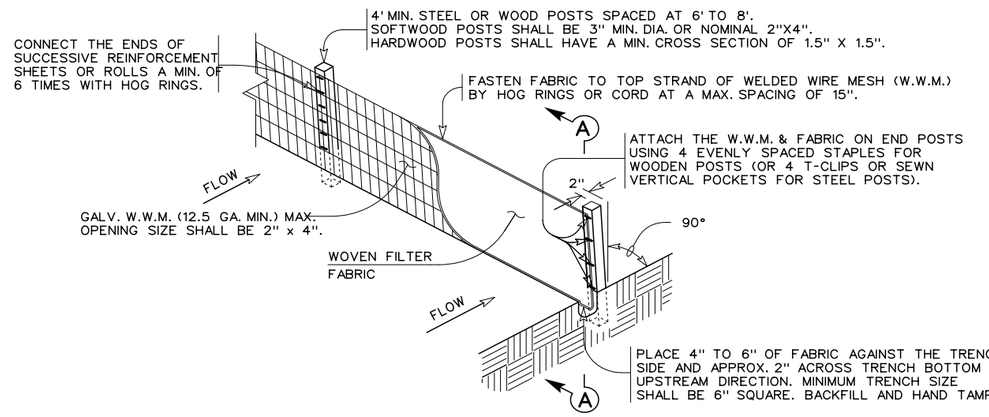


SECTION

AREA INLET PROTECTION
NOT TO SCALE

GENERAL NOTES:

1. FRAME TO BE MADE OF 4 GAUGE GALVANIZED STEEL 3"X8" SQUARE FOR SECTION ADJACENT TO FACE OF INLET 4"X8" SQUARE FOR TOP AND BOTTOM SECTIONS.
2. FILTER FABRIC TO BE TS 500 POLYFELT OR EQUAL.
3. CURB INLET PROTECTOR TO BE MANUFACTURED BY TEXAS ENVIRONMENTAL MANAGEMENT, INC. OR EQUAL. (ENGINEER TO APPROVE SUBSTITUTE PRIOR TO INSTALLATION.)
4. ALL SEDIMENTS TO BE REMOVED FROM FABRIC BEFORE AND AFTER ALL RAINFALL EVENTS.
5. THE INLET WILL BE SECURED WITH 50 POUND SANDBAGS PLACED CONTINOUSLY ALONG THE TOP OF THE INLET AND ALONG THE STREET EDGE OF THE FILTER FABRIC. SAND BAGS SHALL BE PLACED SO AS NOT TO OBSTRUCT THE OPENING.



TEMPORARY SEDIMENT CONTROL FENCE

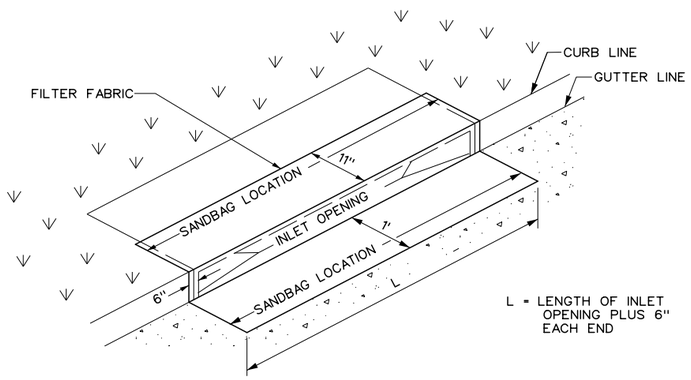
SCF

GENERAL NOTES

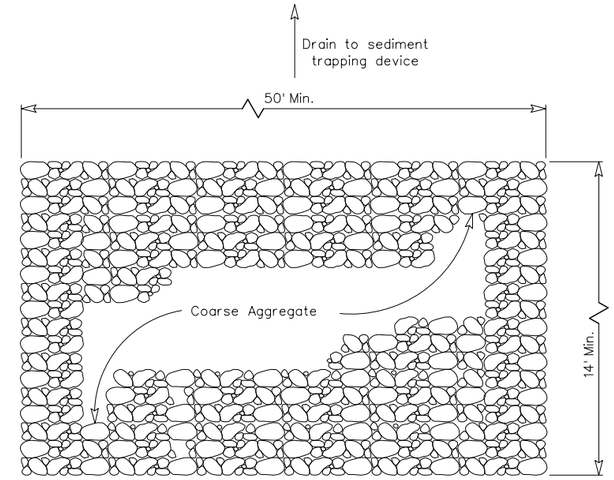
1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

PLAN SHEET LEGEND

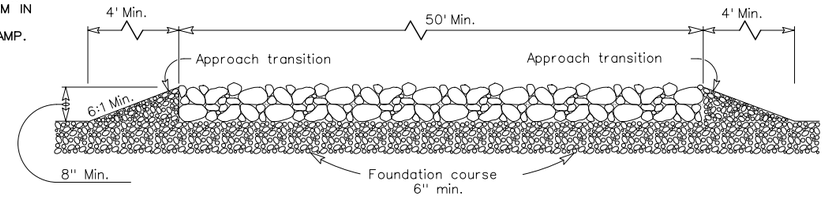
SEDIMENT CONTROL FENCE — SCF



CURB INLET PROTECTION
NOT TO SCALE



PLAN



PROFILE

CONSTRUCTION EXIT (TYPE 1)

CE

GENERAL NOTES

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 material as approved by the Engineer.
5. The construction exits shall be graded to allow drainage to a sediment trapping device.

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
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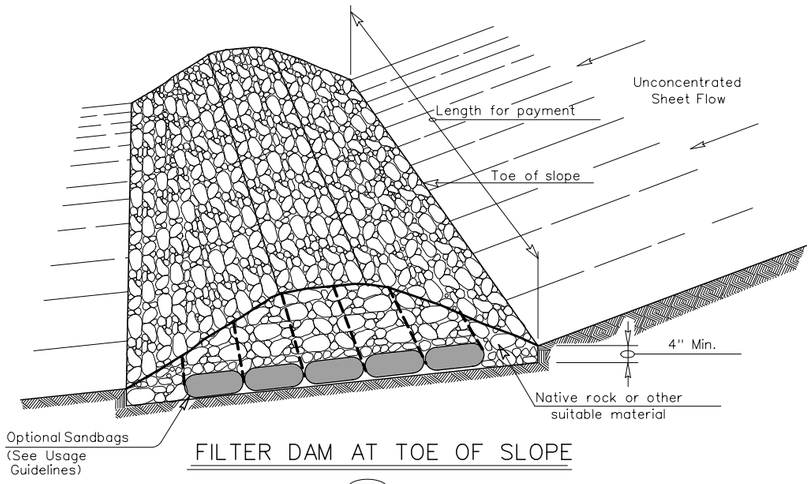
CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
TEMPORARY POLLUTION CONTROL MEASURES

CITY OF MESQUITE, TEXAS

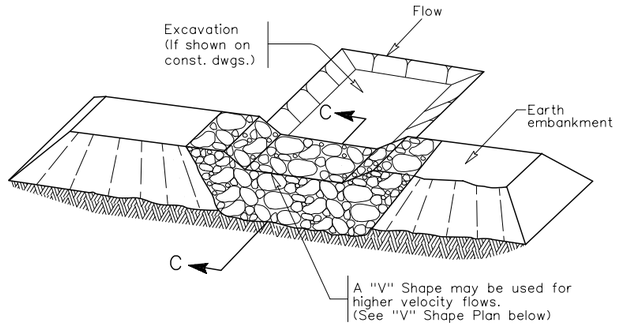
DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-154	154 OF 252



FILTER DAM AT TOE OF SLOPE

RFD1

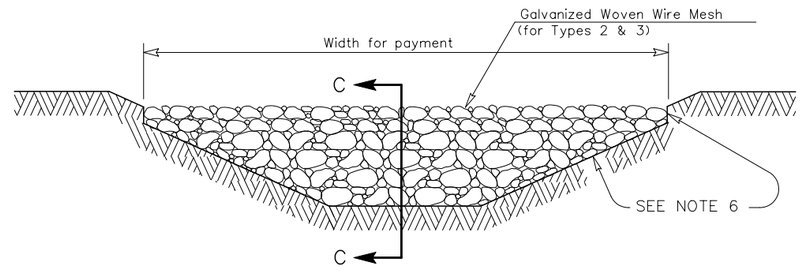
TYPE 1



FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2

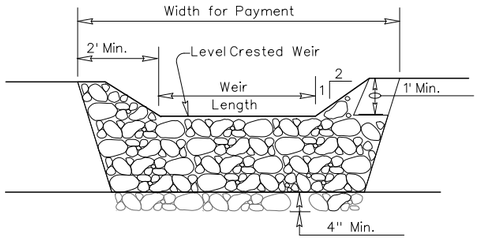
TYPE 1 OR TYPE 2



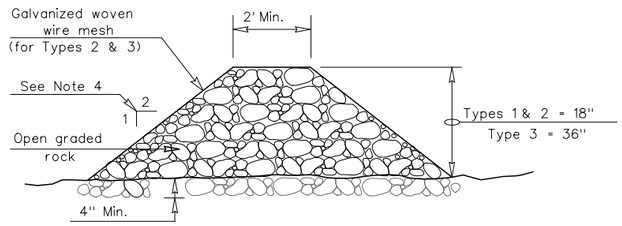
FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

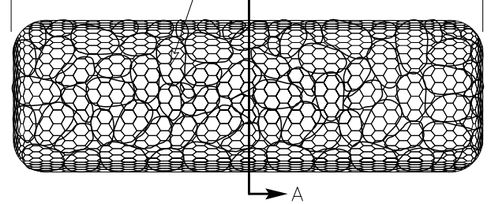
TYPE 1 OR TYPE 2 OR TYPE 3



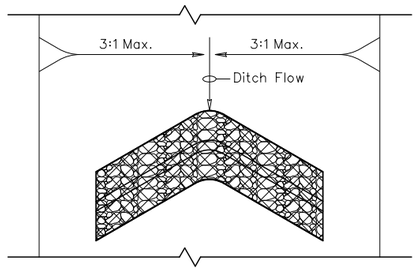
PROFILE



SECTION C-C

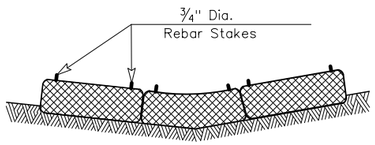


PLAN VIEW



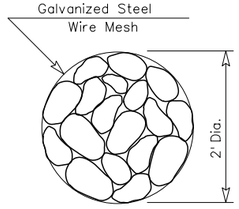
"V" SHAPE

(Plan View)



SECTION B-B

TYPE 4 (SACK GABIONS)



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approx. 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. In stream use the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes.
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).

PLANS SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Sack Gabions	RFD4

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc. 1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091
Engineering - Planning - CM Services

CITY CONTRACT NO. 2020-095

FAITHON P. LUCAS BLVD.

FROM McKENZIE RD. TO CARTWRIGHT RD.

TEMPORARY POLLUTION CONTROL MEASURES

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-155	155 OF 252

Install 334 LF.18" DI Pipe

Abandon Ex.18" Water

1+60.0 ~ Prop. W. Line A
N=6950534.3415
E=2559418.8392
Remove & Deliver Exist. FH
Install:
1- 18"x 6" Tee BBF
1- 6" Gate Valve FMJ
4 LF 6" PVC C900 (DR-14) Water Pipe
1- FH

0+26.3 ~ Prop. W. Line A
N=6950438.6351
E=2559325.4712
Install:
1- 20"x 18" Tee
1- 18" Gate Valve
Cut & Plug Ex. 18" Water (SE)

McKENZIE ROAD

42" RCP

18" RCP

Ex. 20" DI. Water

12' CONC. SIDEWALK

1+00

VARIES

EXIST. R.O.W.

2+00

PROP. R.O.W.

18" W

Line A

3+00

VARIES

Ex. 18" DI. Water

8" PVC

M.I.S.D. FOC

FOC

CITY OF MESQUITE
CITY OF BALCH SPRINGS

48" RCP

Ex. 8" PVC Wastewater

APPROX. 107' RT TO NEXT VALVE

PROP. 54" RCP

21" RCP

18" RCP

FAITHON P. LUCAS BLVD.

125' MIN. R.O.W.

10+00

11+00

12+00

13+00

36" RCP

33" RCP

33" RCP

24" RCP

℄ McKENZIE RD.

℄ FAITHON P. LUCAS BLVD.

2" STREET LIGHTING CONDUIT

18" RCP

PROP. 60" RCP

MATCH LINE WATER STA. 3+60-
PAV. STA. 13+60.00

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

NOTE:

1. CONTRACTOR TO VERIFY LOCATION AND SIZE OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES WITHIN THIS AREA AND RELOCATE THEM AS NECESSARY.

2. THE CONTRACTOR SHALL MAINTAIN EXISTING WASTEWATER SERVICE AND FLOW AT ALL TIMES. NO SEPARATE PAY ITEM.

CAUTION ~ OVERHEAD LINES !
Overhead Electric, Telephone and Cables Lines In This Area. Use Extreme Care and Caution While Working In This Area.

CAUTION ~ GAS !
Underground Gas Main In Area Contact ATMOS Energy Corp. Two Working Days Prior To Construction. Tele: 1-800-344-8377/1-800-545-6005

CAUTION ~ FIBER OPTIC !
Underground Fiber Optic Cables In Area Contact Fiber Optic Co. Two Working Days Prior To Constuction. Tele: 1-800-344-8377

CAUTION ~ TELEPHONE !
Underground Telephone Cables In Area Contact S.B.C. Two Working Days Prior To Construction. Tele: 1-800-344-8377

CAUTION ~ MISD FIBER OPTIC !
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Line A

Sta. 0+26.3 ~ Prop. W. Line A
Install:
1- 20"x 18" Tee
1- 18" Gate Valve
FL 449.22 +/-

Sta. 0+33 ~ Prop. W. Line A
Ex. 8" WW
F.L. 400.00 +/-

P.V.I. Sta. 0+71 ~ Prop. W. Line A
Δ = 1.86°
FL 447.77

Sta. 1+60.0 ~ Prop. W. Line A
Install:
18"x 6" Tee
FL 447.68

Sta. 3+09 ~ Prop. W. Line A
Prop. 8" PVC
FL 451.19

P.V.I. Sta. 3+10 ~ Prop. W. Line A
Δ = 1.13°
FL 447.53

EXISTING GROUND @ ℄ PIPE

PROPOSED GRADE @ ℄ PIPE

Install:
20" x 6" Tee
Connect 6" PVC to 20" DI Main

Install:
6" Gate Valve FMJ

Install:
Typical Fire Hydrant Assembly

Varies
6" PVC

PROP 18" D.I. -3.24%

PROP 18" D.I. -0.10%

PROP 18" D.I. 1.87%

Ex. 20" W 449.14 +/-
FL 18" W 449.22 +/-

FL 18" 447.74

FL 18" 447.64

FL 18" 447.54

470
465
460
455
450
445
440
435
430

0+00
1+00
2+00
3+00

MATCH LINE WATER STA. 3+60-
PAV. STA. 13+60.00

TYPICAL PROFILE FOR FIRE HYDRANT

334 L.F. of 18" D.I. Water Pipe W/Blue Polywrap
AWWA A21.50 Class 52 (CIII/A21.11)

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-156	156 OF 252

Install 460 L.F. 18" DI Pipe

Abandon Ex. 18" Water

4+54.5 ~ 10" Lt. Prop. W. Line A
Connect to Exist. 8" Water
N=6950750.0886
E=2559615.1664
Install:
1- 8" MJ. Solid Sleeve
2- 8" 45° Horiz. Bends
13 LF 8" PVC C900 (DR-14) Water Pipe
Plug Exist. 8" Water (SE)

4+54.5 ~ Prop. W. Line A
N=6950745.2439
E=2559624.3876
Install:
1- 18" x 8" Tee
1- 8" Gate Valve

PI STA. 4+28.61
Δ = 00° 19'07" RT
N=6,950,726.6133
E=2,559,606.4133

PC STA. 6+48.04
PROP. WATER LINE
N=6,950,884.5258
E=2,559,758.7633

20 LF 26" Dia.
7/16" Thk. Steel
Pipe Encasement

CURVE #W-1

MATCH LINE WATER STA. 3+60-
PAV. STA. 13+60.00

MATCH LINE WATER STA. 8+20-
PAV. STA. 18+21.86

Ex. 8" Water

8" PVC

PROP. R.O.W.

EXIST. R.O.W.

Line A

18" W

12' CONC. SIDEWALK

M.I.S.D. FOC

FOC

Ex. 18" DJ. Water

VARIES

125' MIN. R.O.W.

PROP. 54" RCP

℄ FAITHON P. LUCAS BLVD.

2" STREET LIGHTING CONDUIT

33" RCP

FAITHON P. LUCAS BLVD.

Ex. 8" PVC Wastewater

6' CONC. SIDEWALK

4+00 5+00 6+00 7+00 8+00 14+00 15+00 16+00 17+00 18+00

TS

PROP. WATER LINE
CURVE #W-1 DATA
PI STA. 7+55.01
N 6,950,961.5082
E 2,559,833.0340
D 2° 20'18.97"
R 2,450.00'
Lc 213.80'
T 106.97'

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

NOTE:

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Underground Telephone Cables In Area Contact S.B.C. Two Working Days Prior To Construction. Tele: 1-800-344-8377

CAUTION ~ MISD FIBER OPTIC !
Underground Fiber Optic Cables In Area Contact Fiber Optic Co. Two Working Days Prior To Constuction. Tele: 1-800-344-8377

480 475 470 465 460 455 450 445 440

Line A

Sta. 4+54.5 ~ Prop. W. Line A
Install: 18"x 8" Tee
FL 450.23

Sta. 5+07 ~ Prop. W. Line A
Prop. 8" PVC
FL 454.74

Sta. 6+61 ~ Prop. W. Line A
Prop. 8" PVC
FL 457.27

Sta. 7+47 ~ Prop. W. Line A
Ex. 8" WW
FL 459.70 +/-

P.V.I. Sta. 7+73 ~ Prop. W. Line A
Δ = 0.1°
FL 456.18

EXISTING GROUND @ ℄ PIPE

PROPOSED GRADE @ ℄ PIPE

PROP 18" DJ. 1.87%

PROP 18" DJ. 3.16%

20 LF 26" Dia.
7/16" Thk. Steel
Pipe Encasement

460 L.F. of 18" DJ. Water Pipe W/Blue Polywrap
AWWA A21.50 Class 52 (CIII/A21.11)

FL 18" 448.93 FL 18" 450.48 FL 18" 452.03 FL 18" 453.58 FL 18" 455.93

4+00 5+00 6+00 7+00 8+00

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-157	157 OF 252

Install 420 L.F. 18" DI Pipe

Abandon Ex. 18" Water

Install 40 L.F. 12" PVC Pipe

Abandon Ex. 12" Water

MATCH LINE WATER STA. 8+20-
PAV. STA. 18+21.86

MATCH LINE WATER STA. 12+80-
PAV. STA. 22+79.22

PT STA. 8+61.84
PROP. WATER LINE
N-6,951,044.6708
E-2,559,900.3126

CURVE •W-1

PC STA. 9+66.39
PROP. WATER LINE
N-6,951,125.9553
E-2,559,966.0719

10+86.9 ~ 10' Lt. Prop. W. Line A
Connect to Exist. 12" Water
N 6951224.3430
E 2560036.6700
Install:
1- 12" M.J. Solid Sleeve
2- 12" 45° Horiz. Bends
13 LF 12" PVC C900 (DR-14) Water Pipe
Plug Exist. 12" Water (SE)

10+83.4 ~ Prop. W. Line A
N 6951215.1957
E 2560041.7192
Install:
1- 18" x 12" Tee
1- 12" Gate Valve

CURVE •W-2

PT STA. 11+88.34
PROP. WATER LINE
N-6,951,292.2197
E-2,560,112.9963

11+84.0 ~ Prop. W. Line A
N-6951289.0857
E-2560109.9741
Install:
1- 18" Gate Valve

12+25.9 ~ Prop. W. Line A
N-6951319.2547
E-2560139.0671
Install:
1- 2" Combination Air Release Valve

12+31.9 ~ Prop. W. Line A •
0+00.0 ~ Prop. W. Line A1
N-6951323.5631
E-2560143.2219
Install:
1- 18" x 16" Tee
1- 18" Gate Valve
1- 18" x 12" Reducer
1- 16" Gate Valve

Line A
18" W

Line A1
12" W

PROP. R.O.W.

EXIST. R.O.W.

VARIES

10'

125' MIN. R.O.W.

130' MIN. R.O.W.

12' CONC. SIDEWALK

PROP. 48" RCP

SEE SHEET 161 FOR
LINE A1 PLAN & PROFILE

Ex. 18" DI. Water

Ex. 12" DI. Water

8" GAS (ABANDONED)

FOC M.I.S.D. FOC

FAITHON P. LUCAS BLVD.

℄ FAITHON P. LUCAS BLVD.

2" STREET LIGHTING CONDUIT

Ex. 8" PVC Wastewater

8" GAS (ABANDONED)

McKENZIE RD.

Ex. 16" DI. Water

33" RCP

9+00 10+00 11+00 12+00 19+00 20+00 21+00 22+00

PROP. WATER LINE CURVE •W-1 DATA	
PI STA.	7+55.01
N	6,950,961.5082
E	2,559,833.0340
D	2° 20'18.97"
R	2,450.00'
Lc	213.80'
T	106.97'

PROP. WATER LINE CURVE •W-2 DATA	
PI STA.	10+77.44
N	6,951,212.2866
E	2,560,035.9140
D	2° 14'48.82"
R	2,550.00'
Lc	221.95'
T	111.05'

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

NOTE:

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Tele: 1-800-344-8377/1-800-545-6005

CAUTION ~ FIBER OPTIC !
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Tele: 1-800-344-8377

CAUTION ~ TELEPHONE !
Underground Telephone Cables In Area Contact S.B.C. Two Working Days Prior To Construction.
Tele: 1-800-344-8377

CAUTION ~ MISD FIBER OPTIC !
Underground Fiber Optic Cables In Area Contact Fiber Optic Co. Two Working Days Prior To Constuction.
Tele: 1-800-344-8377

Line A

490 485 480 475 470 465 460 455 450

MATCH LINE WATER STA. 8+20-
PAV. STA. 18+21.86

MATCH LINE WATER STA. 12+80-
PAV. STA. 22+79.22

Sta. 8+78 ~ Prop. W. Line A
P.V.I. Sta. 8+78
Δ = 0.84°
FL 459.50

Sta. 8+86 ~ Prop. W. Line A
Sta. 8+88 RCP
FL 452.56

Sta. 11+84.0 ~ Prop. W. Line A
Install:
1- 18" Gate Valve
FL 464.89

P.V.I. Sta. 12+20 ~ Prop. W. Line A
Δ = 2.25°
FL 465.30

Sta. 12+25.9 ~ Prop. W. Line A
Install:
2" Combination Air Release Valve
FL 465.17

Sta. 12+31.9 ~ Prop. W. Line A
Install:
18" x 16" Tee
18" Gate Valve
1- 18" x 12" Reducer
FL 465.03

PROPOSED GRADE @ ℄ PIPE

EXISTING GROUND @ ℄ PIPE

PROP 18" DI. 3.16%

PROP 18" DI. 1.70%

PROP 18" DI. 1.70%

PROP 12" P.V.C. -2.25%

±12

FL 18" 459.87

FL 18" 461.57

FL 18" 463.27

FL 18" 464.97

420 L.F. of 18" DI. Water Pipe W/Blue Polywrap
AWWA A21.50 Class 52 (CIII/A21.11)

9+00 10+00 11+00 12+00

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99

ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-158	158 OF 252

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1/4/2023 4:04:02 PM ttanos

ttanos 4:04:06 PM 1/4/2023

Install 477 LF. 12" PVC Pipe

Abandon Ex. 12" Water

MATCH LINE WATER STA. 12+80- PAV. STA. 22+79.22

MATCH LINE WATER STA. 17+56.57- PAV. STA. 27+39.22

15+00.0 ~ Prop. W. Line A
N=695|516.5591
E=2560329.3348
Install:
1- 12" 45° Horiz. Bend

15+28.3 ~ Prop. W. Line A
N=695|517.0725
E=2560357.6145
Install:
1- 12" 45° Horiz. Bend

15+88.3 ~ Prop. W. Line A
N=695|560.2621
E=2560399.2637
Install:
1- 12" 45° Horiz. Bend

16+16.6 ~ Prop. W. Line A
N=695|588.5417
E=2560398.7503
Install:
1- 12" 45° Horiz. Bend

16+57.7 ~ 10' Lt. Prop. W. Line A
Connect to Exist. 8" Water
N 695|625.1542
E 2560420.0337
Install:
1- 12" M.J. Solid Sleeve
2- 12" 45° Horiz. Bends
13 LF 12" PVC C900 (DR-14) Water Pipe
Plug Exist. 12" Water (SE)

16+54.6 ~ Prop. W. Line A
N 695|616.4765
E 2560424.6114
Install:
1- 12" x 12" Tee
2- 12" Gate Valves

Line A
12" W

PROP. R.O.W.

VANGUARD HIGH SCHOOL DRIVEWAY

℄ VANGUARD HIGH SCHOOL DRIVEWAY

SCHOOL SIGN

12' CONC. SIDEWALK

VARIES

EXIST. R.O.W.

130' MIN. R.O.W.

8" GAS (ABANDONED)

Ex. 12" D.I. Water

FOC

M.I.S.D. FOC

2" STREET LIGHTING CONDUIT

Ex. 8" P.V.C. Wastewater (ABANDONED)

Ex. 10" P.V.C. Wastewater (ABANDONED)

Ex. 12" Water

18" RCP

℄ FAITHON P. LUCAS BLVD.

FAITHON P. LUCAS BLVD.

13+00 14+00 15+00 16+00 17+00 23+00 24+00 25+00 26+00 27+00

0 20 40
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

NOTE:

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CAUTION ~ MISD FIBER OPTIC !
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485 480 475 470 465 460 455 450 445

MATCH LINE WATER STA. 12+80- PAV. STA. 22+79.22

MATCH LINE WATER STA. 17+56.57- PAV. STA. 27+39.22

Line A

EXISTING GROUND ℄ PIPE

PROPOSED GRADE ℄ PIPE

P.V.I. Sta. 13+20 ~ Prop. W. Line A
Δ = 1.29°
FL 463.30

Sta. 13+45 ~ Prop. W. Line A
Ex. 8" WW (ABANDONED)
FL 461.30 +/-

P.V.I. Sta. 14+80 ~ Prop. W. Line A
Δ = 2.47°
FL 463.30

Sta. 15+00.0 ~ Prop. W. Line A
Install:
1-12" 45° Horiz. Bend
FL 462.44

Sta. 15+28.3 ~ Prop. W. Line A
Install:
1-12" 45° Horiz. Bend
FL 461.22

Sta. 15+88.3 ~ Prop. W. Line A
Install:
1-12" 45° Horiz. Bend
FL 458.64

Sta. 16+16.6 ~ Prop. W. Line A
Install:
1-12" 45° Horiz. Bend
FL 457.42

Sta. 16+73 ~ Prop. W. Line A
Ex. 12" WW (ABANDONED)
FL 454.90 +/-
(TO BE REMOVED)

PROP 12" P.V.C. 0.00%

PROP 12" P.V.C. -2.25%

PROP 12" P.V.C. 0.00%

PROP 12" P.V.C. -4.31%

477 L.F. of 12" PVC Water Pipe
AWWA C900 (DR-14) D-3139

FL 12" 463.80 FL 12" 463.30 FL 12" 462.44 FL 12" 458.13 FL 12" 453.82

13+00 14+00 15+00 16+00 17+00

REVISIONS

REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES

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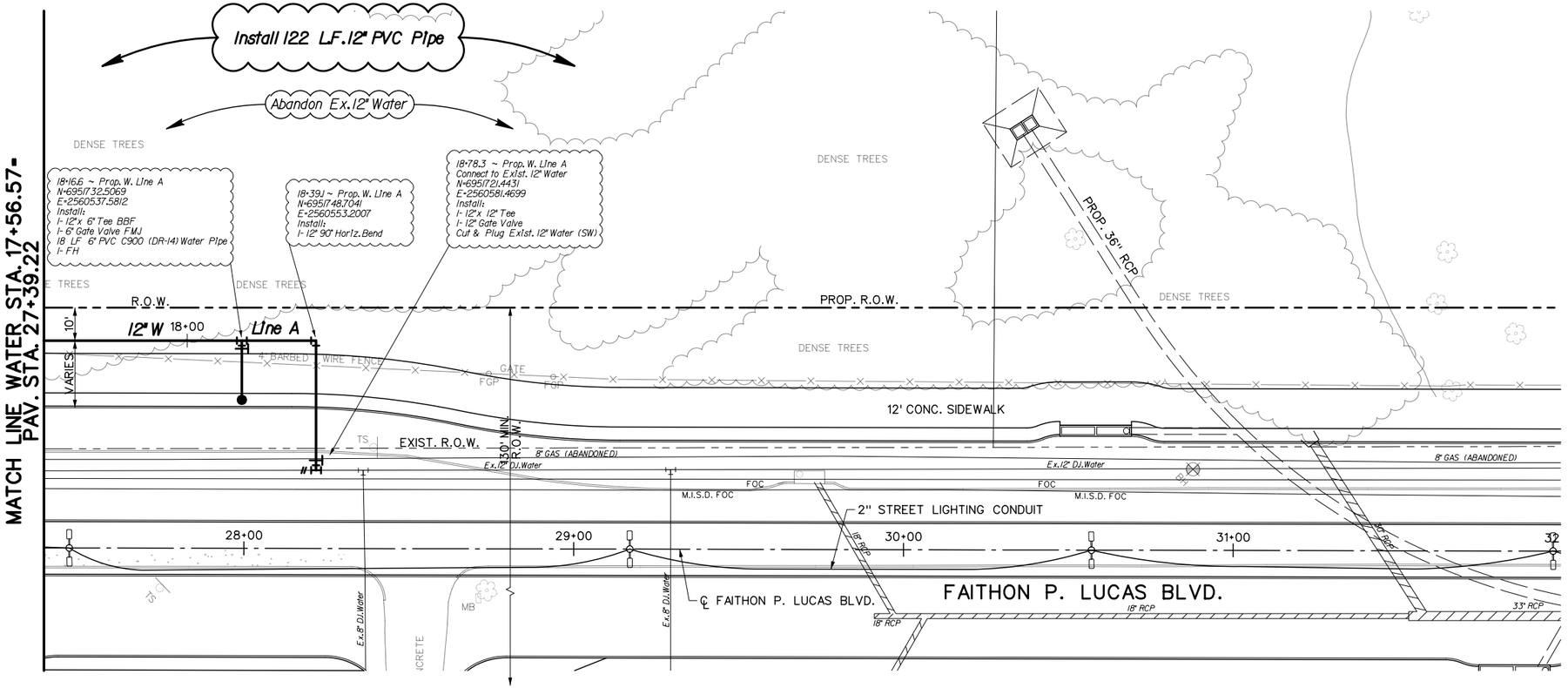
CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-159	159 OF 252

j:\2021\21106 fp lucas blvd - pkce\SHEETS-WATER\21106WAT 04.dgn



0 20 40
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

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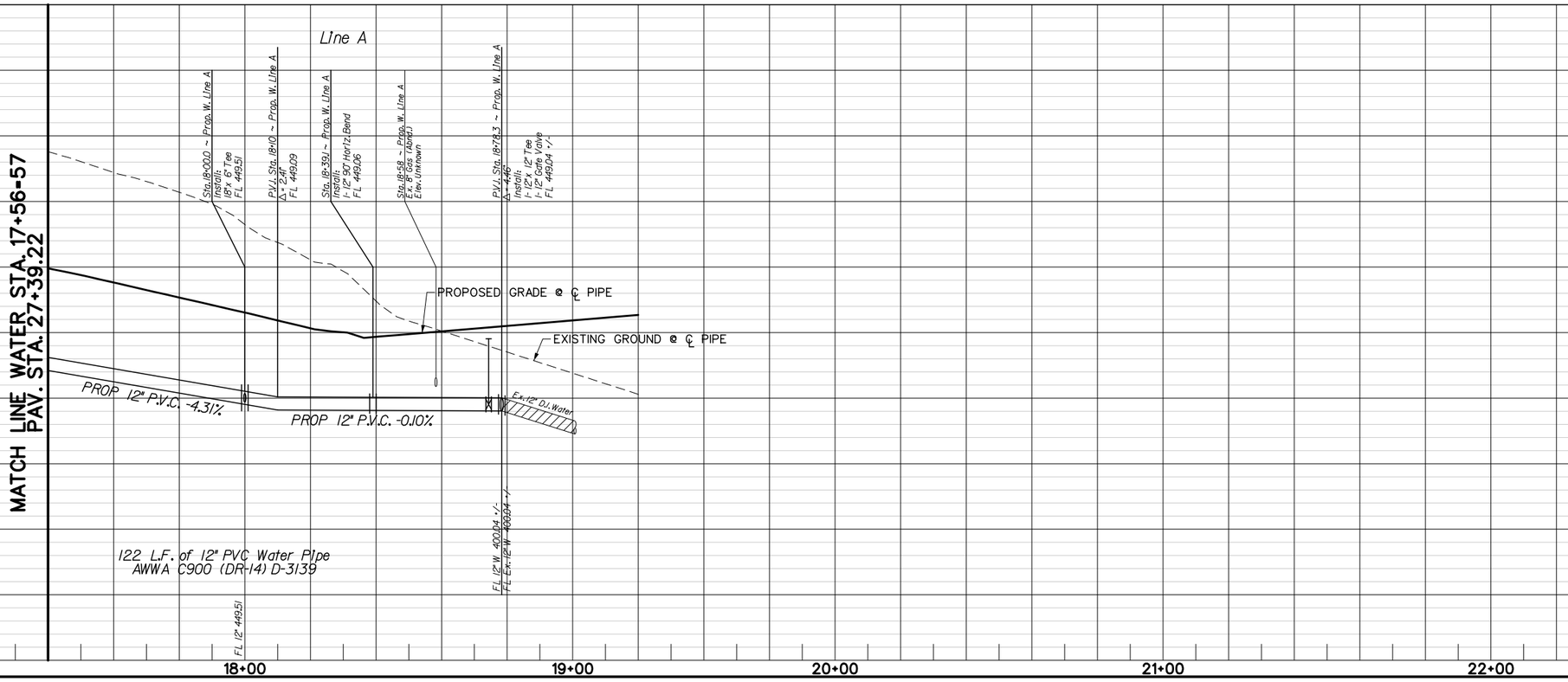

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
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2			

BENCHMARKS & CONTROL POINTS

REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED PROFESSIONAL ENGINEER
12/27/22

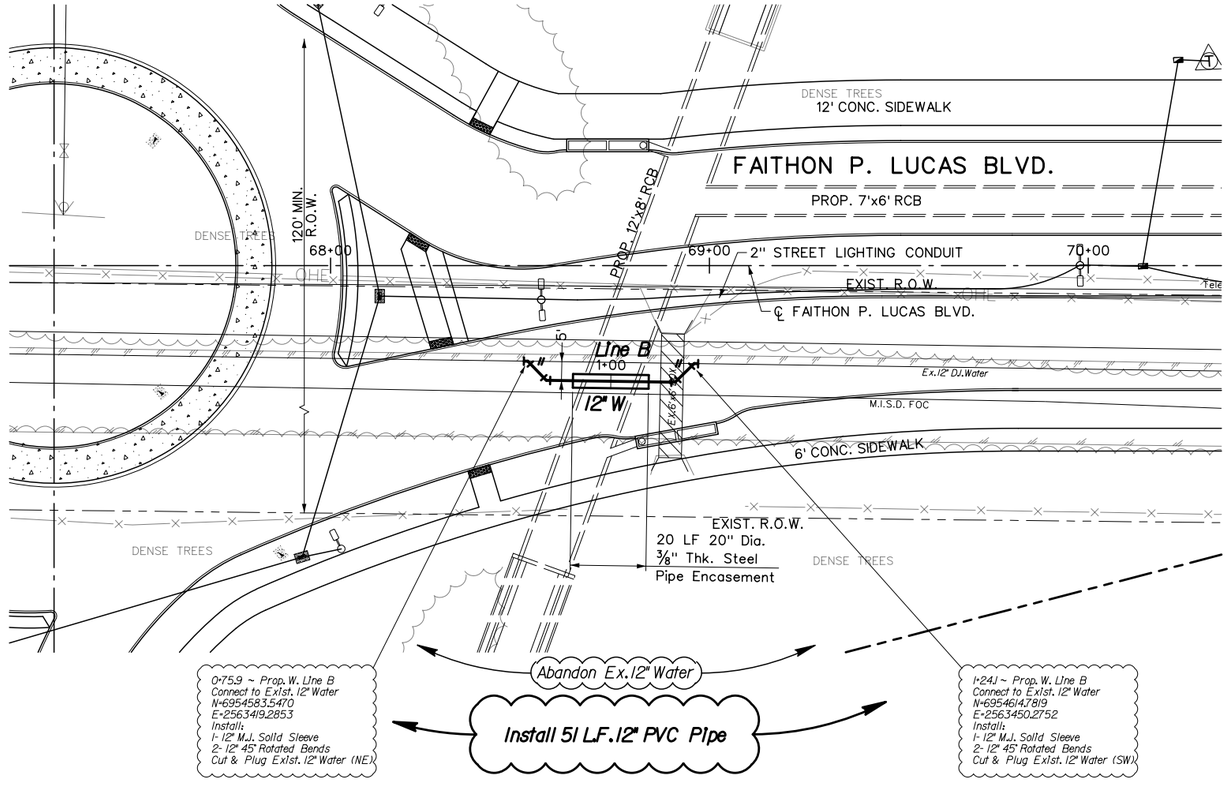
APM & Associates, Inc. Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020 Dallas, TX. 75201 (214) 748-4888 FIRM REG. #3091

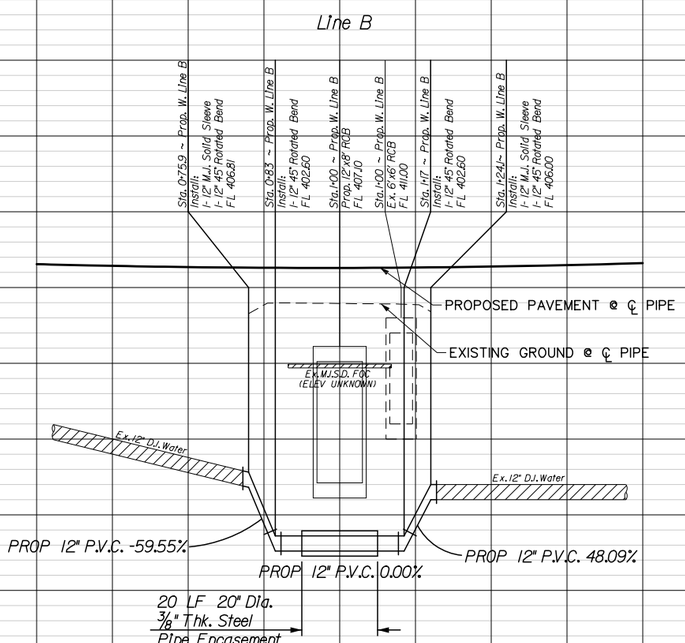
CITY CONTRACT NO. 2019-068

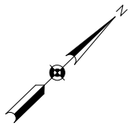
FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-160	160 OF 252







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FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-161	161 OF 252

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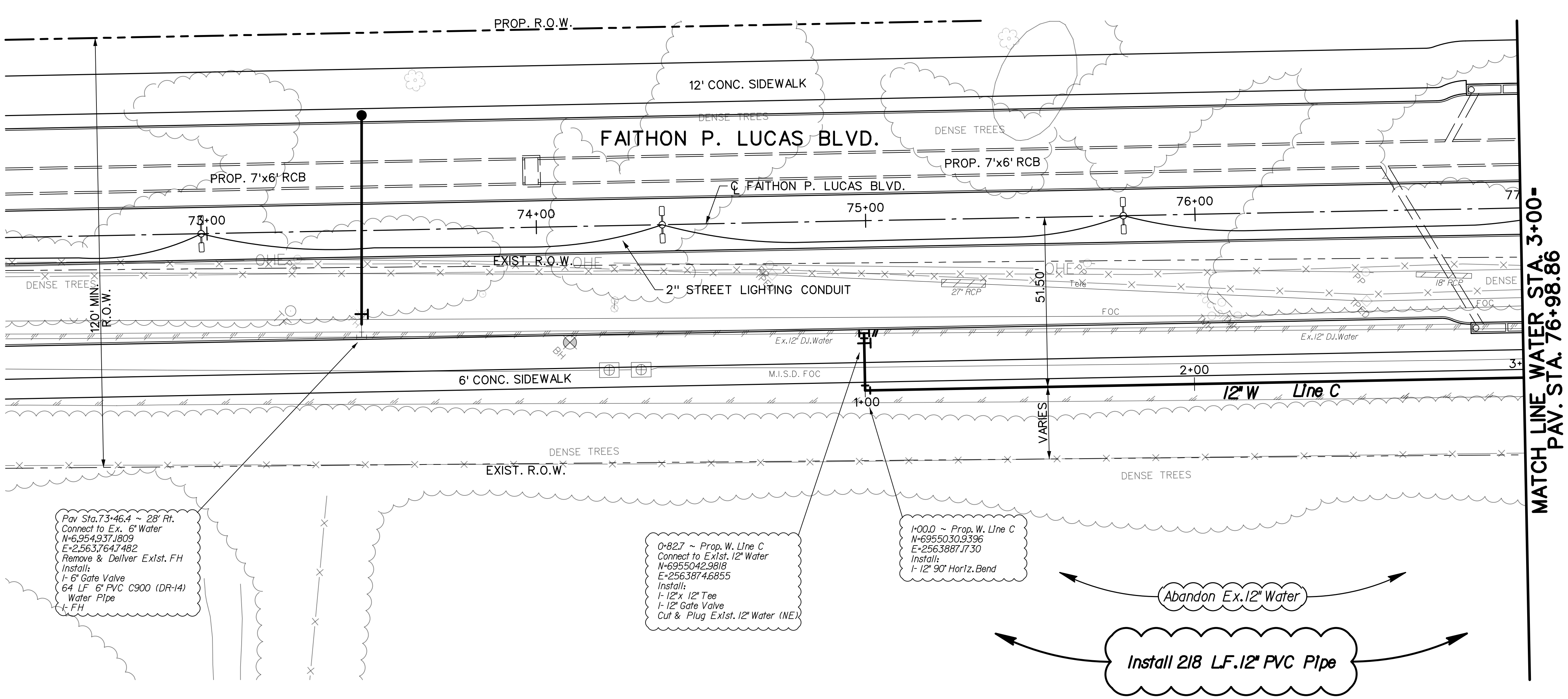

HORZ. SCALE IN FEET (0, 20, 40)

VERT. SCALE IN FEET (0, 5, 10)

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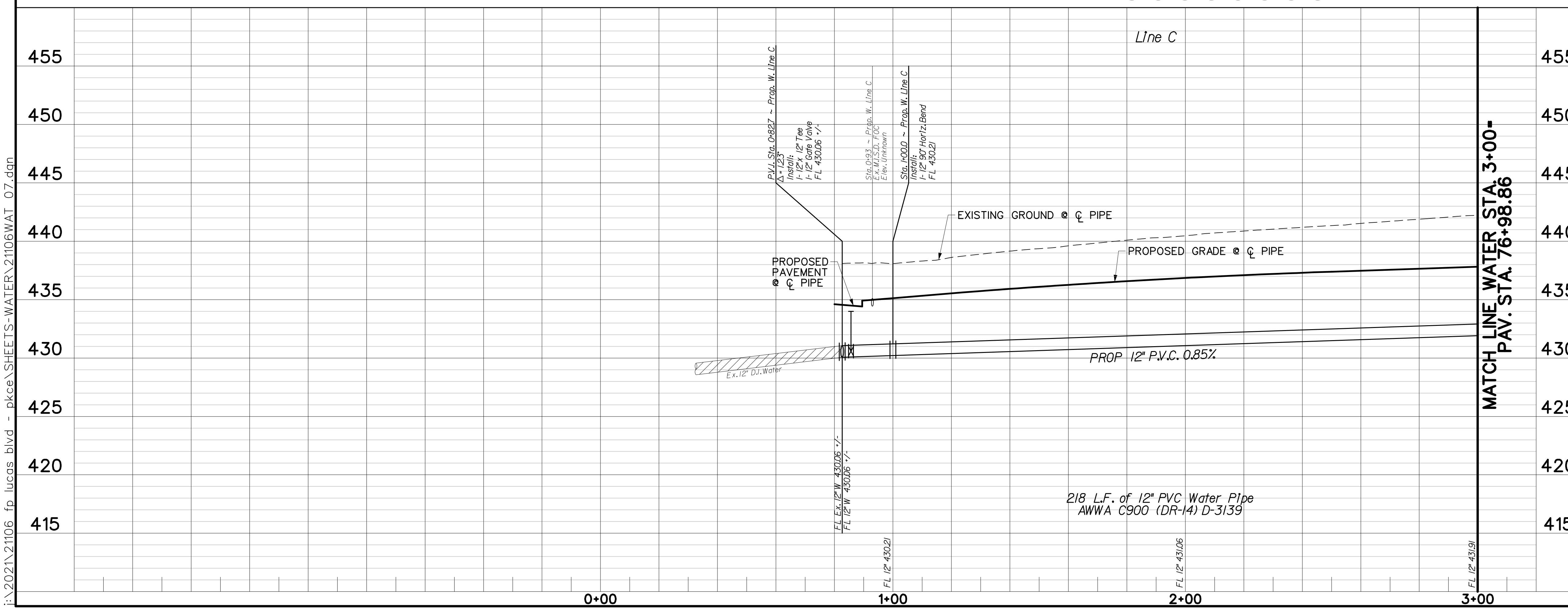

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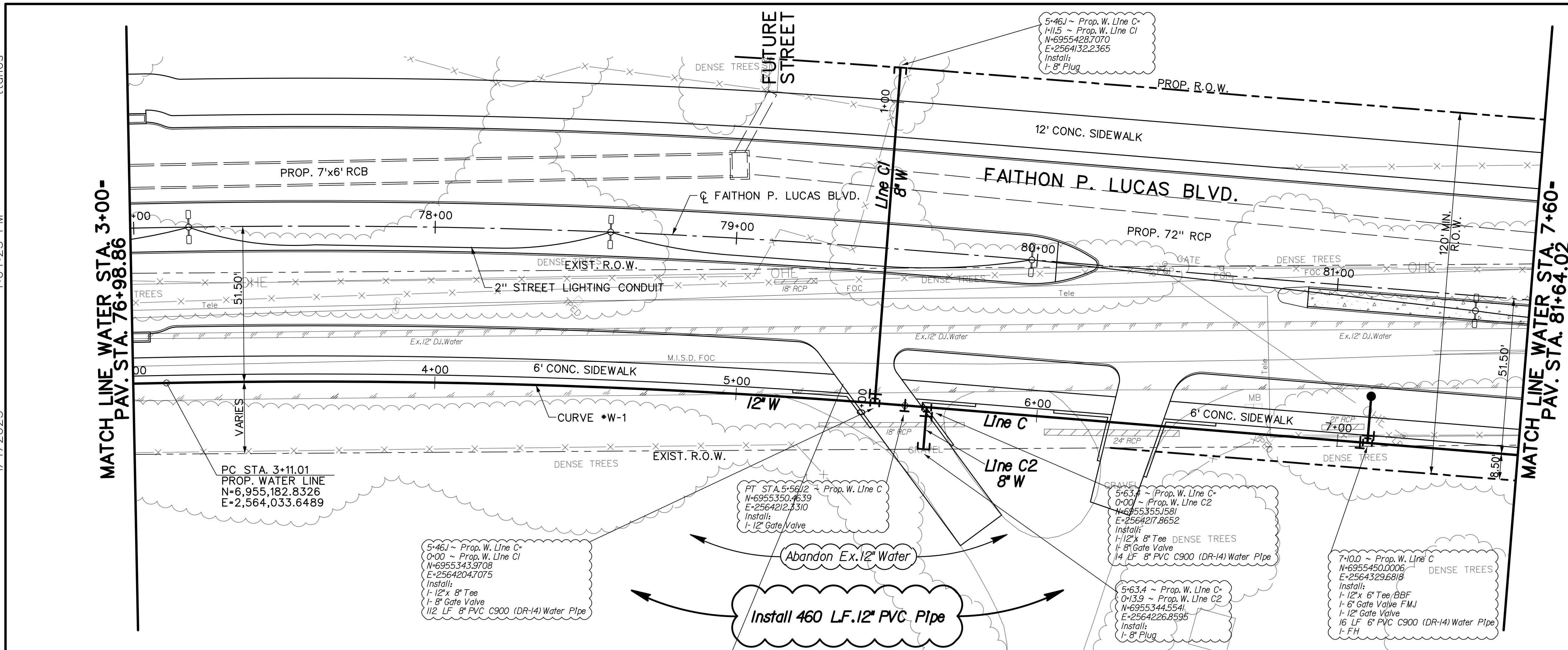
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-162	162 OF 252



PROP. WATER LINE CURVE *W-1 DATA

PI STA. 4+33.67
N 6,955,271.1239
E 2,564,118.7914
D 2° 20'24.13"
R 2,448.50'
Lc 245.11'
T 122.66'

HORZ. SCALE IN FEET (0 20 40)

VERT. SCALE IN FEET (0 5 10)

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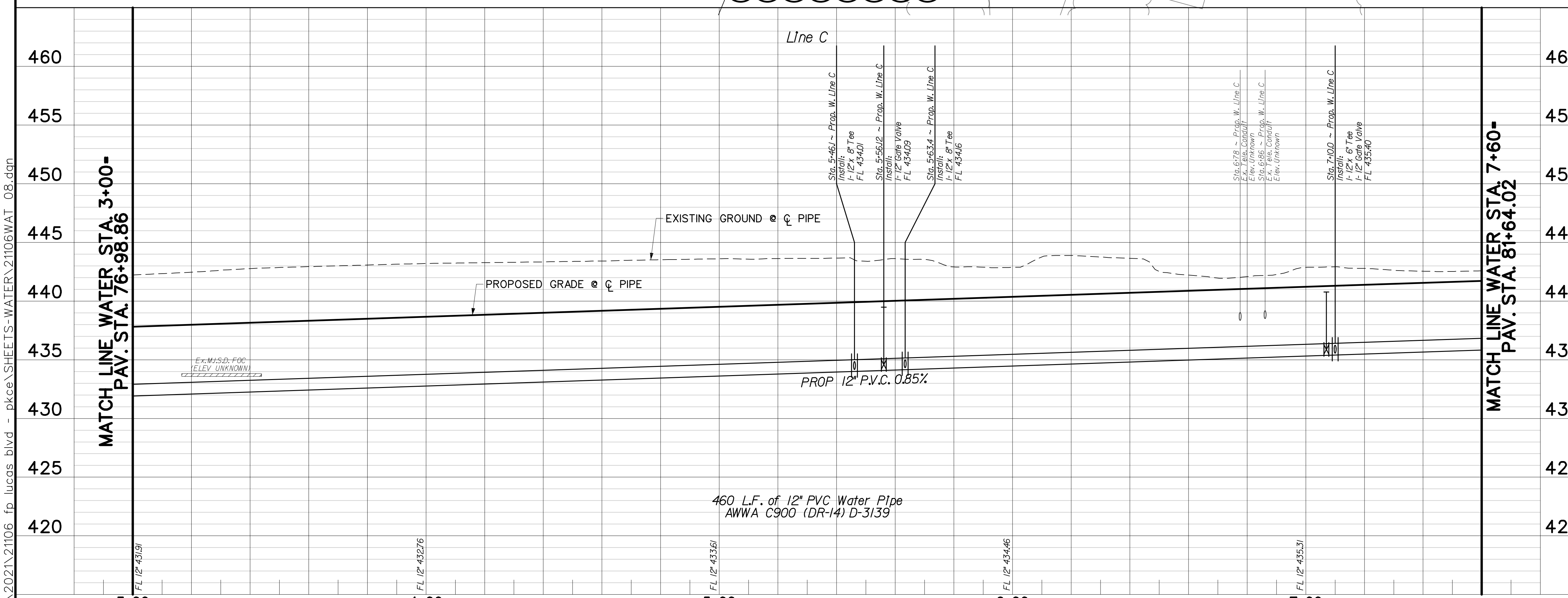

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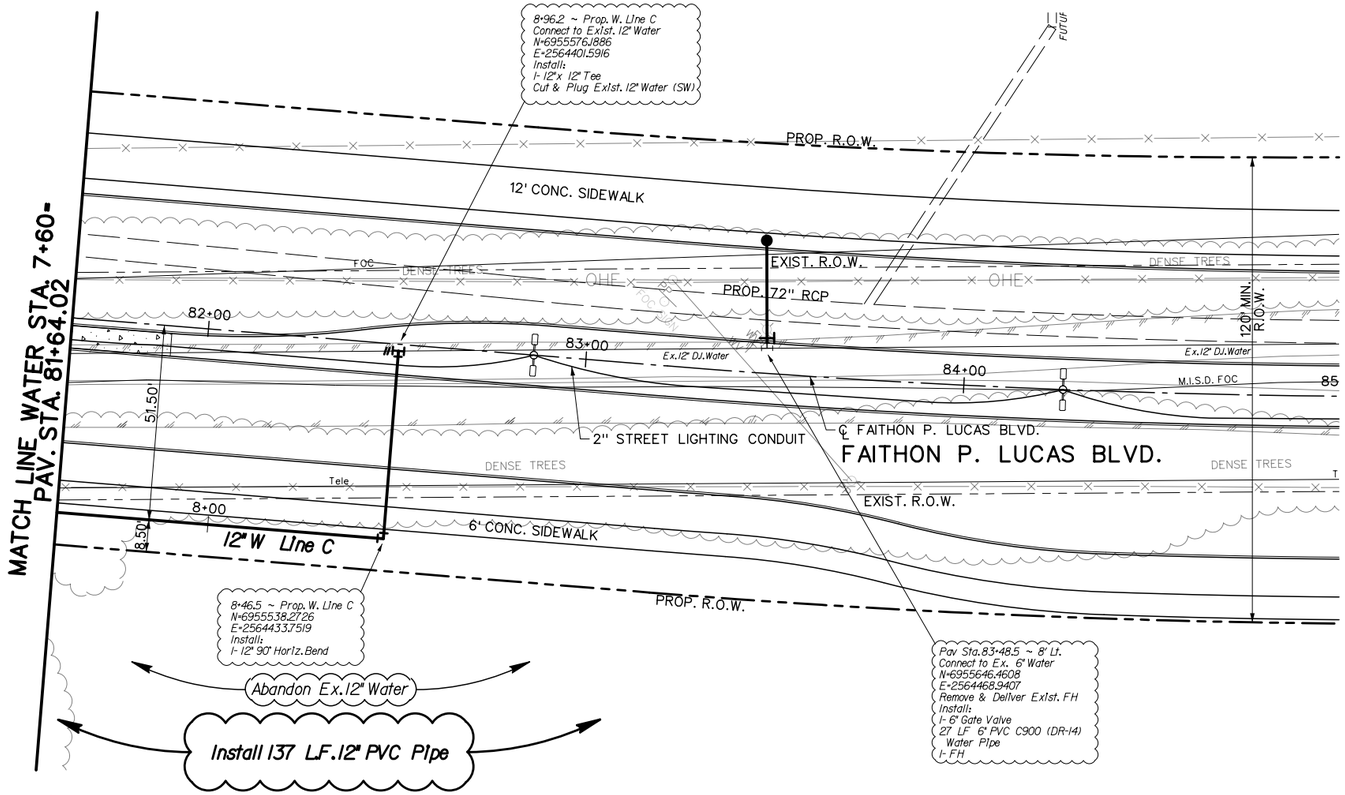
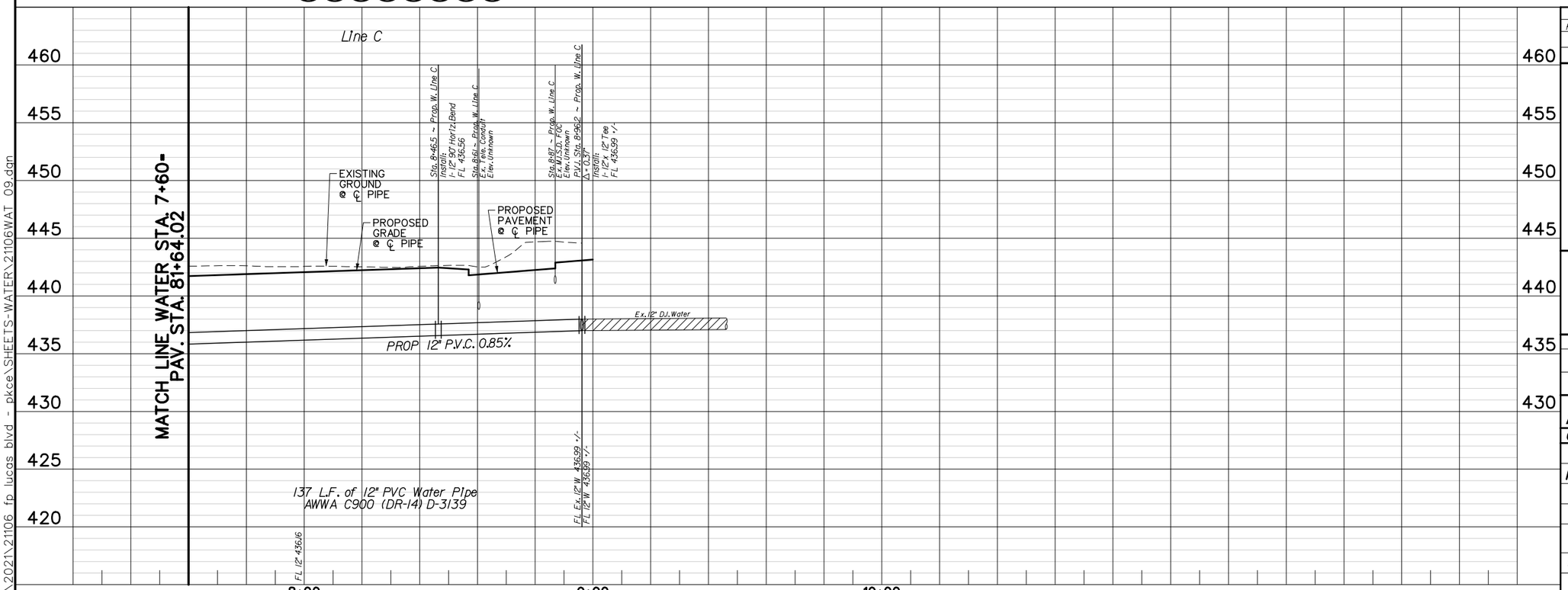
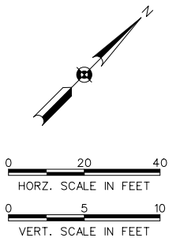
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-163	163 OF 252







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CITY CONTRACT NO. 2019-068

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WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-164	164 OF 252

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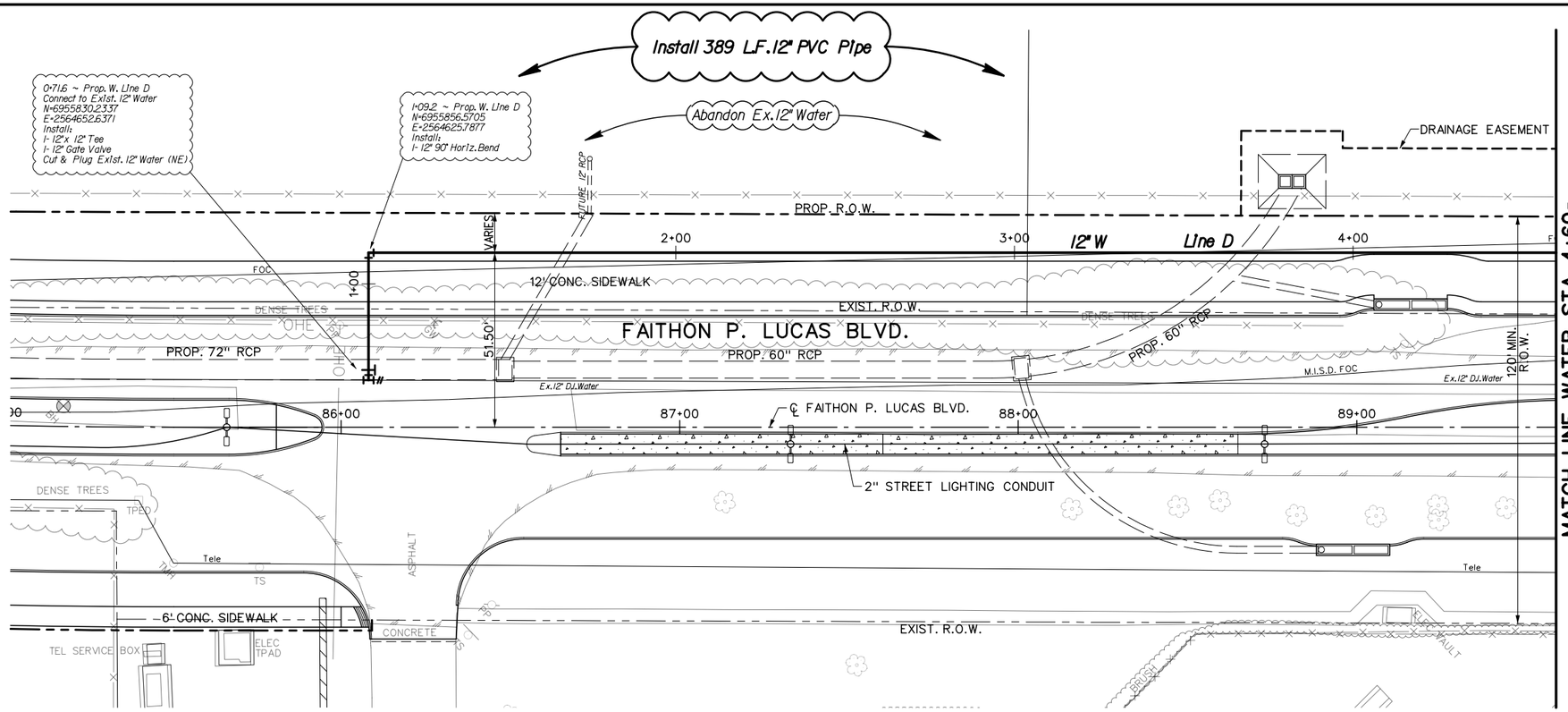

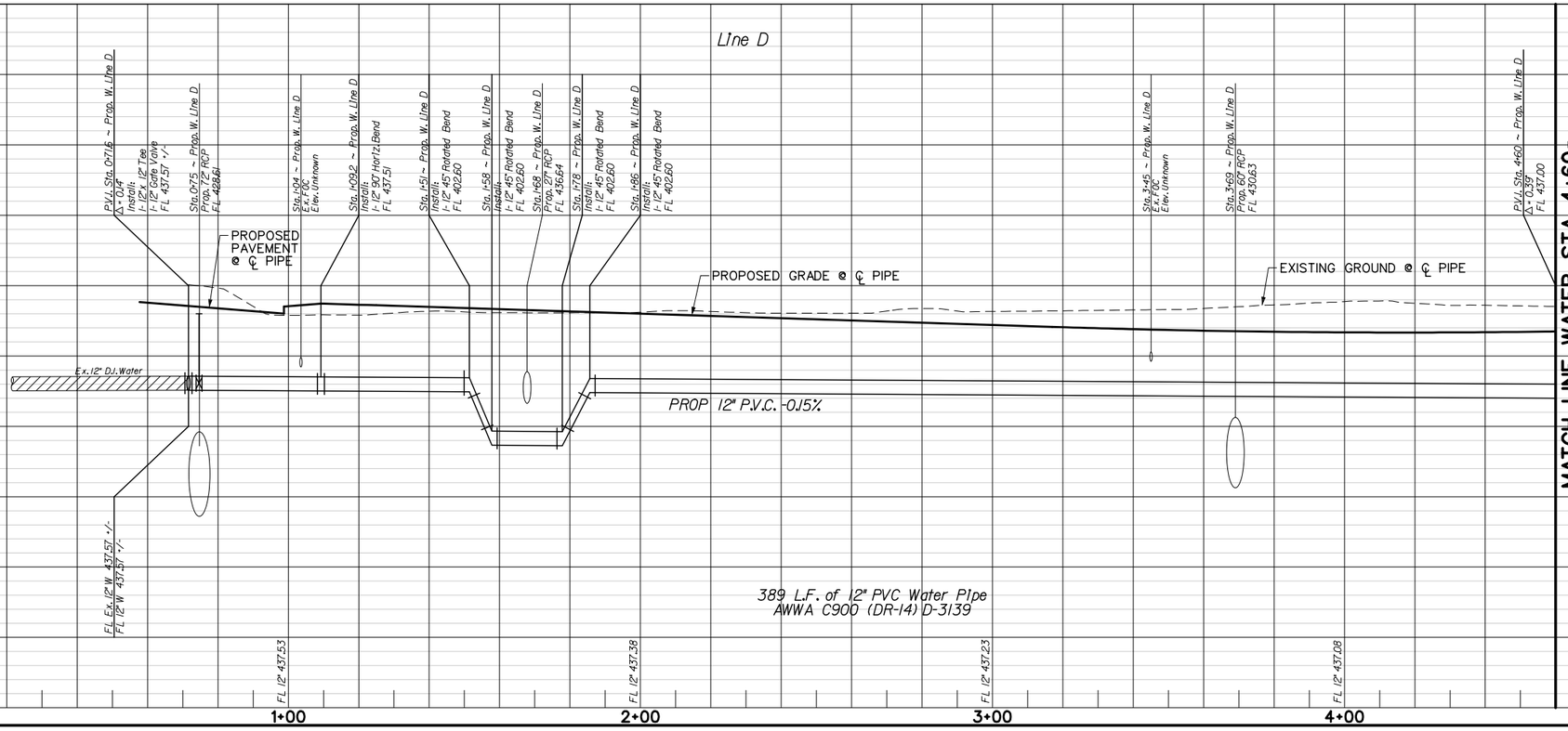

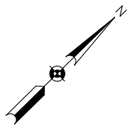

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CITY CONTRACT NO. 2019-068

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FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-165	165 OF 252

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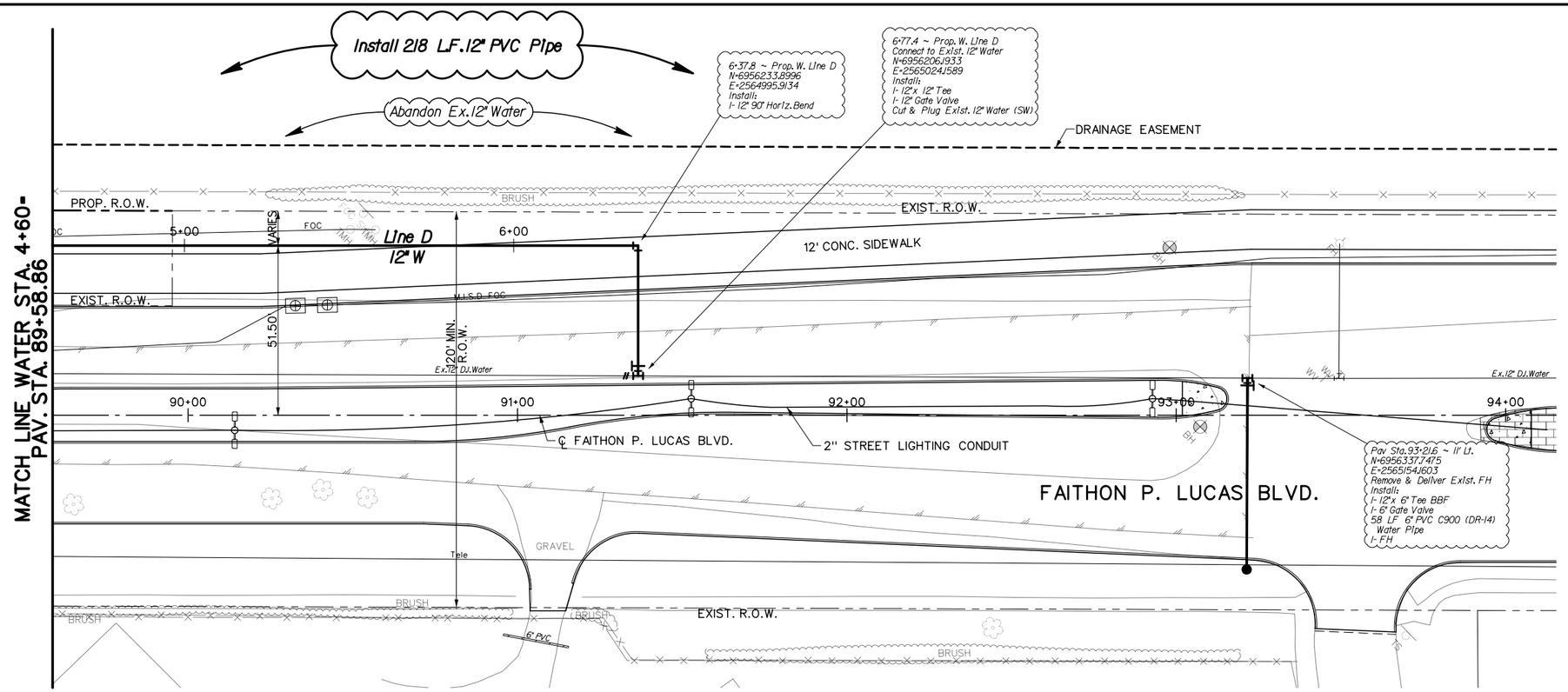

0 20 40
HORZ. SCALE IN FEET
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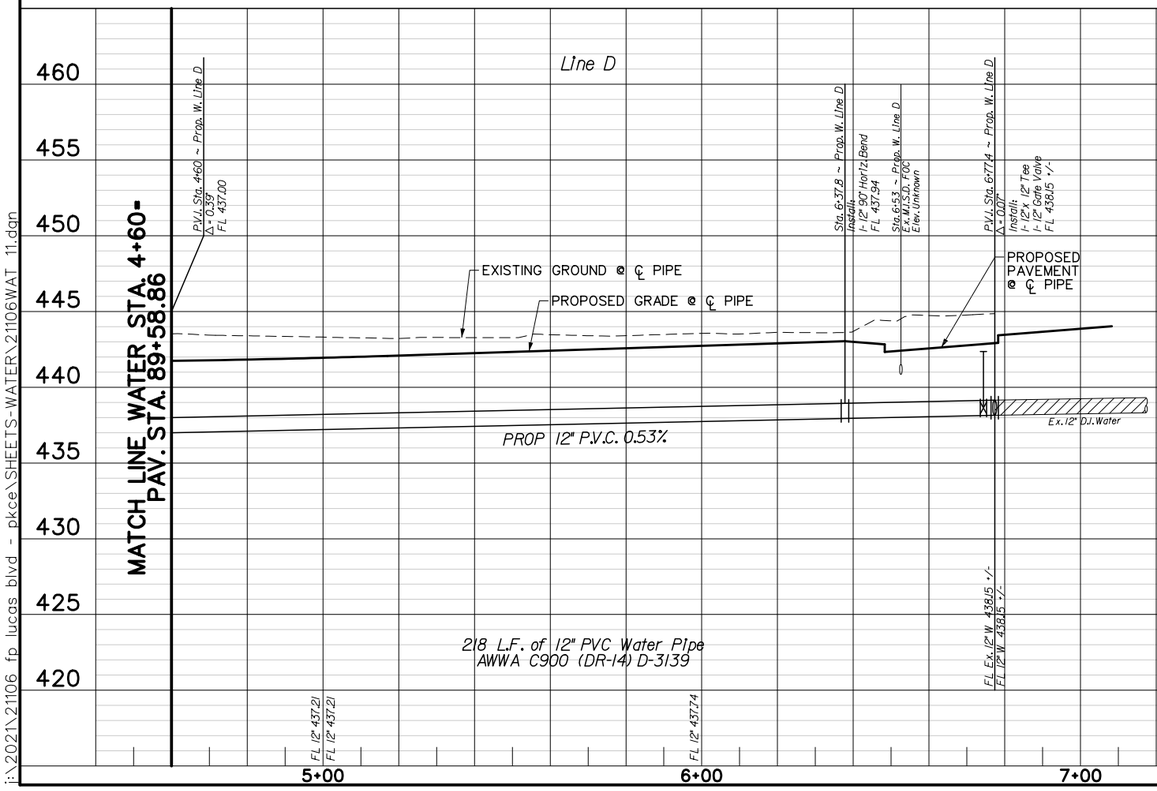

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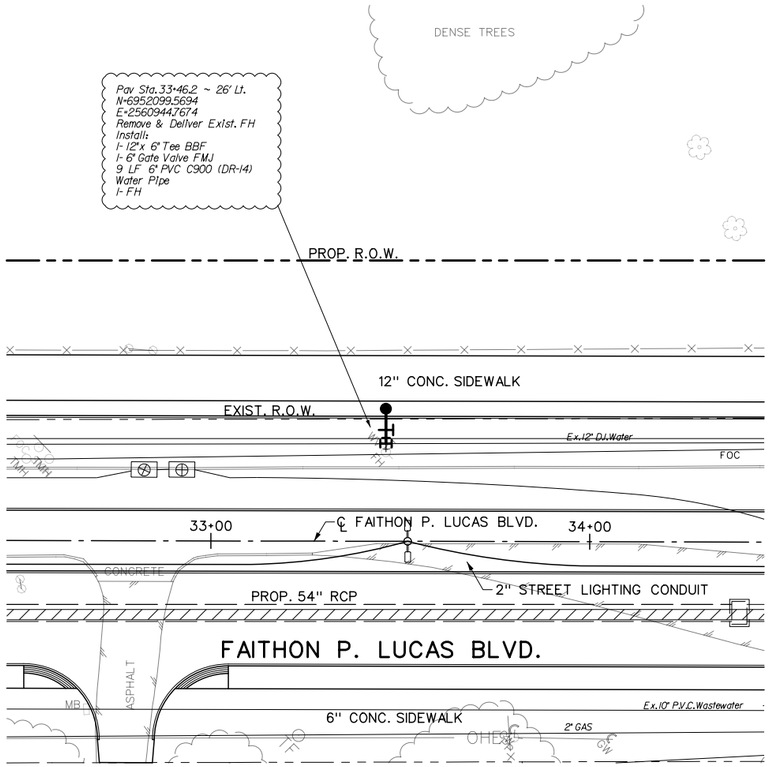
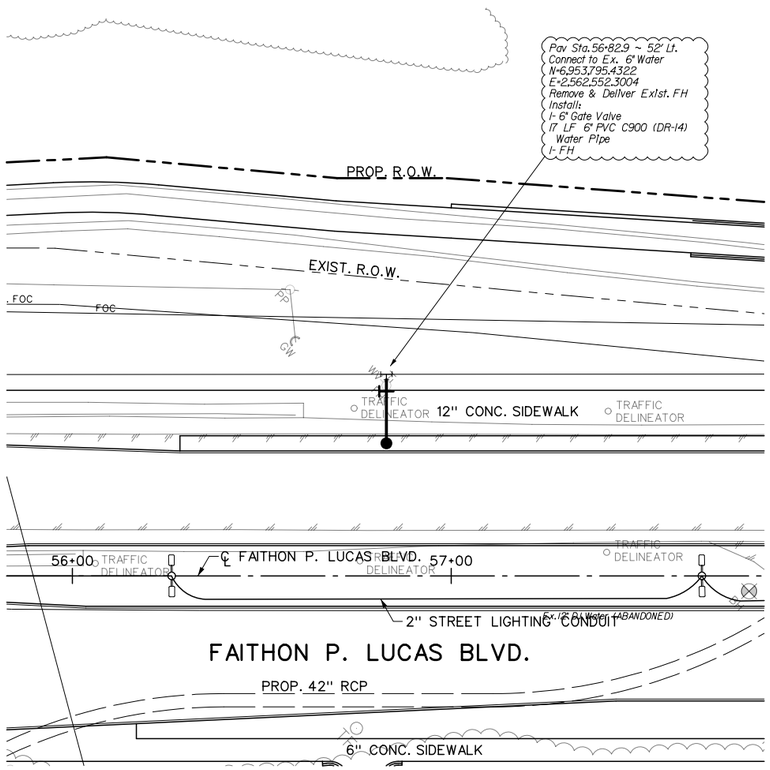
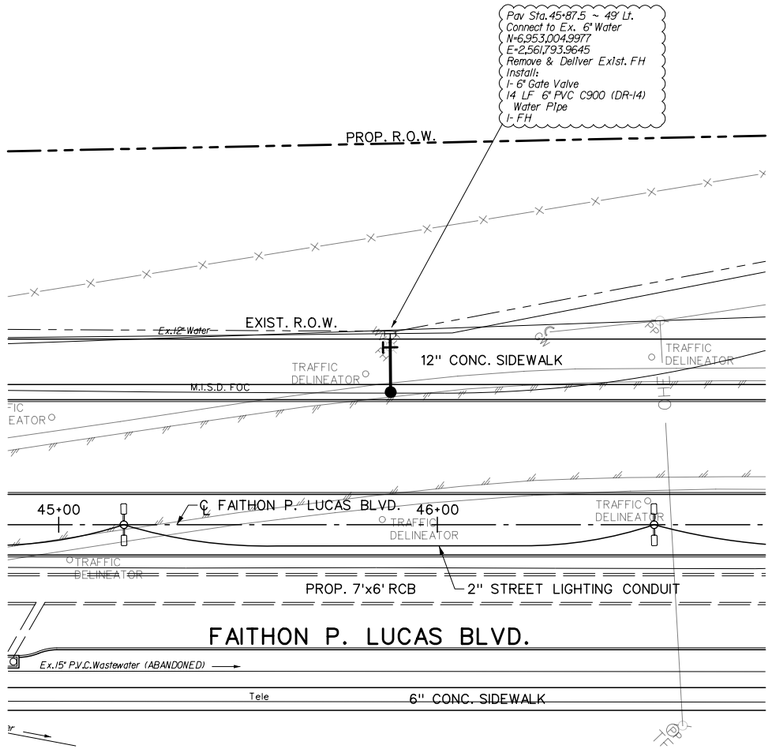
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

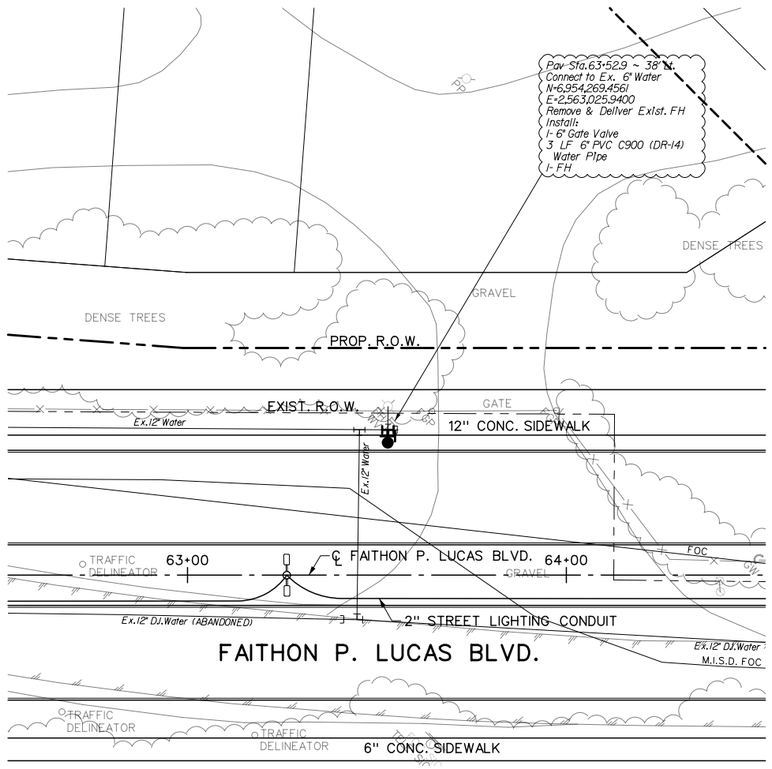
CITY OF MESQUITE, TEXAS

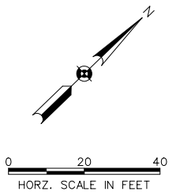
DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-166	166 OF 252











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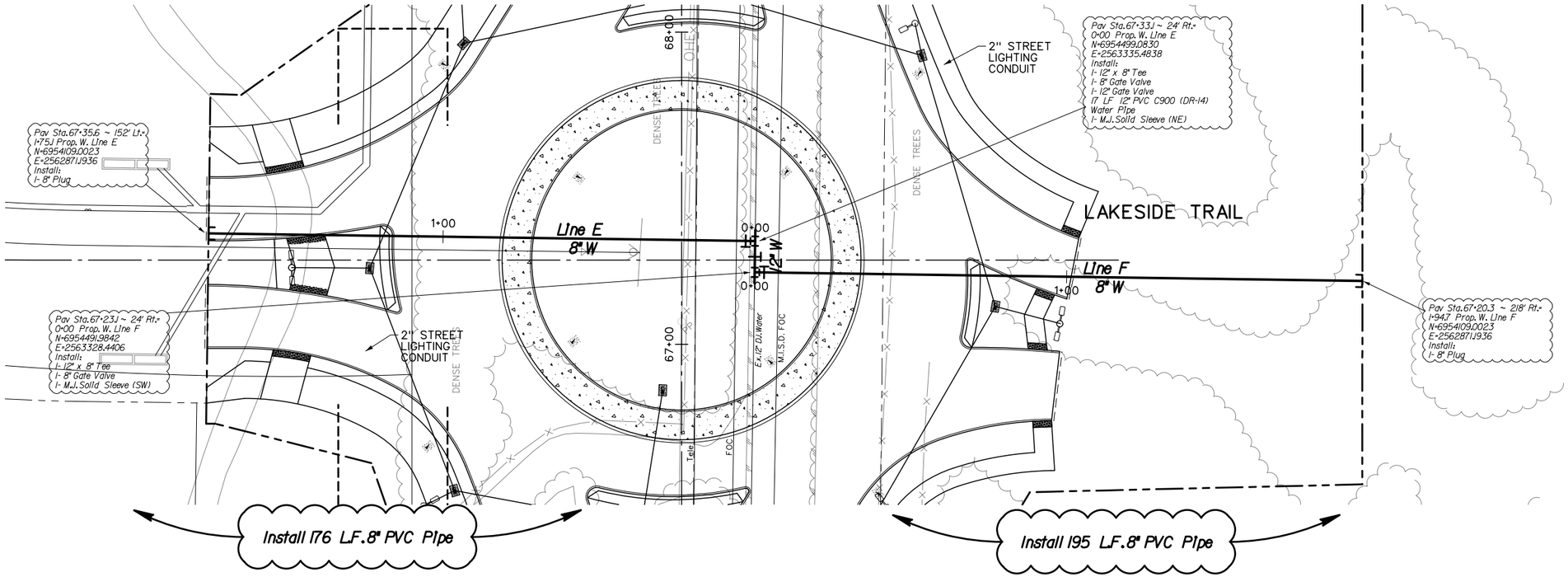
WATER PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-167	167 OF 252



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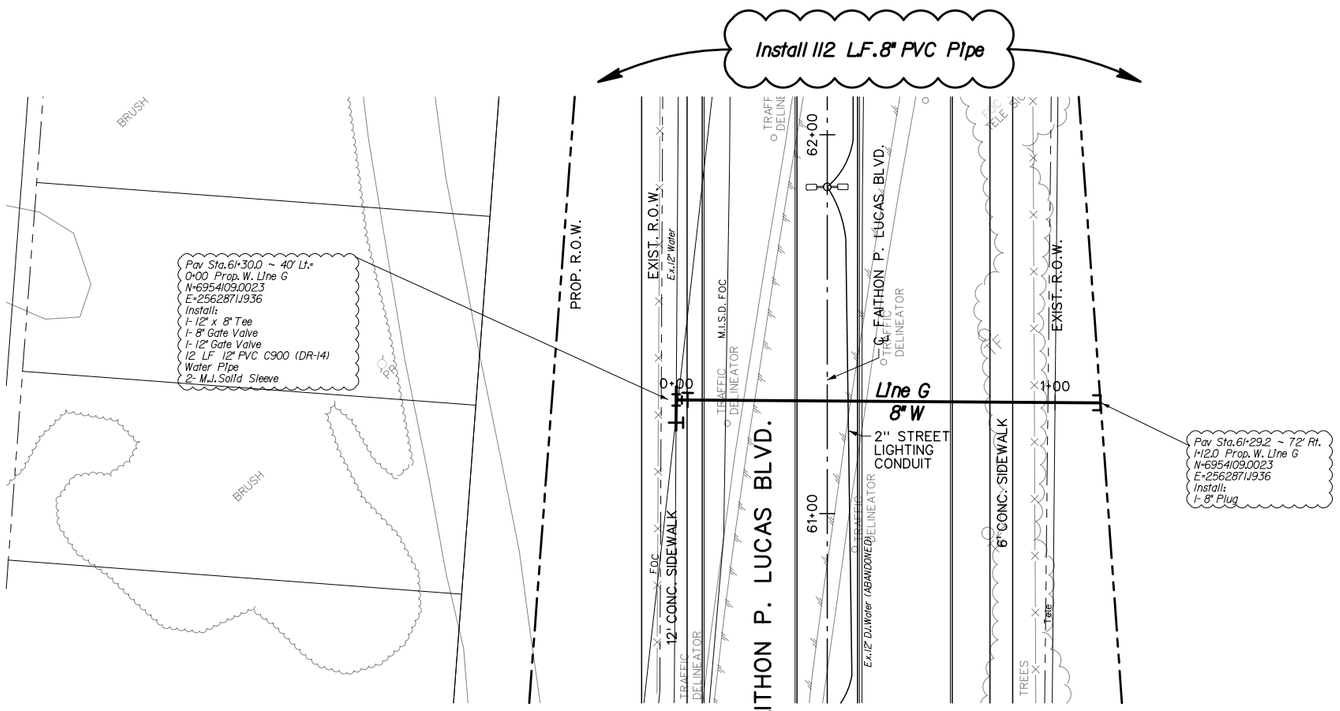


REFERENCES
ENGINEERING DIV. WATER MAP SHEET NO. 98 & 99
ENGINEERING DIV. SEWER MAP SHEET NO. 98 & 99

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

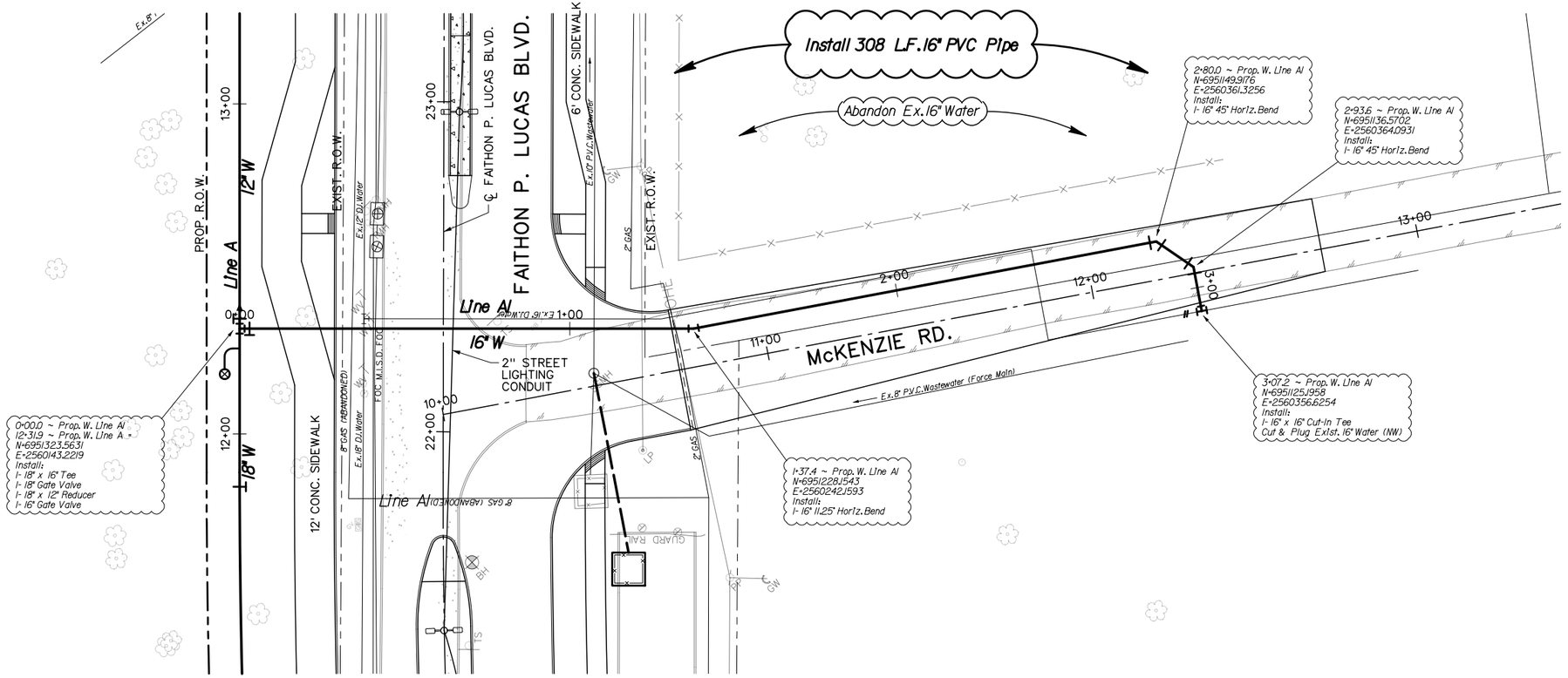
APM & Associates, Inc.
Engineering · Planning · CM Services
1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-168	168 OF 252



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NOTE:

1. CONTRACTOR TO VERIFY LOCATION AND SIZE OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES WITHIN THIS AREA AND RELOCATE THEM AS NECESSARY.
2. THE CONTRACTOR SHALL MAINTAIN EXISTING WASTEWATER SERVICE AND FLOW AT ALL TIMES. NO SEPARATE PAY ITEM.

CAUTION ~ OVERHEAD LINES !
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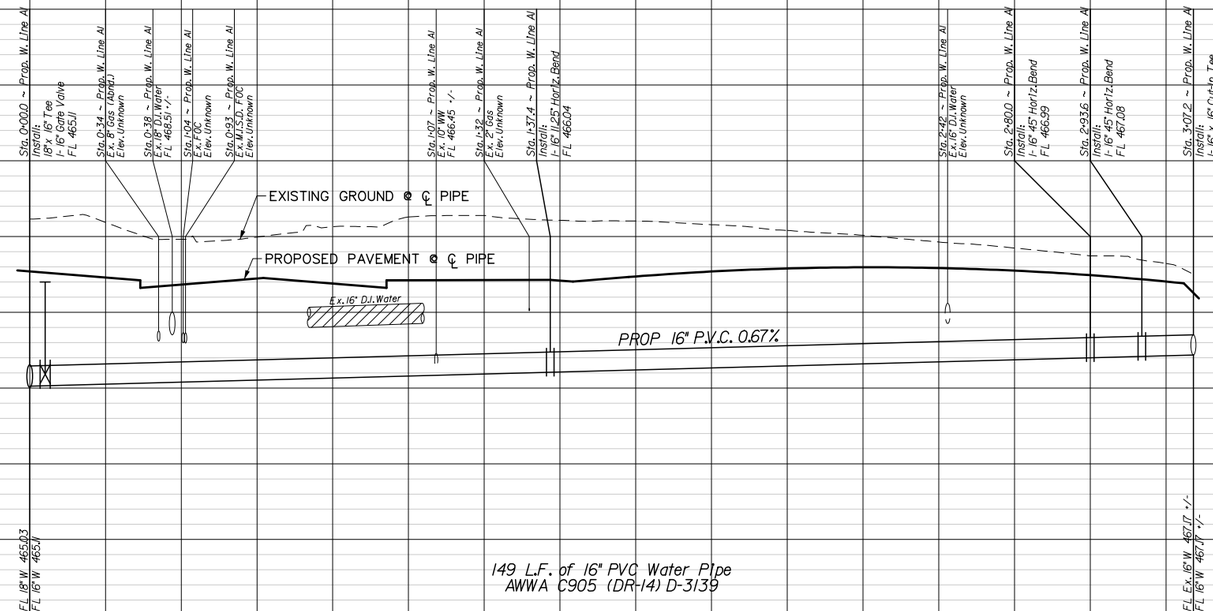

149 L.F. of 16" PVC Water Pipe
AWWA C905 (DR-14) D-3139

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
2			

BENCHMARKS & CONTROL POINTS

REFERENCES
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CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-169	169 OF 252

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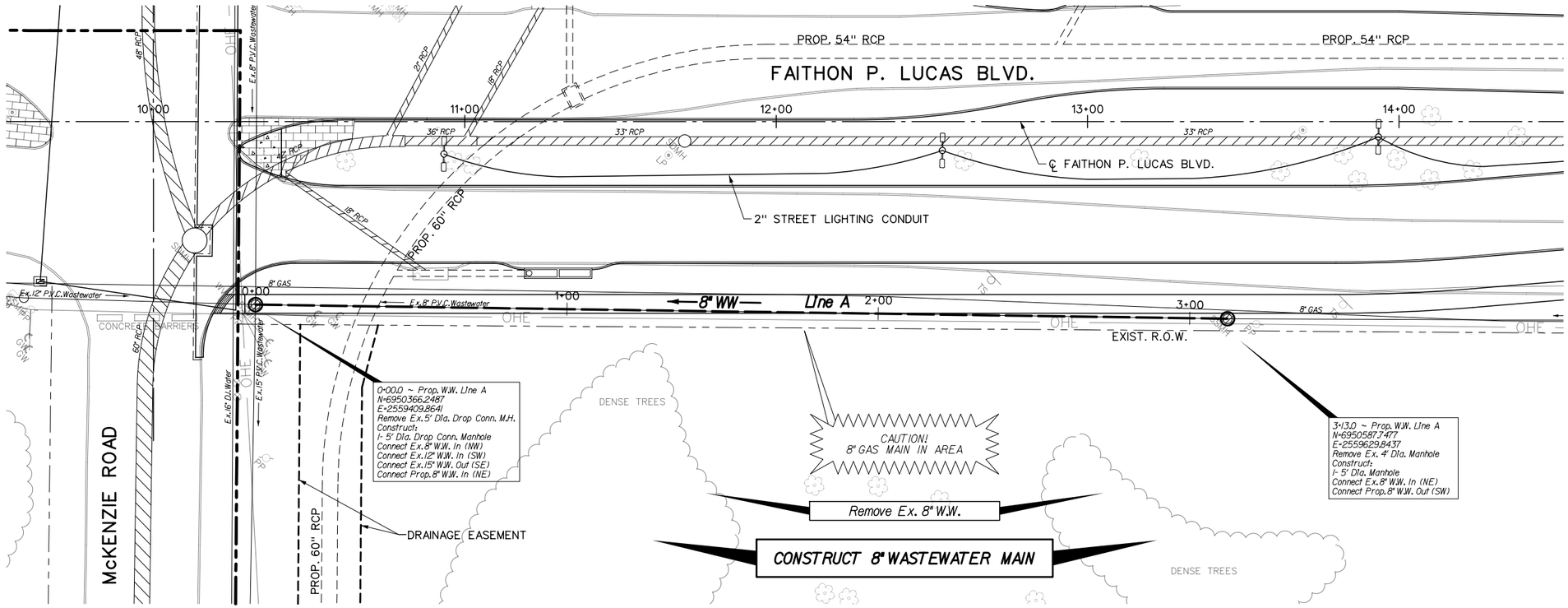

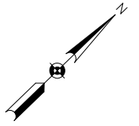

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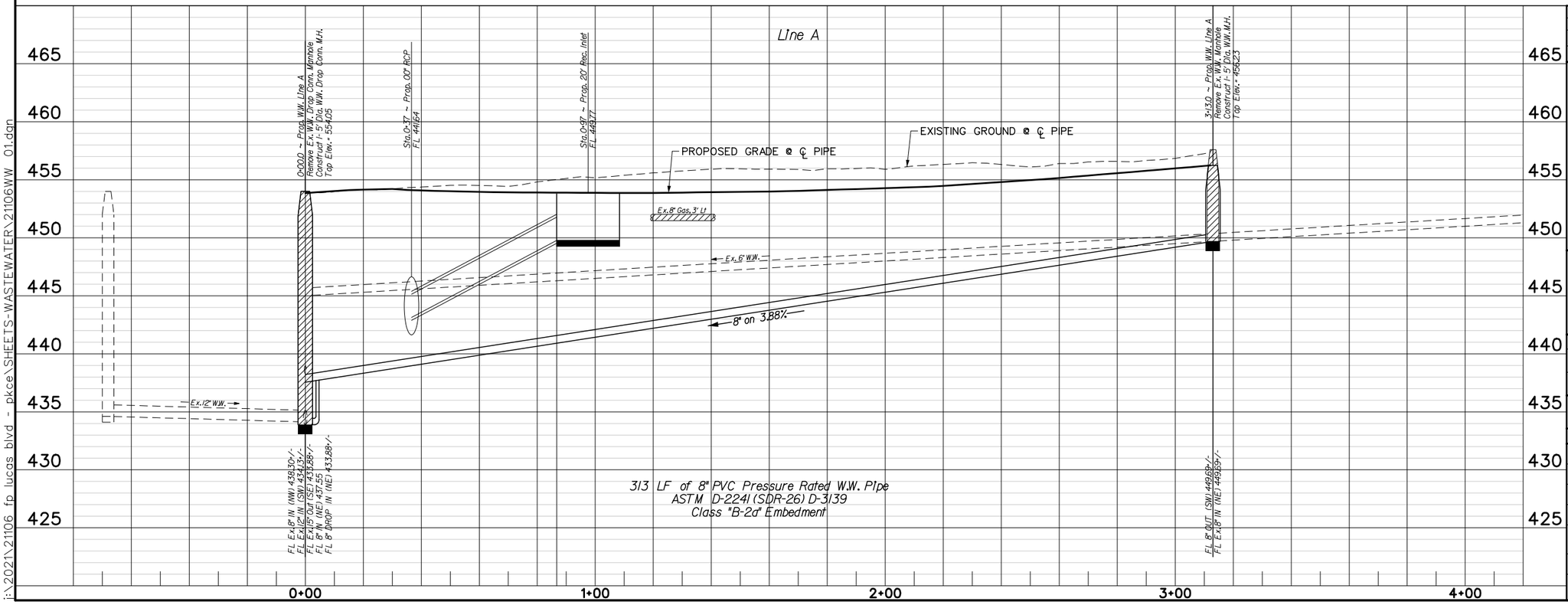

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY
1			
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FIRM REG. #3091

CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WASTEWATER PLAN AND PROFILE

CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-170	170 OF 252

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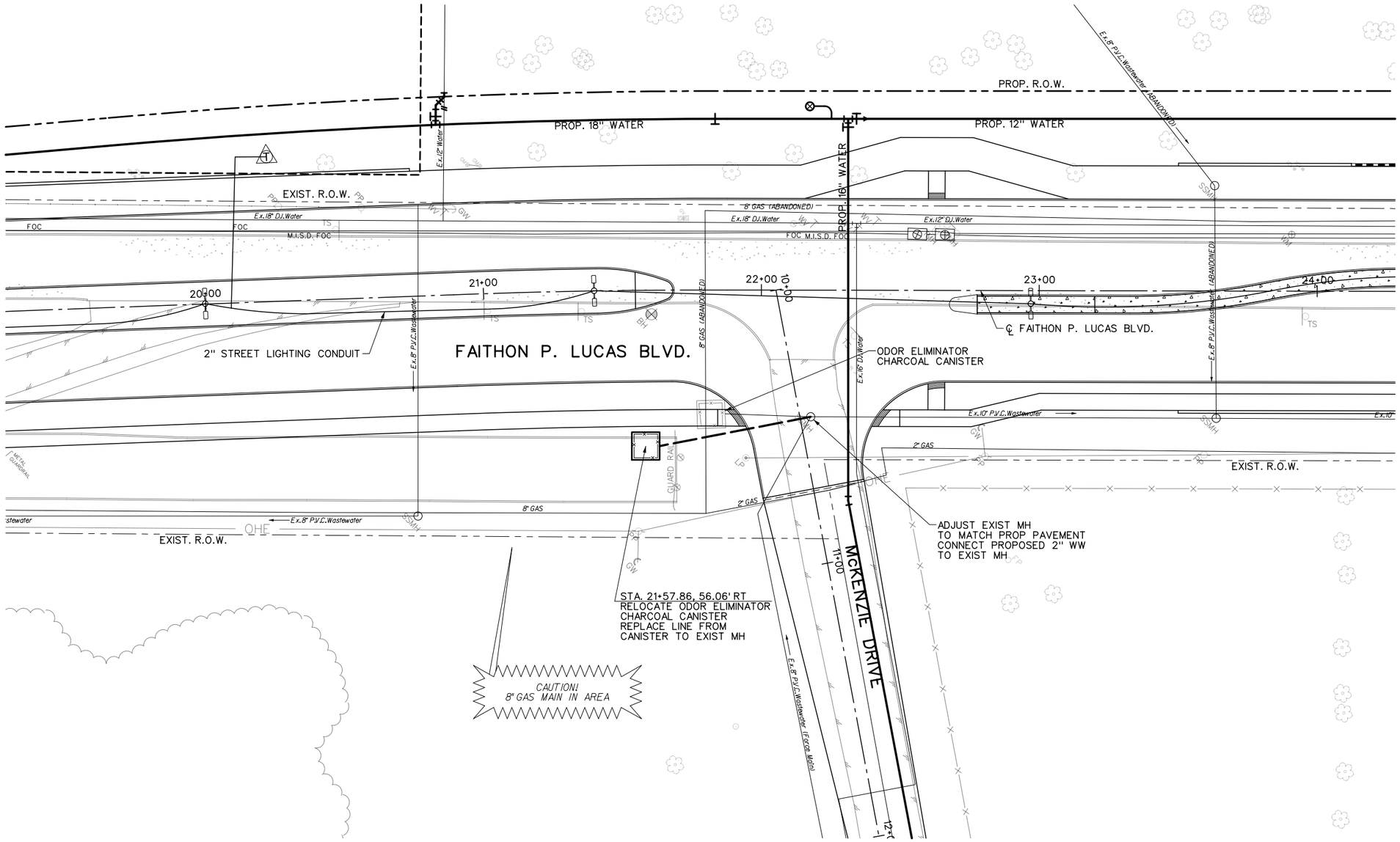

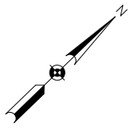

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1700 Pacific Avenue, Suite 1020
Dallas, TX. 75201 (214) 748-4888
FIRM REG. #3091

CITY CONTRACT NO. 2019-068

FAITHON P. LUCAS BLVD.
FROM McKENZIE RD. TO CARTWRIGHT RD.
WASTEWATER PLAN

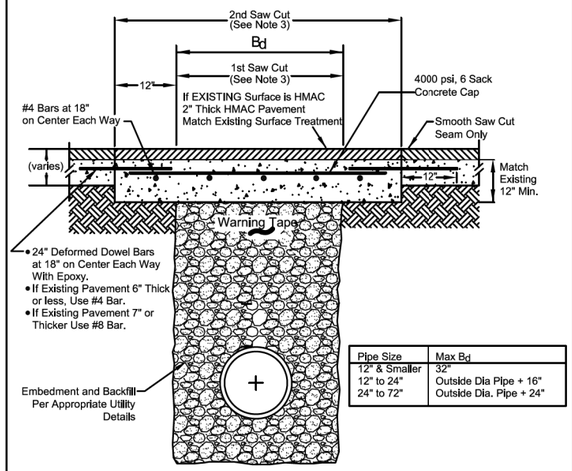
CITY OF MESQUITE, TEXAS

DESIGN	DRAWN	DATE	CITY OF MESQUITE RECORD DWG INDEX NO.	SHEET
APM	APM	JAN 2023	2023-029-171	171 OF 252

DETAIL NO.	DETAIL NAME	EFFECTIVE DATE
GENERAL		
G-GN	GENERAL NOTES	11/11/2019
G-1	TABLE OF CONTENTS	05/20/2019
G-2	TYPICAL PAVEMENT CUT OVER TRENCH	11/11/2019
G-3	UTILITY BORE	05/20/2019
G-4	CONCRETE ENCASEMENT	05/20/2019
G-5A:C	AERIAL CROSSING	05/20/2019
PAVING		
P-1	EXPANSION JOINTS	11/11/2019
P-2	CONSTRUCTION JOINTS	11/11/2019
P-3	SAWED CONTRACTION & ISOLATION JOINTS	05/20/2019
P-4	STREET JOINTING	05/20/2019
P-5	TYPICAL HEADERS	05/20/2019
P-6	THICKENED CONCRETE EDGE	05/20/2019
P-7	TYPICAL CURB & GUTTER	07/24/2019
P-8	PEDESTRIAN FACILITIES	11/11/2019
P-9	MONOLITHIC NOSE	05/20/2019
P-10	MEDIAN	05/20/2019
P-11	STAMPED CONCRETE MEDIAN PAVEMENT	05/20/2019
P-12A:12B	PERMANENT BARRICADE	05/20/2019
P-13A:13B	LEFT TURN LANE	05/20/2019
P-14	CONCRETE PAVING DETAIL - TYPICAL SECTION	05/20/2019
P-15	CONCRETE SIDEWALK WITH RETAINING WALL	05/20/2019
P-16	CURB RAMP - TYPE A	09/08/2020
P-17	CURB RAMP - TYPE B	09/08/2020
P-18	CURB RAMP - TYPE C	09/08/2020
P-19	CURB RAMP - TYPE D	09/08/2020
P-20	FIRE LANE PAVING	05/20/2019
P-21	FIRE LANE STRIPING	05/20/2019
P-22	ALLEY PAVING	05/20/2019
P-23	ALLEY/STREET INTERSECTION - OFFSET SIDEWALK	05/20/2019
P-24	ALLEY/STREET INTERSECTION - ADJACENT SIDEWALK	05/20/2019
P-25	ALLEY UTILITY LOCATION	05/20/2019
P-26	DRIVEWAY - GENERAL	09/30/2020
P-27	DRIVEWAY - FLARED	05/20/2019
P-28	DRIVEWAY - RADIAL	05/20/2019
P-29	DRIVEWAY - RESIDENTIAL ALLEY	05/20/2019
WATER		
W-GN	GENERAL NOTES - WATER	07/24/2019
W-1	TYPICAL WATER MAIN PIPE EMBEDMENT (NOT UNDER PAVEMENT)	09/08/2020
W-2	TYPICAL WATER MAIN PIPE EMBEDMENT (UNDER PAVING)	11/11/2019
W-3	WATER FLANGED FITTINGS	05/20/2019
W-4	WATER VALVE	05/20/2019
W-5	ABANDONMENT OF VALVE STACK	05/20/2019
W-6	AIR RELEASE VALVE	05/20/2019

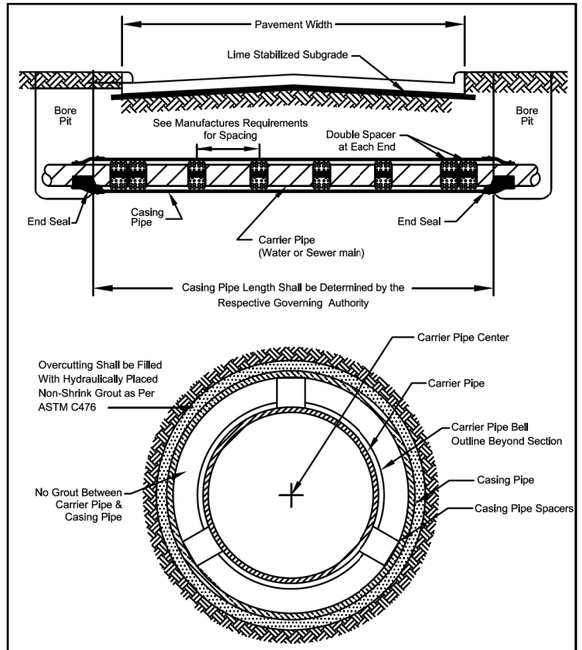
W-7	WATER SERVICE	09/08/2020
W-8	TYPICAL UTILITY LOCATIONS	09/08/2020
W-9	FIRE HYDRANT	09/08/2020
W-10	FIRE HYDRANT (STRAIGHT)	05/20/2019
W-11	FIRE HYDRANT (90 BEND)	05/20/2019
W-12	WATER FLANGED FITTINGS	05/20/2019
W-13	FIRE SPRINKLER YARD PIPING	05/20/2019
W-14	REMOTE FDC AND FIRE LINE	05/20/2019
W-15	3" THRU 10" DOMESTIC TURBINE WATER METER ASSEMBLY	05/20/2019
W-16	FIRE HYDRANT BOLLARD	05/20/2019
WASTEWATER		
WW-GN	GENERAL NOTES - WASTEWATER	11/11/2019
WW-1	WASTEWATER EMBEDMENT (NOT UNDER PAVING)	04/13/2020
WW-2	WASTEWATER EMBEDMENT (UNDER PAVING)	04/13/2020
WW-3	WASTEWATER LATERAL	05/20/2019
WW-4	WASTEWATER MAINLINE CLEANOUT	05/20/2019
WW-5	WASTEWATER MANHOLE RING AND COVER	05/20/2019
WW-6	WASTEWATER MANHOLE RING AND COVER (RETROFIT ONLY)	05/20/2019
WW-7	DOUBLE CLEANOUT	05/20/2019
WW-8	SINGLE CLEANOUT	05/20/2019
WW-9	PRECAST MANHOLE	05/20/2019
WW-10	CAST-IN-PLACE MANHOLE	05/20/2019
WW-11	PRECAST DROP MANHOLE	05/20/2019
WW-12	CAST-IN-PLACE DROP MANHOLE	05/20/2019
WW-13	ABANDONED MANHOLE	05/20/2019
WW-14	MANHOLE INVERT AND CONNECTION	05/20/2019
WW-15	MANHOLE BLOCKOUT	05/20/2019
WW-16	MANHOLE VENT	05/20/2019
WW-17	PRECAST FLAT MANHOLE LID	05/20/2019
WW-18	CAST-IN-PLACE FLUSH MANHOLE LID	05/20/2019
WW-19	CAST-IN-PLACE MANHOLE LID	05/20/2019
TRAFFIC		
T-1A:1D	PAVEMENT MARKING	05/20/2019
T-5	JIGGLE BARS & TRAFFIC ARROWS	05/20/2019
T-6	STREET LIGHTING CONDUIT	05/20/2019
T-7	CROSSWALK PAVEMENT MARKING	05/20/2019
T-8	STREET NAME SIGN LAYOUT	05/20/2019
SOLID WASTE		
~~SW-1A:1B~~	~~DUMPSTER ENCLOSURE~~	~~05/20/2019~~
DRAINAGE		
D-1A:1B	5' AND 10' SINGLE RECESSED CURB INLET	05/20/2019
D-2A:2B	15' AND 20' DOUBLE STANDARD CURB INLET	05/20/2019
D-3A:3B	5' AND 10' SINGLE STANDARD CURB INLET	05/20/2019
D-4	CURB INLET DETAILS AND NOTES	05/20/2019
D-5	CURB INLET REINFORCING	05/20/2019
D-6A:6B	STORM DRAIN MANHOLE 4', 5', OR 6' SQUARE	05/20/2019

D-7A:7B	CONCRETE CHANNEL DETAILS	05/20/2019
D8	CONCRETE COLLAR	11/11/2019
D9	STORM DRAIN EMBEDMENT	11/11/2019
FRANCHISE UTILITY		
F-1	FRANCHISE UTILITY PAVEMENT CUT REPLACEMENT	05/20/2019
F-2	TYPICAL FRANCHISE UTILITY LOCATION IN STREET ROW	05/20/2019
F-3	TYPICAL FRANCHISE UTILITY LOCATION IN ALLEY ROW	05/20/2019
F-4	RESERVED FOR FUTURE USE	
F-5A	FRANCHISE UTILITY GENERAL NOTES	04/13/2020
F-5B	FRANCHISE UTILITY GENERAL NOTES	05/20/2019

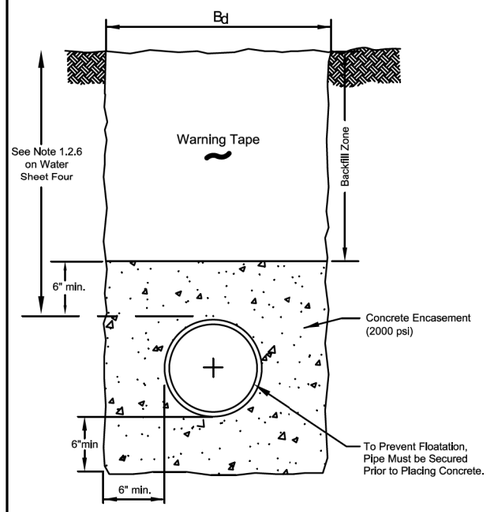


Pipe Size	Max Bd
12" & Smaller	32"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

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



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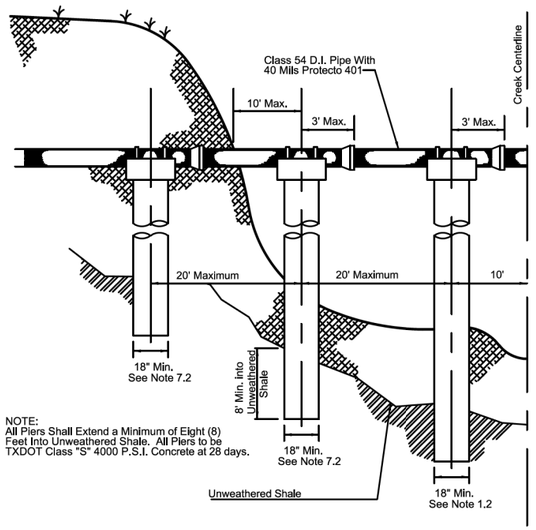
Notes:
1. Warning Tape Shall be Placed Approximately 24" Above Top of Pipe.

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

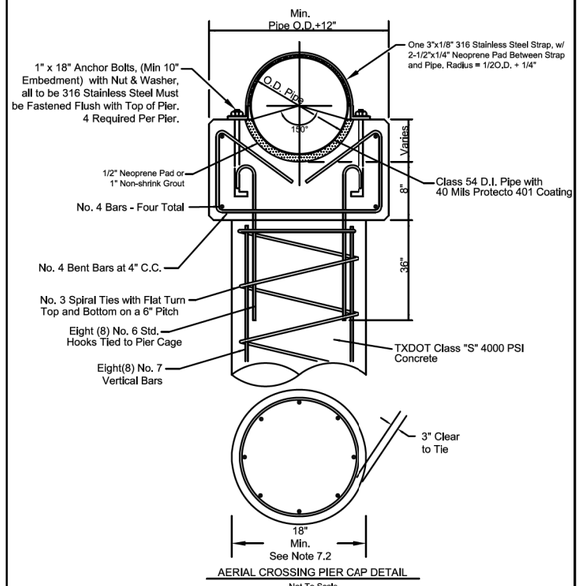
MESQUITE TEXAS Real. Texas. Service.



NOTE:
All Piers Shall Extend a Minimum of Eight (8) Feet Into Unweathered Shale. All Piers to be TXDOT Class "S" 4000 P.S.I. Concrete at 28 days.

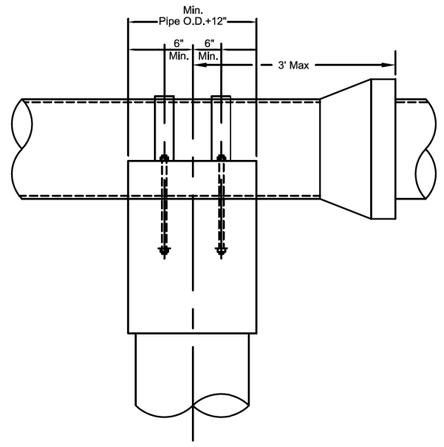
NOTES:
1. Reinforcing Steel Shall Conform to ASTM A-615, Grade 60.
2. Concrete for Drilled Shafts Shall be Poured Within 8 Hours of Drilling the Hole.
3. Casing May be Required During Installation of the Piers to Keep the Walls of the Shafts from Caving in and to Limit Groundwater Seepage into Pier Shafts.
4. Ductile Iron Pipe to be Class 54 with Protecto 401 Interior Coating. Polywrap all D.I. Pipe Below Grade.
5. TXDOT Specifications Shall Govern Construction of Drill Shafts, Columns and Pier Caps.
6. 2" Cover for all Steel Reinforcing Above Grade.
7. 3" Cover for all Steel Reinforcing Below Grade.
8. 3/4" Chamfer on all Exposed Corners.
9. THIS DETAILS GIVES MINIMUM ACCEPTABLE CRITERIA. ALL AERIAL CROSSINGS SHALL BE DESIGNED IN ACCORDANCE WITH ENGINEERING DESIGN MANUAL, SECTION 4.8.6

MESQUITE TEXAS Real. Texas. Service.	Public Works	AERIAL CROSSING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: G-5A



AERIAL CROSSING PIER CAP DETAIL
Not To Scale

MESQUITE TEXAS Real. Texas. Service.	Public Works	AERIAL CROSSING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: G-5B



PIPE ANCHOR TO CAP
Not To Scale

MESQUITE TEXAS Real. Texas. Service.	Public Works	AERIAL CROSSING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: G-5C

GENERAL - 2

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

CITY OF MESQUITE
RECORD DWG INDEX NO.
2023-029-173

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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 approvec 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 staxe 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 no: 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 Stemsonite 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-endec 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.

9.9. **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.

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

GENERAL DESIGN STANDARDS
STANDARD DETAILS

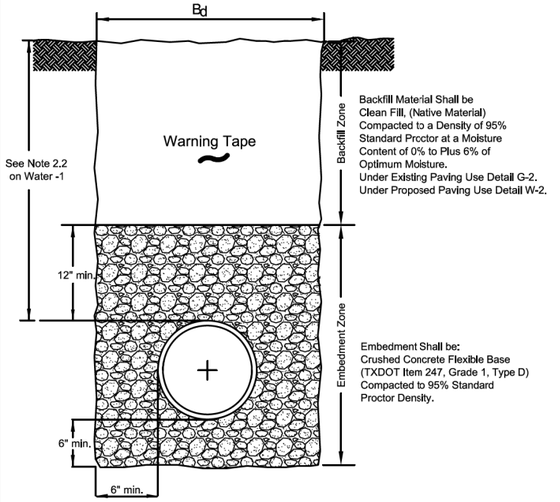
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-174

SCALE: N.T.S

REVISION DATE: 07/24/2019

SHEET: W-GN

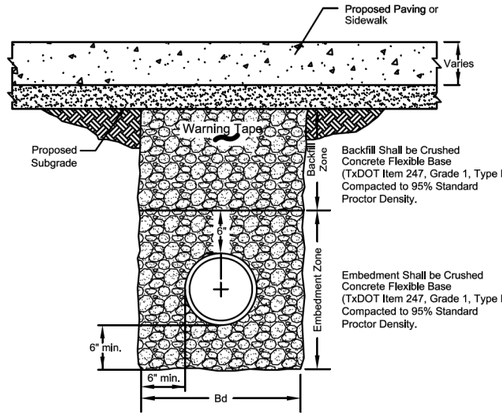
MESQUITE TEXAS Real. Texas. Service.



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"

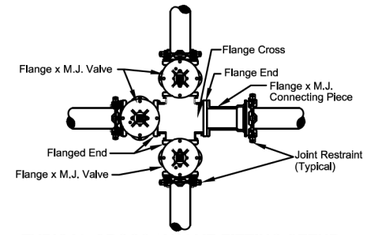
MESQUITE TEXAS Real. Texas. Service. Public Works | WATER MAIN EMBEDMENT (NOT UNDER PAVING) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 09/08/2020 | SHEET: W-1



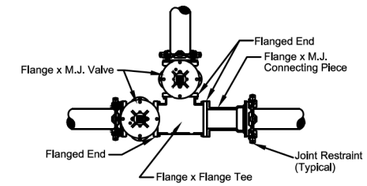
NOTES:
1. TYPICAL COVER OVER WATER MAIN IS 42" FOR MAIN < 14" DIAMETER AND 60" FOR MAINS 14" OR GREATER IN DIAMETER.
2. WARNING TAPE SHALL BE PLACED APPROX. 24" ABOVE TOP OF PIPE.
3. DUCTILE IRON PIPE AND FITTINGS SHALL HAVE CONTINUOUS POLYETHYLENE WRAP (BLUE COLOR).

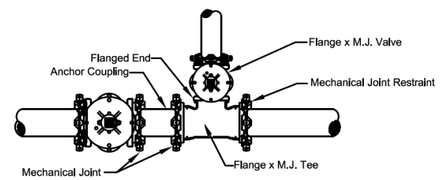
Pipe Size	Max Bd
12" & Smaller	32"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

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



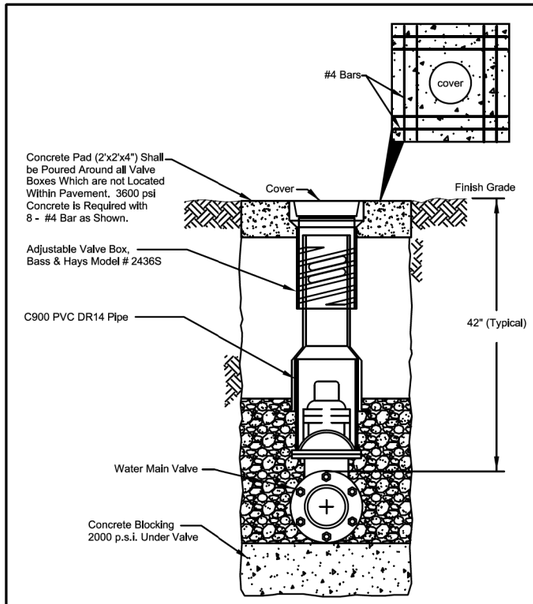
TYPICAL CROSS / VALVE FITTING SETUP





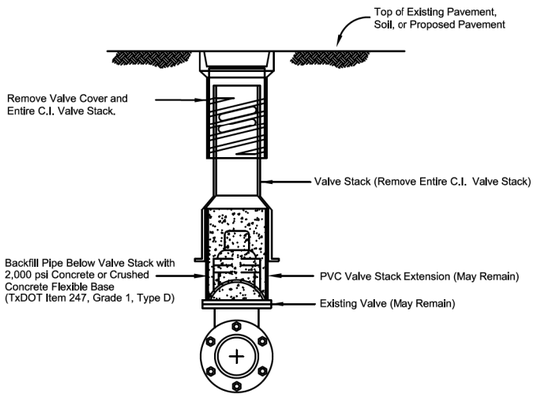
TYPICAL TEE / VALVE SETUP

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



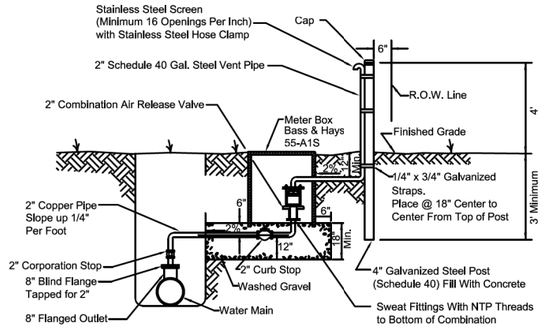
Notes:
See Details W-1, W-2, W-3 or W-4 for Valve Embedment & Backfill Requirements.

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



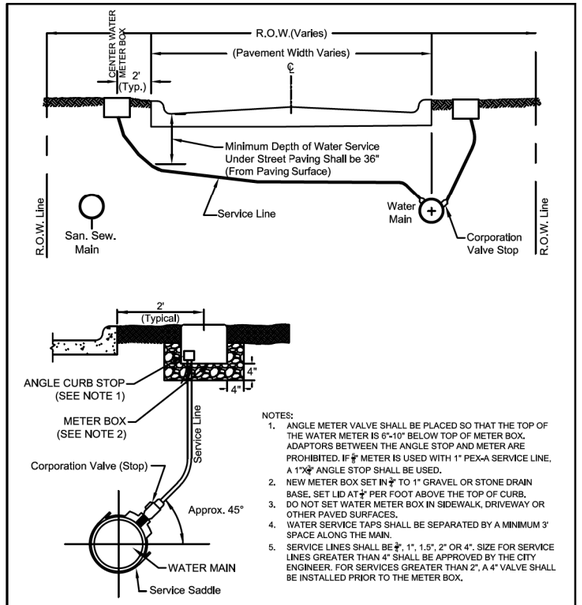
Notes:
1. Not In Pavement - Match Existing Soil and Sod. Compact to 95% Standard Proctor Density.
2. In Pavement - All Pavement Repairs Must Conform to Detail W-3.

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



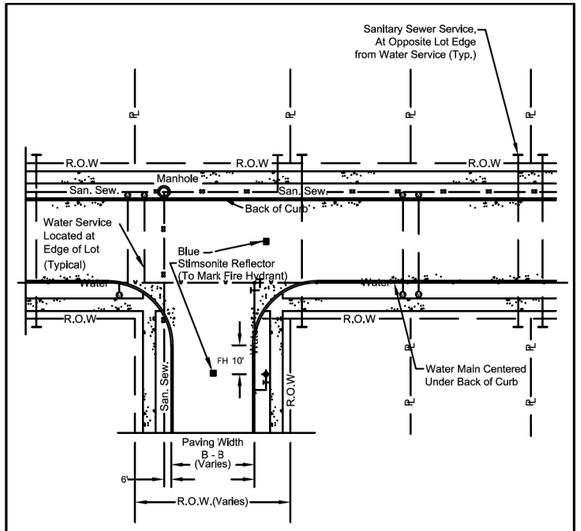
Notes:
1. For 1" Air Release Valve
2. For Larger Sizes Consult with City Engineer
3. Corporation & Curb Stop Per Typical Service Detail

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"-10" BELOW TOP OF METER BOX. ADAPTORS BETWEEN THE ANGLE STOP AND METER ARE PROHIBITED. IF ¾" METER IS USED WITH 1" PEX-A SERVICE LINE, A 1"X¾" ANGLE STOP SHALL BE USED.
2. NEW METER BOX SET IN ¾" TO 1" GRAVEL OR STONE DRAIN BASE. SET LID AT ¾" 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



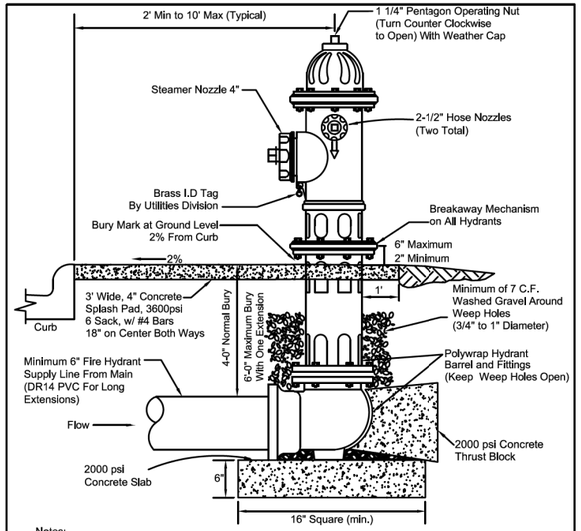
Notes:
1. Water meters shall not be in paving (sidewalks, drives, parking).
2. Fire hydrants located at street intersections shall be placed a minimum of 10' from the street radius tangent point.
3. All water and sewer service locations shall be marked at the curb and painted per City standards.
4. Water 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

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

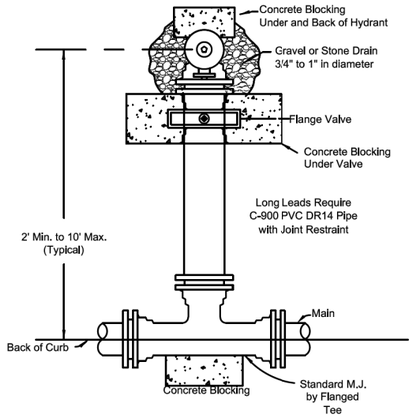
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-175



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.

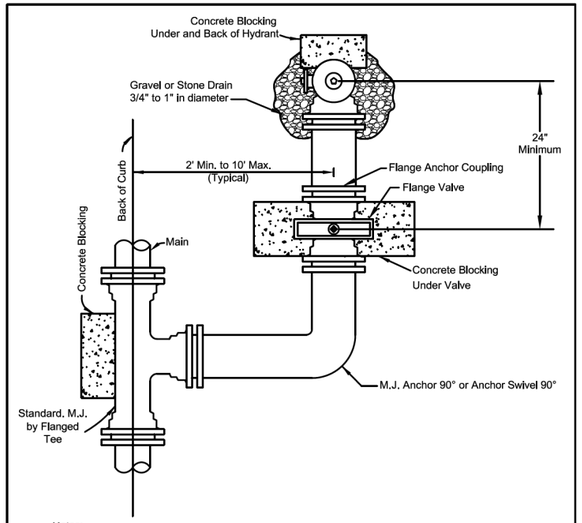
MESQUITE TEXAS Real. Texas. Service. | Public Works | FIRE HYDRANT | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 09/08/2020 | SHEET: W-9



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 200 PSI
8. IF HYDRANT LEAD EXTENDS UNDER ARTERIAL ROADWAY, AN ADDITIONAL VALVE SHALL BE INSTALLED AT THE TEE.

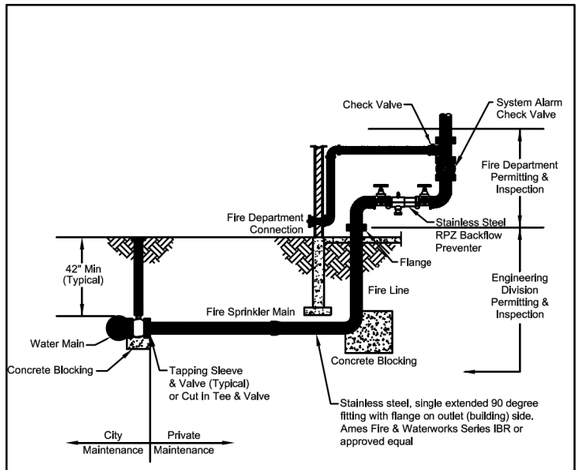
MESQUITE TEXAS Real. Texas. Service. | Public Works | FIRE HYDRANT (STRAIGHT) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: W-10



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.

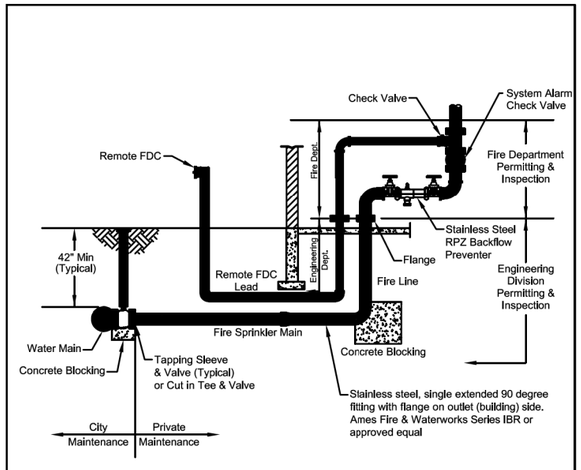
MESQUITE TEXAS Real. Texas. Service. | Public Works | FIRE HYDRANT (90 BEND) | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: W-11



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.

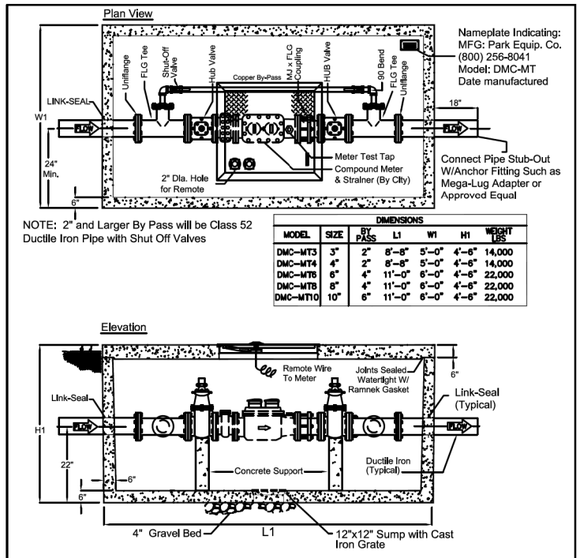
MESQUITE TEXAS Real. Texas. Service. | Public Works | FIRE SPRINKLER YARD PIPING | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE N.T.S | REVISION DATE: 05/20/2019 | SHEET: W-13



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



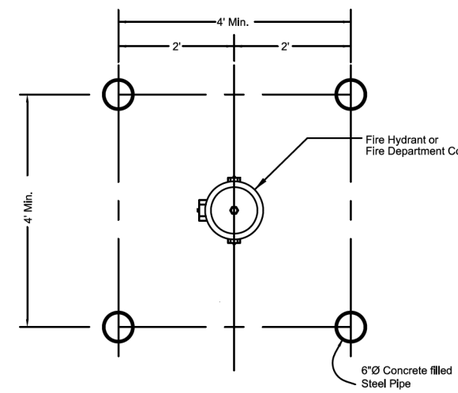
NOTE: 2" and Larger By Pass will be Class 52 Ductile Iron Pipe with Shut Off Valves

DIMENSIONS						
MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS
DMC-MT3	3"	2"	8'-8"	5'-0"	4'-6"	14,000
DMC-MT4	4"	2"	8'-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 ¼" 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

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-176

GENERAL NOTES FOR WASTEWATER MAINS AND RELATED APPURTENANCES:

1. GENERAL:

1.1. All sanitary sewer 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 sanitary sewer system design and construction shall conform to the most current Texas Commission on Environmental Quality (TCEQ) regulations. These regulations can be found in the Texas Administrative Code (TAC), Title 30, Chapter 217, Subchapter C (Design Criteria for Domestic Wastewater Systems).

2. SANITARY SEWER MAINS:

2.1. Sanitary Sewer mains are generally placed in the parkway, 6 feet back of curb, unless otherwise approved by the City Engineer.

2.2. Trench boxes shall be required for construction of mains where adequate clearance from streets or primary structures cannot be achieved. Adequate clearance is defined as a distance from the pavement / structure equal to the depth of the trench.

2.3. The spacing and separation of water mains from sanitary sewer mains shall follow the nine (9) foot rule as set forth in the TCEQ regulation (30 TAC 217.53). Water and sanitary sewer mains (including manholes) shall be separated by nine feet in all directions and installed in separate trenches.

2.4. Warning tape shall be installed 18 inches above the top of the embedment or as otherwise directed by the Public Works Construction Inspector. The tape shall be a plastic, high stretch, 4 inch width tape approved by the City Engineer. The tape shall be green in color and have the words "Caution Sanitary Sewer Main Buried Below" imprinted on the tape.

2.5. Private sanitary sewer mains and laterals shall be designed, permitted and inspected per the International Plumbing Code; generally private systems are permitted and inspected by the City Building Inspection Division.

3. SERVICE LATERALS

3.1. Service laterals shall be located ten (10) feet downstream of the water service for the lot (water service generally to be located at the centerline of the lot), and plugged suitable for testing.

3.2. All sanitary sewer services are to have a minimum cover of three (3) feet and a maximum cover of five (5) feet as measured at the property line or easement line from the proposed grade to top of pipe. In general, the minimum depth for sewer to serve given property with a 4-inch lateral shall be 3-feet plus 2% times the length of the lateral to the middle of the structure. Services that are longer than 100 feet from the main and larger buildings may require a deeper service line and may request an exemption by the City Engineer from the maximum cover requirements. **No services shall be connected to mains over 15 feet deep as measured from the proposed ground elevation to the main flowline.**

3.3. Contractor shall install a property line cleanout per the City of Mesquite General Design Details if required by the City Engineer. Contractor shall not install double service cleanouts in concrete paving.

3.4. Service fittings shall be a tee or wye fitting to be installed on the main. Saddle services are not allowed for new construction.

3.5. Each individual service location shall be marked on the face of the curb with a four (4) inch high and 1/8" deep double scribe mark "**II**" cut in the curb using an approved motor driven concrete saw. The double scribe mark "**II**" shall receive a coating of green paint, which shall coat the interior and exterior of the cut to a width of one (1) inch.

4. MANHOLES

4.1. Manhole wall thickness shall conform to the following table:

MANHOLE DIAMETER	MINIMUM WALL THICKNESS (PRE-CAST)	MINIMUM WALL THICKNESS (CAST-IN PLACE)
4 FEET	5"	6"
5 FEET	6"	8"
6 FEET	8"	8"
> 6 FEET AND/OR SPECIAL CONDITIONS AND SITUATIONS	AS REQUIRED BY CITY ENGINEER	

4.2. Drop Manholes shall be installed if there is an incoming line with a vertical drop of more than two (2) feet measured from flowline to flowline. All drops manholes shall be internal and conform to City of Mesquite standard details. Drop manholes shall have a minimum diameter of five (5) feet. Existing manholes that have drops installed may terminate the drop pipe at the invert ledge.

4.3. The top of a manhole located in a floodplain area shall have a minimum elevation of the ultimate 100 year water surface elevation and shall be a minimum of 2-feet and a maximum of 3-feet above the adjacent grade. The tops of all other manholes shall be set to the grade of adjacent land or paving.

4.4. The excavation within 6-feet of a manhole shall be backfilled with 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 Pre-cast manholes shall be used on all new construction unless an alternate is approved by the City Engineer.

4.5. MANHOLE MATERIALS

4.5.1. Pre-cast concrete shall conform to current ASTM designation C 478 (C 478M). Lifting eyes are not allowed in pre-cast manholes. "T" base manholes may be substituted with the City Engineer's approval for pre-cast manholes for RCP mains larger than 36 inches in diameter. Shop drawing shall be submitted to the City Engineer for all pre-cast manholes.

4.5.2. Cast-in-place concrete manholes shall only be allowed with special permission of the City Engineer. Generally the City Engineer will only grant permission for cast-in-place manholes for connections to existing mains carrying live sewer. When cast-in-place manholes are approved by the City Engineer, construction must conform to City of Mesquite Engineering Design Standards. Manholes must have a concentric top cone section. Eccentric cone manholes may be used in situations where conflicts with other facilities warrant it.

4.5.3. Brick or fiberglass manholes or any other type of manhole material other than concrete will not be allowed.

4.6. All rings shall be bolted to the manhole cone section with a layer of mastic applied between the ring and cone section.

4.7. All manhole ring and covers on manholes with a connecting sanitary sewer main size of 15-inches or larger shall be coated with a City approved structural / high sulfide resistant coating (see **City of Mesquite Approved Sewer Materials List**).

4.8. Manhole rings and covers shall be adjusted by the use of approved grade rings with butyl sealant between grade rings, cover ring and manhole. Maximum adjustment is eight (8) inches. Grade rings may be HDPE or Rubber as shown on the **City of Mesquite Approved Sewer Materials List** and in accordance with NCTCOG Public Works Construction Standard 502.1.2. Precast concrete grade rings, bricks, steel, iron or and broken concrete are not acceptable for adjustment.

4.9. All manholes shall have full depth inverts to the depth of the largest entering main.

4.10. Manhole Ring Sealing to Manhole Cone/Flat Top: All manholes rings shall be sealed and contain an internal manhole chimney seal or approved external seal or wrap as shown on the **City of Mesquite Approved Sewer Materials List.**

4.11. False Bottoms: All manholes shall have a ¾ inch thick plywood false bottom installed prior to initiation of grading and/or liming operations.

4.12. Manhole Coatings: All manholes with a connecting pipe of fifteen (15) inches in diameter or larger shall be coated. Manholes shall be coated with a City approved structural/high sulfide resistant coating (see **City of Mesquite Approved Sewer Materials List**).. Coating application procedures shall conform to the recommendations of the coating manufacturer, including material handling, mixing, and environmental controls during application, safety, and equipment.

4.13. Manhole Testing: Manhole testing shall be in accordance with section 5.3.

4.14. Location Marking: Each manhole shall be marked on the face of the curb with a four (4) inch high and 1/8" deep mark "**MH**" cut in the curb using an approved motor driven concrete saw. The double mark "**MH**" shall receive a coating of green paint, which shall coat the interior and exterior of the cut to a width of one (1) inch.

4.15. Main Line Cleanouts: Main line cleanouts are to be located and installed as per approved drawings and City of Mesquite Engineering Design Standards. Each cleanout shall be marked on the face of the curb with a four (4) inch high and 1/8" deep mark "**CO**" cut in the curb using an approved motor driven concrete saw. The double mark "**CO**" shall receive a coating of green paint, which shall coat the interior and exterior of the cut to a width of one (1) inch.

4.16. Manhole Stub Outs: Stub outs from manholes shall be a minimum five (5) foot long and capped.

4.17. Manholes located in floodplain or in middle of field shall have a minimum 5' tall marker attached to manhole lid.

5. INSTALLATION AND CONSTRUCTION

5.1. Installation of all sanitary sewer shall conform to North Central Texas Council of Governments (NCTCOG) Standard Specifications for Public Works Construction Items 505.1 and 507 except as amended in these standards.

5.2. 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 Section 6.2 regarding "trench safety" requirements. The amount of trench excavation to grade shall not exceed one hundred (100) feet from the end of the pipe laying operations and no excavation shall be three hundred (300) 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 is disturbed, removed, or damaged during construction shall be replaced to original condition or better by a licensed irrigator.

5.3. 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.

6. TESTING

6.1. Notification of Testing: The Contractor shall notify the assigned City Public Works Construction Inspector of all testing 24 hours prior to the scheduled test. Copies of all test reports shall be sent to the City Public Works Construction 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.

6.2. Compaction of Trenches and Excavations: The Contractor shall take nuclear gauge density tests per ASTM D2922 at a frequency of one test per lift, per 300 linear feet of trench (including services) at locations specified by the City Public Works Inspector. In addition to the above trench density tests, two nuclear gauge density tests per ASTM D2922 shall be taken of the manhole backfill within 4 foot of the manhole. Density tests must meet a minimum compaction of 95% of Standard Proctor Density (ASTM D698) at a moisture range of 0% to plus 6% of optimum moisture.

6.3. Manhole Testing: All manholes shall be vacuum tested including grade rings and casting per NCTCOG Public Works Construction Standard 502.1.5.2 and meet TCEQ regulations 30 TAC 217 and ASTM C1244, "*Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill*". The time for the vacuum to drop from 10 inches of mercury to 9 inches shall not be less than two (2) minutes.

6.4. Deflection Testing: Mains less than thirty six (36) inches in diameter shall pass deflection mandrel test per NCTCOG Standard Specifications for Public Works Construction, Item 507.5.1.4 Flexible Pipe (Deflection) Testing and TCEQ regulations Chapter 217.57(b) Deflection Testing. Alternate methods for measuring deflection for pipes larger than thirty six (36) inches in diameter subject to City approval. Testing of mains thirty six (36) inches and larger shall occur at least 30 days after installation and backfill. Pipe with deflection exceeding the percentage allowed deflection per NCTCOG table 507.5.1.4.2(e) at the time of testing shall be uncovered and reinstalled. If deflection exceeds 7% at the time of testing, pipe shall be removed and replaced with new materials. All failed joints, pipes, sections or structures shall be retested upon completion of remedial actions. Failed sections shall be retested after the remedial construction has been in place for 30 days.

6.5. Air Testing: Mains less than thirty six (36) inches in diameter and laterals shall pass a Low Pressure Air Test per NCTCOG Standard Specifications for Public Works Construction, Item 507.5.1.3 Low Pressure Air Testing and TCEQ regulations 30 TAC Chapter 217.57(a)(1) Low Pressure Air Test. Pipes 36-inches and larger may be tested per NCTCOG item 507.5.1.3.3 (individual joint air test method). Testing of mains thirty six (36) inches and larger shall occur at least 30 days after installation and backfill. All failed joints, pipes, sections or structures shall be retested upon completion of remedial actions. Failed sections shall be retested after the remedial construction has been in place for 30 days.

6.6. TV Camera Inspection: After the deflection mandrel and air pressure test, the contractor shall conduct a color television camera inspection of the interior of the installed sanitary sewer system. The main must be laced with enough water to fill any low points. A copy of the recording in digital format and storage device (DVD disk, flash drive, etc.) as specified by the City, with written log of the inspection, shall be provided to the Public Works Construction Inspector prior to final acceptance of the project.

WASTEWATER - 1
GENERAL NOTES

CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

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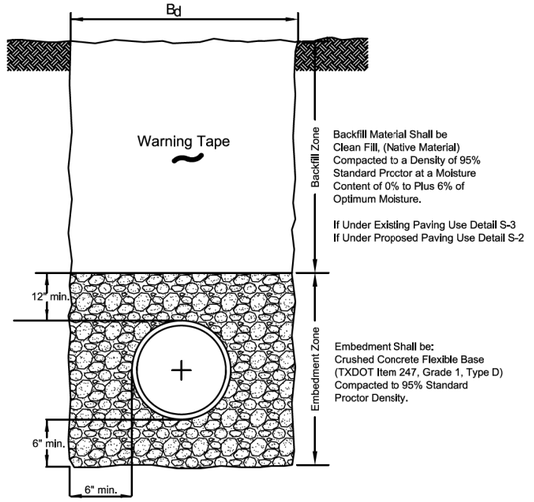
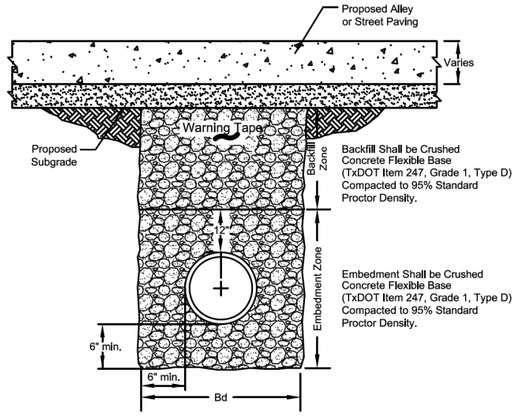
GENERAL DESIGN STANDARDS STANDARD DETAILS		
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-177	SCALE: N.T.S REVISION DATE: 11/11/2019	SHEET: WW-GN



Pipe Size	Max Bd
12" & Smaller	32"
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.

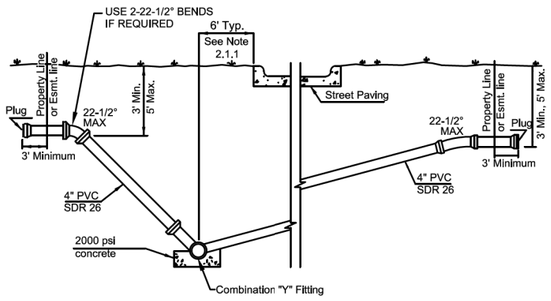
MESQUITE TEXAS Real. Texas. Service. Public Works	WASTEWATER EMBEDMENT (NOT UNDER PAVING)	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S; REVISION DATE: 04/13/2020; SHEET: WW-1



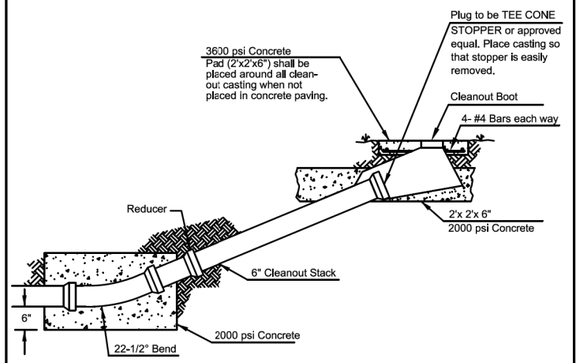
Pipe Size	Max Bd
12" & Smaller	32"
12" to 24"	Outside Dia Pipe + 16"
24" to 72"	Outside Dia. Pipe + 24"

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

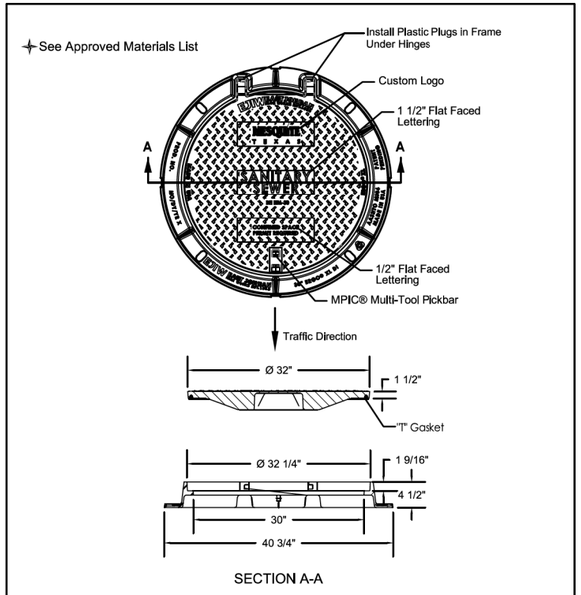


MESQUITE TEXAS Real. Texas. Service. Public Works	WASTEWATER LATERAL	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S; REVISION DATE: 05/20/2019; SHEET: WW-3



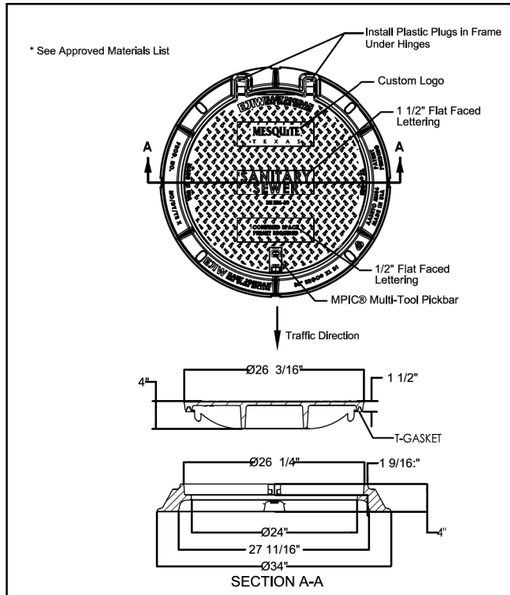
NOTES:
1. EMBEDMENT FOR LATERAL AND MAINLINE CLEANOUTS TO BE THE SAME AS THE MAINLINE.
2. MAINLINE CLEANOUTS SHALL ONLY BE USED AT THE DIRECTION OF THE CITY ENGINEER.

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



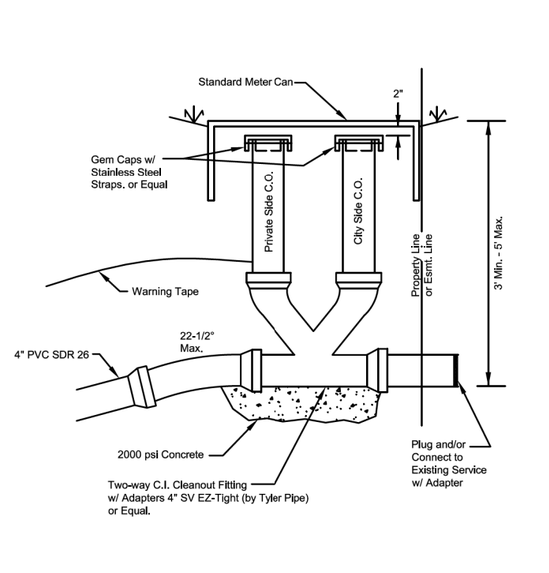
Notes:
1. Materials Shall be Ductile Iron ASTM A536 for Frame and Cover
2. Design Load Shall be Heavy Duty (HS-20)
3. Lid Shall be Oriented such that Pickbar is Oriented with Traffic Flow
4. Lid shall be bolted when in floodplain

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



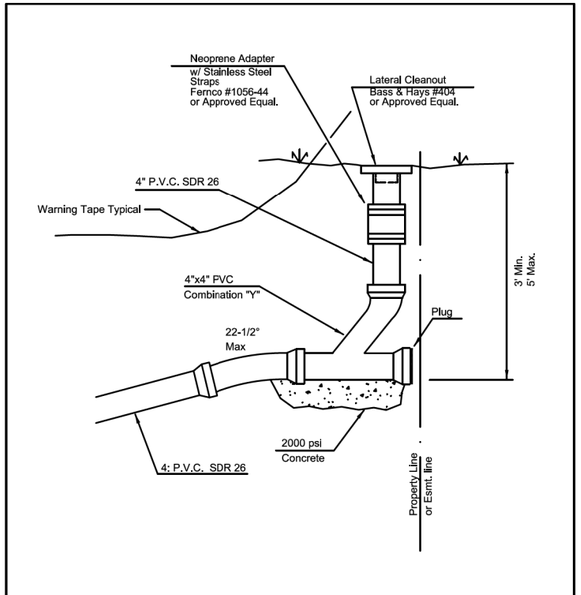
Notes:
1. Materials Shall be Ductile Iron ASTM A536for Frame and Cover
2. Design Load Shall be Heavy Duty (HS-20)
3. Lid Shall be Oriented such that Pickbar is Oriented with Traffic Flow
4. Lid shall be bolted when in floodplain

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

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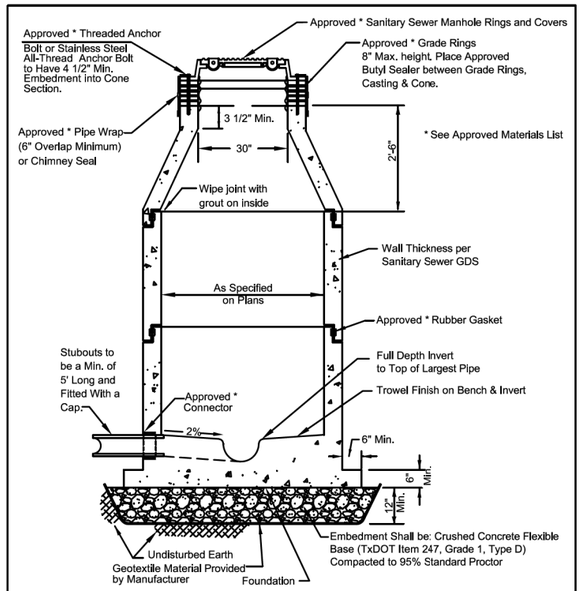
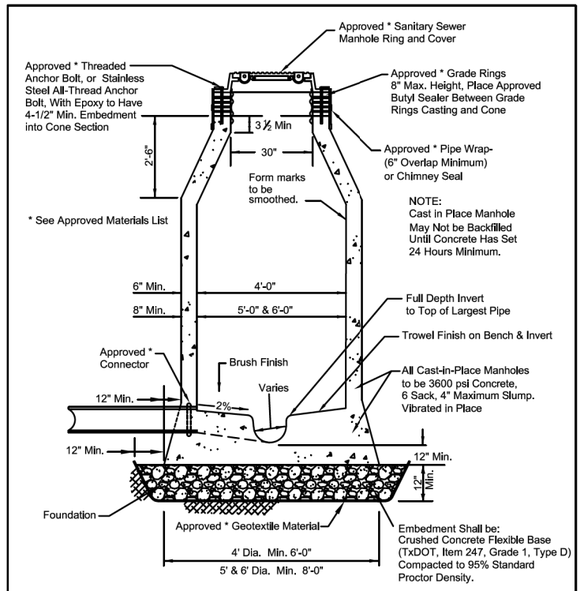


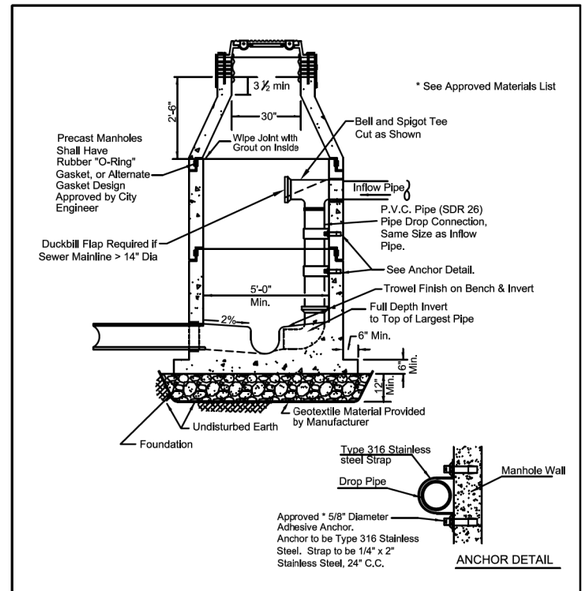
NOTES:
1. Precast manholes are standard. Cast-in-place manholes shall be constructed only with approval of City Engineer.
2. Precast riser shall conform to requirements of ASTM C-478
3. Lifting Holes Not Permitted.
4. No Steps Allowed.

MESQUITE TEXAS Real. Texas. Service.	Public Works	PRECAST MANHOLE	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-9



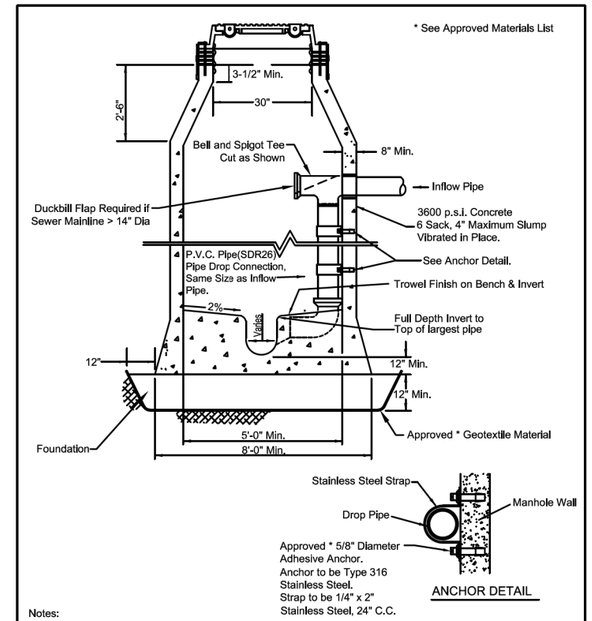
Notes:
1. No Steps Allowed

MESQUITE TEXAS Real. Texas. Service.	Public Works	CAST-IN-PLACE MANHOLE	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-10



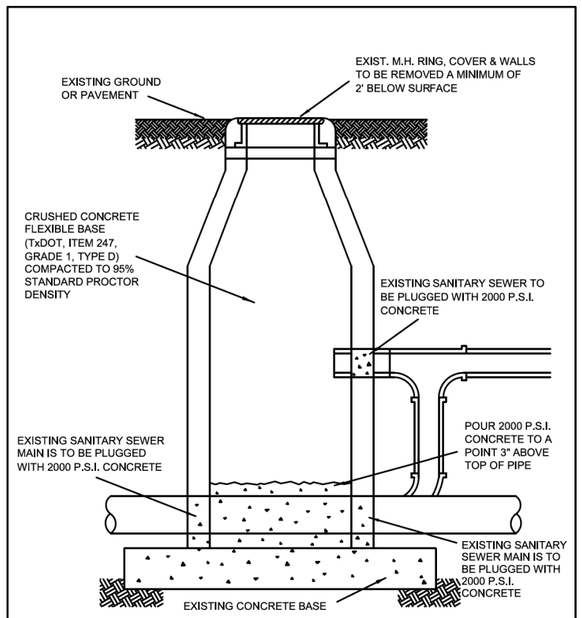
Notes:
1. See Precast Manhole Detail for Additional Requirements
2. No Steps Allowed

MESQUITE TEXAS Real. Texas. Service.	Public Works	PRECAST DROP MANHOLE	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-11

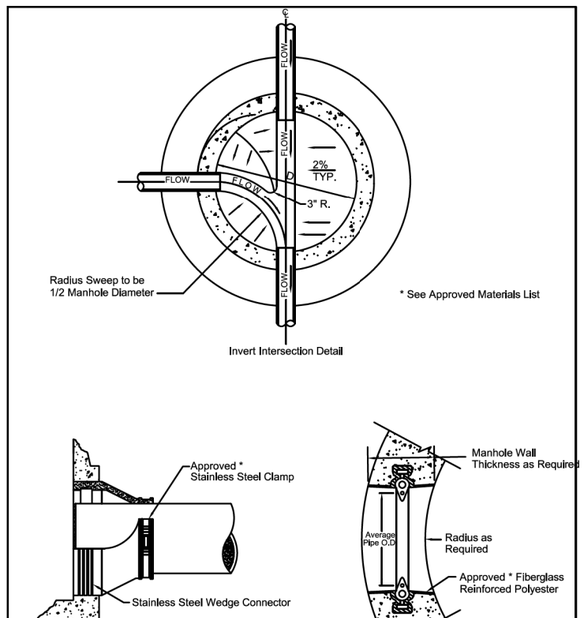


Notes:
1. See Cast-In-Place Manhole Detail for Additional Requirements
2. No Steps Allowed

MESQUITE TEXAS Real. Texas. Service.	Public Works	CAST-IN-PLACE DROP MANHOLE	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-12

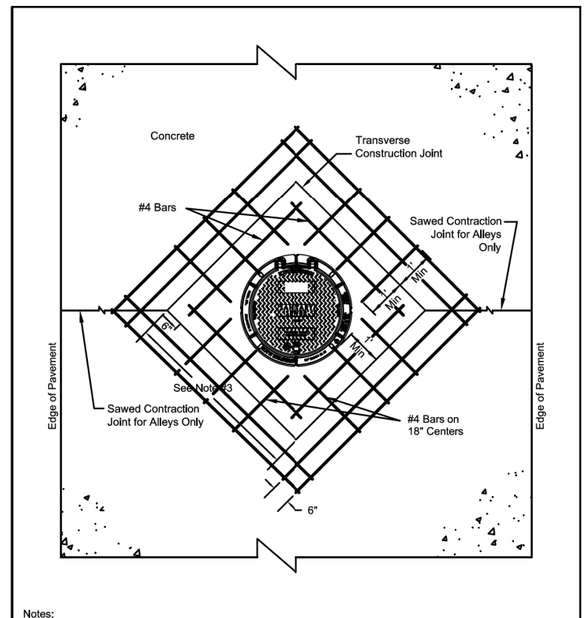


MESQUITE TEXAS Real. Texas. Service.	Public Works	ABANDONED MANHOLE	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-13



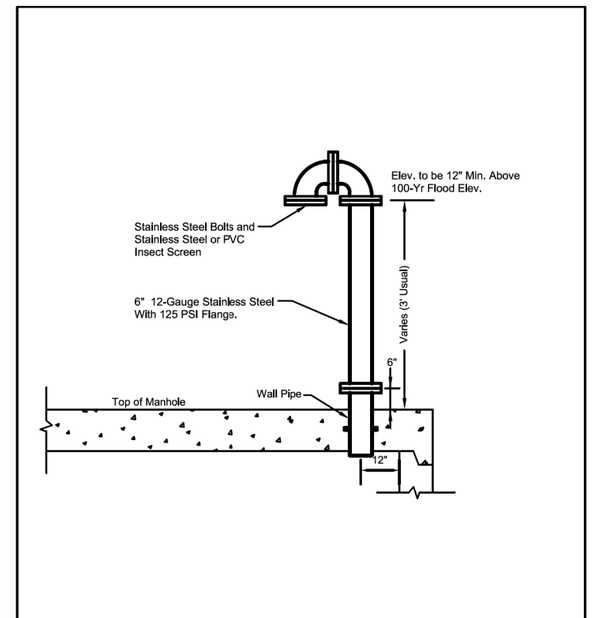
Notes:
1. Pipe Connector (C.I.P. or Pre-Cast) Detail

MESQUITE TEXAS Real. Texas. Service.	Public Works	MANHOLE INVERT AND CONNECTION	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-14



Notes:
1. For New Paving Only.
2. Depth of Blockout to Match Roadway Pavement Depth.
3. Manhole OD + 1' (5' for 4' Diameter Manhole, 6' for 5' Diameter Drop Manhole).

MESQUITE TEXAS Real. Texas. Service.	Public Works	MANHOLE BLOCKOUT	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-15



NOTES:
1. USE ONLY WHEN SPECIFIED ON PLANS.
2. CHARCOAL CANISTER REQUIRED.

MESQUITE TEXAS Real. Texas. Service.	Public Works	MANHOLE VENT	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-16

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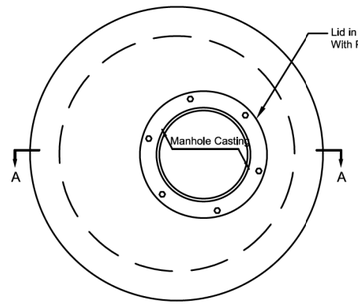
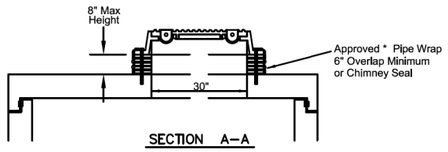
MESQUITE TEXAS Real. Texas. Service.



* See Approved Materials List

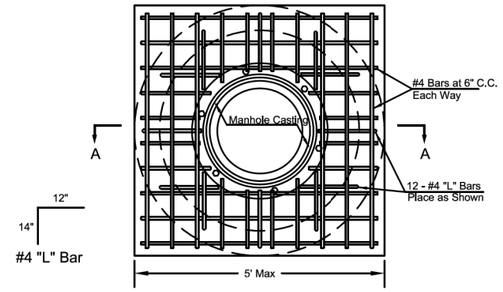


SECTION A–A

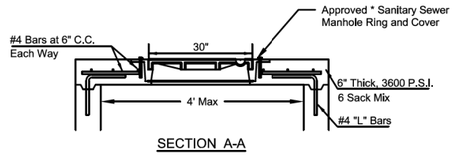
Notes:

1. Manhole Flat Lids Must be Load Rated for HS-20 Loadings.
2. See Cast-in-Place Manhole Detail for Additional Requirements.
3. Alternate: Ring and Cover May be Cast in to the Lid Per Detail S-16.

MESQUITE TEXAS Real. Texas. Service.	Public Works	PRECAST FLAT MANHOLE LID	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-17



* See Approved Materials List

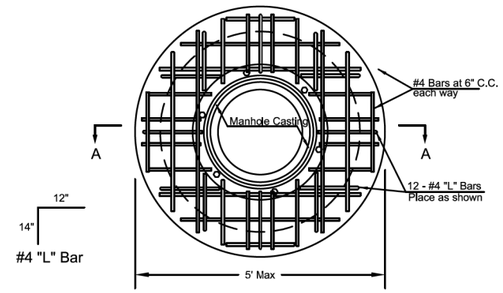


SECTION A-A

Notes:

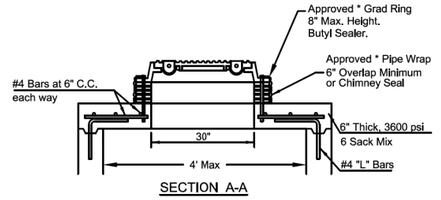
1. Use Must be Approved by the City Engineer. For In Street Application Only.
2. Manhole Flat Lids Must be Load Rated for HS-20 Loadings.
3. See Cast-in-Place Manhole Detail for Additional Requirements.

MESQUITE TEXAS Real. Texas. Service.	Public Works	CAST-IN-PLACE FLUSH MANHOLE LID	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-18



* See Approved Materials List

* See Approved Materials List



SECTION A-A

Notes:

1. Use Must be Approved by the City Engineer.
2. For In Street Application Only
3. Manhole Flat Lids Must be Load Rated for HS-20 Loadings.
4. See Cast-in-Place Manhole Detail for Additional Requirements.

MESQUITE TEXAS Real. Texas. Service.	Public Works	CAST-IN-PLACE MANHOLE LID	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: WW-19

WASTEWATER - 4

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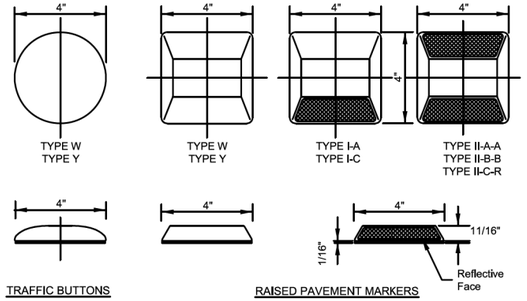
2023-029-180



TRAFFIC BUTTONS

RAISED PAVEMENT MARKERS

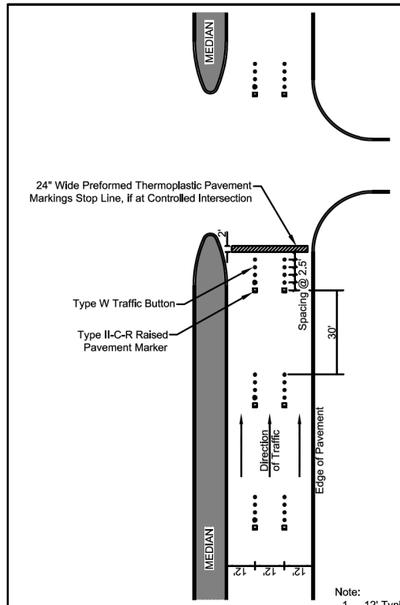
Use Type II-B-B only at fire hydrant locations, and Type II-C-R only on divided roadways.

REQUIREMENTS FOR INSTALLATION OF PAVEMENT MARKERS AND MARKINGS (ON ALL PUBLIC ROW):
UPDATED; 5-4-2012

1. REFLECTOR CODE: A - AMBER REFLECTOR, C - WHITE REFLECTOR, R - RED REFLECTOR, B - BLUE REFLECTOR
2. PAVEMENT UPON WHICH TRAFFIC BUTTONS, PAVEMENT MARKERS, JIGGLE BAR TILES, THERMOPLASTIC AND PAINT ARE TO BE APPLIED SHALL HAVE ITS SURFACE PREPARED IN ACCORDANCE WITH TXDOT SPECIFICATIONS ITEM 677.1 TO 677.4 INCLUSIVE AND ITEM 678.1 TO 678.4 INCLUSIVE. MEASUREMENT AND PAYMENT FOR REMOVAL OF EXISTING PAVEMENT MARKINGS AND MARKERS AND SURFACE PREPARATION SHALL BE SUBSIDIARY TO THE PAVEMENT MARKINGS OR MARKER INSTALLATION PAY ITEMS.
3. TRAFFIC BUTTONS, PAVEMENT MARKERS AND JIGGLE BAR TILES SHALL BE INSTALLED IN ACCORDANCE WITH TXDOT SPECIFICATION 672, HOWEVER ALL TRAFFIC BUTTONS, PAVEMENT MARKERS AND JIGGLE BAR TILES SHALL BE INSTALLED USING EPOXY ADHESIVE; USE OF BITUMINOUS ADHESIVE IS PROHIBITED, TYPE I-C AND TYPE II-C-R RAISED PAVEMENT MARKERS MUST HAVE A WHITE COLORED BODY; A SILVER-WHITE BODY COLOR IS PROHIBITED.
4. TYPE II-B-B (BLUE REFLECTORS) PAVEMENT MARKERS SHALL ONLY BE USED TO IDENTIFY FIRE HYDRANT LOCATIONS.
5. RAISED PAVEMENT MARKERS AND TRAFFIC BUTTONS SHALL NOT BE INSTALLED OVER PAVEMENT JOINTS OF ANY KIND.
6. THERMOPLASTIC SHALL BE INSTALLED PER TXDOT SPECIFICATIONS ITEM 666 AND / OR ITEM 668, AND CITY SPECIFICATIONS, WHICHEVER IS MORE RESTRICTIVE.
7. DIMENSIONAL LAYOUT, SIZING AND SPACING FOR ALL TRAFFIC ARROWS, "ONLY" DESIGNATIONS, AND OTHER PAVEMENT MARKINGS SHALL CONFORM TO THE MOST RECENT FEDERAL HIGHWAY ADMINISTRATION (FHWA) STANDARD HIGHWAY SIGNS MANUAL AND THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), PART 3.
8. THERMOPLASTIC STOP BARS SHALL STOP 12-INCHES FROM FACE OF CURB.
9. ALL PREFORMED THERMOPLASTIC PAVEMENT MARKING MATERIAL SHALL BE PER THE TRAFFIC APPROVED MATERIALS LIST OR AS APPROVED BY MANAGER OF TRAFFIC ENGINEERING.

GUARDRAIL DELINEATORS:
ALL CORRUGATED W-BEAM METAL GUARDRAIL INSTALLED IN THE CITY SHALL BE INSTALLED WITH TRIANGULAR GUARDRAIL REFLECTORS TABS (BOLT ON TYPE) OF THE APPROPRIATE COLOR INSTALLED IN THE CENTER OF THE CORRUGATED RAIL AT EACH POST BOLT, BUT NO LESS THAN EVERY 6-FEET.

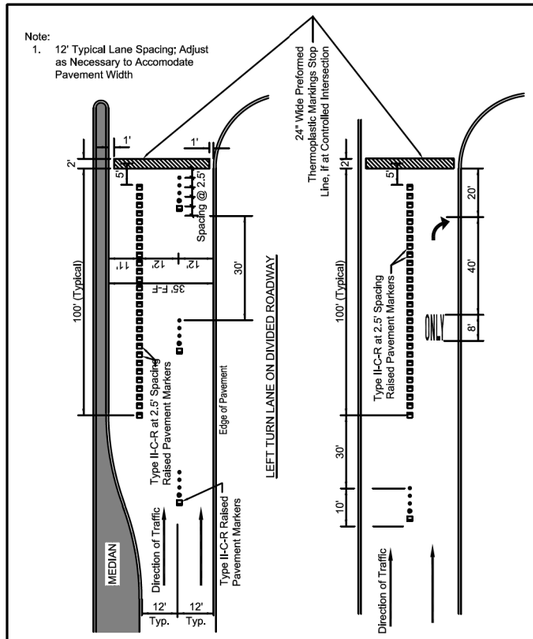
MESQUITE TEXAS Real. Texas. Service.	Public Works	PAVEMENT MARKING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: T-1A



Note:
1. 12' Typical Lane Spacing; Adjust as Necessary to Accommodate Pavement Width

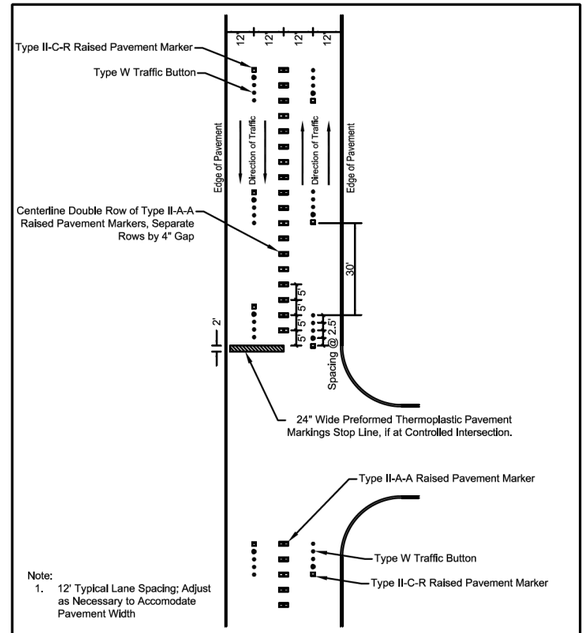
DIVIDED STREET (WITH MEDIAN)

MESQUITE TEXAS Real. Texas. Service.	Public Works	PAVEMENT MARKING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N,T,S	REVISION DATE: 05/20/2019	SHEET: T-1B



MANDATORY RIGHT TURN LANE ON DIVIDED ROADWAY

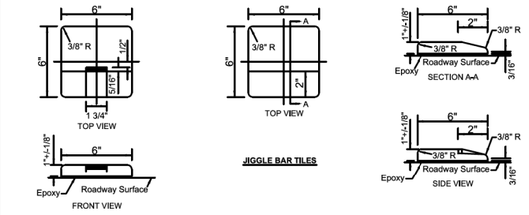
MESQUITE TEXAS Real. Texas. Service.	Public Works	PAVEMENT MARKING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N,T,S	REVISION DATE: 05/20/2019	SHEET: T-1C



Note:
1. 12' Typical Lane Spacing; Adjust as Necessary to Accomodate Pavement Width

4-LANE UNDIVIDED ROADWAY

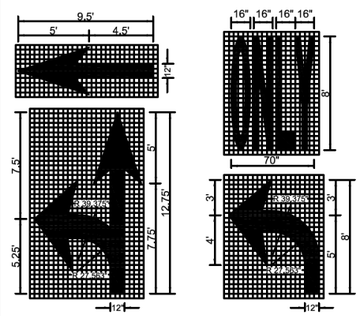
MESQUITE TEXAS Real. Texas. Service.	Public Works	PAVEMENT MARKING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N,T,S	REVISION DATE: 05/20/2019	SHEET: T-1D



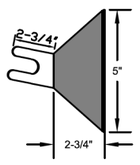
JIGGLE BAR TILES

TRAFFIC ARROW TEMPLATES

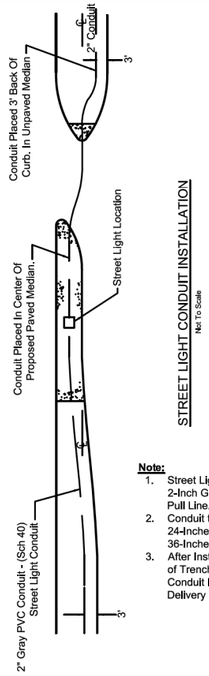
Use at speeds of 40 MPH and lower.
Templates are from FHWA Standard Highway Signs, 2004 Edition.
One Square Is 4-Inches



Triangular Reflector Tab for Delineating Guardrail



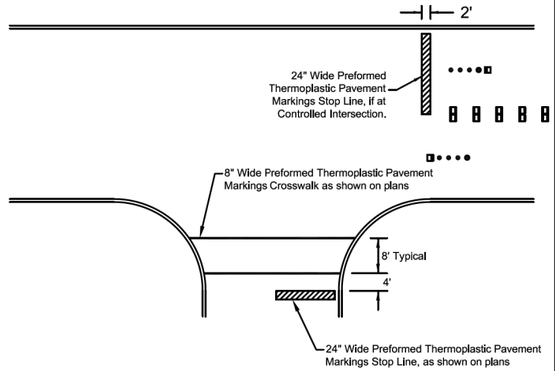
MESQUITE TEXAS Real. Texas. Service.	Public Works	JIGGLE BARS & TRAFFIC ARROWS	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: T-5



STREET LIGHT CONDUIT INSTALLATION
Not To Scale

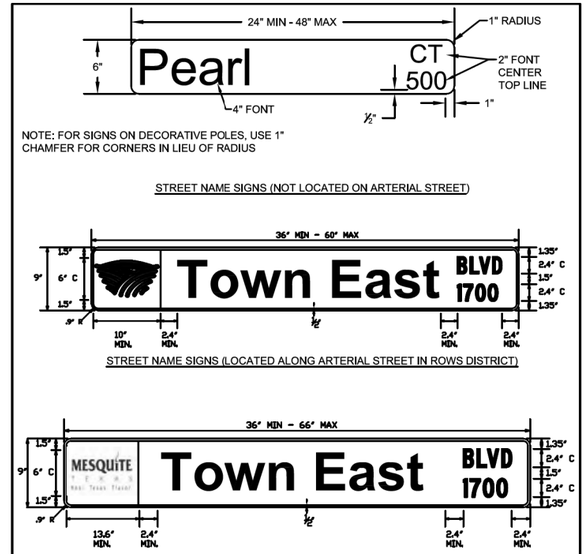
Note:
1. Street Light Conduit to be Continuous 2-Inch Gray PCV (Sch. 40) with Nylon Pull Line.
2. Conduit to be Installed a Minimum of 24-Inches deep and a Maximum of 36-Inches Deep. Cap all Openings.
3. After Installation and Prior to Back-Fill of Trench, Request an Inspection of Conduit Installation From Electric Delivery (24 Hour Notice).

MESQUITE TEXAS Real. Texas. Service.	Public Works	STREET LIGHTING CONDUIT	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: T-6



Note:
Install Crosswalks & Stop Lines Only at Direction of Manager of Traffic Engineering - Generally at Controlled Intersections, Traffic Signals, Stop Signs or School Zones.

MESQUITE TEXAS Real. Texas. Service.	Public Works	CROSSWALK PAVEMENT MARKING	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: T-7



NOTE: FOR SIGNS ON DECORATIVE POLES, USE 1" CHAMFER FOR CORNERS IN LIEU OF RADIUS

STREET NAME SIGNS (NOT LOCATED ON ARTERIAL STREET)

STREET NAME SIGNS (LOCATED ALONG ARTERIAL STREET IN ROWS DISTRICT)

STREET NAME SIGNS (LOCATED ALONG ARTERIAL STREET)

NOTES:
1. TYPICAL LAYOUT AND CORNER DETAIL FOR STREET SIGNS (HIGH INTENSITY)
2. COLORS: LETTER - WHITE, NUMBERALS - WHITE, BACKGROUND - GREEN REFLECTIVE, BORDER - WHITE (9" SIGNS ONLY)
3. STREET NAMES SIGNS ALONG ARTERIALS SHALL BE 9".
4. SIGN THICKNESS: 6" TALL SIGNS - 0.08" ALUMINUM; 9" TALL SIGNS - 0.125"

MESQUITE TEXAS Real. Texas. Service.	Public Works	STREET NAME SIGN LAYOUT	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: T-8

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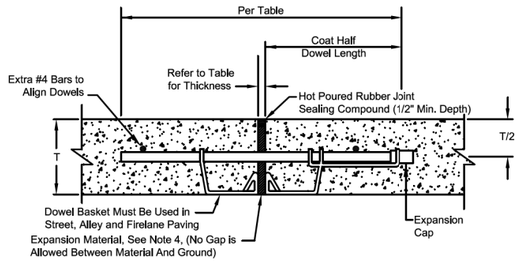
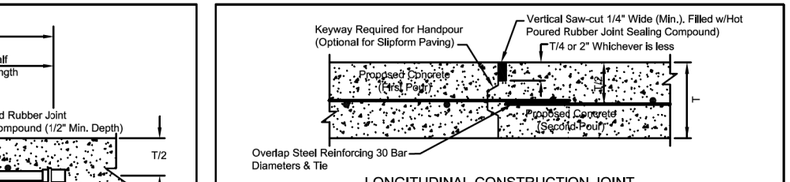


EXPANSION JOINT

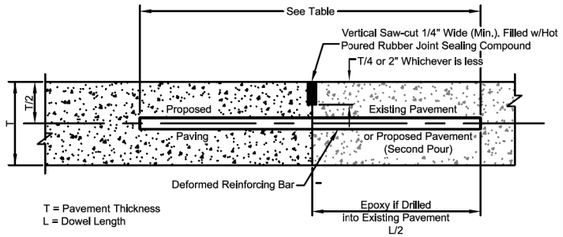
Smooth Dowel Bars				
Commercial Driveway, Street, Alley & Firelane Paving Thickness (In.)	**Diameter (In.)**	**Length (In.)**	**Spacing (In.)**	**Expansion Joint Thickness**
6	#8 (1 In.)	30	18	3/4"
> 6 and ≤ 12	#11 (1.4 In.)	30	12	3/4"
> 12	Determined by City Engineer			
Sidewalk, Residential Driveway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

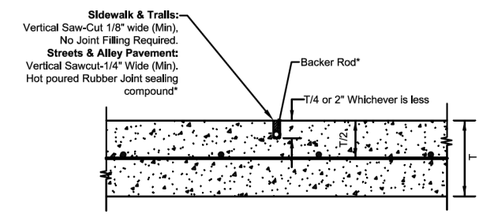


TRANSVERSE CONSTRUCTION JOINT

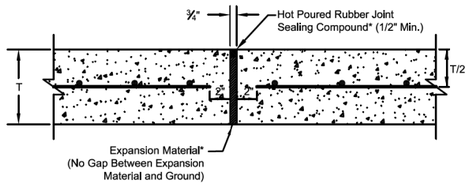
Deformed Reinforcing Bars			
Commercial Driveway, Street, Alley & Firelane Paving Thickness (In.)	**Diameter (In.)**	**Length (In.) (L)**	**Spacing (In.)**
< 8	#8 (1 In.)	30	18
≥ 8	#11 (1.4 In.)	30	12
Sidewalk, Residential Driveway and Trail Thickness (In.)	**Diameter (In.)**	**Length (In.)**	**Spacing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



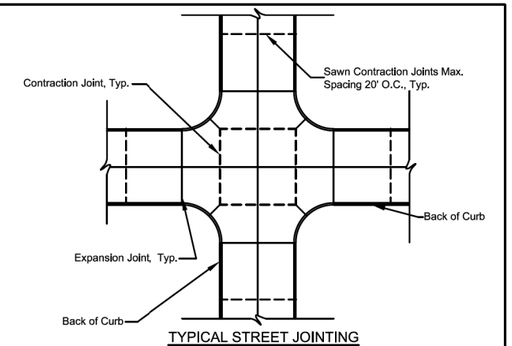
SAWED CONTRACTION JOINT



ISOLATION JOINT

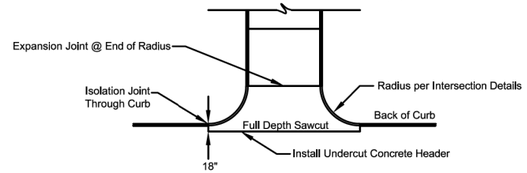
* Refer Approved Materials List for recommended material.

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



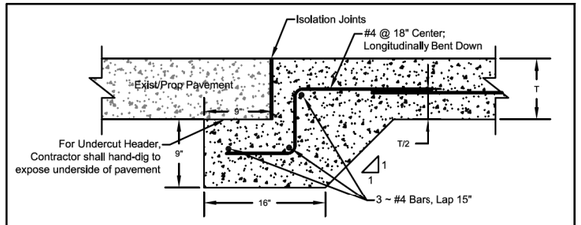
TYPICAL STREET JOINTING

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.



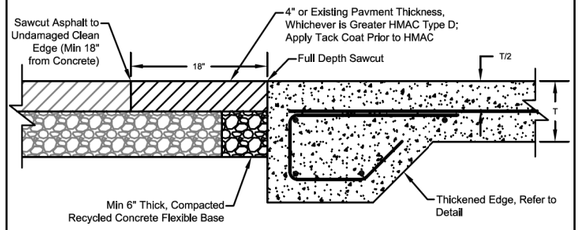
EXISTING CONCRETE STREET TO NEW CONCRETE STREET TEE INTERSECTION

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

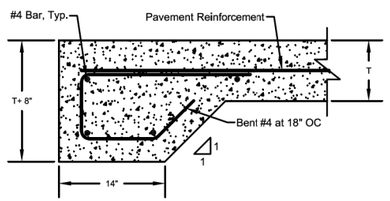
T = Pavement Thickness, Not Less than Street Pavement Depth or 8", whichever is greater



CONCRETE TO ASPHALT HEADER

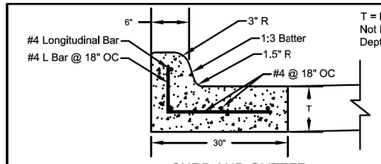
NOTES:
1. Concrete Headers Shall be Continuous Along Existing or Phased Pavement when Adjacent to the New Pavement. Additional Locations can be Shown on the Plans or at the Discretion of the City Engineer.

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



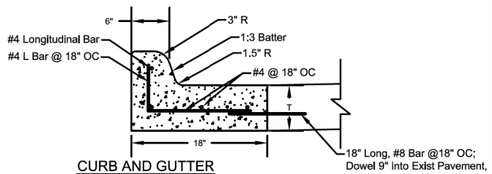
T = Pavement Thickness, Not Less than Street Pavement Depth or 8", whichever is greater

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

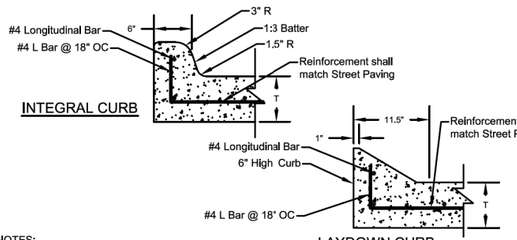


T = Pavement Thickness, Not Less than Street Pavement Depth or 8", whichever is greater

CURB AND GUTTER (HMAC PAVEMENT)



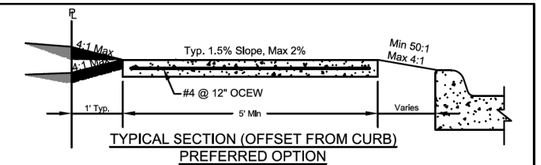
CURB AND GUTTER (CONCRETE PAVEMENT - FOR RECONSTRUCTION)



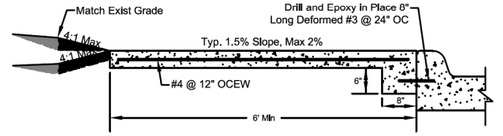
LAYDOWN CURB

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

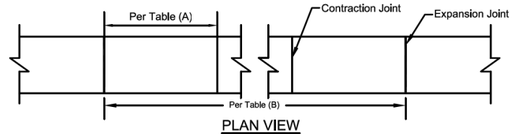
MESQUITE TEXAS Real. Texas. Service.	Public Works	TYPICAL CURB & GUTTER	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 07/22/2019	SHEET: P-7



TYPICAL SECTION (OFFSET FROM CURB) PREFERRED OPTION



TYPICAL SECTION (ADJACENT TO CURB) - ONLY WITH PERMISSION OF CITY ENGINEER



PLAN VIEW

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

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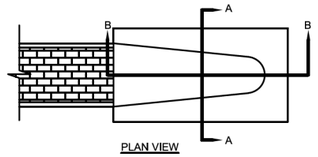
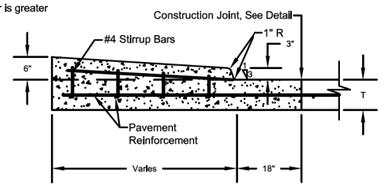
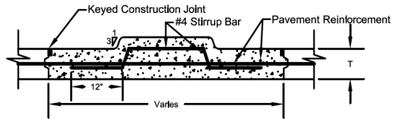


PLAN VIEW

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



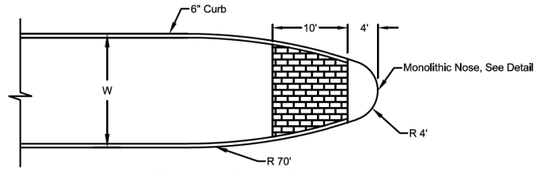
SECTION B-B



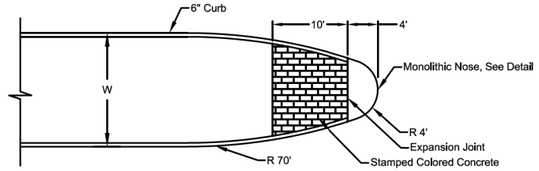
SECTION A-A

NOTES:
1. If constructing median nose on existing pavement, contractor shall full depth sawcut existing pavement and shall dowel into existing pavement per Transverse Construction Joint detail

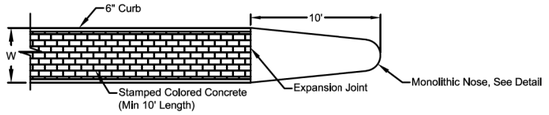
MESQUITE TEXAS Real. Texas. Service.	Public Works	MONOLITHIC NOSE	GENERAL DESIGN STANDARDS STANDARD DETAILS	
			SCALE: N.T.S	SHEET: P-9
			REVISION DATE: 05/20/2019	



MEDIAN NOSE: W > 15'



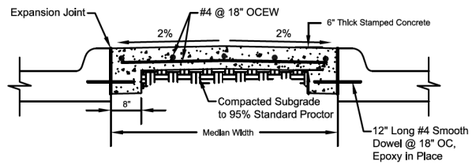
MEDIAN NOSE: 5' < W < 15'

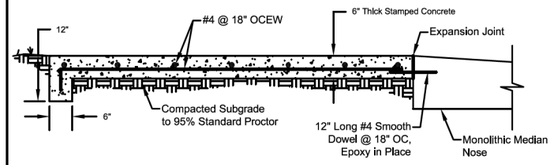


MEDIAN NOSE: W < 5'

NOTES:
1. Medians less than 5' in width, back-of-curb to back-of-curb, shall be stamped colored concrete
2. Median areas that are not stamped concrete or part of the monolithic nose shall be filled with six inches of top soil or sandy loam. All rocks, large roots and other debris shall be removed and the area graded smooth.

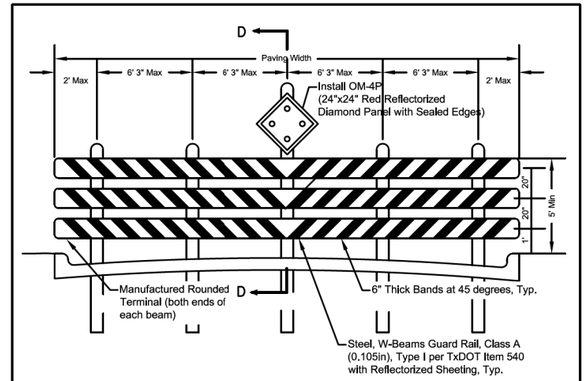
MESQUITE TEXAS Real. Texas. Service.	Public Works	MEDIAN	GENERAL DESIGN STANDARDS STANDARD DETAILS	
			SCALE: N,T,S	SHEET: P-10
			REVISION DATE: 05/20/2019	





NOTES:
1. Contractor to Provide Concrete Stamping Mats used for Construction, to City upon Completion of Construction.
2. Color shall be full depth and integral with concrete and shall comply with the Approved Materials List.
3. Pattern shall be a running bond, and as per Approved Materials List.
4. Stamped Concrete Shall be Antique Red in Color.

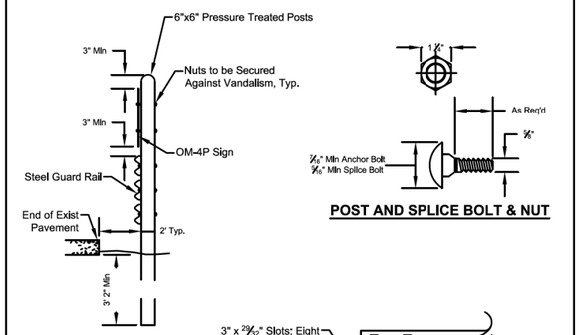
MESQUITE TEXAS Real. Texas. Service.	Public Works	STAMPED CONCRETE MEDIAN PAVEMENT	GENERAL DESIGN STANDARDS STANDARD DETAILS	
			SCALE: N,T,S	SHEET: P-11
			REVISION DATE: 05/20/2019	



TYPICAL PERMANENT BARRICADE (MUTCD 3F-1)

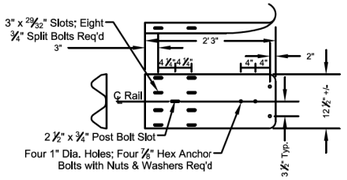
NOTES:
1. This permanent barricade is intended for dead-end streets when a hazardous condition exists past the extents of the pavement, such as a natural stream or deep excavation. At other dead ends, only place the sign OM-4P(24"x24") MUTCD 3C-4, with sealed edges.
2. Typical mounting height shall be as shown and the offset from the point of road closure shall be 10'. The exact location and height of Metal Beam Guard Fence shall be as directed by City Engineer.
3. Bolts shall be ⅝" diameter, galvanized and of sufficient length to extend through the full thickness of the nut and no more than ¾" beyond it.
4. Posts to be backfilled with a cohesionless material. Do not backfill timber posts with concrete. Posts shall be 7" diameter creosote treated wood.
5. Metal beams, bolts, splices and all fittings to be galvanized.
6. Red reflectorized stripes shall be high intensity sheeting.
7. Directional signs may be required on barricades at discretion of the City Engineer (S,D,H,P,T, CWI-6 or CWI-7)
8. Consult the Texas Manual of Uniform Traffic Control Devices for direction of striping

MESQUITE TEXAS Real. Texas. Service.	Public Works	PERMANENT BARRICADE	GENERAL DESIGN STANDARDS STANDARD DETAILS	
			SCALE: N,T,S	SHEET: P-12A
			REVISION DATE: 05/20/2019	



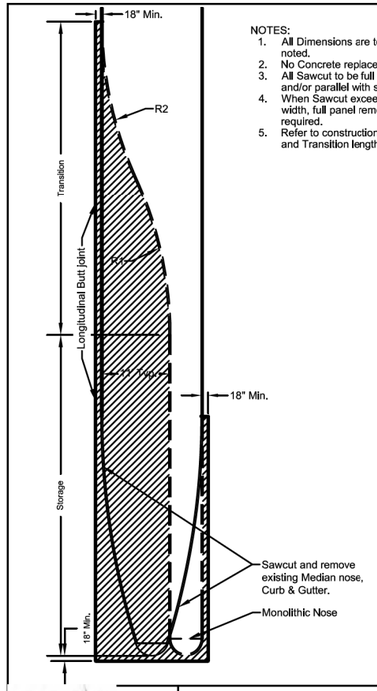
SECTION DD

POST AND SPLICE BOLT & NUT



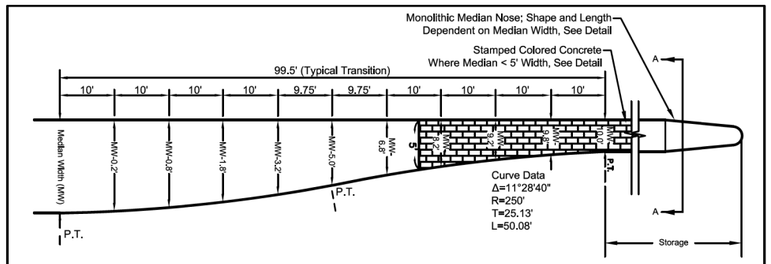
ROUNDED TERMINAL DETAIL

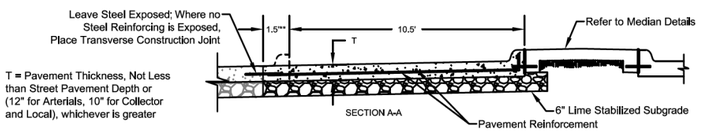
MESQUITE TEXAS Real. Texas. Service.	Public Works	PERMANENT BARRICADE	GENERAL DESIGN STANDARDS STANDARD DETAILS	
			SCALE: N.T.S	SHEET: P-12B
			REVISION DATE: 05/20/2019	



NOTES:
1. All Dimensions are to back of curb unless otherwise noted.
2. No Concrete replacement width shall be less than 18".
3. All Sawcut to be full depth and either perpendicular and/or parallel with street centerline.
4. When Sawcut exceeds half of construction joint panel width, full panel removal and replacement shall be required.
5. Refer to construction drawings for Curb radii, Storage and Transition lengths.

MESQUITE TEXAS Real. Texas. Service.	Public Works	LEFT TURN LANE CONCRETE REMOVAL AND REPLACEMENT	GENERAL DESIGN STANDARDS STANDARD DETAILS	
			SCALE: N.T.S	SHEET: P-13A
			REVISION DATE: 05/20/2019	





NOTES:
1. In lieu of 6" Lime stabilized subgrade, contractor may install 6" Recycled Crushed concrete, TxDOT Item No. 247, Grade 1, Type D or increase paving depth by 2".
2. See City Pavement Marking Standards for marking left turn lane.
3. For project specific Transition and Storage lengths, refer to Construction Drawings.

** This configuration applies only where a new Left Turn Lane is introduced on a median.

MESQUITE TEXAS Real. Texas. Service.	Public Works	LEFT TURN LANE DETAIL	GENERAL DESIGN STANDARDS PAVING DETAILS	
			SCALE: N.T.S	SHEET: P-13B
			REVISION DATE: 05/20/2019	

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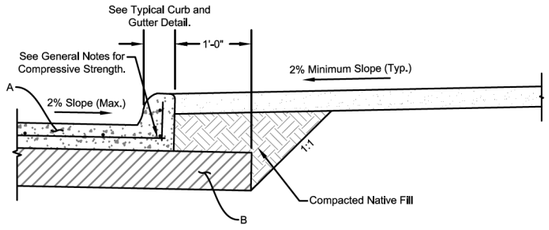
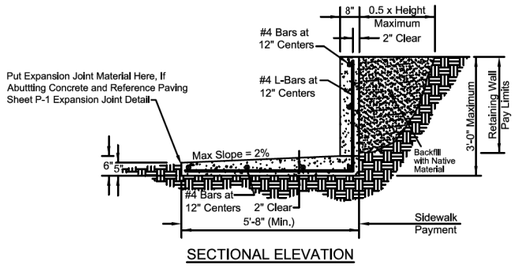


Classification	Minimum Pavement Thickness (A)	Minimum Subgrade Thickness (B)	Minimum Bar; Maximum Spacing Reinforcing Steel
Local	6"	6" Lime Stabilized at 8% (Or 6" Crushed Concrete)	#4 @ 18" C.C.
Collector	8"	8" Lime Stabilized at 8% (Or 8" Crushed Concrete)	#4 @ 18" C.C.
Fire Lane	Per Fire Lane Detail		
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).

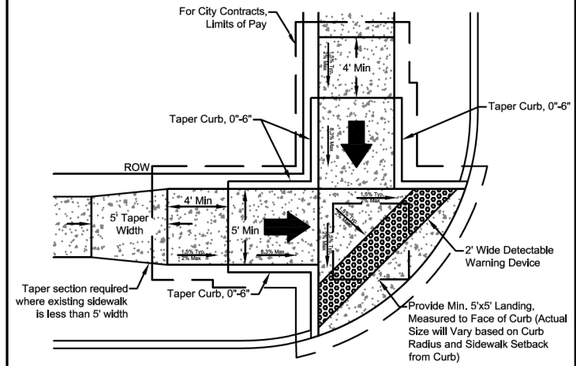
MESQUITE TEXAS Real. Texas. Service. | Public Works | CONCRETE PAVEMENT DETAIL TYPICAL SECTION | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-14



SECTIONAL ELEVATION

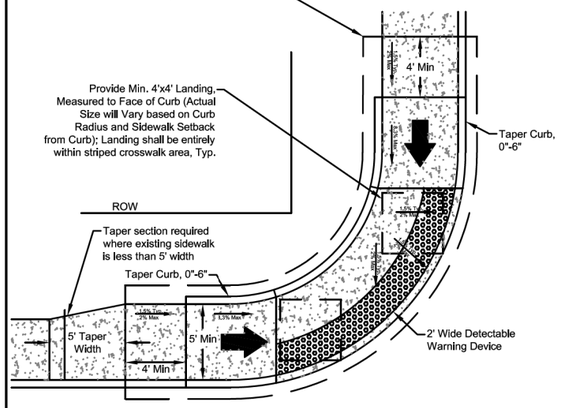
NOTES:
1. Exposed face or wall shall have form liner Sika Greenstreak #439 Sierra Drystack or Symons #F3170575 /#F3170503 Standard Dry Stack or as directed by the City Engineer. Form liner is required for walls 6-inches in height and over.
2. Minimum compressive design strength of the concrete shall 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



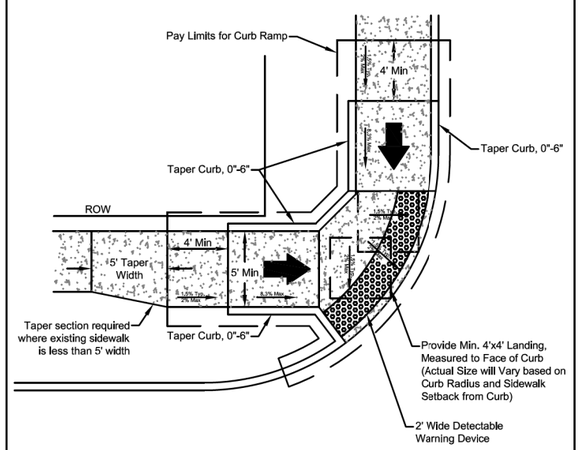
NOTES:
1. All pedestrian elements, including curb ramps, shall comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), published by the Architectural and Transportation Compliance Board on July 26, 20111, 36 CFR Part 1190 or its final adopted guidelines.
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



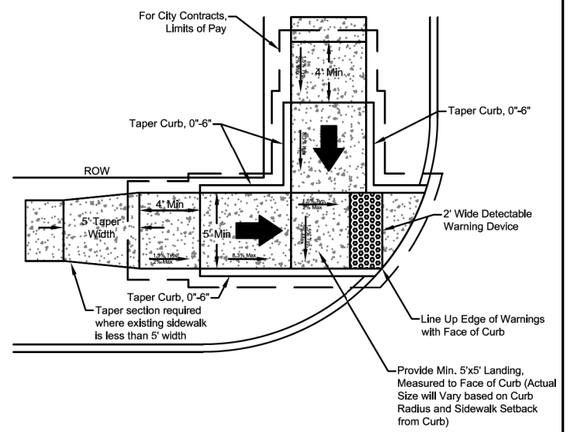
NOTES:
1. All pedestrian elements, including curb ramps, shall comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), published by the Architectural and Transportation Compliance Board on July 26, 20111, 36 CFR Part 1190 or its final adopted guidelines.
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.

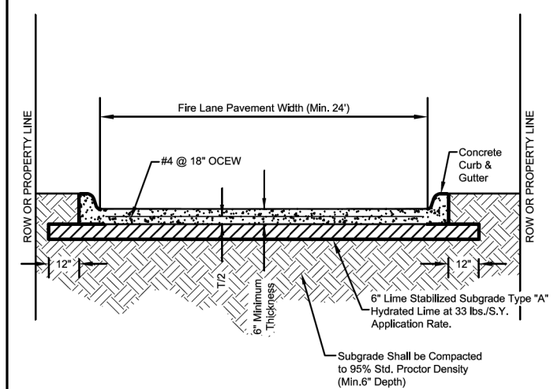
MESQUITE TEXAS Real. Texas. Service. | Public Works | CURB RAMP TYPE C | GENERAL DESIGN STANDARDS STANDARD DETAILS | SCALE: N.T.S | REVISION DATE: 05/20/2019 | SHEET: P-18



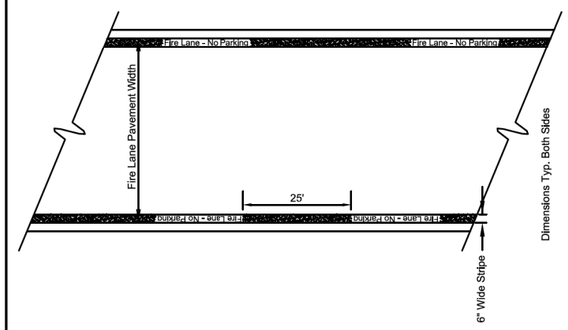
NOTES:
1. All pedestrian elements, including curb ramps, shall comply with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), published by the Architectural and Transportation Compliance Board on July 26, 20111, 36 CFR Part 1190 or its final adopted guidelines.
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

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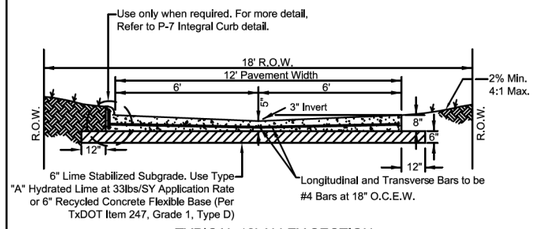
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

MESQUITE TEXAS Real. Texas. Service.

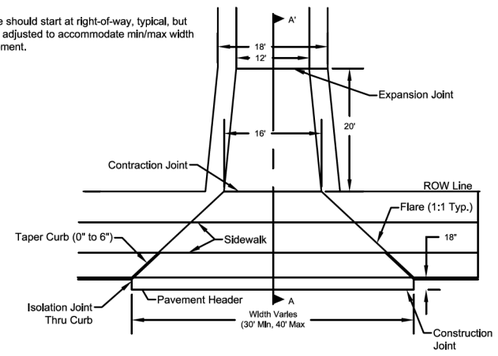
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-184



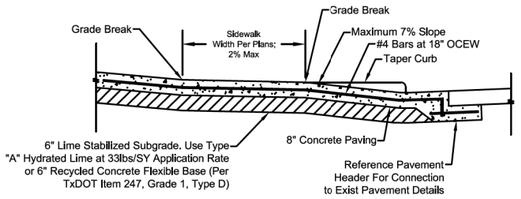
TYPICAL 12' ALLEY SECTION

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

Notes:
1. Flare should start at right-of-way, typical, but can be adjusted to accommodate min/max width requirement.



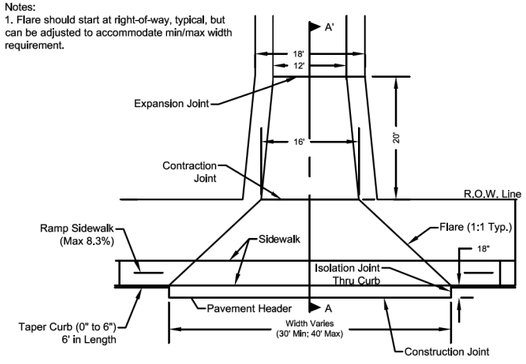
PLAN VIEW



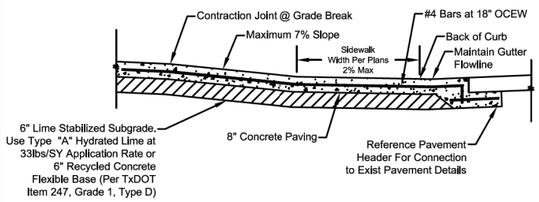
SECTION A-A'

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

Notes:
1. Flare should start at right-of-way, typical, but can be adjusted to accommodate min/max width requirement.

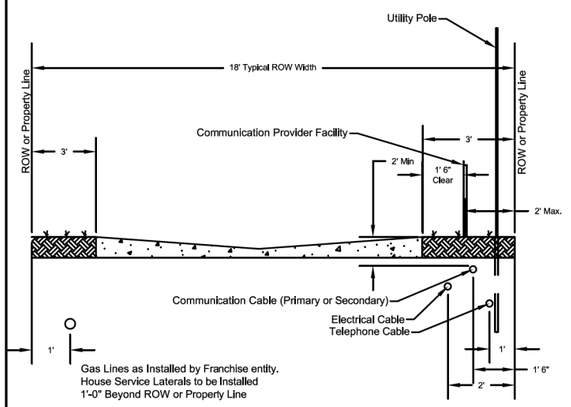


PLAN VIEW



SECTION A-A'

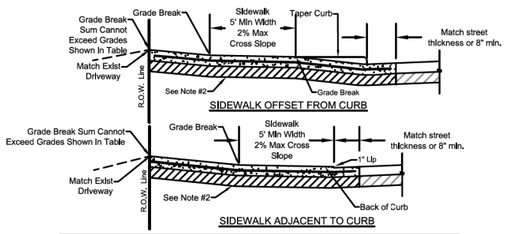
MESQUITE TEXAS Real. Texas. Service.	Public Works	ALLEY/STREET INTERSECTION ADJACENT SIDEWALK	GENERAL DESIGN STANDARDS STANDARD DETAILS	SCALE: N.T.S	REVISION DATE: 05/20/2019	SHEET: P-24



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

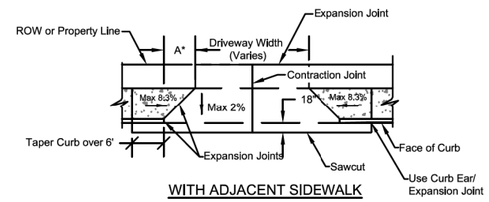
DRIVEWAY NOTES:
1. On residential driveways, in lieu of 18" blockout into street, contractor may horizontally sawcut curb. On commercial driveways, use full-depth sawcut 18" from face of curb.
2. For driveway width and curb radii, refer to Section 2 of Design Manual. Residential driveway shall be a minimum 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.



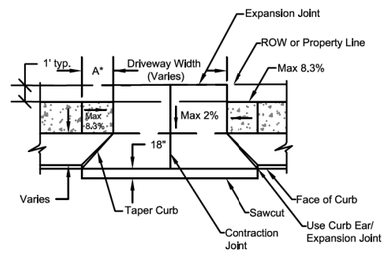
	Residential	Commercial	Industrial
Concrete Thickness (Minimum)	6"	8" Min.	12"
Reinforcing (Minimum)	#4 @ 18" OCEW		
Max Slope Connecting to Street	10%	7%	7%
Max Slope Connecting to Alley	14%	11%	11%
Flare/Radius	5' Min.	By Ordinance	By Ordinance

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



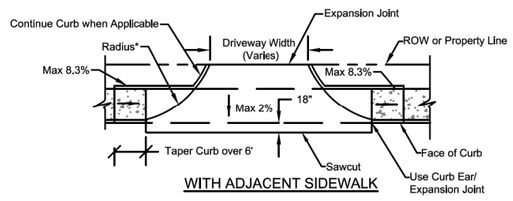
WITH ADJACENT SIDEWALK



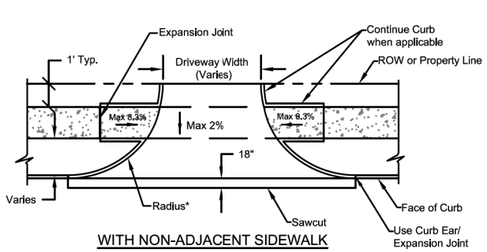
WITH NON-ADJACENT SIDEWALK

* 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



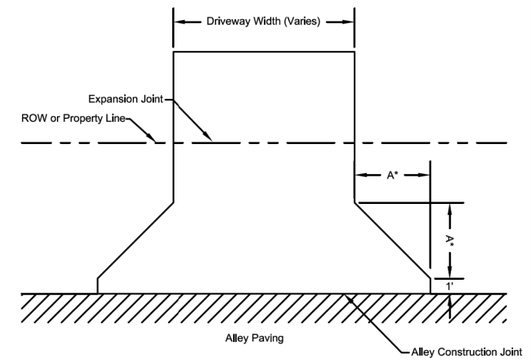
WITH ADJACENT SIDEWALK



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

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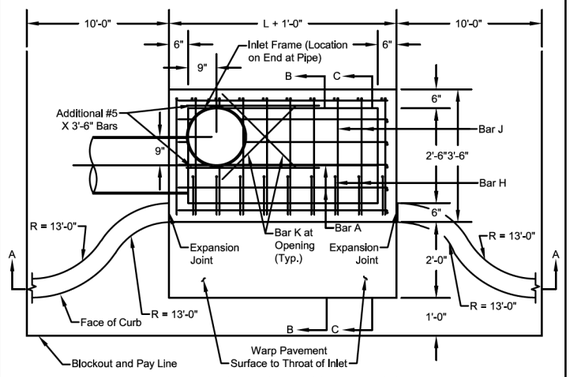
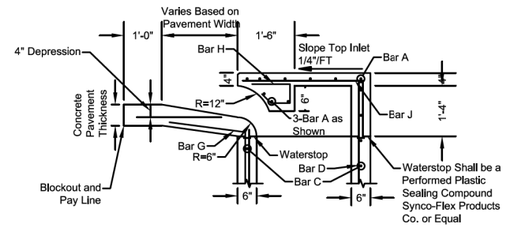
MESQUITE TEXAS Real. Texas. Service.

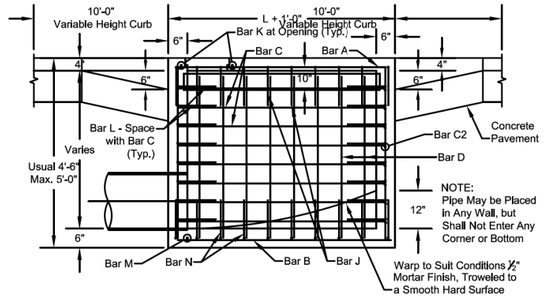
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-185



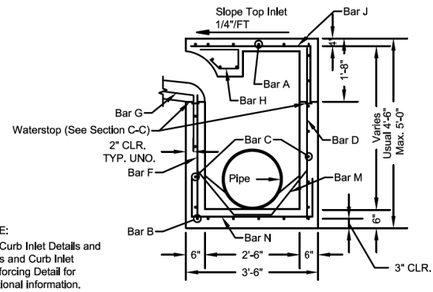
5 AND 10 FOOT RECESSED INLETS - PLAN VIEW



SECTION C-C - 5 AND 10 FOOT RECESSED INLETS

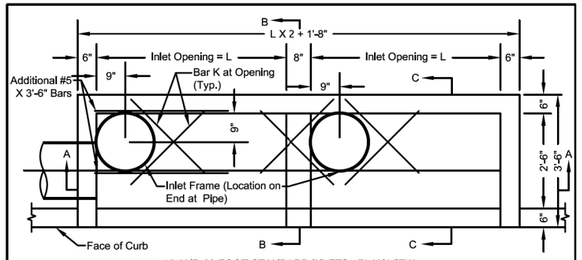


SECTION A-A - 5 AND 10 FOOT RECESSED INLETS



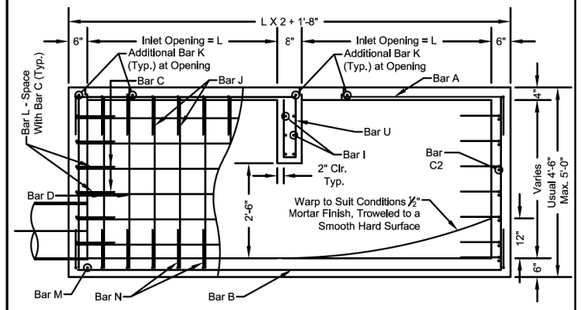
NOTE:
See Curb Inlet Details and Notes and Curb Inlet Reinforcing Detail for additional information.

SECTION B-B - 5 AND 10 FOOT RECESSED INLETS

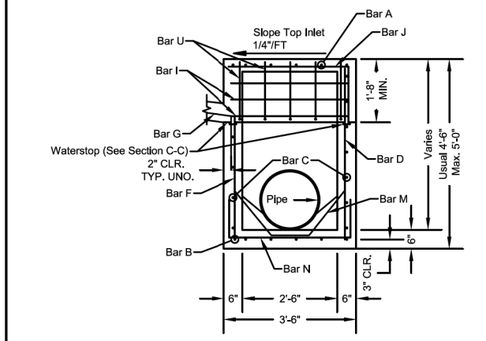


15 AND 20 FOOT STANDARD INLETS - PLAN VIEW

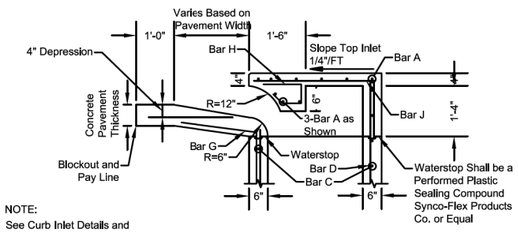
NOTES:
1. Reinforcement shown is additional for pipe openings, see sections for other reinforcing.
2. Bars J Shall be cut at opening to maintain 2" minimum clear cover. Additional #5 bars X 3'-6" shall be provided at each side of opening.



SECTION A-A - 15 AND 20 FOOT STANDARD INLETS

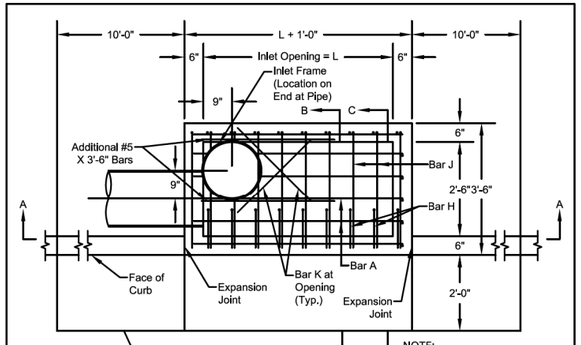


SECTION B-B - 15 AND 20 FOOT STANDARD INLETS



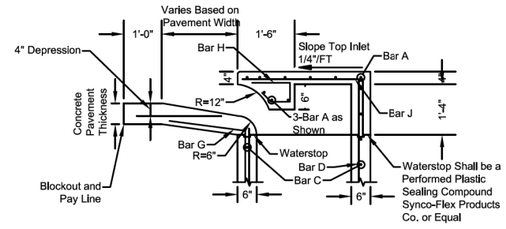
NOTE:
See Curb Inlet Details and Notes and Curb Inlet Reinforcing Detail for additional information.

SECTION C-C - 15 AND 20 FOOT STANDARD INLETS

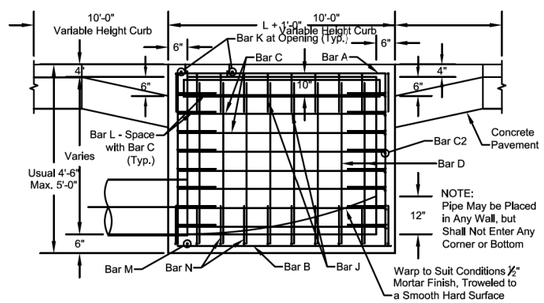


NOTE:
Pipe Shall Connect to the Ends or Sides of Inlets. Connection Shall be Made at Corner or Bottom.

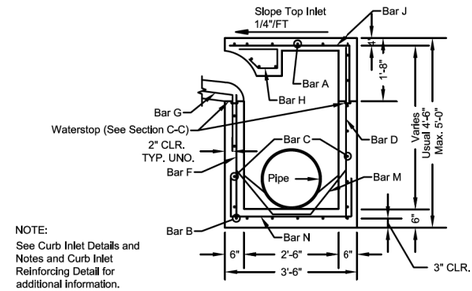
5' AND 10' STANDARD CURB INLET - PLAN VIEW



SECTION C-C - 5 AND 10 FOOT STANDARD INLETS



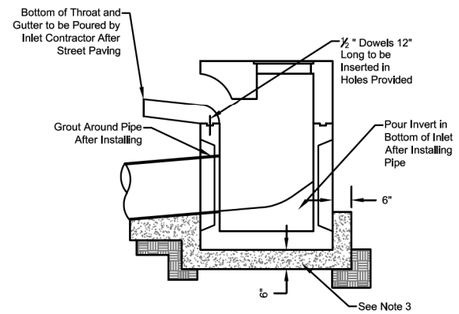
SECTION A-A - 5 AND 10 FOOT STANDARD INLETS



NOTE:
See Curb Inlet Details and Notes and Curb Inlet Reinforcing Detail for additional information.

SECTION B-B - 5 AND 10 FOOT STANDARD INLETS

NOTE:
Precast Inlets Must be Approved by City Engineer.

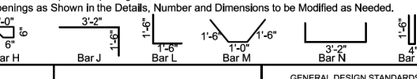


INSTALLATION DRAWING FOR PRECAST CURB INLETS

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.

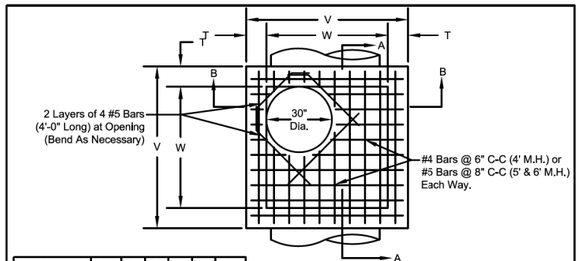
	Inlet Opening "L"	Bar	Bar Size	Bar Length	Bar Spacing	Inlet Opening "L"	Bar	Bar Size	Bar Length	Bar Spacing
Double Inlets	7'-6"	A	#4	16'-4"	8" O.C. MAX.	10'-0"	A	#4	21'-4"	8" O.C. MAX.
		B	#4	16'-4"	8" O.C. MAX.		B	#4	21'-4"	8" O.C. MAX.
		C	#4	16'-4"	8" O.C. MAX.		C	#4	21'-4"	8" O.C. MAX.
		C2	#4	3'-2"	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.



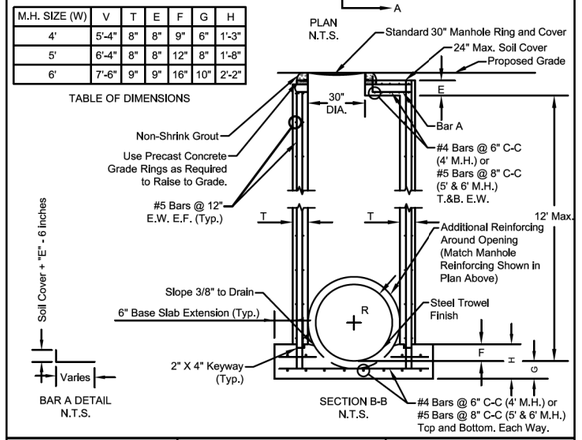
CITY OF MESQUITE, TEXAS
PUBLIC WORKS DEPARTMENT
STANDARD DETAILS

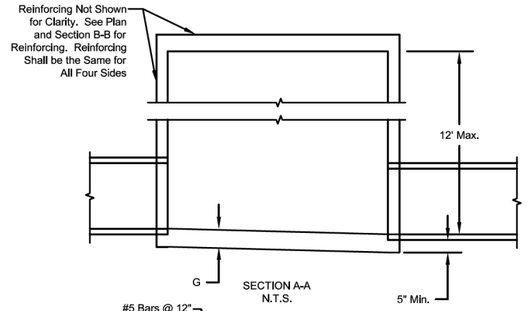
MESQUITE TEXAS Real. Texas. Service.



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"

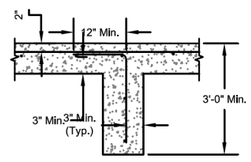
TABLE OF DIMENSIONS





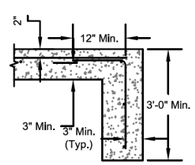
NOTES:
1. Chamfer all exposed edges ¾".
2. All reinforcing steel shall be ASTM 615 Grade 60 steel.
3. Concrete shall be 3,600 psi minimum. Mix designs for concrete shall be submitted to owner for approval prior to construction.
4. Reinforcing bar dimensions are to outside of bar unless otherwise noted.
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 manhole 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.

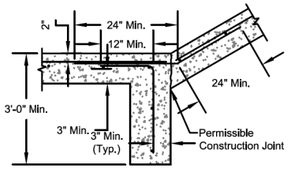


TYPICAL INTERMEDIATE TOE WALL DETAIL

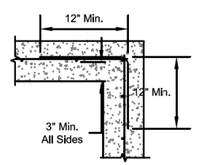
NOTE:
For concrete channel lengths over 150', provide intermediate toe walls at 100' maximum spacing



TYPICAL TRANSVERSE TOE WALL DETAIL

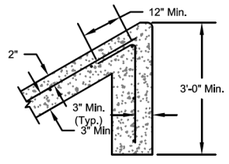


TYPICAL TOE WALL DETAIL AT TOE OF SLOPE

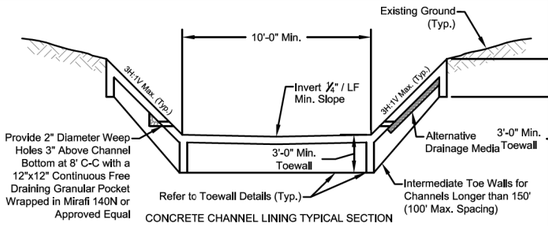


NOTE:
Minimum requirements only. Design shall be submitted.

TYPICAL TOE WALL CORNER DETAIL



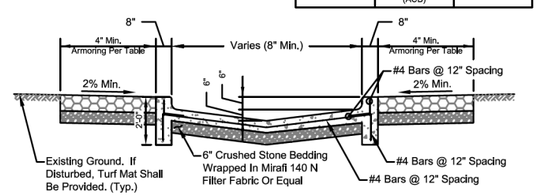
TYPICAL LONGITUDINAL TOE WALL DETAIL AT TOP OF SLOPE



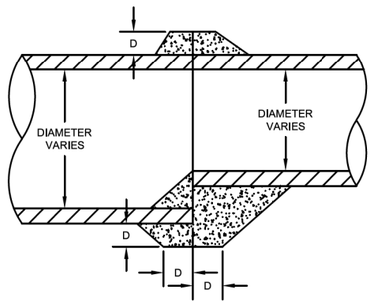
CONCRETE CHANNEL LINING TYPICAL SECTION

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.

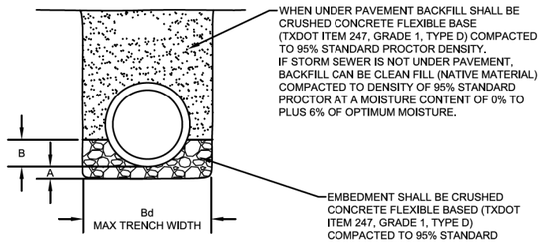
100 Year Velocity (fps)	Armoring Material	Requirements
≤ 6	Turf Mat	Per Manufacturer
≤ 12	Gabion	Per Standard Detail
Per Manufacturer	Articulated Concrete Block (ACB)	Per Manufacturer



CONCRETE PILOT CHANNEL TYPICAL SECTION



LARGER PIPE DIAMETER	D
>= 36"	6" MIN
> 36"	12" MIN



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 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
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
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
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
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
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.

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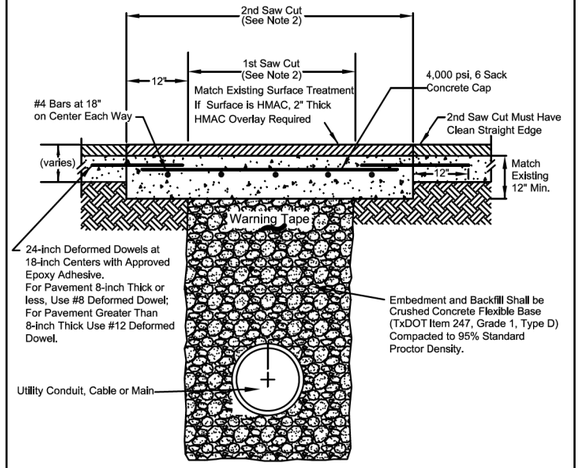
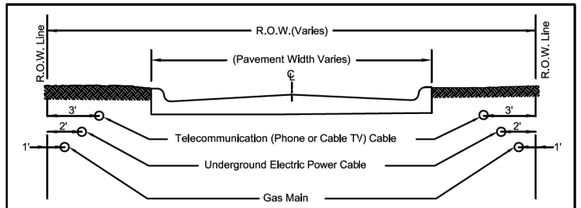
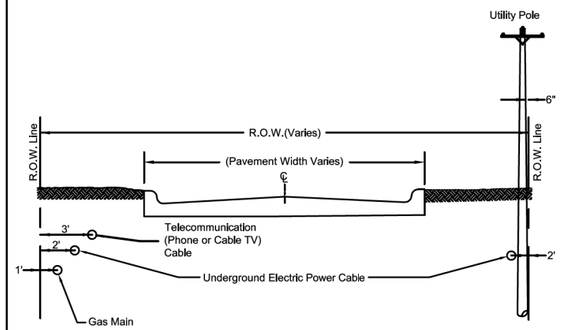


Notes:
1. Pavement Cuts Shall be Full Depth Saw Cuts.
2. Make 1st Saw Cut when Opening Pavement to Begin Conduit Installation. Make 2nd Cut after Conduit Installation and Backfill and Preparing to Replace Pavement.
3. Where Existing Pavement is HMAC, Replace with 12-inch Thick Minimum Concrete with 2-inch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

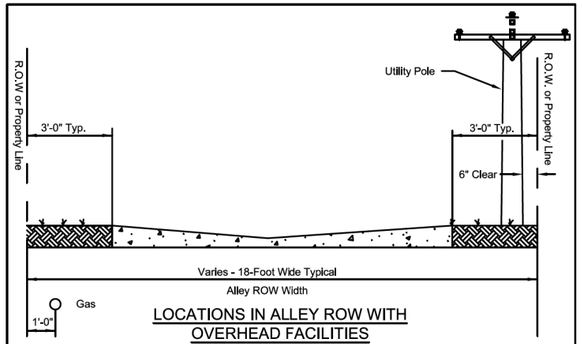


LOCATIONS IN STREET ROW WITH NO OVERHEAD FACILITIES

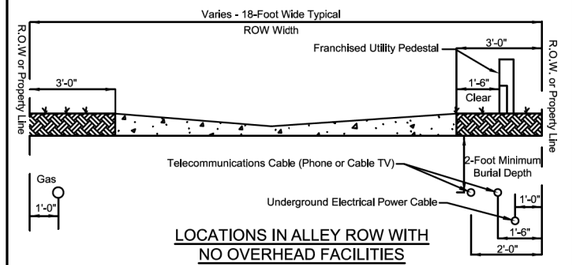


LOCATIONS IN STREET ROW WITH OVERHEAD FACILITIES

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
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		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/UTL-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 DAILY 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-HOURS 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.

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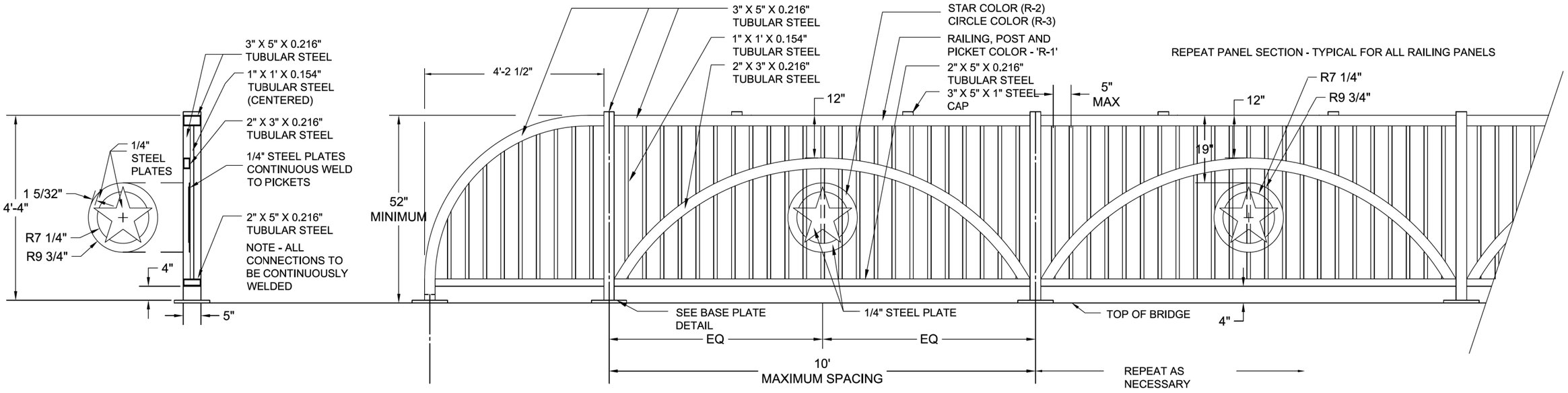
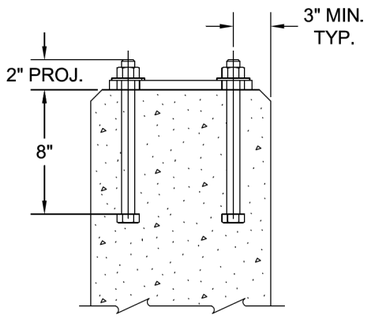
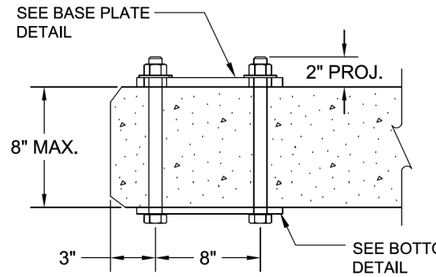
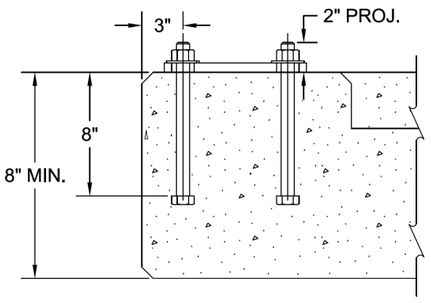




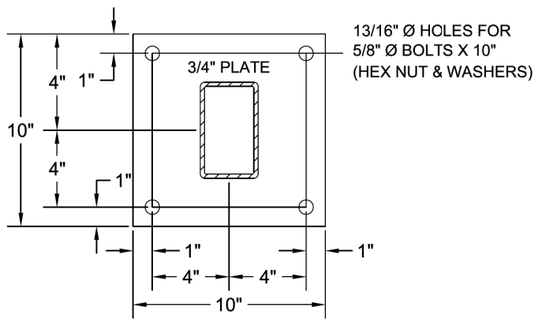
ON ABUT WING OR CAP RETAINING WALL



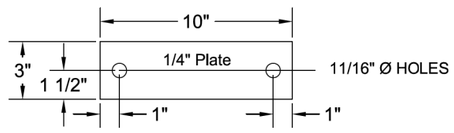
BASIC CONDITION



ON CULVERTS OR SLABS OVER 8" THICK



BASE PLATE DETAIL



BOTTOM PLATE DETAIL

GENERAL NOTES:

1. DESIGNED ACCORDING TO CURRENT AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES.
2. PIPE AND TUBE FOR RAIL SHALL CONFORM TO ASTM A53 GRADE B. OR A501. PLATES SHALL BE ASTM A36.
3. ALL ANCHOR BOLTS, NUTS, WASHERS AND BOTTOM PLATES TO BE INCLUDED IN UNIT PRICE BID FOR RAILING.
4. ALL STEEL COMPONENTS TO BE HOT-DIP GALVANIZED PER ASTM A123 WITH A MINIMUM COATING THICKNESS OF 2.0 MILS (COATING GRADE 50) UNLESS OTHERWISE SHOWN ON THE PLANS.
5. ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL TYPE 304 WITH MINIMUM YIELD STRENGTH OF 36 KSI.
6. FACE OF RAIL AND POSTS SHALL BE VERTICAL TRANSVERSELY UNLESS OTHERWISE APPROVED BY THE ENGINEER. POSTS SHALL BE PERPENDICULAR TO ADJACENT ROADWAY GRADE. GROUT MAY BE USED UNDER BASE PLATES IF NECESSARY.
7. SHOP DRAWINGS TO BE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL WILL BE REQUIRED ONLY FOR RAILS ON HORIZONTAL CURVES IN WHICH CASE THE RAIL MEMBERS SHALL BE FABRICATED TO THE REQUIRED RADIUS FOR RADII OF 600' OR LESS. FOR RAILS NOT REQUIRING SHOP DRAWINGS, ERECTION DRAWINGS SHOWING PANEL LENGTHS, SPLICE LOCATIONS, RAIL POST SPACING AND ANCHOR BOLT SETTING SHALL BE SUBMITTED TO THE AREA ENGINEER FOR APPROVAL.
8. SHOP DRAWINGS MAY BE SUBMITTED AS 11" X 17" PRINTS PROVIDED THEY ARE CLEARLY LEGIBLE.
9. EXPOSED EDGES OF RAIL AND POSTS SHALL BE ROUNDED OR CHAMFERED TO APPROXIMATELY 1/16" BY GRINDING.
10. PROVIDE SEALED ENGINEERING SHOP DRAWINGS OF THE DECORATIVE HANDRAIL BASED UPON THE CONCEPT DRAWINGS ON THIS SHEET
11. HANDRAIL TO CONFORM TO AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES (4TH EDITION).
12. HANDRAIL POSTS TO MATCH BOLT PATTERN SPACING SHOWN ON THE BRIDGE PLANS AND DETAILS.

PAINTING:

1. PRIMER FOR ALL STEEL SURFACES - RUST-OLEUM HEAVY DUTY RUST-INHIBITIVE PRIMER - 1069 RED.
2. PAINT R-1 BRIDGE RAILING - BOLLARD: RUST-OLEUM INDUSTRIAL ENAMEL - 634402 HIGH GLOSS BLACK.
3. PAINT R-2 BRIDGE RAILING - STAR: RUST-OLEUM -1936 BRASS METALLIC OR 1910 GOLD METALLIC.
4. PAINT R-3 BRIDGE RAILING - STAR CIRCLE: RUST-OLEUM - INDUSTRIAL ENAMEL - 935402 VISTA GREEN.
5. PRIMER ALTERNATE: PRIMER FOR ALL STEEL SURFACES - SHERWIN WILLIAMS - MACROPOXY 646 FAST CURE EPOXY - GRAY COLOR.
6. PAINT ALTERNATE : R-1 BRIDGE RAILING - RAILING, POST AND PICKETS: SHERWIN WILLIAMS - HI SOLIDS POLYURETHANE B65B311 GLOSS BLACK.
7. PAINT ALTERNATE: R-2 BRIDGE RAILING - STAR: RUST-OLEUM 1936 BRASS METALLIC (SPRAY CAN).
8. PAINT ALTERNATE: R-3 BRIDGE RAILING - STAR CIRCLE: SHERWIN WILLIAMS - HI SOLIDS POLYURETHANE B65T304 HUNTER GREEN.

STATE OF TEXAS
THOMAS S. LACH
96234
LICENSED
PROFESSIONAL ENGINEER

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-189

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REVISION TABLE		
NO.	REVISION	DATE

PEDESTRIAN BRIDGE RAIL		
ENGINEERING DIVISION		
GENERAL DESIGN STANDARDS		
City of Mesquite, Texas		
APPROVAL DATE	SCALE	DRAWN BY
7/7/2010	N.T.S.	TSL

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	DIST	COUNTY		SHEET NO. 190

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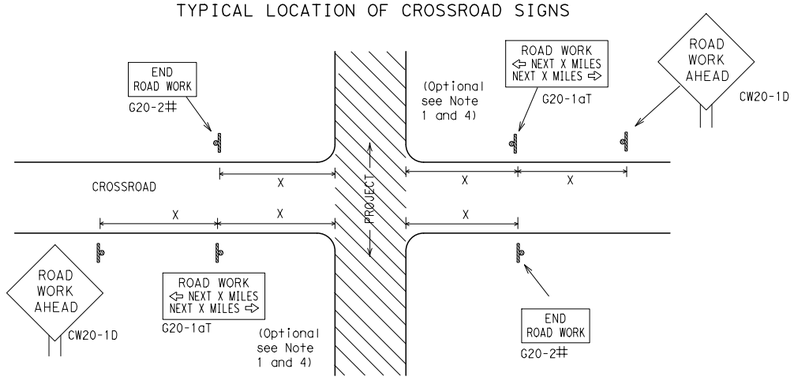
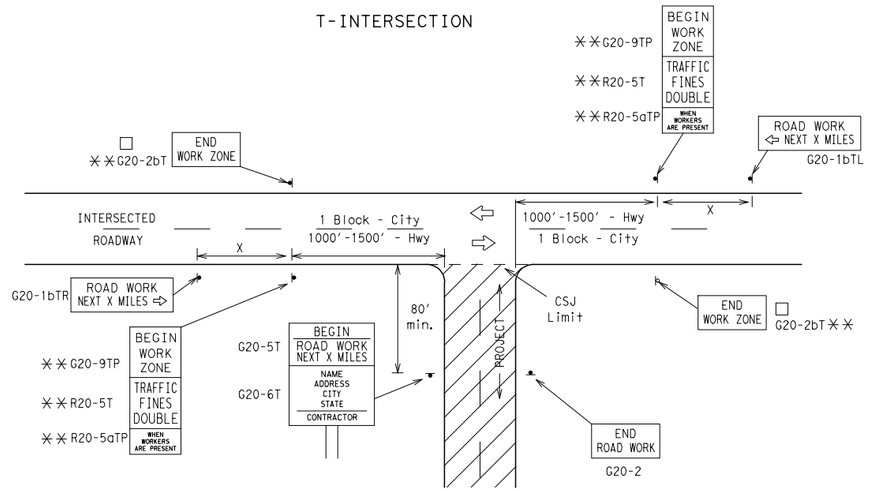
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

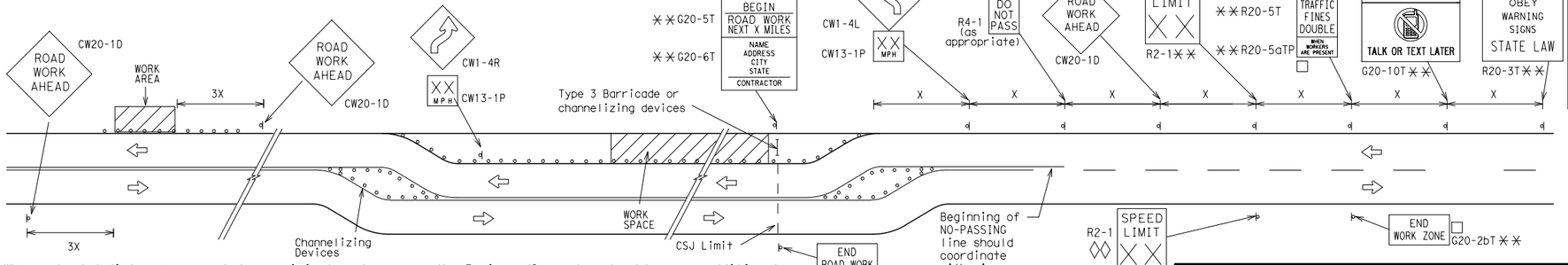
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

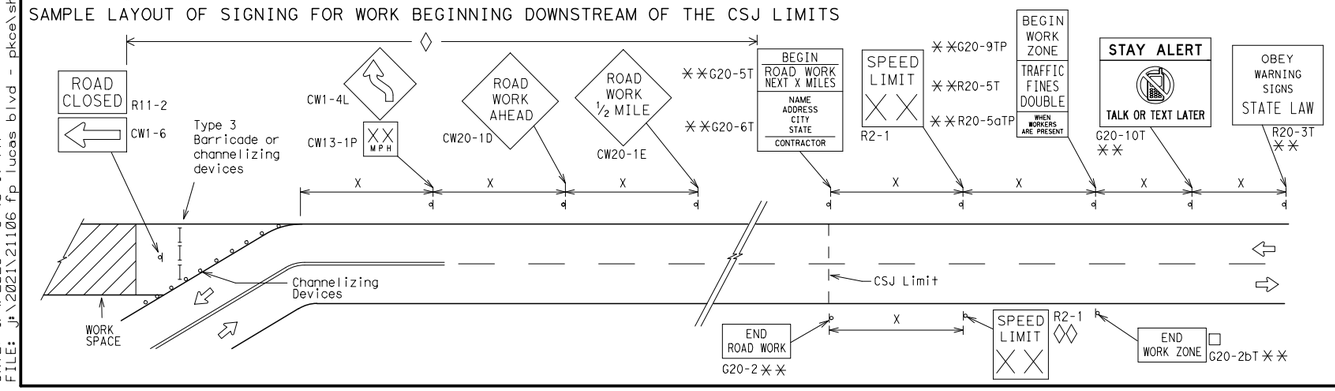
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



NOTES

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

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

✳✳ CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

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

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

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

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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REVISIONS 9-07 8-14 7-13 5-21	DIST	COUNTY		SHEET NO. 191

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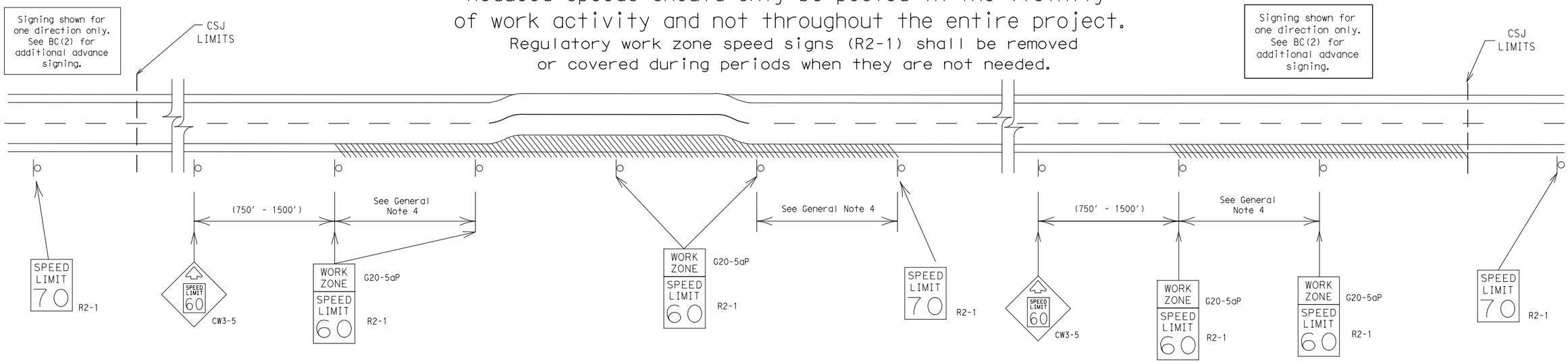
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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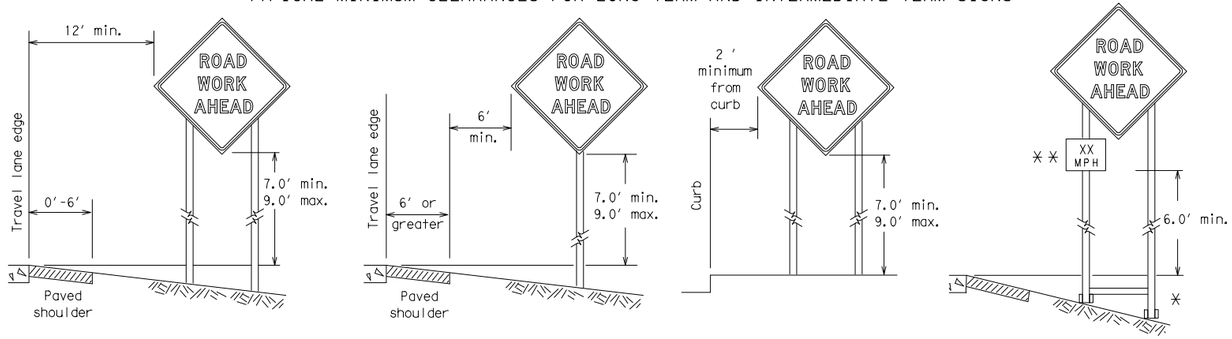
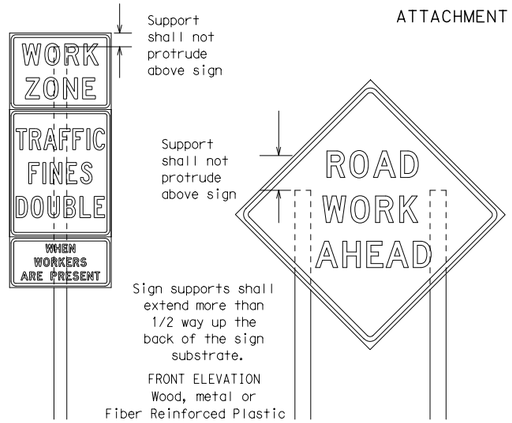
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

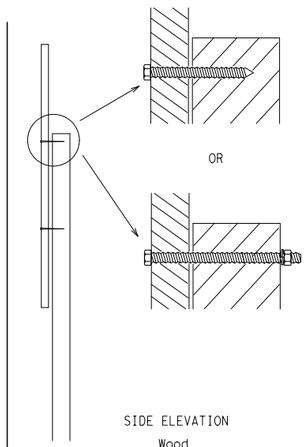


⚹ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





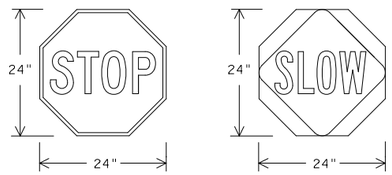
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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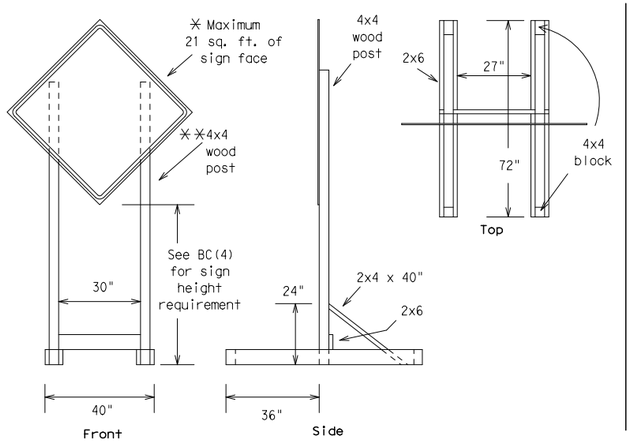
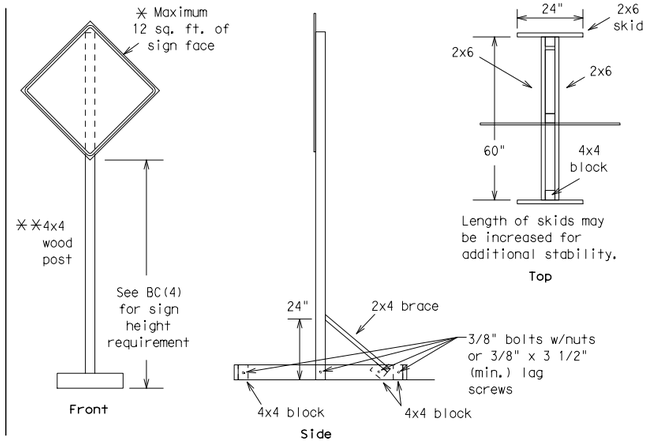
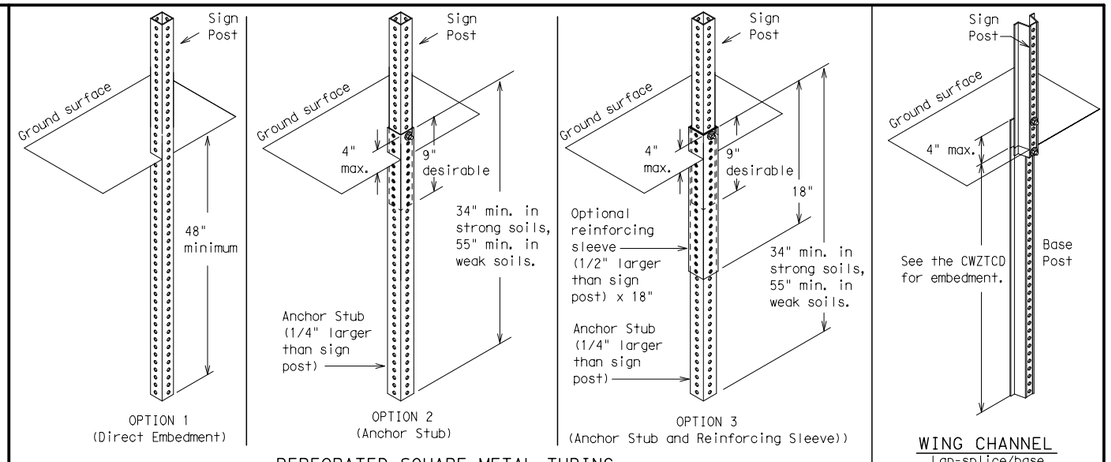




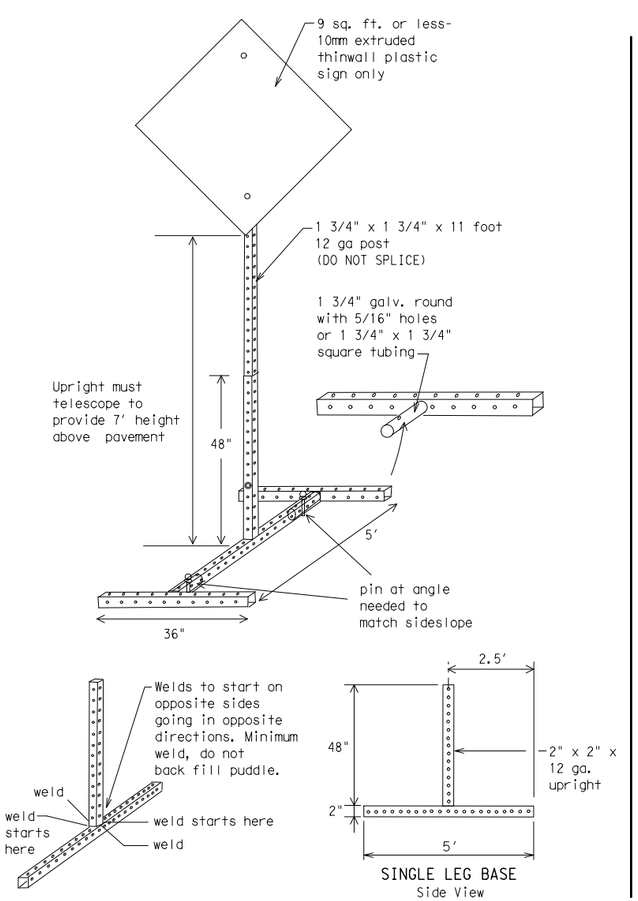
SKID MOUNTED WOOD SIGN SUPPORTS

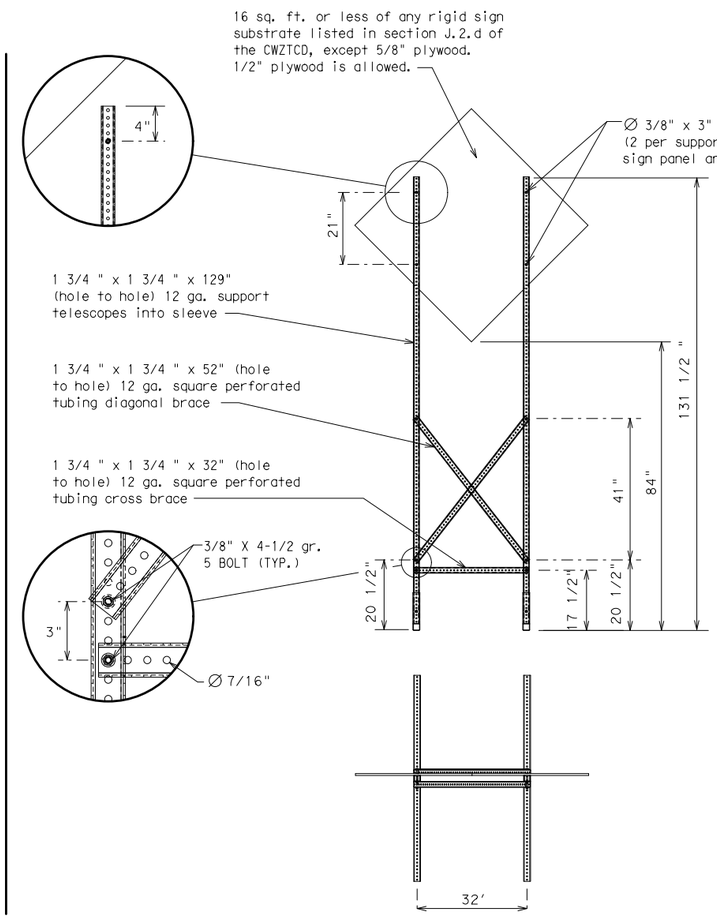
✳ LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

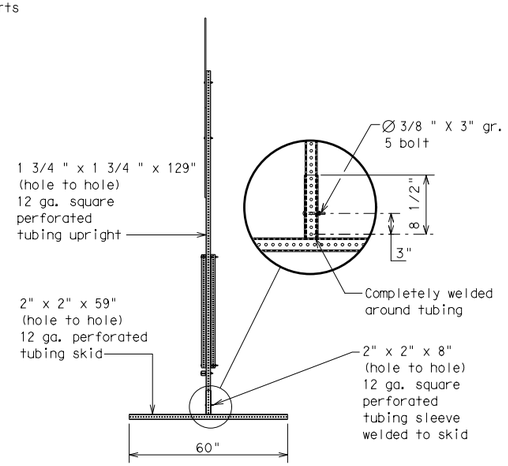


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

✳✳ Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be 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 Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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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.

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-195

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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7-13	5-21				195

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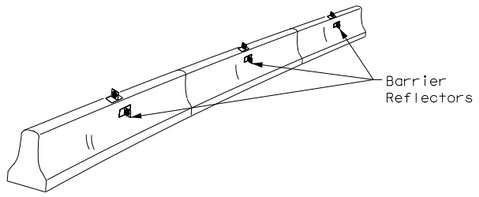
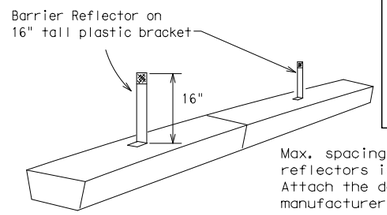
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



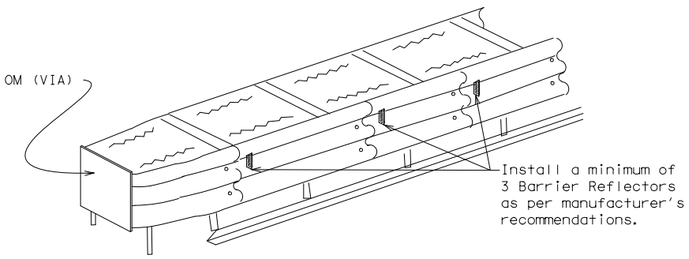
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

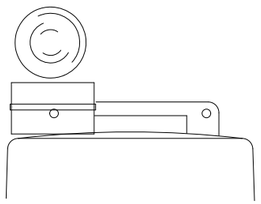
LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

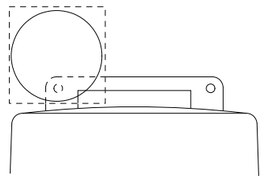
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{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

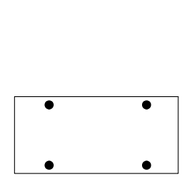
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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.

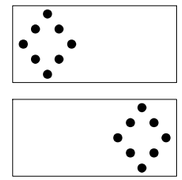
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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:

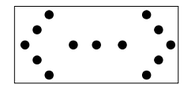


4 CORNER CAUTION

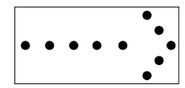
OR



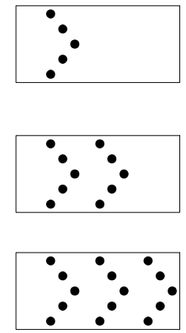
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



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



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

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-196

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

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© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				196

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

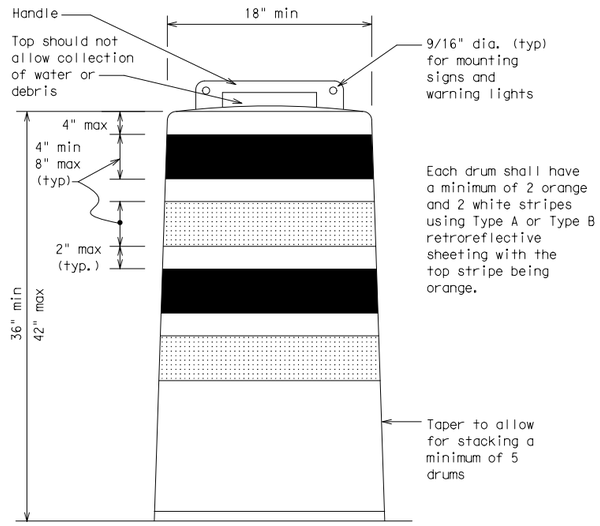
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

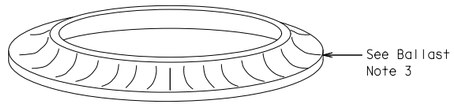
RETROREFLECTIVE SHEETING

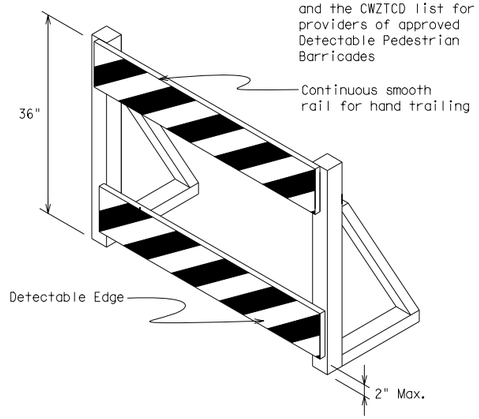
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

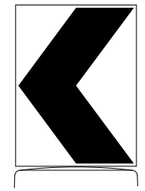




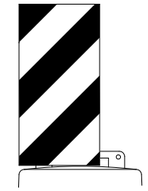


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

.

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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REVISIONS				
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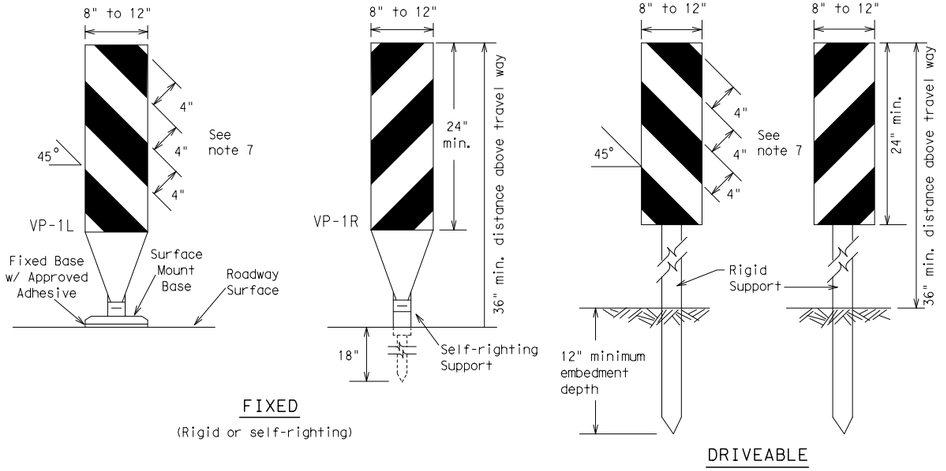
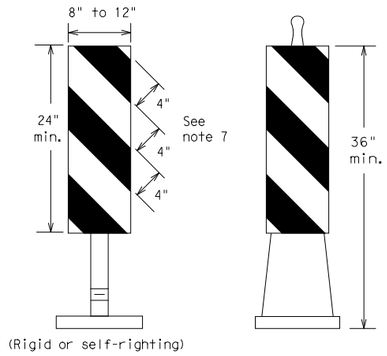


FIXED

(Rigid or self-righting)

DRIVEABLE

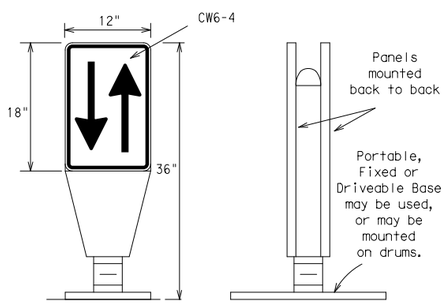


(Rigid or self-righting)

PORTABLE

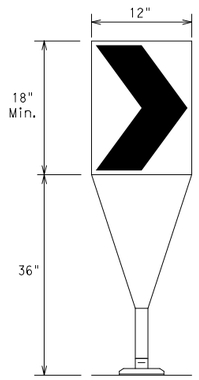
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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



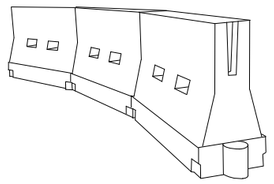
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 8-14	DIST	COUNTY		SHEET NO.
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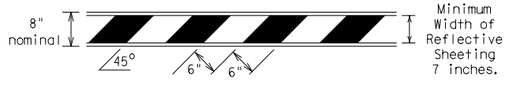
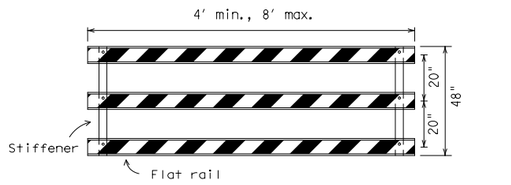
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



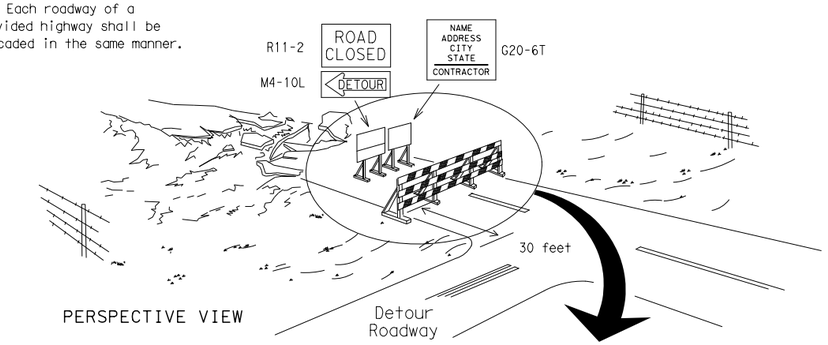
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

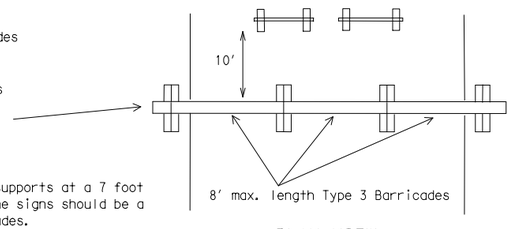
TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

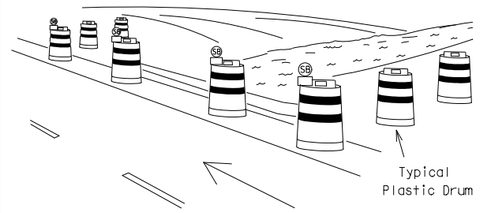
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

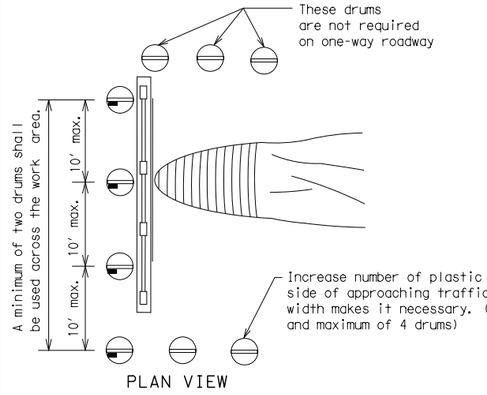
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

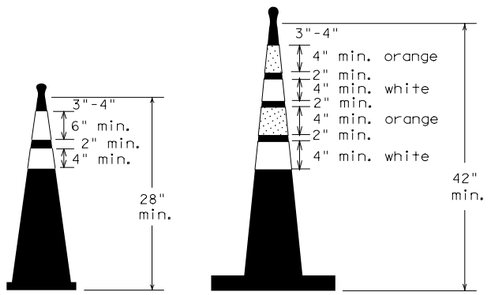
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

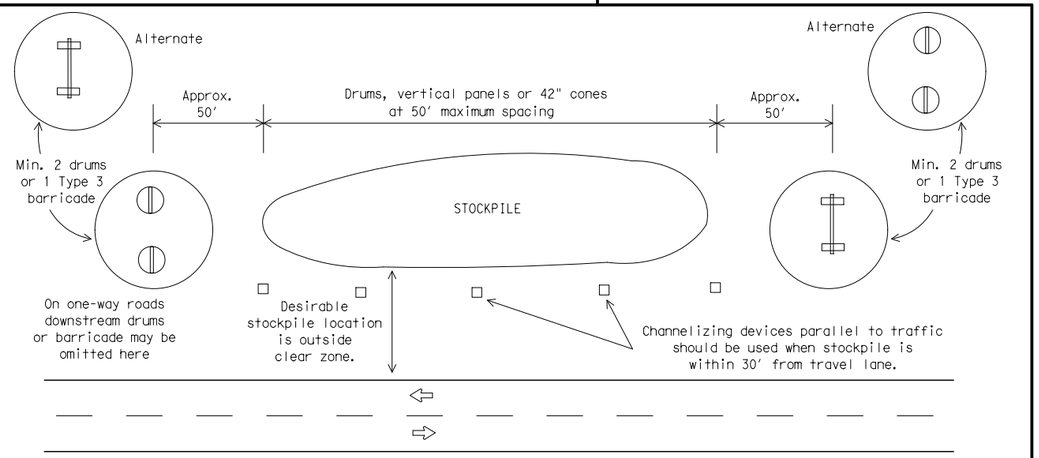
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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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.

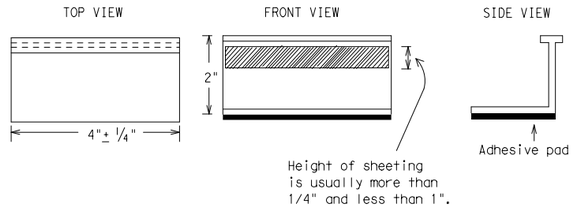
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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).

CITY OF MESQUITE
RECORD DWG INDEX NO.
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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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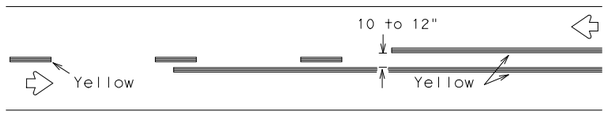
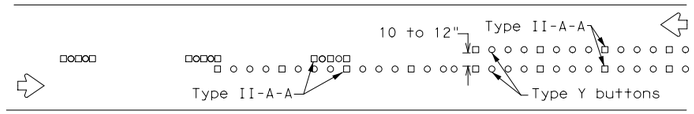
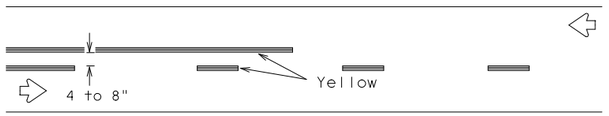
PAVEMENT MARKING PATTERNS



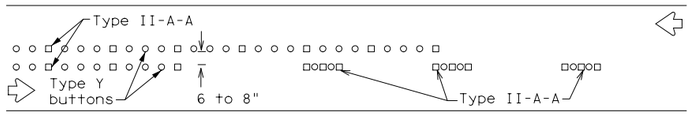
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



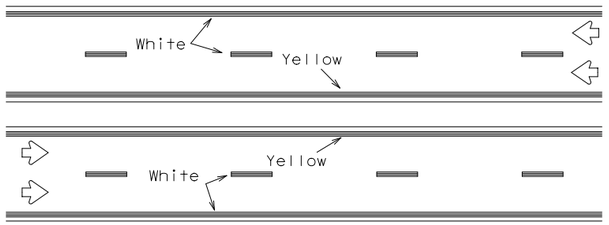
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



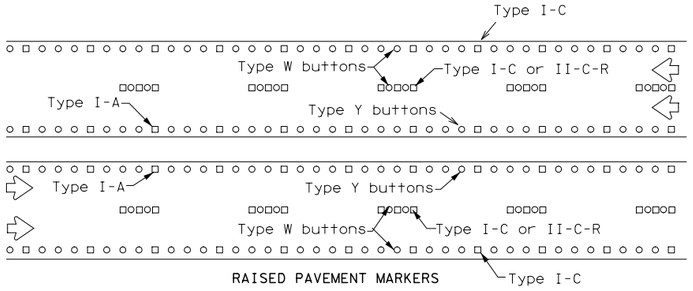
RAISED PAVEMENT MARKERS - PATTERN B

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

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



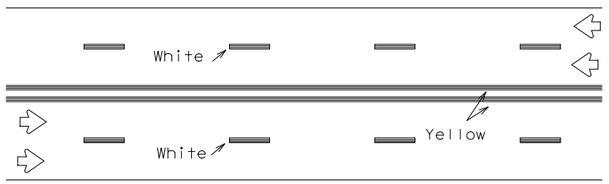
REFLECTORIZED PAVEMENT MARKINGS



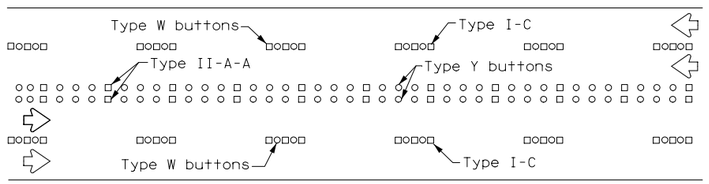
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



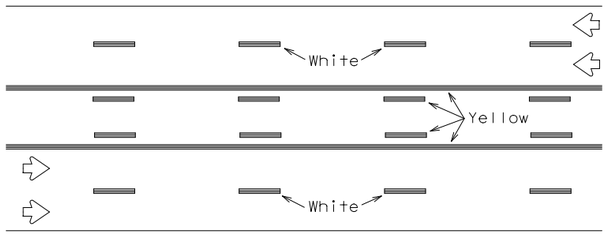
REFLECTORIZED PAVEMENT MARKINGS



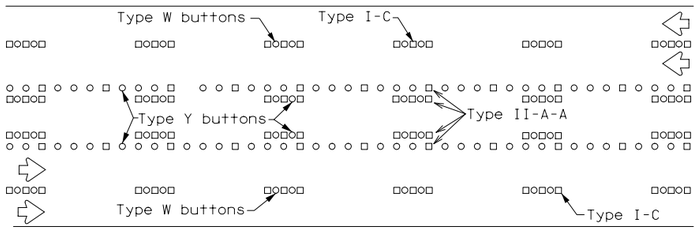
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

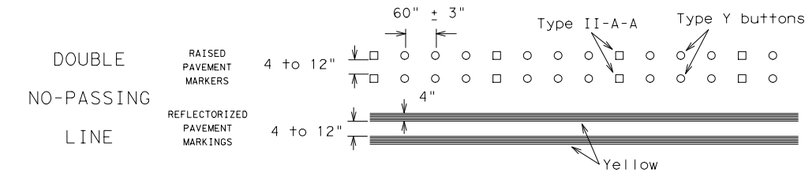
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

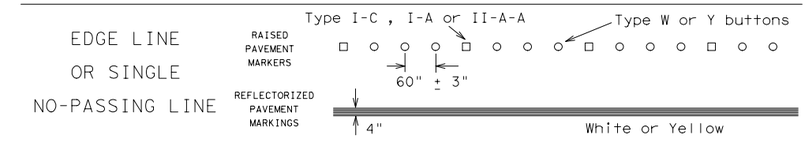
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

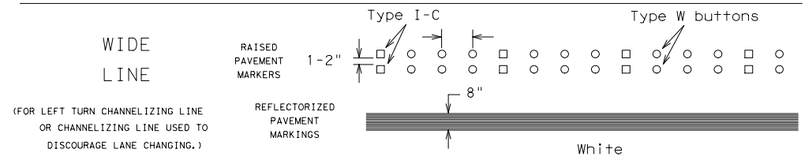


EDGE LINE OR SINGLE NO-PASSING LINE



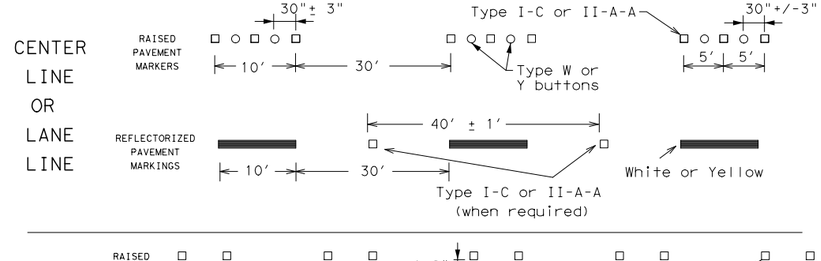
WIDE LINE

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

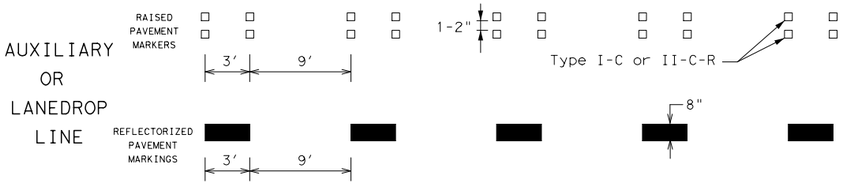


BROKEN LINES

CENTER LINE OR LANE LINE

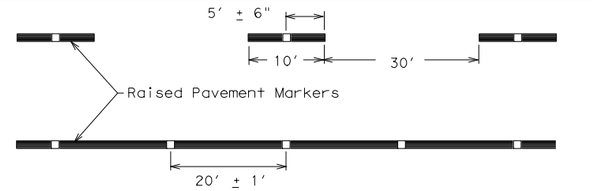


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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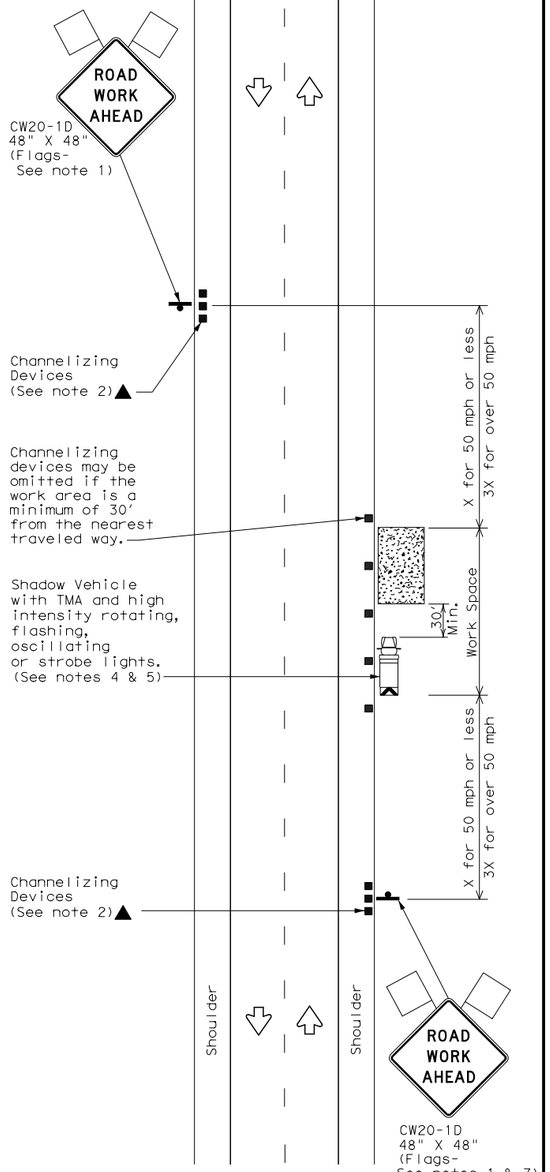
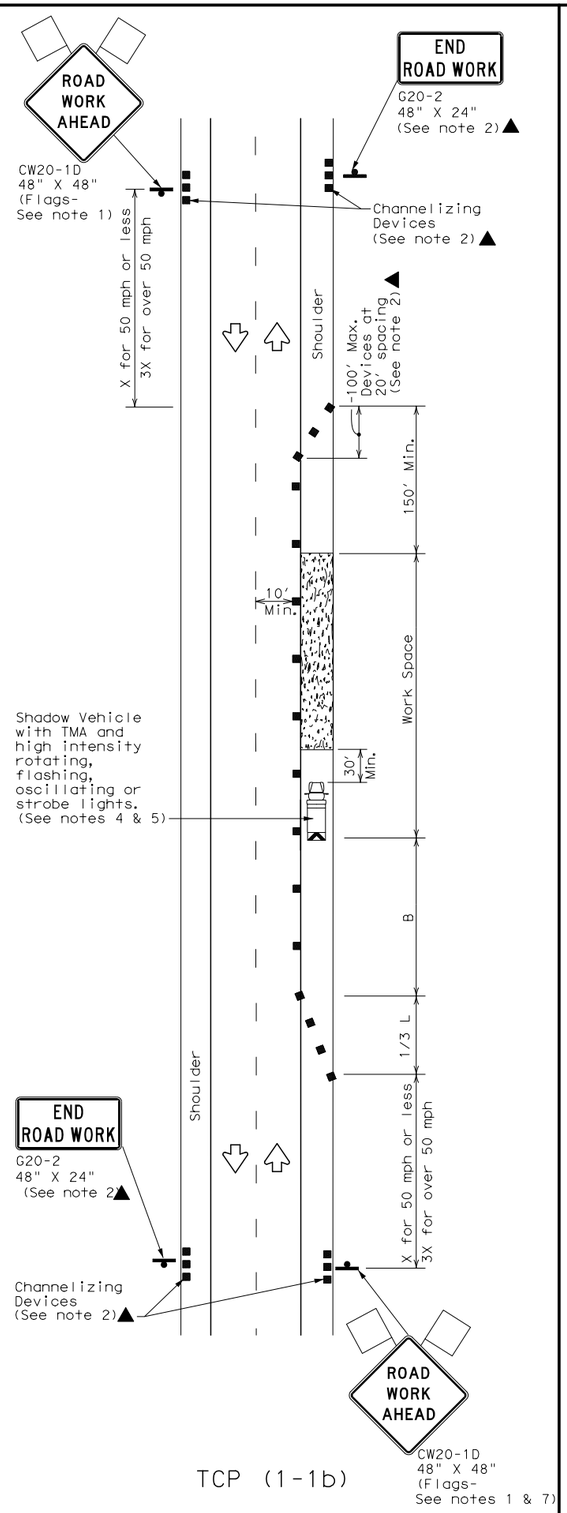


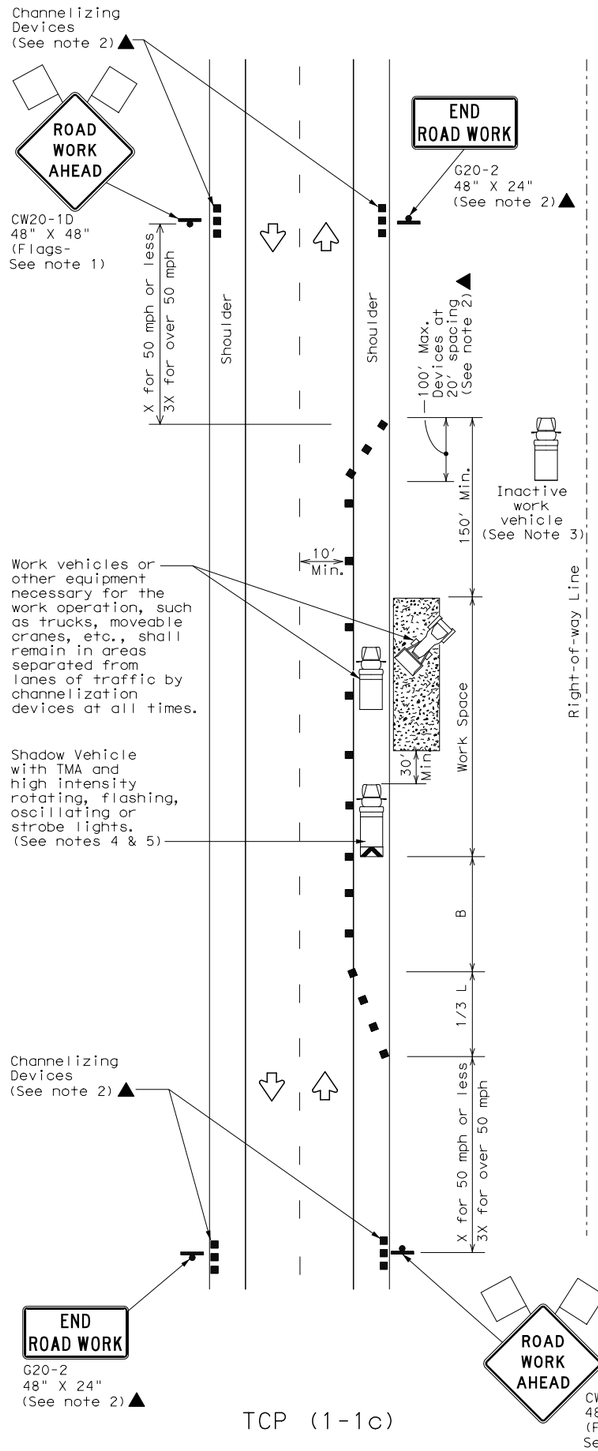
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

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 elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. 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 wider work spaces.
6. See TCP(5-1)for shoulder work on divided highways, expressways and freeways.
7. 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

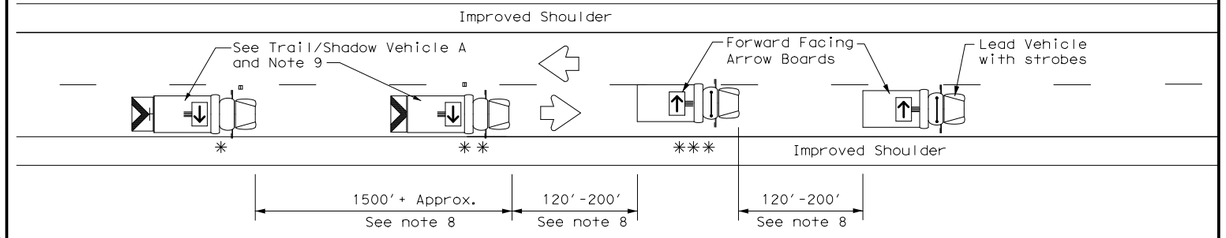
TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(1-1)-18

FILE: tcp1-1-18.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. 202

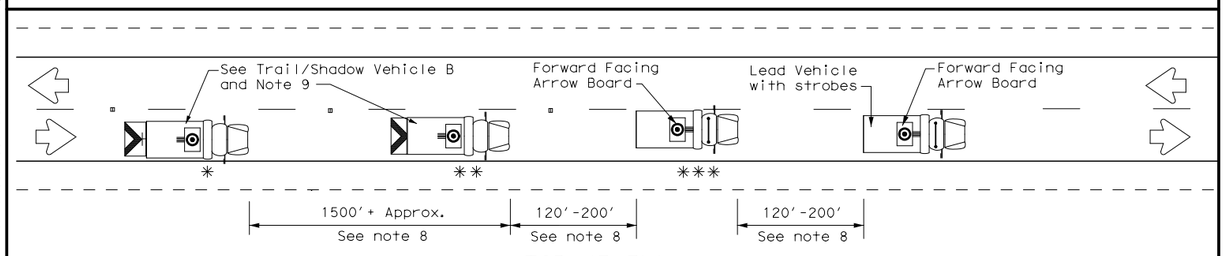
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-202

151



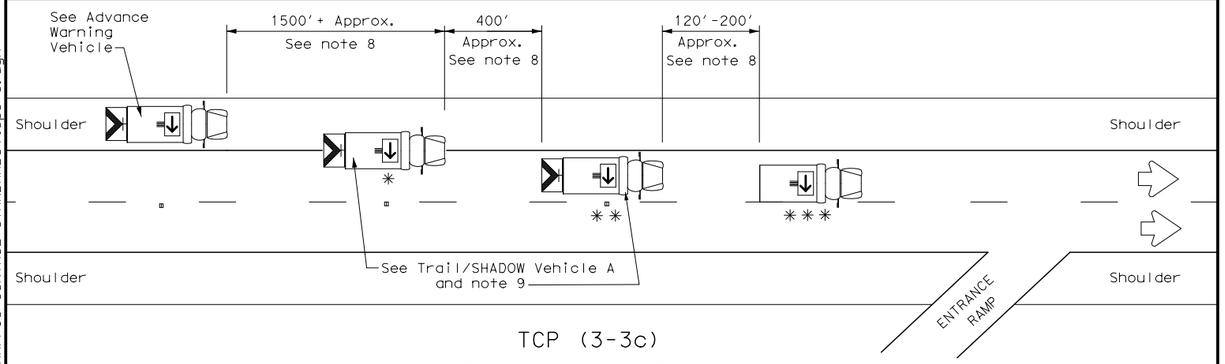
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



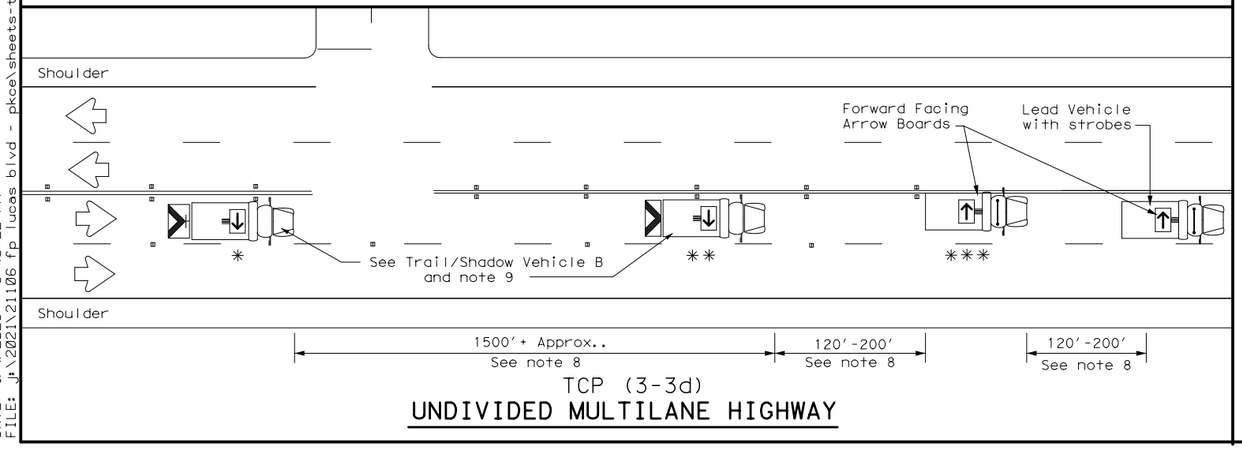
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



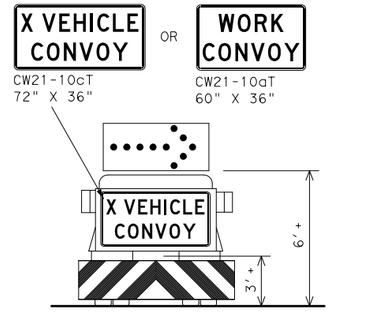
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



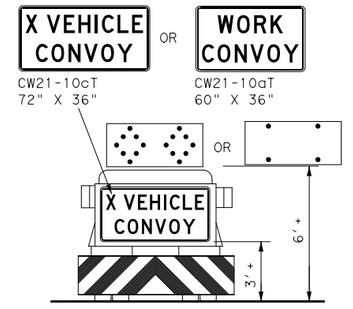
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



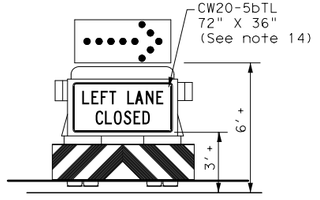
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

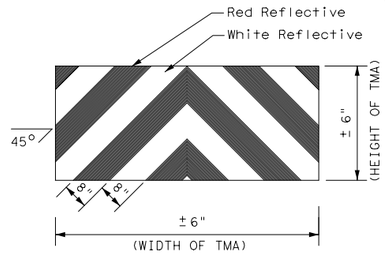


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

TCP(3-3)-14

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS				
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13				203
1-97 7-14				

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-203

177

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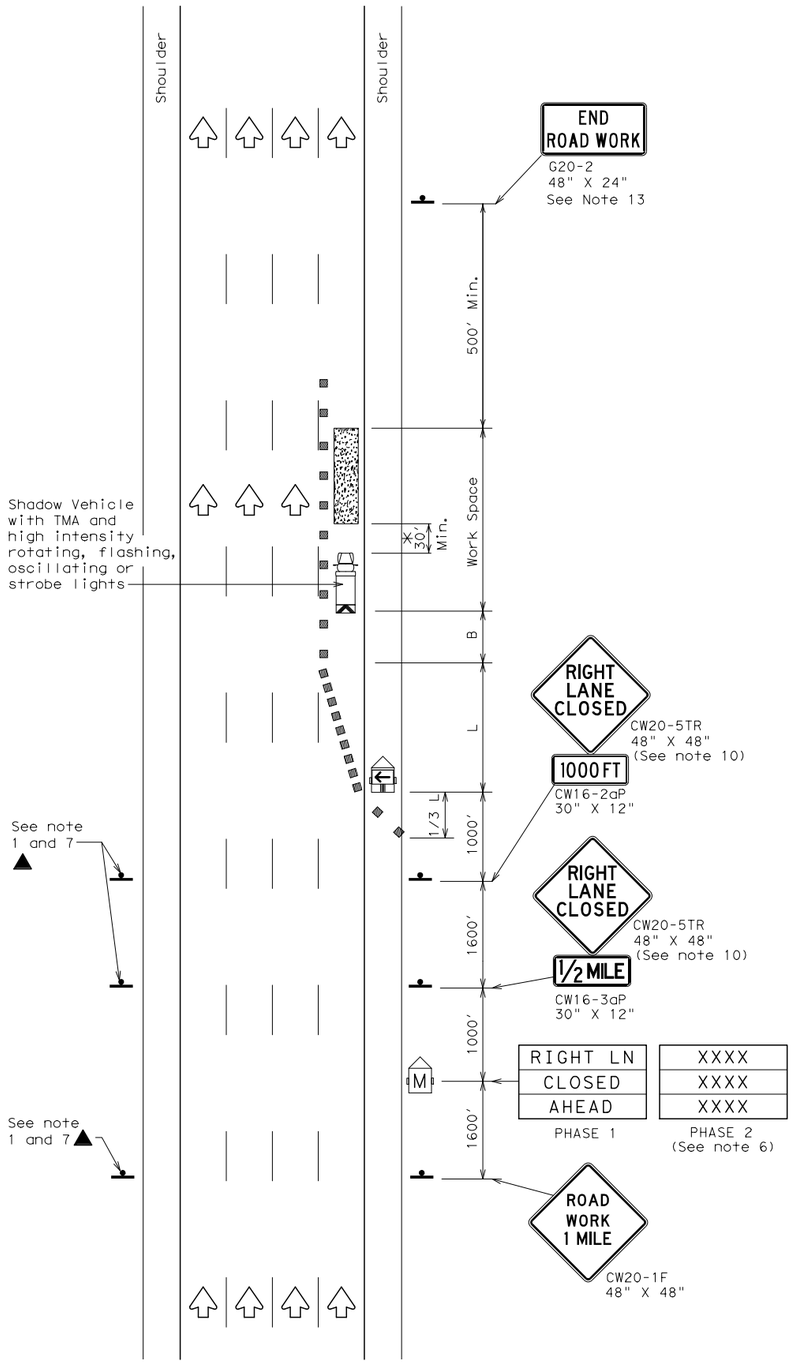
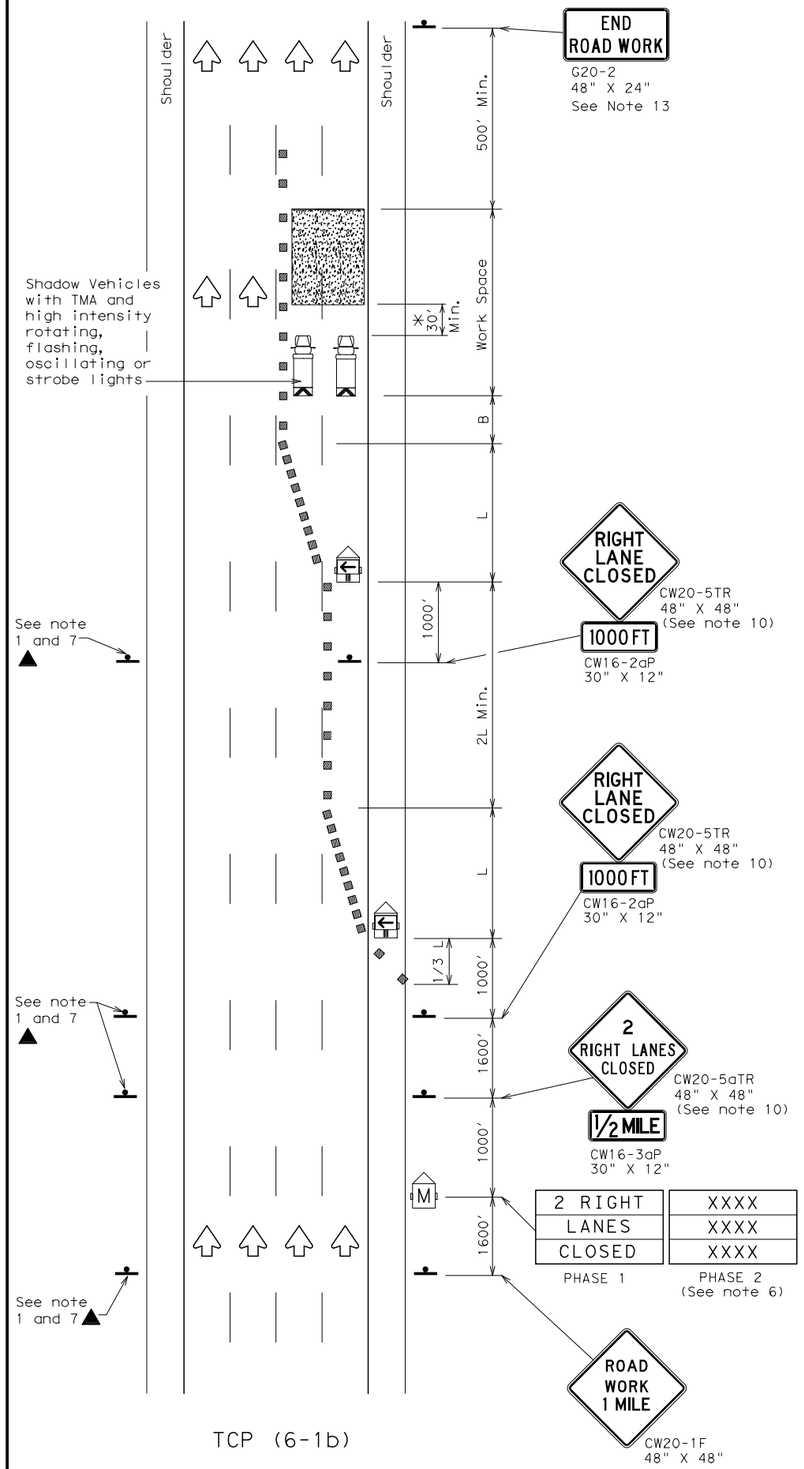


TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

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 "L" ⁂ 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

⁂ 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. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. Drums or 42"cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
3. All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
4. The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
5. Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
6. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
7. Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
8. The number of closed lanes may be increased provided the spacing of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMUTCD.
9. Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
10. Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions shown in the SHSD for Texas with distances on the sign face rather than mounted on a plaque below the sign may be used.
11. When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
12. For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
13. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

⁂ A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 8-12	DIST	COUNTY		SHEET NO. 204

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-204

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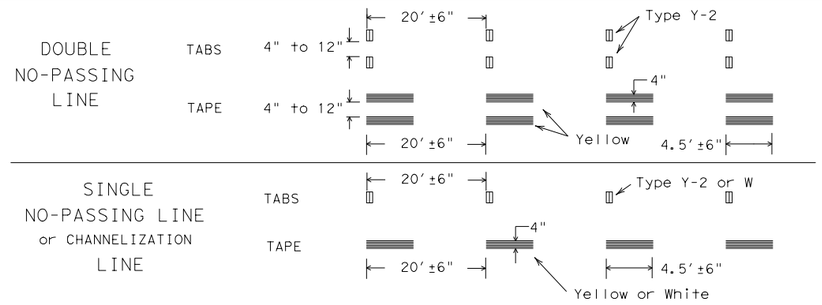
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



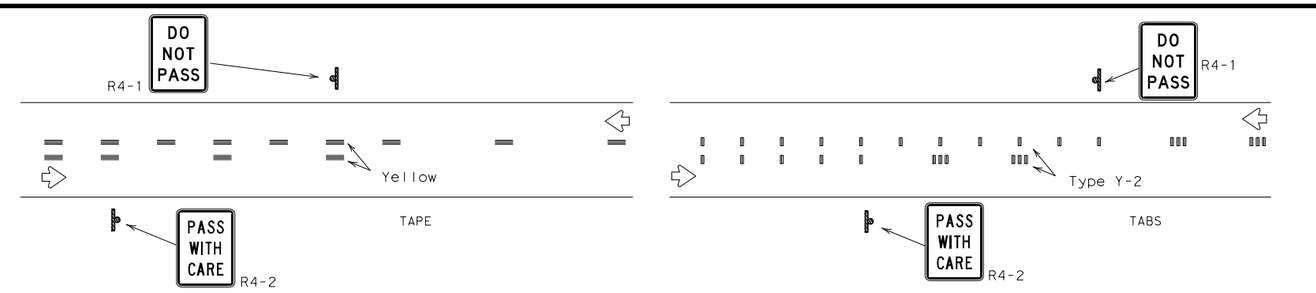
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible-reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

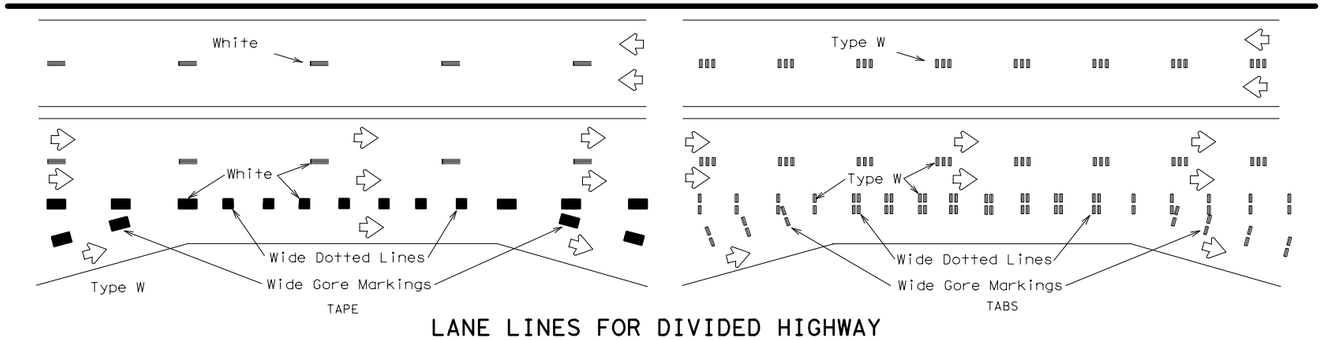
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

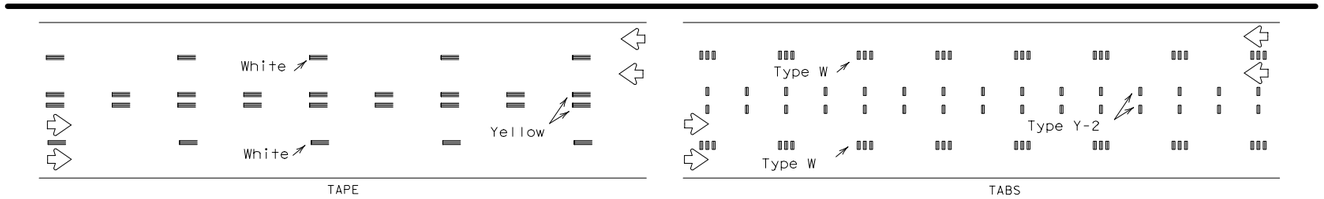
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



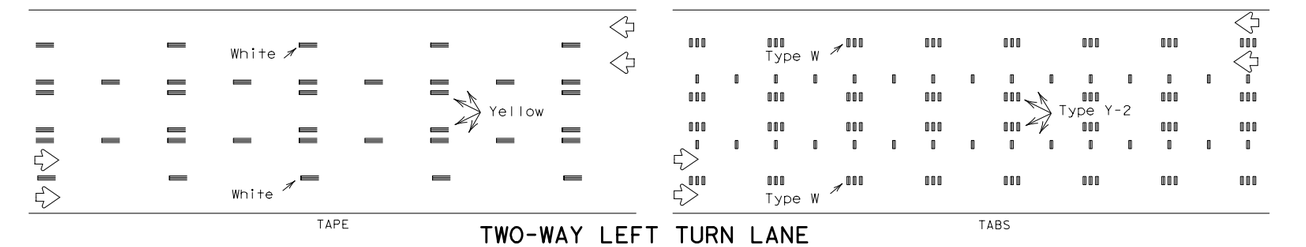
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



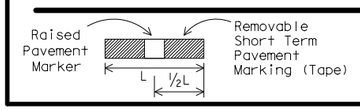
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:
   http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-205

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

FILE:	wzstpm-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS					
1-97		DIST	COUNTY		SHEET NO.
3-03					205
7-13					

111

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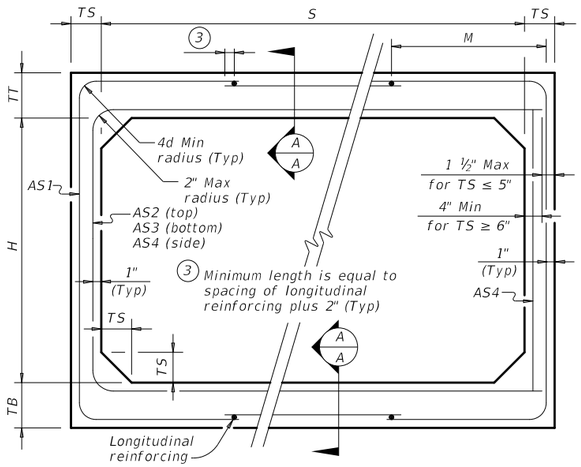
BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
6	2	8	7	7	< 2	–	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	–	–	–	6.8
6	2	7	7	7	3 – 5	43	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	–	–	–	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	–	–	–	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	–	–	–	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	–	–	–	6.8
6	3	8	7	7	< 2	–	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	–	–	–	7.5
6	3	7	7	7	3 – 5	39	0.17	0.18	0.17	0.17	–	–	–	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	–	–	–	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	–	–	–	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	–	–	–	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	–	–	–	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	–	–	–	7.5
6	4	8	7	7	< 2	–	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	–	–	–	8.2
6	4	7	7	7	3 – 5	39	0.17	0.21	0.19	0.17	–	–	–	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	–	–	–	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	–	–	–	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	–	–	–	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	–	–	–	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	–	–	–	8.2
6	5	8	7	7	< 2	–	0.19	0.37	0.28	0.17	0.19	0.19	0.17	9.3
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	–	–	–	8.9
6	5	7	7	7	3 – 5	43	0.17	0.23	0.21	0.17	–	–	–	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	–	–	–	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	–	–	–	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	–	–	–	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	–	–	–	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	–	–	–	8.9
6	6	8	7	7	< 2	–	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	–	–	–	9.6
6	6	7	7	7	3 – 5	52	0.17	0.24	0.22	0.17	–	–	–	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	–	–	–	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	–	–	–	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	–	–	–	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	–	–	–	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	–	–	–	9.6

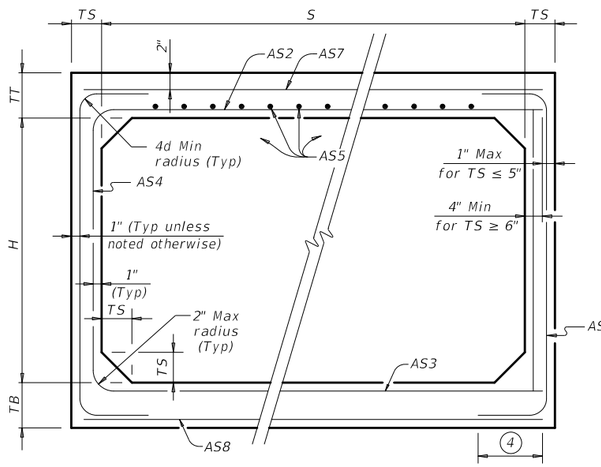
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

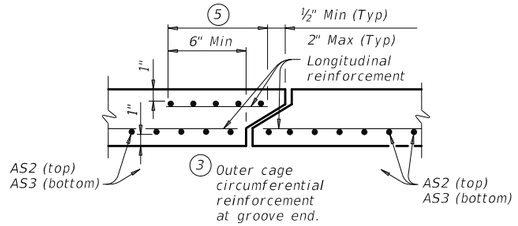
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

6'-0" SPAN

SCP-6

FILE: scp06sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				206

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-206

DATE: 1/4/2023 3:40:24 PM
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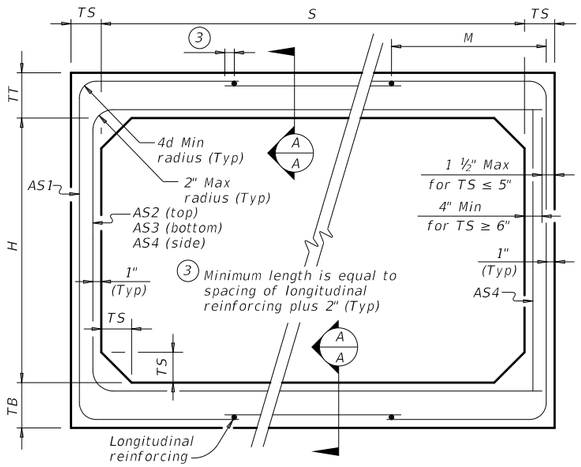
BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
7	3	8	8	8	< 2	–	0.23	0.31	0.22	0.19	0.19	0.19	0.19	9.6
7	3	8	8	8	2 < 3	47	0.27	0.25	0.24	0.19	–	–	–	9.6
7	3	8	8	8	3 – 5	43	0.19	0.19	0.19	0.19	–	–	–	9.6
7	3	8	8	8	10	43	0.21	0.20	0.21	0.19	–	–	–	9.6
7	3	8	8	8	15	43	0.28	0.26	0.27	0.19	–	–	–	9.6
7	3	8	8	8	20	43	0.36	0.34	0.35	0.19	–	–	–	9.6
7	3	8	8	8	25	43	0.45	0.42	0.43	0.19	–	–	–	9.6
7	3	8	8	8	30	43	0.54	0.50	0.51	0.19	–	–	–	9.6
7	4	8	8	8	< 2	–	0.21	0.34	0.25	0.19	0.19	0.19	0.19	10.4
7	4	8	8	8	2 < 3	43	0.23	0.28	0.28	0.19	–	–	–	10.4
7	4	8	8	8	3 – 5	43	0.19	0.22	0.19	0.19	–	–	–	10.4
7	4	8	8	8	10	43	0.19	0.23	0.23	0.19	–	–	–	10.4
7	4	8	8	8	15	41	0.24	0.30	0.30	0.19	–	–	–	10.4
7	4	8	8	8	20	41	0.31	0.38	0.39	0.19	–	–	–	10.4
7	4	8	8	8	25	41	0.38	0.47	0.48	0.19	–	–	–	10.4
7	4	8	8	8	30	41	0.46	0.57	0.57	0.19	–	–	–	10.4
7	5	8	8	8	< 2	–	0.19	0.36	0.27	0.19	0.19	0.19	0.19	11.2
7	5	8	8	8	2 < 3	47	0.21	0.31	0.31	0.19	–	–	–	11.2
7	5	8	8	8	3 – 5	43	0.19	0.24	0.21	0.19	–	–	–	11.2
7	5	8	8	8	10	43	0.19	0.25	0.26	0.19	–	–	–	11.2
7	5	8	8	8	15	41	0.21	0.32	0.33	0.19	–	–	–	11.2
7	5	8	8	8	20	41	0.27	0.41	0.42	0.19	–	–	–	11.2
7	5	8	8	8	25	41	0.33	0.51	0.52	0.19	–	–	–	11.2
7	5	8	8	8	30	41	0.40	0.61	0.62	0.19	–	–	–	11.2
7	6	8	8	8	< 2	–	0.19	0.38	0.30	0.19	0.19	0.19	0.19	12.0
7	6	8	8	8	2 < 3	59	0.19	0.33	0.34	0.19	–	–	–	12.0
7	6	8	8	8	3 – 5	47	0.19	0.25	0.23	0.19	–	–	–	12.0
7	6	8	8	8	10	43	0.19	0.26	0.27	0.19	–	–	–	12.0
7	6	8	8	8	15	41	0.19	0.34	0.35	0.19	–	–	–	12.0
7	6	8	8	8	20	41	0.24	0.43	0.45	0.19	–	–	–	12.0
7	6	8	8	8	25	41	0.29	0.53	0.55	0.19	–	–	–	12.0
7	6	8	8	8	30	41	0.35	0.64	0.65	0.19	–	–	–	12.0
7	7	8	8	8	< 2	–	0.19	0.40	0.33	0.19	0.19	0.19	0.19	12.8
7	7	8	8	8	2 < 3	59	0.19	0.36	0.37	0.19	–	–	–	12.8
7	7	8	8	8	3 – 5	59	0.19	0.27	0.25	0.19	–	–	–	12.8
7	7	8	8	8	10	47	0.19	0.27	0.29	0.19	–	–	–	12.8
7	7	8	8	8	15	43	0.19	0.35	0.37	0.19	–	–	–	12.8
7	7	8	8	8	20	43	0.22	0.44	0.46	0.19	–	–	–	12.8
7	7	8	8	8	25	43	0.27	0.54	0.57	0.19	–	–	–	12.8
7	7	8	8	8	30	41	0.32	0.65	0.67	0.19	–	–	–	12.8

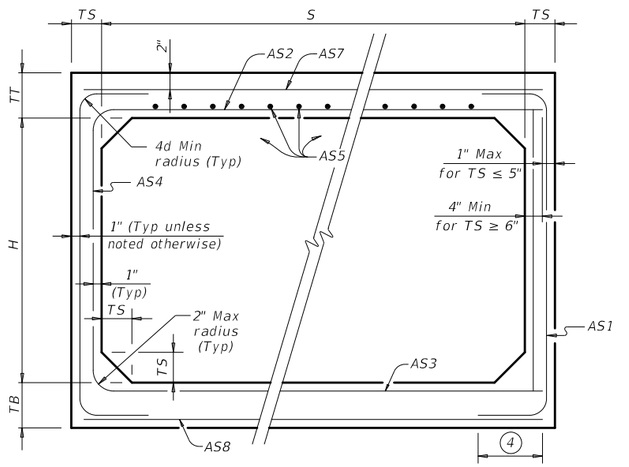
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

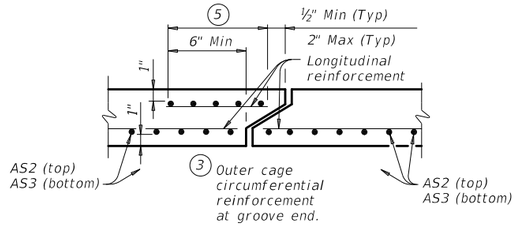
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

7'-0" SPAN

SCP-7

FILE: scp07sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				207

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-207

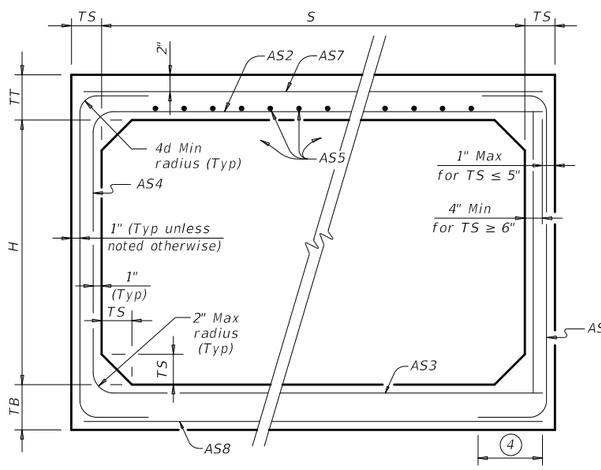
DATE: 1/4/2023 3:40:25 PM
FILE: j:\2021\21106 fp lucas blvd - pkce\sheets-txdot\DRAINAGE STANDARDS\scp12sts-20.dgn

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
12	4	12	12	12	< 2	–	0.38	0.31	0.29	0.29	0.29	0.29	0.29	22.8
12	4	12	12	12	2 < 3	73	0.44	0.37	0.30	0.29	–	–	–	22.8
12	4	12	12	12	3 – 5	66	0.37	0.30	0.29	0.29	–	–	–	22.8
12	4	12	12	12	10	66	0.44	0.34	0.35	0.29	–	–	–	22.8
12	4	12	12	12	15	59	0.60	0.46	0.48	0.29	–	–	–	22.8
12	4	12	12	12	20	59	0.78	0.60	0.61	0.29	–	–	–	22.8
12	4	12	12	12	25	59	0.97	0.74	0.75	0.29	–	–	–	22.8
12	5	12	12	12	< 2	–	0.34	0.33	0.29	0.29	0.29	0.29	0.29	24.0
12	5	12	12	12	2 < 3	66	0.41	0.40	0.33	0.29	–	–	–	24.0
12	5	12	12	12	3 – 5	61	0.34	0.33	0.30	0.29	–	–	–	24.0
12	5	12	12	12	10	59	0.41	0.38	0.39	0.29	–	–	–	24.0
12	5	12	12	12	15	59	0.55	0.51	0.52	0.29	–	–	–	24.0
12	5	12	12	12	20	59	0.71	0.66	0.67	0.29	–	–	–	24.0
12	5	12	12	12	25	59	0.88	0.81	0.82	0.29	–	–	–	24.0
12	6	12	12	12	< 2	–	0.32	0.36	0.32	0.29	0.29	0.29	0.29	25.2
12	6	12	12	12	2 < 3	66	0.38	0.43	0.36	0.29	–	–	–	25.2
12	6	12	12	12	3 – 5	59	0.32	0.36	0.33	0.29	–	–	–	25.2
12	6	12	12	12	10	59	0.38	0.41	0.42	0.29	–	–	–	25.2
12	6	12	12	12	15	53	0.51	0.55	0.57	0.29	–	–	–	25.2
12	6	12	12	12	20	53	0.65	0.71	0.72	0.29	–	–	–	25.2
12	6	12	12	12	25	53	0.81	0.87	0.89	0.29	–	–	–	25.2
12	7	12	12	12	< 2	–	0.30	0.39	0.35	0.29	0.29	0.29	0.29	26.4
12	7	12	12	12	2 < 3	66	0.35	0.46	0.39	0.29	–	–	–	26.4
12	7	12	12	12	3 – 5	59	0.29	0.38	0.36	0.29	–	–	–	26.4
12	7	12	12	12	10	59	0.36	0.43	0.45	0.29	–	–	–	26.4
12	7	12	12	12	15	53	0.47	0.58	0.61	0.29	–	–	–	26.4
12	7	12	12	12	20	53	0.61	0.75	0.77	0.29	–	–	–	26.4
12	8	12	12	12	< 2	–	0.29	0.41	0.38	0.29	0.29	0.29	0.29	27.6
12	8	12	12	12	2 < 3	66	0.33	0.49	0.42	0.29	–	–	–	27.6
12	8	12	12	12	3 – 5	59	0.29	0.41	0.38	0.29	–	–	–	27.6
12	8	12	12	12	10	59	0.34	0.46	0.48	0.29	–	–	–	27.6
12	8	12	12	12	15	53	0.44	0.61	0.64	0.29	–	–	–	27.6
12	8	12	12	12	20	53	0.57	0.78	0.81	0.29	–	–	–	27.6
12	8	12	12	12	25	53	0.69	0.96	0.99	0.29	–	–	–	27.6

BOX DATA

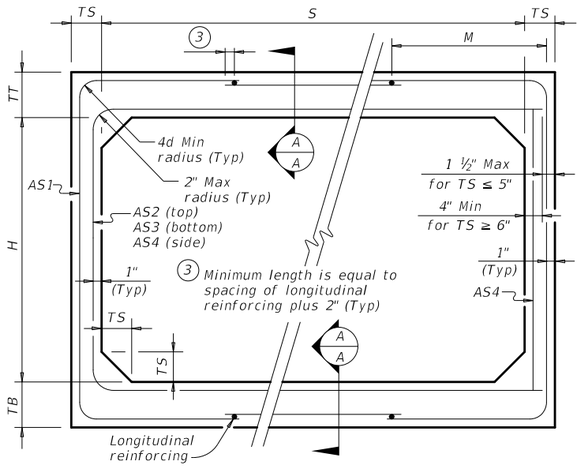
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
12	9	12	12	12	< 2	–	0.29	0.43	0.40	0.29	0.29	0.29	0.29	28.8
12	9	12	12	12	2 < 3	66	0.30	0.51	0.45	0.29	–	–	–	28.8
12	9	12	12	12	3 – 5	66	0.29	0.43	0.41	0.29	–	–	–	28.8
12	9	12	12	12	10	59	0.32	0.47	0.51	0.29	–	–	–	28.8
12	9	12	12	12	15	53	0.42	0.63	0.67	0.29	–	–	–	28.8
12	9	12	12	12	20	53	0.53	0.81	0.85	0.29	–	–	–	28.8
12	9	12	12	12	25	53	0.69	0.96	0.99	0.29	–	–	–	28.8
12	10	12	12	12	< 2	–	0.29	0.45	0.43	0.29	0.29	0.29	0.29	30.0
12	10	12	12	12	2 < 3	73	0.29	0.54	0.48	0.29	–	–	–	30.0
12	10	12	12	12	3 – 5	66	0.29	0.45	0.43	0.29	–	–	–	30.0
12	10	12	12	12	10	59	0.31	0.49	0.53	0.29	–	–	–	30.0
12	10	12	12	12	15	53	0.40	0.65	0.70	0.29	–	–	–	30.0
12	10	12	12	12	20	53	0.51	0.84	0.88	0.29	–	–	–	30.0
12	10	12	12	12	25	53	0.62	1.03	1.07	0.29	–	–	–	30.0
12	11	12	12	12	< 2	–	0.29	0.47	0.45	0.29	0.29	0.29	0.29	31.2
12	11	12	12	12	2 < 3	80	0.29	0.56	0.51	0.29	–	–	–	31.2
12	11	12	12	12	3 – 5	73	0.29	0.47	0.46	0.29	–	–	–	31.2
12	11	12	12	12	10	66	0.29	0.51	0.55	0.29	–	–	–	31.2
12	11	12	12	12	15	59	0.38	0.67	0.72	0.29	–	–	–	31.2
12	11	12	12	12	20	53	0.48	0.85	0.91	0.29	–	–	–	31.2
12	11	12	12	12	25	53	0.59	1.05	1.10	0.29	–	–	–	31.2
12	12	12	12	12	< 2	–	0.29	0.49	0.48	0.33	0.29	0.29	0.29	32.4
12	12	12	12	12	2 < 3	93	0.29	0.59	0.53	0.29	–	–	–	32.4
12	12	12	12	12	3 – 5	80	0.29	0.49	0.48	0.29	–	–	–	32.4
12	12	12	12	12	10	73	0.29	0.52	0.58	0.29	–	–	–	32.4
12	12	12	12	12	15	59	0.37	0.69	0.74	0.29	–	–	–	32.4
12	12	12	12	12	20	59	0.46	0.87	0.93	0.29	–	–	–	32.4



CORNER OPTION "A" CORNER OPTION "B"

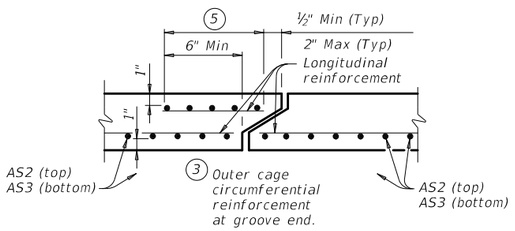
FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

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HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

12'-0" SPAN

SCP-12

FILE: scp12sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				208

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-208

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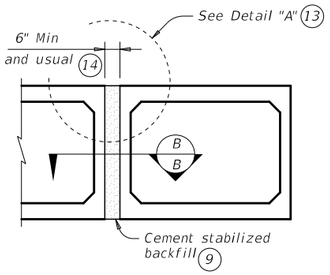
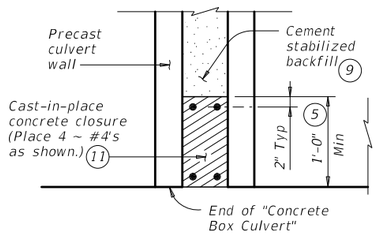
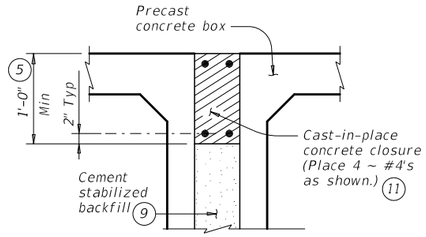


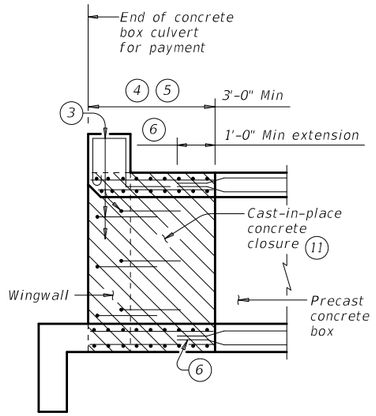
MULTIPLE UNIT PLACEMENT



SECTION B-B

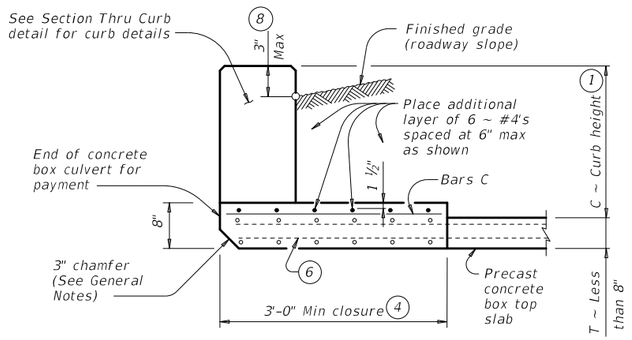


DETAIL "A" (13)

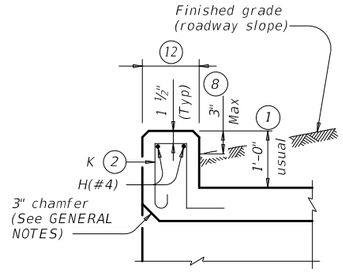


WINGWALL CONNECTION

(Also applies to safety end treatment.)

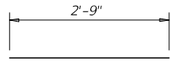


SECTION THRU TOP SLABS LESS THAN 8"

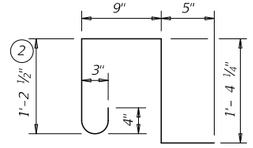


SECTION THRU CURB

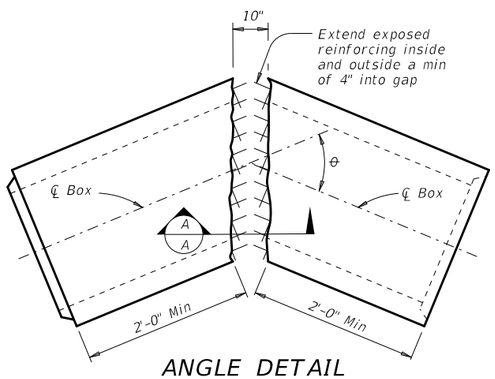
QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



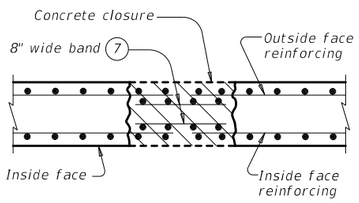
BARS C (#4)
(Spa = 1'-0" Max)



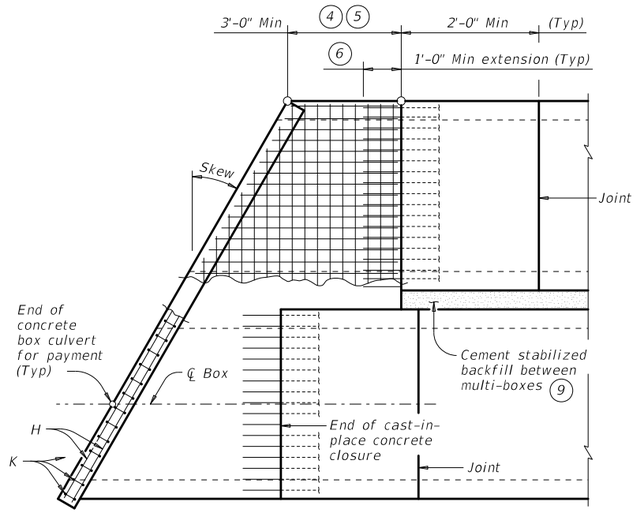
BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi-box placement.)

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'-0" Min cast-in-place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box". No payment will be made for any additional material in the gap between adjacent boxes.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bars dimensions are out-to-out of bars.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

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REVISIONS				
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CITY OF MESQUITE
RECORD DWG INDEX NO.
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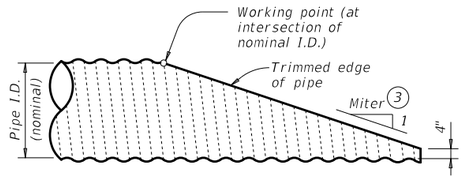
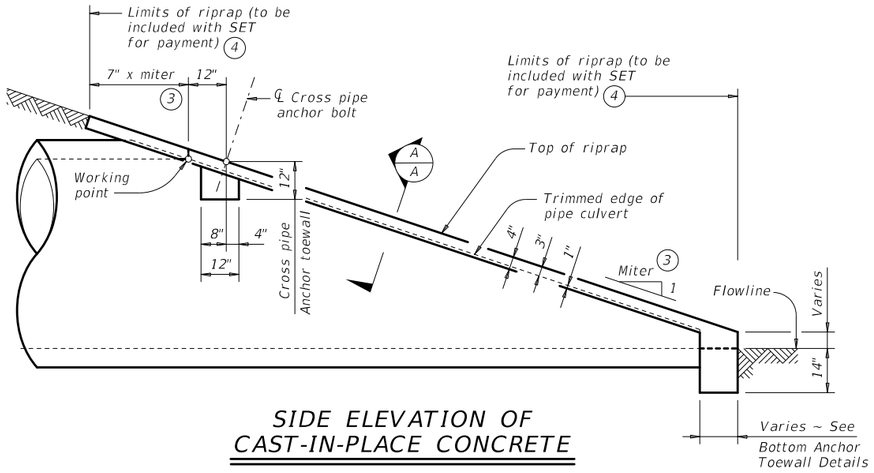


NOTE: All pipe runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

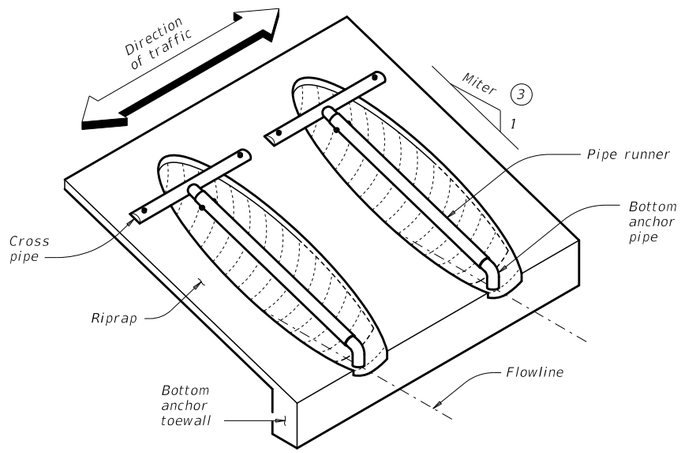
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details of reinforced concrete pipe (RCP) culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details of corrugated metal pipe (CMP) culvert are similar. Pipe runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS AND 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" thru 60"	Always required	Always required

STANDARD PIPE SIZES AND 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) *Provide pipe runner of the size shown in the tables. Provide cross pipe of the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths 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 end of pipe culvert.*

(4) *Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".*

(5) *Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.*

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II ~ CROSS DRAINAGE

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				210

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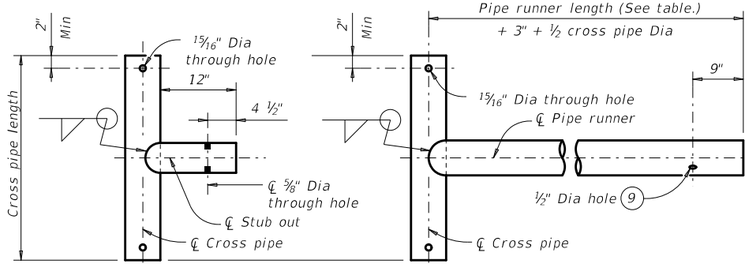
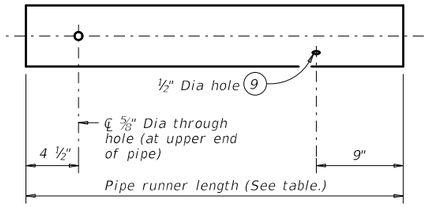


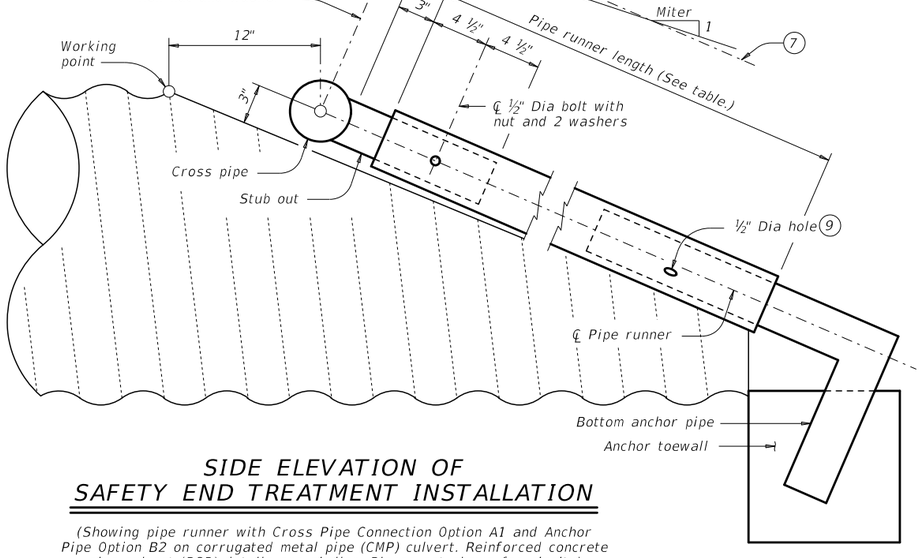
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



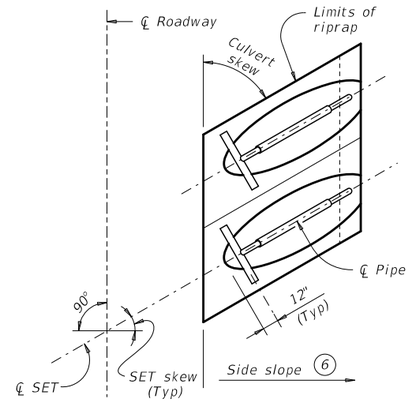
NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

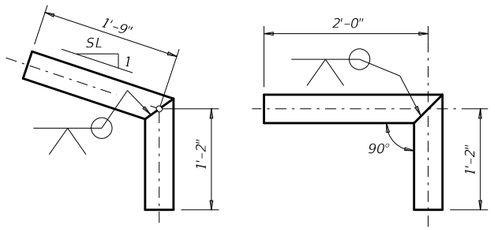


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing pipe runner with Cross Pipe Connection Option A1 and Anchor Pipe Option B2 on corrugated metal pipe (CMP) culvert. Reinforced concrete pipe culvert (RCP) details are similar. Riprap not shown for clarity)

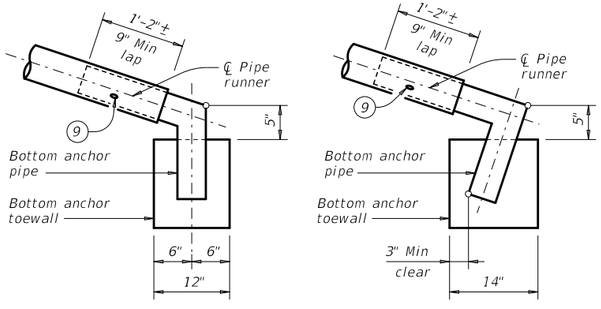


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

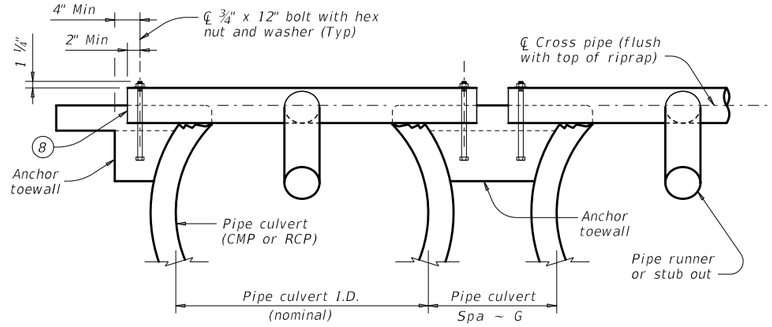
BOTTOM ANCHOR PIPE DETAILS (10)



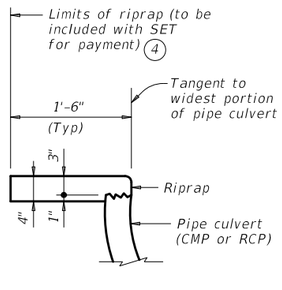
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert and riprap not shown for clarity.)



SHOWING CROSS PIPE AND ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SECTION A-A

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, and 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) 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, inspect the 1/2" hole 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.

MATERIAL NOTES:

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.

Provide pipe runners, cross pipes, and anchor pipes conforming to the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication.

Repair galvanizing damaged during transport or construction in accordance with the specifications.

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.

Safety end treatments (SET) 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.

Payment for riprap and toewall is included in the price bid for each safety end treatment.

Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

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REVISIONS				
	DIST	COUNTY		SHEET NO.
				211

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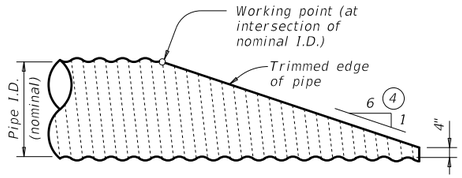
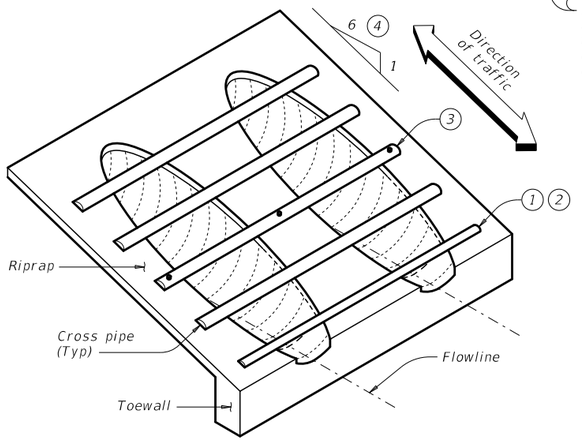


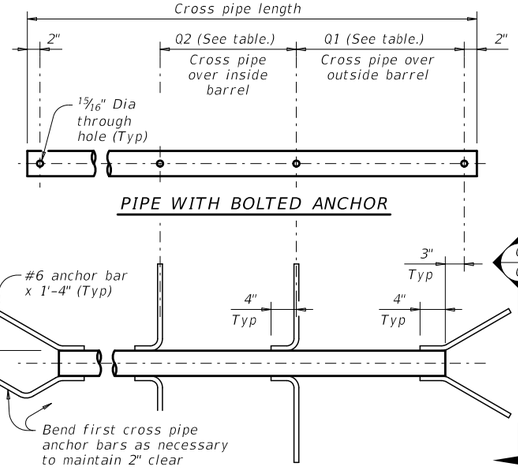
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert Details at reinforced concrete pipe (RCP) culvert are similar.)

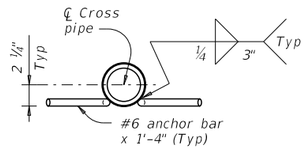


ISOMETRIC VIEW OF TYPICAL INSTALLATION



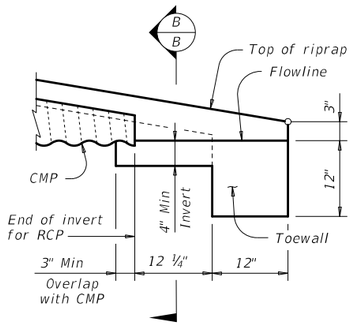
PIPE WITH BOLTED ANCHOR

PIPE WITH ANCHOR BARS



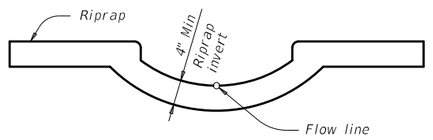
SECTION C-C

CROSS PIPE DETAILS



DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



SECTION B-B

(Cross pipes not shown for clarity.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES (2)

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' - 9"	N/A	2' - 1"	1' - 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' - 11"	N/A	2' - 5"	2' - 2"		
18"	0.8	1' - 2"	N/A	2' - 10"	2' - 8"		
21"	0.9	1' - 4"	N/A	3' - 2"	3' - 1"		
24"	0.9	1' - 7"	N/A	3' - 6"	3' - 7"		
27"	1.0	1' - 8"	N/A	3' - 10"	3' - 11"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
30"	1.1	1' - 10"	N/A	4' - 2"	4' - 4"	2 or more pipe culverts	
33"	1.2	1' - 11"	4' - 2"	4' - 5"	4' - 8"	All pipe culverts	
36"	1.3	2' - 1"	4' - 5"	4' - 9"	5' - 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' - 4"	4' - 11"	5' - 5"	5' - 10"		
48"	1.7	2' - 7"	5' - 5"	6' - 0"	6' - 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' - 0"	5' - 11"	6' - 9"	7' - 6"		
60"	2.2	3' - 3"	6' - 5"	7' - 4"	8' - 3"		
66"	2.4	3' - 3"	6' - 11"	7' - 10"	8' - 9"		
72"	2.7	3' - 4"	7' - 5"	8' - 5"	9' - 4"		

(1) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.

(2) Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1#2" standard pipe (4" O.D.) for the first bottom pipe.

(3) Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.

(4) Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.

(5) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

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.

Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

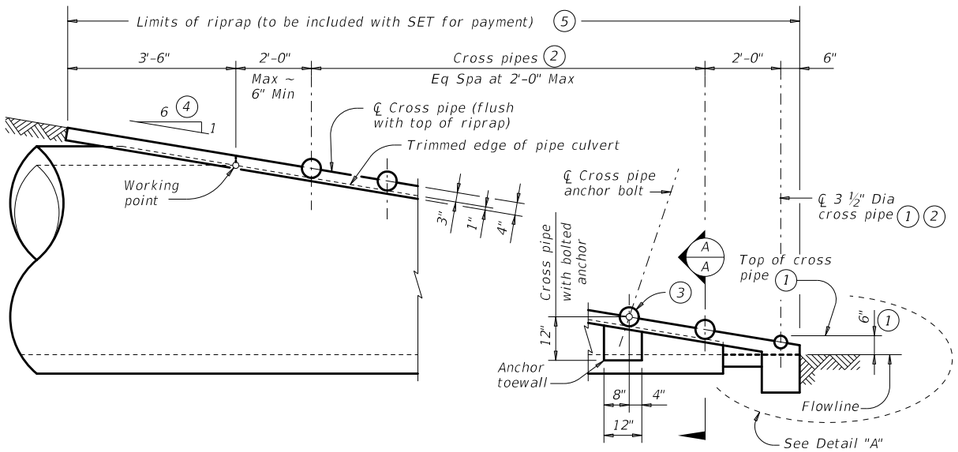
GENERAL NOTES:

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.

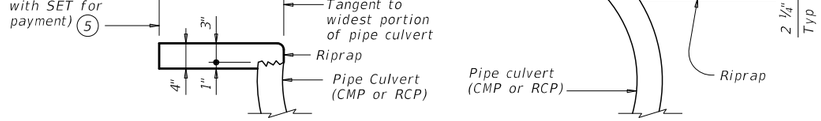
Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.



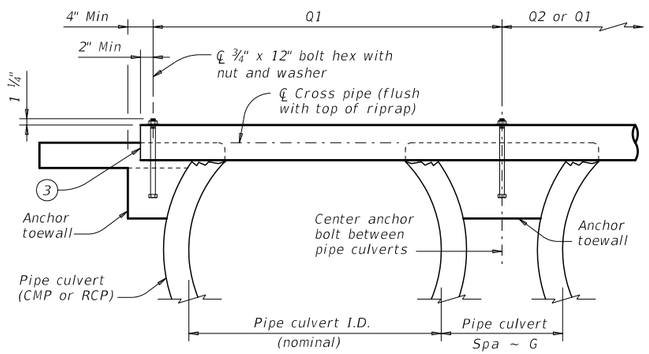
SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



SHOWING CROSS PIPE WITH ANCHOR BAR

SHOWING TYPICAL PIPE CULVERT AND RIPRAP



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

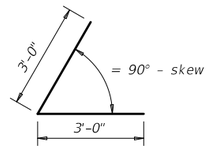
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing (2~wings) (4)		Estimated Quantities per ft of Toewall (1~toewall)	
					Bars J1		Bars J2					
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2~wings)

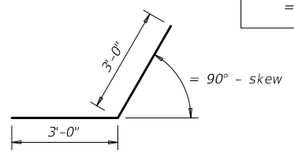
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2

WING DIMENSION FORMULAS:

(All values are in feet.)

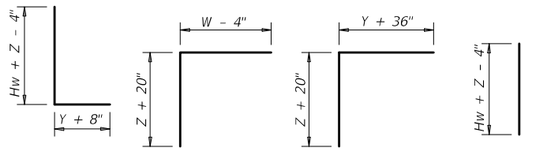
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

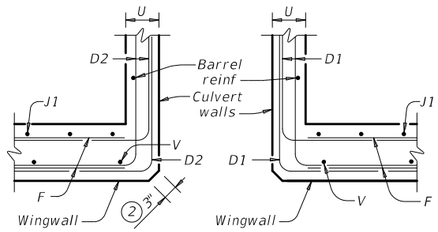
For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.



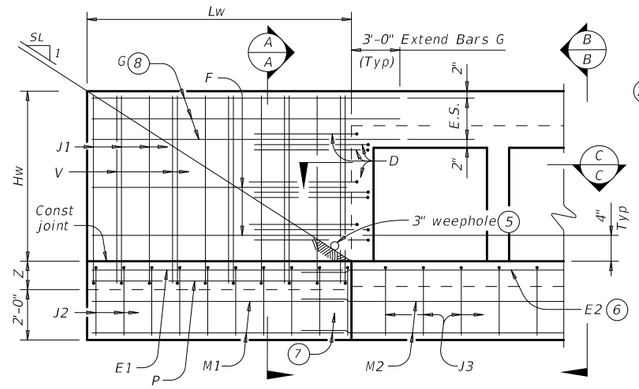
BARS J1 BARS J2 BARS J3 BARS V



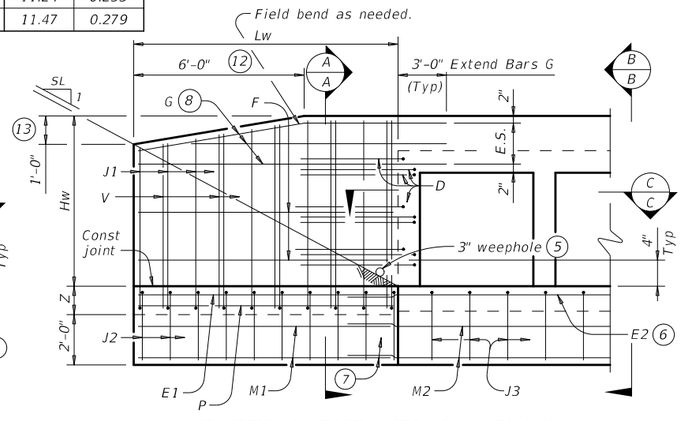
SECTION C-C - PW-1

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
   For 30° skew ~ 2"
   For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

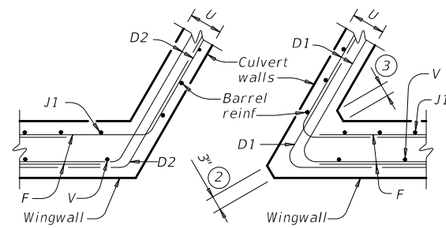
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elswhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.



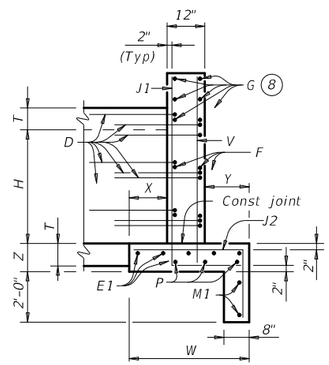
PARTIAL ELEVATION - PW-1



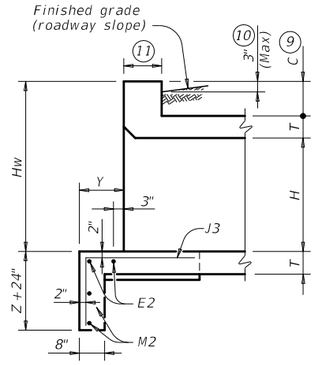
PARTIAL ELEVATION - PW-2



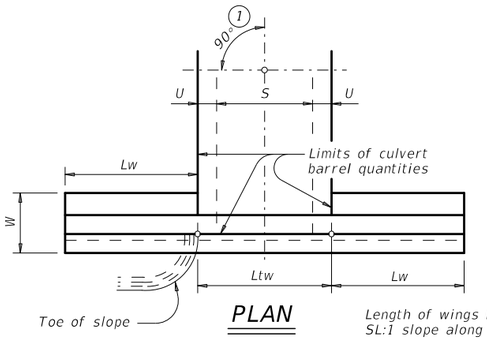
SECTION C-C - PW-2



SECTION A-A
(Showing wing reinforcement.)

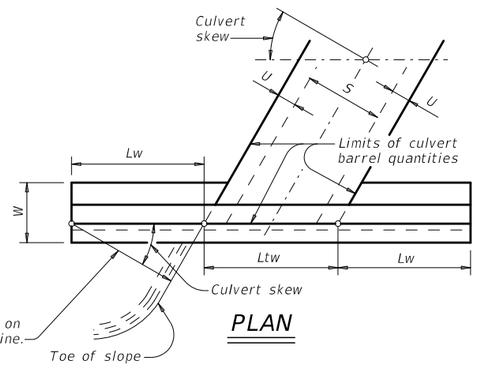


SECTION B-B
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

DESIGNER NOTES:

Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation

Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR BOX CULVERTS
TYPES PW-1 AND PW-2

PW

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REVISIONS				
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CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-213

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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2~wings) (3)	
					Bars J1		Bars J2			
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2~wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C – 0.250'
A = (Hw – 0.333') (SL)
B = (A) tangent (30°)
Lw = (A) ÷ cosine (30°)

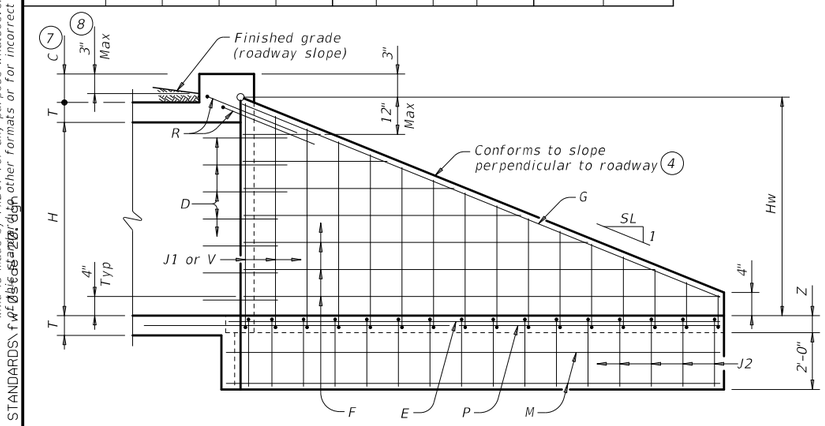
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) + (N – 1) (0.5')

Total wingwall area (two wings ~ SF) = (Hw + 0.333') (Lw)

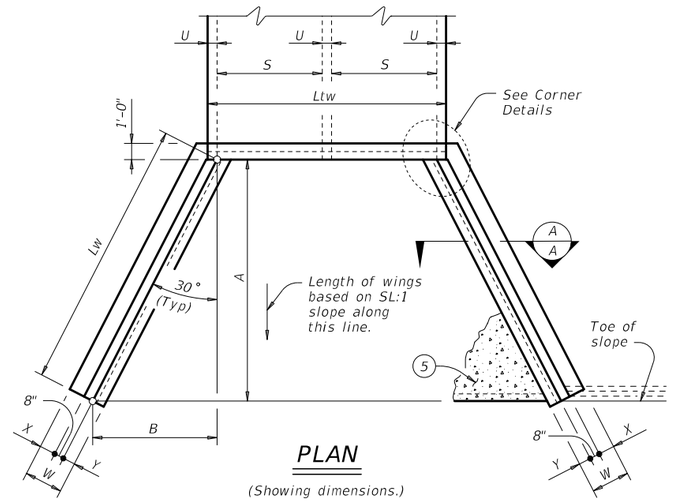
Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.



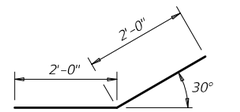
INSIDE ELEVATION

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

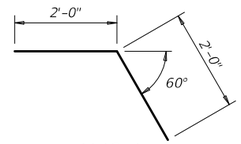


PLAN

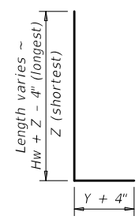
(Showing dimensions.)



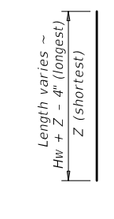
BARS D



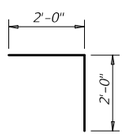
BARS R



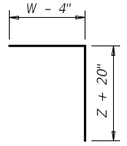
BARS J1



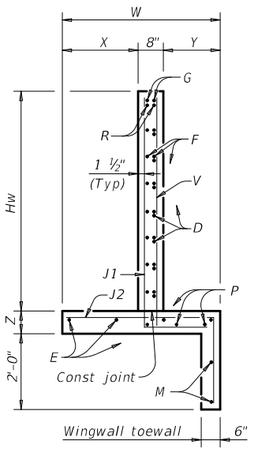
BARS V



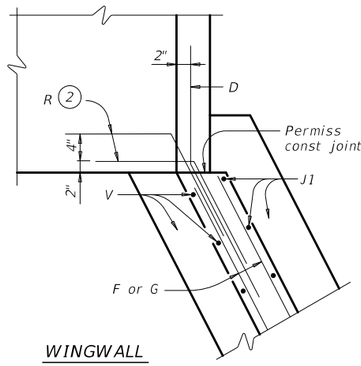
BARS L



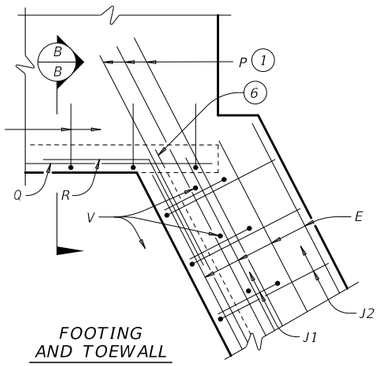
BARS J2



SECTION A-A



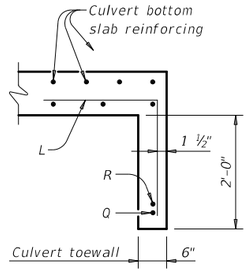
WINGWALL



FOOTING AND TOEWALL

CORNER DETAILS

(Culvert and culvert toewall reinforcing not shown for clarity.)



SECTION B-B (5)

(1) Extend Bars P 3'-0" minimum into bottom slab of box culvert.

(2) Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.

(4) Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

(5) When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

(6) At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

(7) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(8) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation

Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS

FW-0

FILE: fw-0stde-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				214

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-214

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2~wings) (3)	
					Bars J1		Bars J2			
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2~wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:

(All values are in feet.)

Hw = H + T + C - 0.250'
Lw = (Hw - 0.333') (SL)

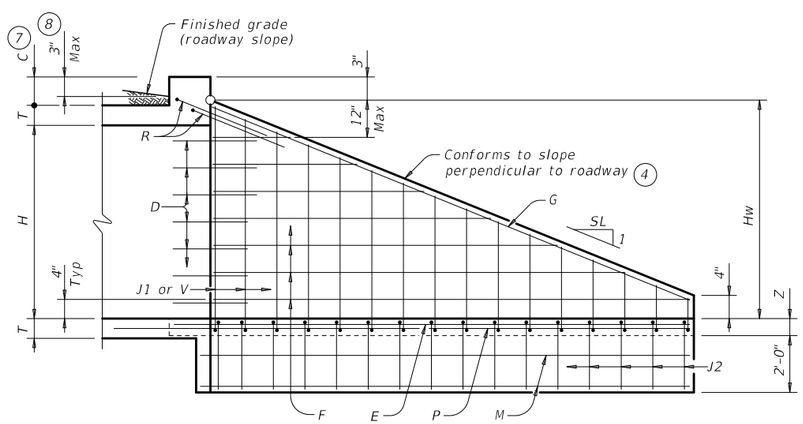
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) + (N - 1) (0.5')

Total Wingwall Area (two wings ~ SF) = (Hw + 0.333') (Lw)

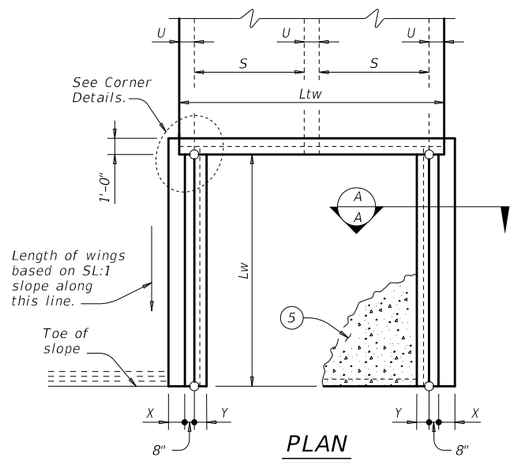
Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.



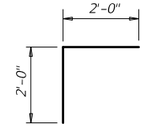
INSIDE ELEVATION

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

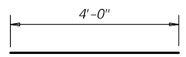


PLAN

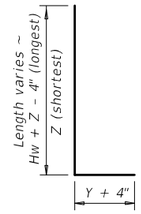
(Showing dimensions.)



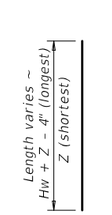
BARS R



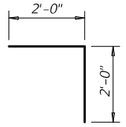
BARS D



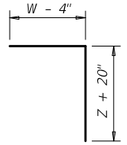
BARS J1



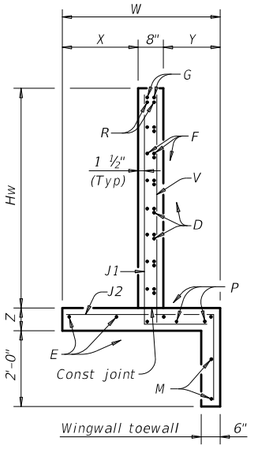
BARS V



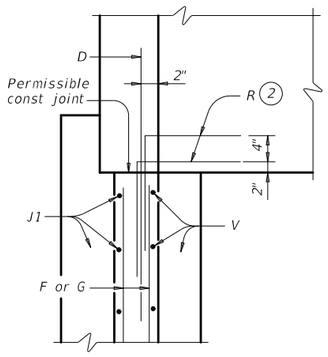
BARS L



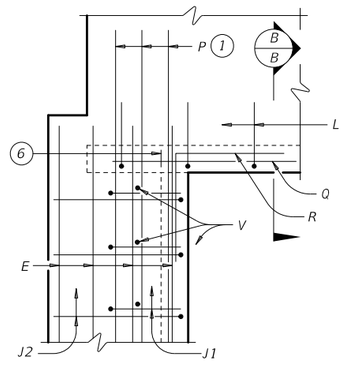
BARS J2



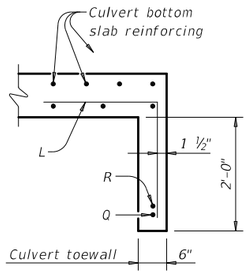
SECTION A-A



WINGWALL



FOOTING AND TOEWALL



SECTION B-B (5)

CORNER DETAILS

(1) Extend Bars P 3'-0" minimum into bottom slab of box culvert.

(2) Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.

(4) Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

(5) When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

(6) At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

(7) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(8) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation

Bridge Division Standard

CONCRETE WINGWALLS
WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-O

FILE: sw-0std-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
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REVISIONS				
	DIST	COUNTY		SHEET NO.
				215

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-215

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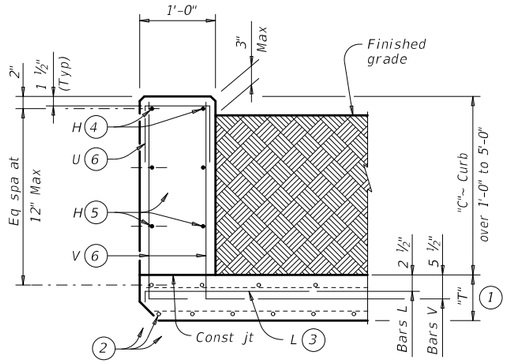
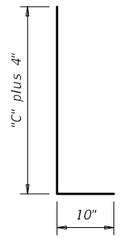
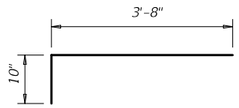


TYPICAL SECTION

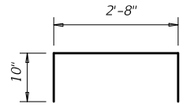
Used for curbs over 1'–0" to 5'–0"



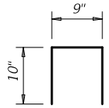
BARS V (#5) (6)
Spaced at 12" Max



BARS L (#5) (3)
Spaced at 12" Max



OPTIONAL BARS L (#5) (3) (7)
Spaced at 12" Max



BARS U (#4) (6)
Spaced at 12" Max

(1) "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.

(2) Adjust normal culvert slab bars as necessary to clear obstructions.

(3) Place bars L as shown. Tilt hook as necessary to maintain cover.

(4) Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.

(5) Additional bars H(#4) as required to maintain 12" Max spacing.

(6) Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.

(7) Optional bars L are to be used only for precast box culverts with 3'–0" closure pour.

(8) Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'–0"	0.037	10.4
1'–6"	0.056	14.5
2'–0"	0.074	15.6
2'–6"	0.093	18.0
3'–0"	0.111	19.0
3'–6"	0.130	21.3
4'–0"	0.148	22.4
4'–6"	0.167	24.8
5'–0"	0.185	25.9

CONSTRUCTION NOTES:

Adjust reinforcing steel as necessary to provide 1 ¼" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs.
Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'–8" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

EXTENDED CURB DETAILS

FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

FILE: ecdstde1-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
C TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				216

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-216

DATE: 1/4/2023 3:40:32 PM
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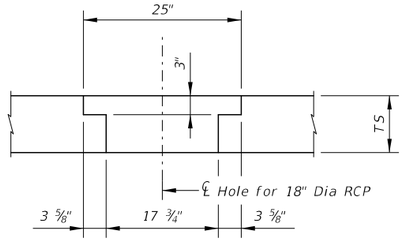
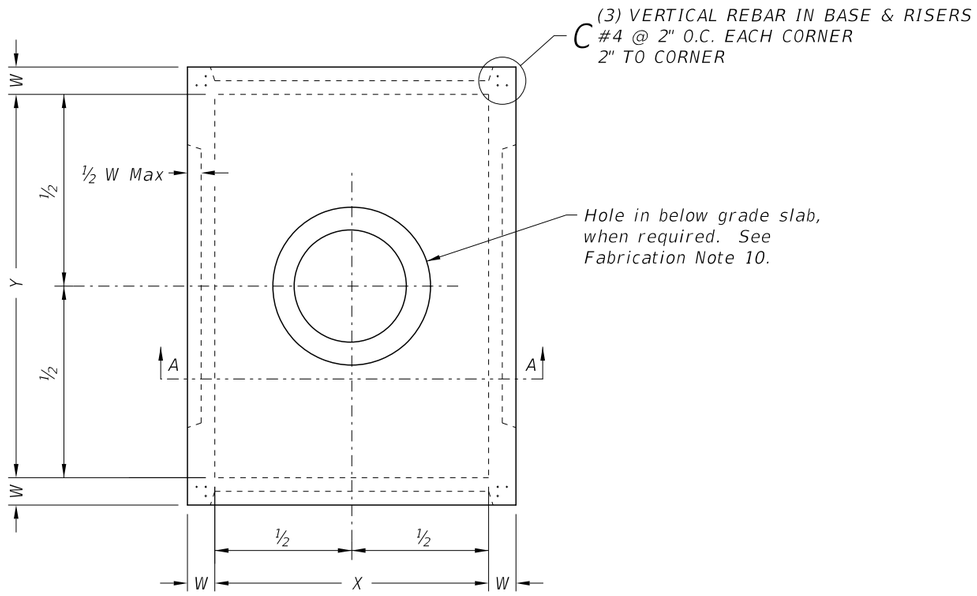
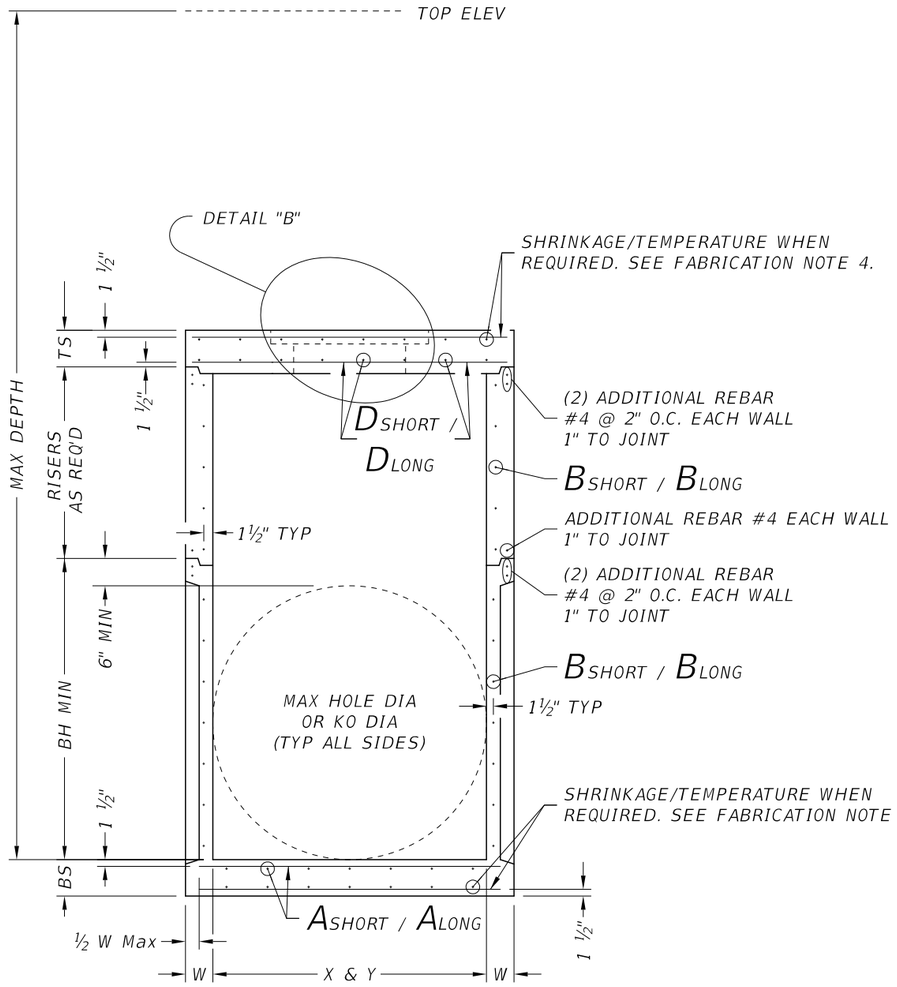


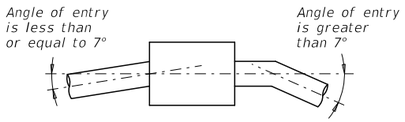
DETAIL "B"



PLAN VIEW



SECTION A-A



PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

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.
10. Provide hole in below grade slab only when PJB is installed with inlet type POD.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
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 Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST JUNCTION BOX

PJB

FILE: prestd09-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				217

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-217

DATE: 1/4/2023 3:40:32 PM
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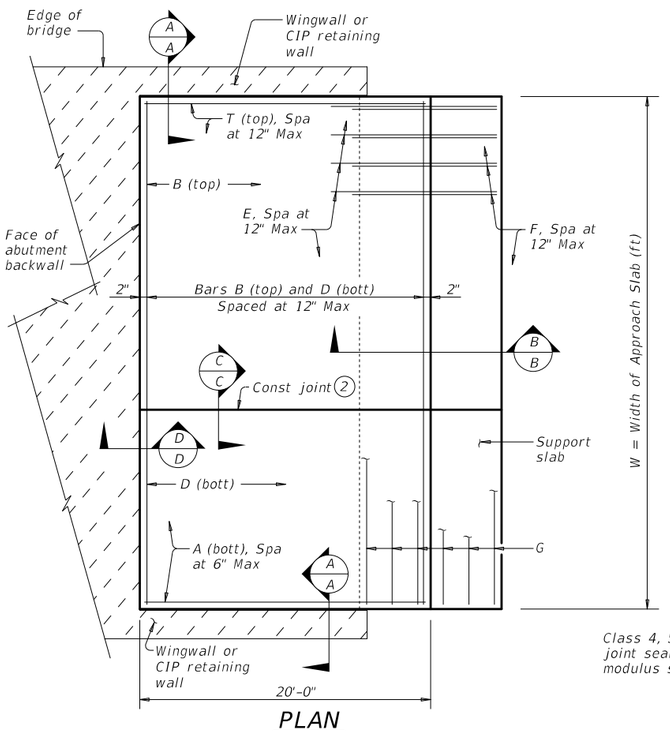
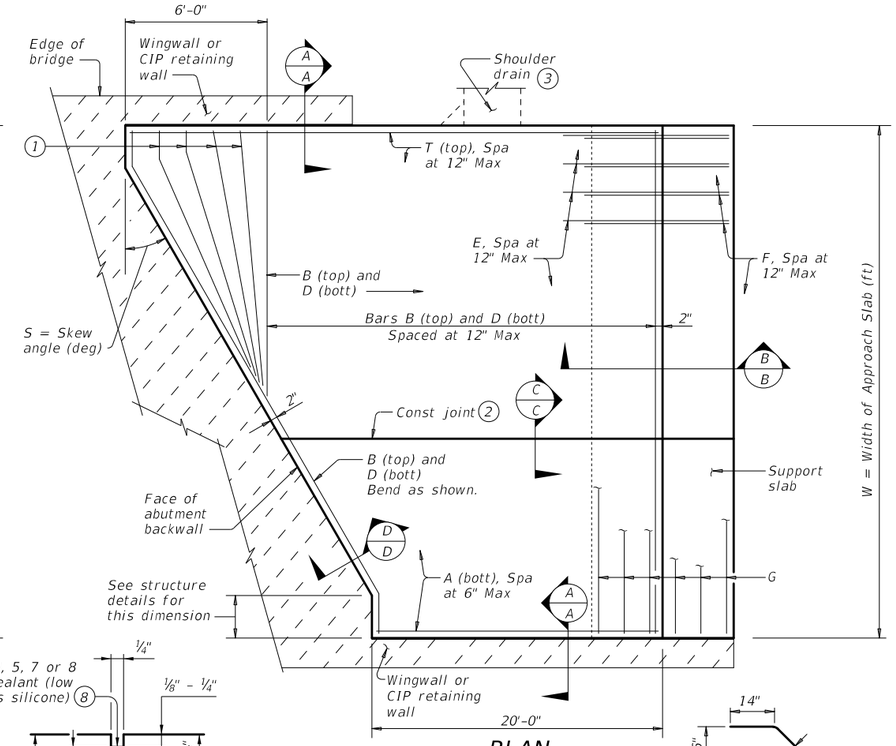


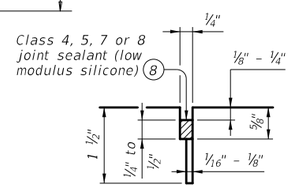
PLAN

(Showing non-skewed approach slab.)



PLAN

(Showing skewed approach slab.)



LONGITUDINAL SAW CUT JOINT DETAIL

BAR TABLE	
BAR	SIZE
A	#8
B	#5
D	#5
E	#5
F	#5
G	#5
T	#5

APPROXIMATE QUANTITIES 4

Reinf steel weight = 8.5 Lbs/SF of Approach Slab
= 18.4 Lbs/LF of Support Slab

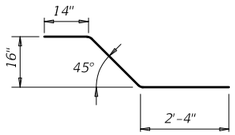
Vol of Appr Slab Conc (CY) = 1.057W – 0.008W x T + 0.02W² Tan S
(Includes Support Slab)

W = Width of Approach Slab (ft)

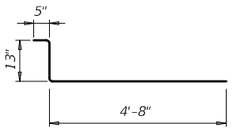
T = Conc Pavement Thickness (in)

S = Skew Angle (deg)

1. Flare Bars B and D in this region (1'-6" Max Spa, 3" Min Spa). Minimum flared bar length = 2'-6". Bend bars as necessary.
2. Provide longitudinal construction joints that align with longitudinal construction joints in the bridge slab with bridges built in stages. Other longitudinal construction joints must receive approval of the Engineer.
3. See details elsewhere in plans for shoulder drain location and details.
4. For Contractor's information only. Quantities shown are for one approach slab only.
5. On portion of support slab that supports the concrete pavement, adjust top surface elevation, if required, to accommodate concrete pavement thickness. Smooth trowel finish. Oil top of support slab with 60 grade oil and apply heavy coat of powdered graphite. Press down one layer of 30# roofing felt.
6. Multiple piece tie bars are acceptable at longitudinal construction joints provided minimum laps shown are achieved.
7. See details elsewhere in plans for required cross-slope.
8. Place in accordance with Item 438.
9. Provide backer rod that is 25% larger than joint opening and compatible with the sealant.
10. If bridge rail is present at the wingwall or CIP retaining wall, place ½" rebonded recycled tire rubber between concrete railing and top of approach slab as shown when concrete railing projects over the approach slab.



BARS E (#5)



BARS F (#5)

GENERAL NOTES:

Construct approach slab in accordance with Item 422.

Provide Class "S" concrete with a minimum compressive strength of 4,000 psi.

Provide Grade 60 reinforcing steel.

Provide longitudinal joints as shown on the Longitudinal Saw Cut Joint Detail at lane lines and shoulders when width between longitudinal construction joints or edges of approach slab exceeds 16 feet. Saw cut joints within 24 hours of concrete placement to a depth of 1 ½" and seal in accordance with Item 438. Alternately, provide a controlled joint consisting of 1 ½" vinyl or plastic joint former (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer.)

Provide rebonded recycled tire rubber joint filler that meets the requirements of DMS-6310. "Joint Sealants and Fillers."

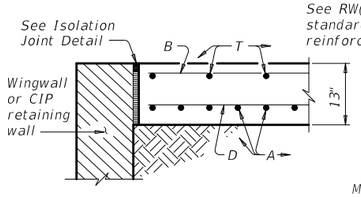
Construct the subgrade or subbase away from the bridge for a minimum distance of 100 feet prior to the approach slab, unless otherwise indicated on the plans.

Compact and finish the subgrade or foundation for the approach slab to the typical cross-section and to the lines and grades shown on the plans.

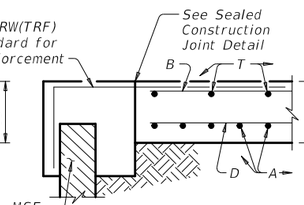
Cure for 4 days using water or membrane curing per Item 422.

All details shown herein are subsidiary to bridge approach slab.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

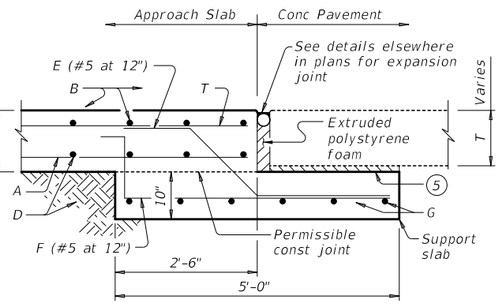


SHOWING WINGWALL OR CIP RETAINING WALL

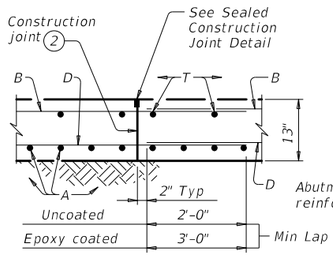


SHOWING MSE WALL

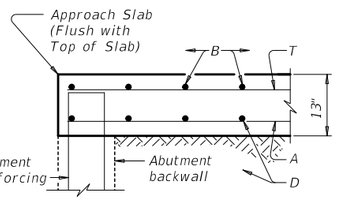
SECTION A-A



SECTION B-B



SECTION C-C 6



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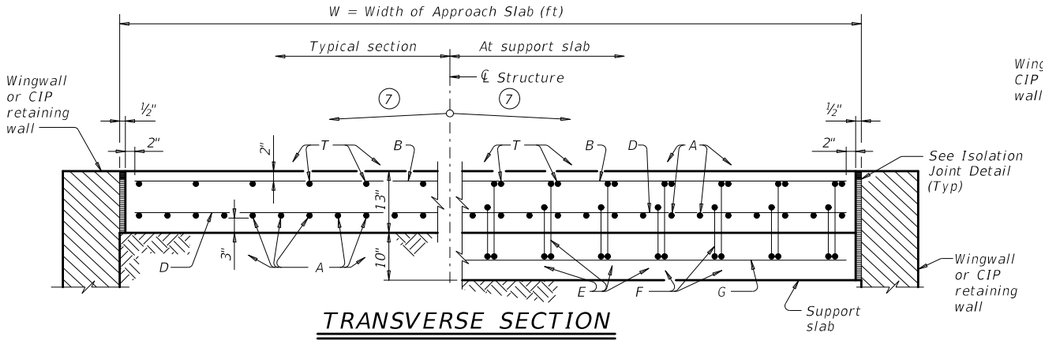
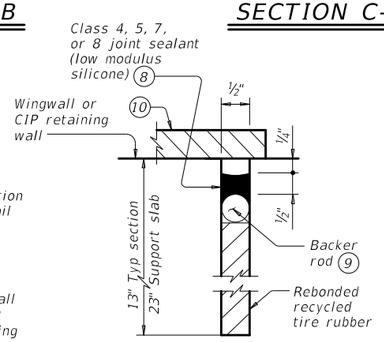
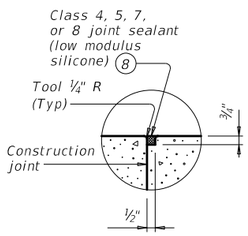


TRANSVERSE SECTION



ISOLATION JOINT DETAIL



SEALED CONSTRUCTION JOINT DETAIL

Texas Department of Transportation

Bridge Division Standard

BRIDGE APPROACH SLAB

CONCRETE PAVEMENT

BAS-C

FILE: bascste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
02-20: Removed stress relieving pad.	DIST	COUNTY		SHEET NO.
				218

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-218

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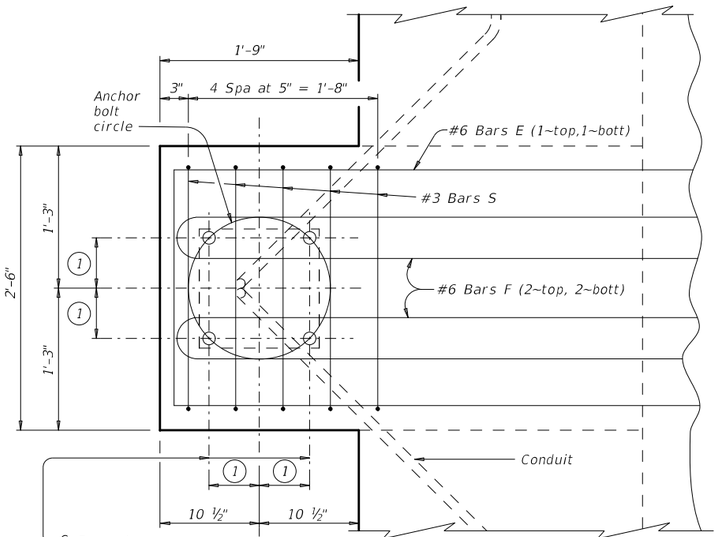
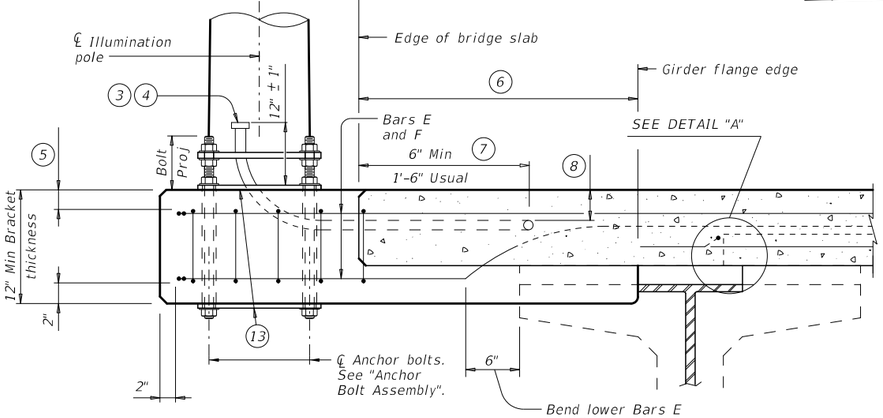


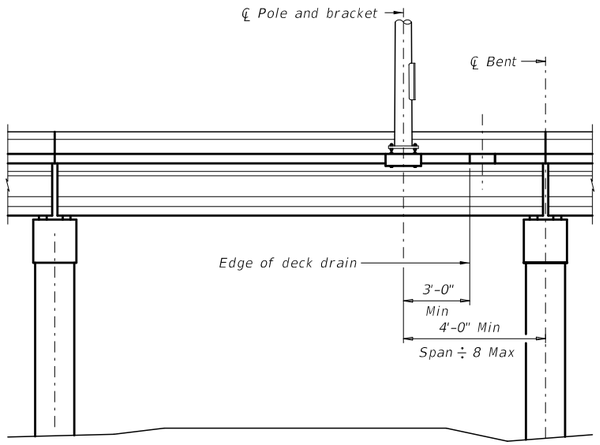
PLAN



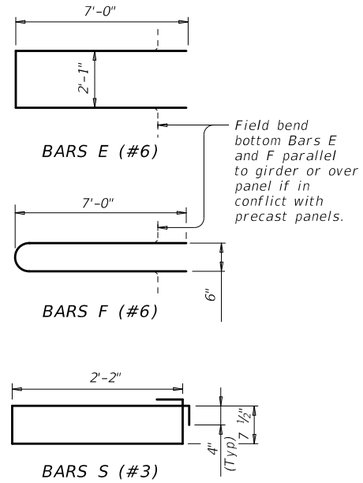
ELEVATION
(Structures with overhanging slabs)

ILLUMINATION POLE BRACKET LOCATION AND REINFORCING

TABLE OF ANCHOR BOLT AND ANCHOR BOLT PLATE INFORMATION						
ANCHOR BOLT CIRCLE DIAMETER	ANCHOR BOLT OFFSET	ANCHOR BOLT DIAMETER	ANCHOR BOLT HOLE SIZE		TOP AND BOTTOM ANCHOR BOLT PLATE SIZE	CENTER HOLE DIAMETER IN TOP ANCHOR BOLT PLATE
			CONCRETE	STEEL		
IN	IN	IN	IN	IN	IN	IN
13	4 ⅜	1	1 ¼	1 ¼	PL ½ X 13 X 1'-1"	9 ½
15	5 5/16	1 ¼	1 ½	1 ½	PL ½ X 15 ½ X 1'-3 ½"	10 ½



TYPICAL BRIDGE ELEVATION



ESTIMATED QUANTITIES~ONE BRACKET			
ITEM		UNIT	QUANT
CONCRETE	(9) (10)	CY	0.2
REINFORCING STEEL	(10)	LB	146
STRUCTURAL STEEL	(10) (11)	LB	112
CONDUIT	(12)	LF	4

(1) See table for anchor bolt offset dimension.
(2) See table for hole diameter size.
(3) If lighting is to be placed on future contract, extend conduit only 6" and provide water tight cap.
(4) Ream burrs and install bell ends or bushings on all conduit ends.
(5) Provide same clear cover required for bridge slab. Place Bars E and F beneath top slab reinforcing only if necessary to provide this cover.
(6) If slab edge to girder flange edge exceeds 3'-11", lengthen Bars E and F proportionally to ensure Bars E and F extend 1'-6" Min beyond girder flange edge.
(7) Clear rail anchors, drains, etc 1 ½" Min.
(8) 1 ½" Min cover and always beneath top layer slab reinforcing.
(9) Variation due to slab thickness is insignificant.
(10) For Contractor's information only.
(11) Anchor bolts, nuts, washers, and 2 plates. Verify anchor bolt lengths prior to ordering.
(12) Additional to main run (size and type as shown elsewhere on the plans).
(13) See "Anchor Bolt Assembly", "Anchor Bolt Plate", and table for anchor bolt, and anchor bolt plate information.

MATERIAL NOTES:

Galvanize anchor bolts, nuts, washers, and anchor bolt plates. Repair galvanizing damage from tack welding per Item 445, "Galvanizing".

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.

Concrete for Illumination Pole Brackets must be of the same type and placed monolithically with the bridge slab. The bracket quantity is considered subsidiary to the Item "Reinforced Concrete Slab".

GENERAL NOTES:

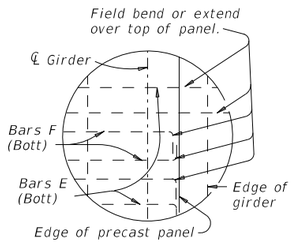
Designed for up to 50 ft light pole with one 12 ft arm, 60 lb luminaire with 1.6 sq ft EPA at maximum design wind speed of 110 mph (3 second gusts). A special design is required if luminaire mounting height exceeds 100 ft above average surrounding terrain.

The anchor bolts, nuts, washers, and anchor bolt plates are subsidiary to the Item "Roadway Illumination Assemblies".

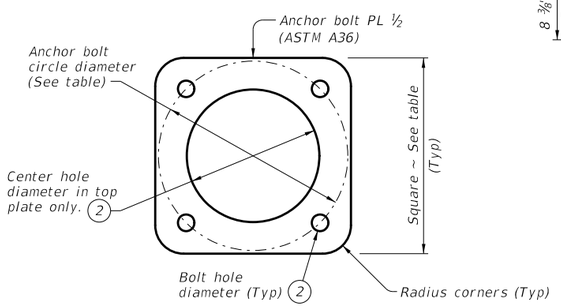
The type and size of conduit, the anchor bolt circle diameter, and the number and location of brackets is shown elsewhere on the plans. Brackets found to conflict with other components of the bridge may be relocated as necessary.

See Roadway Illumination Poles standard for details and notes not shown.

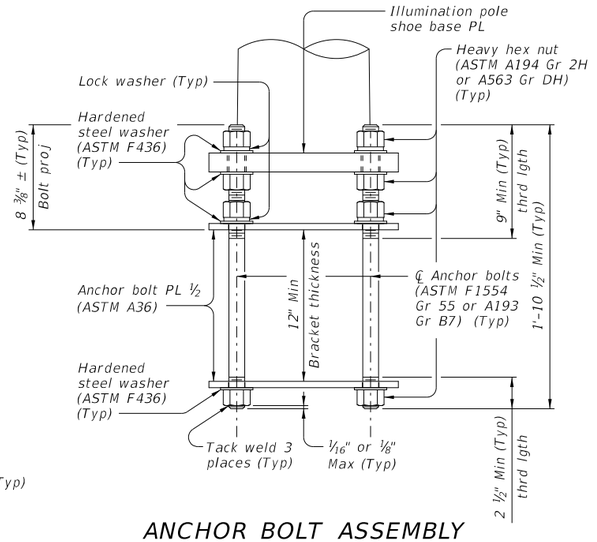
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



DETAIL "A"



ANCHOR BOLT PLATE



ANCHOR BOLT ASSEMBLY

(See table for anchor bolt diameter)

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

BRIDGE LIGHTING DETAILS

BL

FILE: blstde01-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				219

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-219

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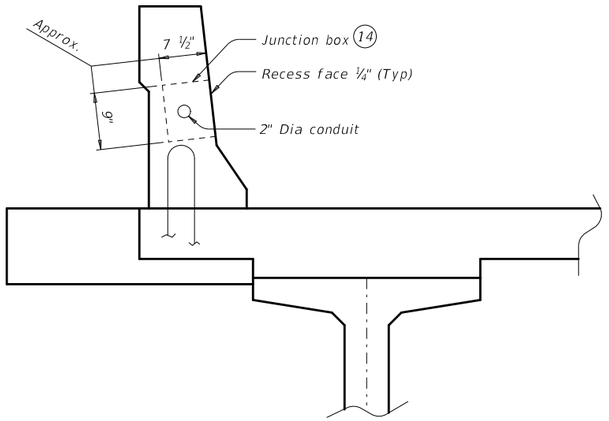
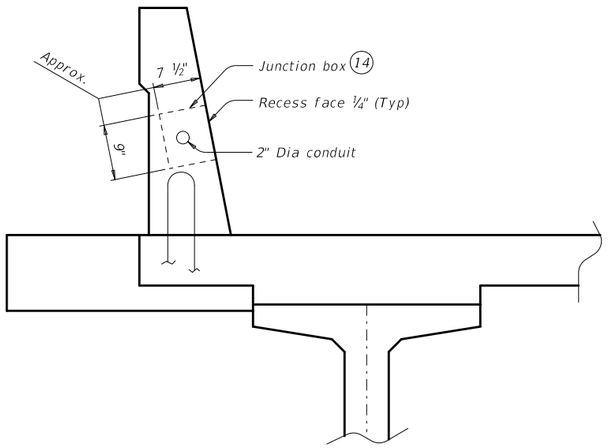


SHOWING T551, T552, AND T80HT



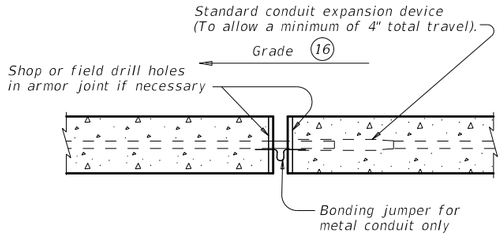
SHOWING SSTR AND T80SS

(4) Ream burrs and install bell ends or bushings on all conduit ends.

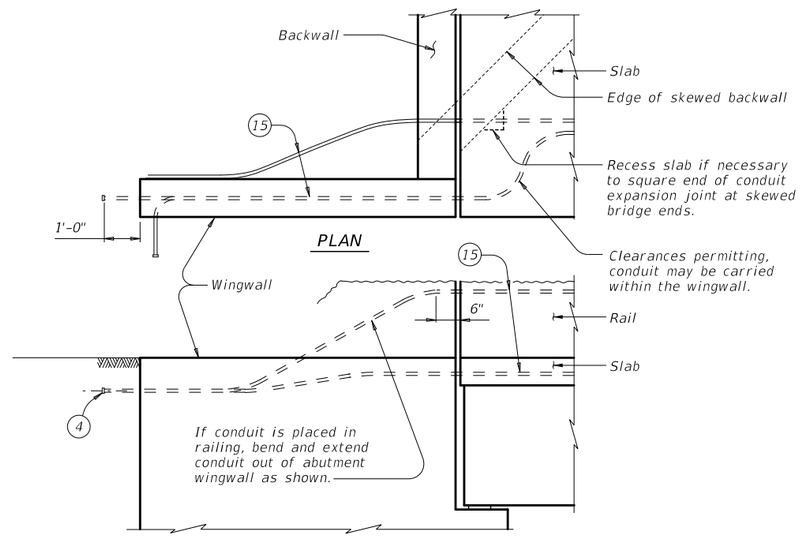
(14) Provide polymer concrete junction boxes meeting the requirements of DMS 11030.

(15) Position of conduit shown elsewhere on the plans or as directed by the Engineer.

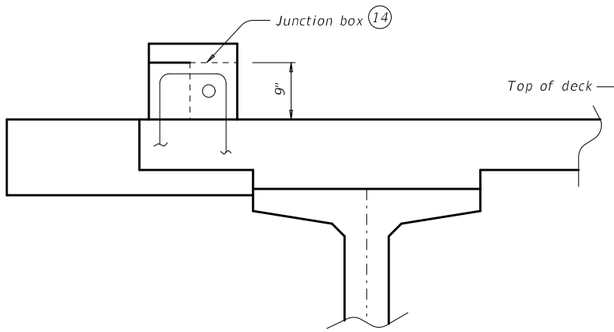
(16) Place conduit expansion device on high side of expansion joint.



CONDUIT EXPANSION JOINT

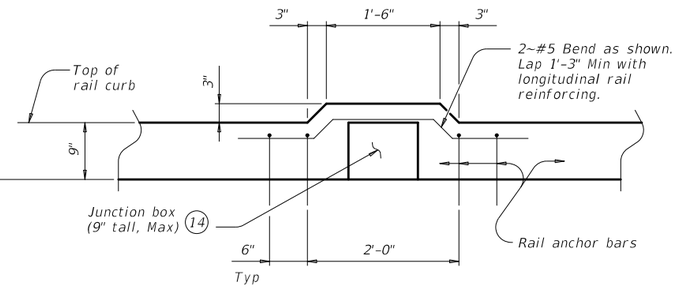


TREATMENT AT END OF BRIDGE



SHOWING T1F, T2P, T1W, T66, C2P, AND C1W CURB

See Elevation View for curb modifications



ELEVATION VIEW

For Rail Types T1F, T2P, T1W, T66, C2P, and C1W, center junction box between posts. Additional reinforcing and concrete required for this rail modification is considered subsidiary to the rail. Do not locate junction box in the same bay as a drain slot in rail curb.

JUNCTION BOX LOCATION

Use these details as a guide in locating junction boxes in rail types not shown.

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

BRIDGE LIGHTING DETAILS

BL

FILE: blstde01-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				220

CITY OF MESQUITE
RECORD DWG INDEX NO.
2023-029-220

DATE: 1/4/2023 3:40:34 PM
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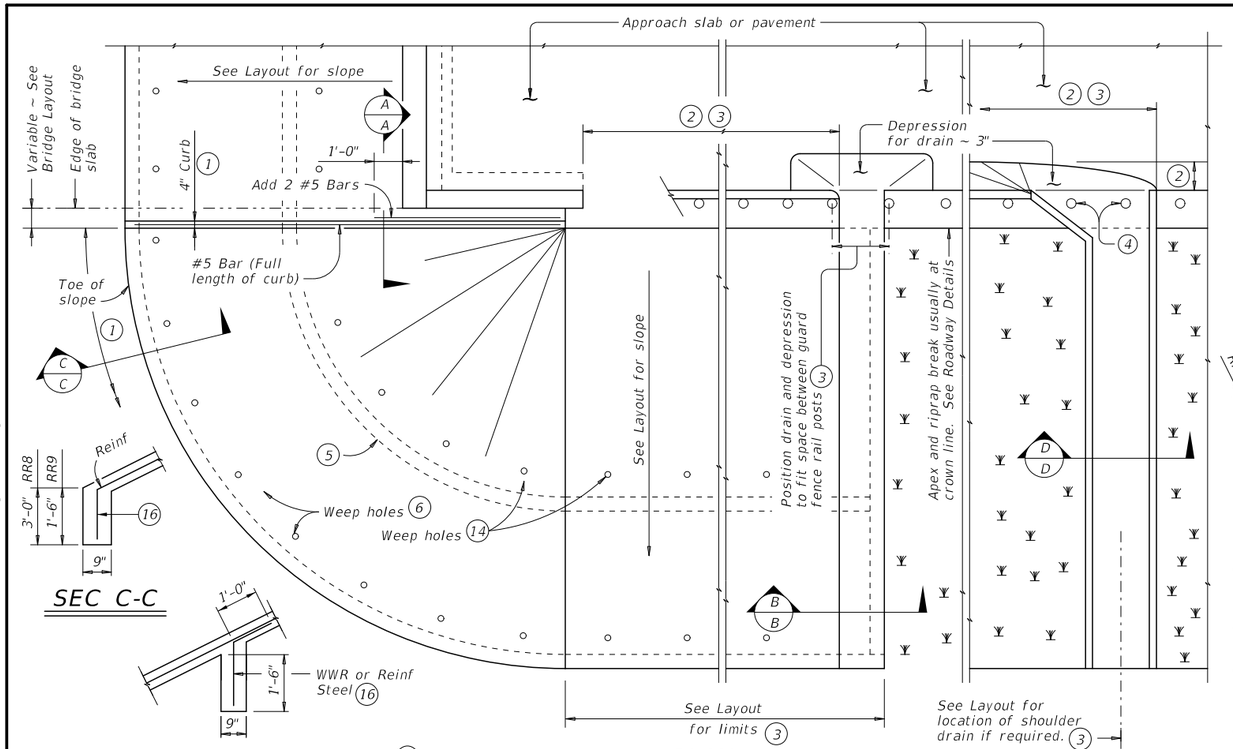
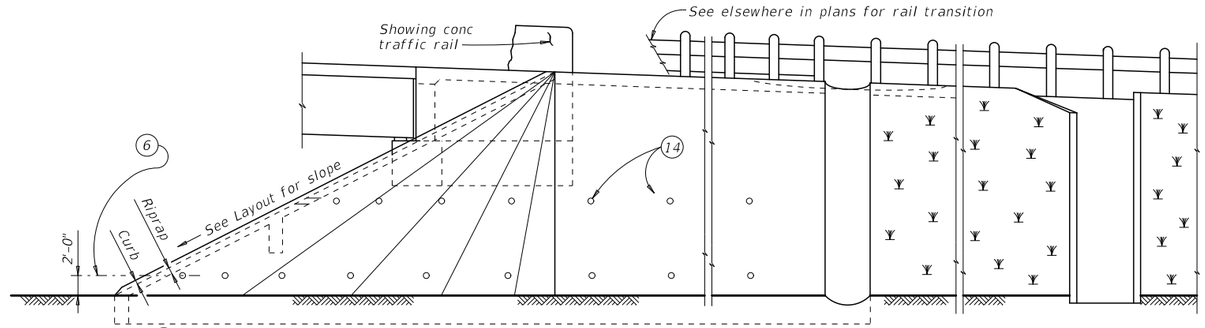


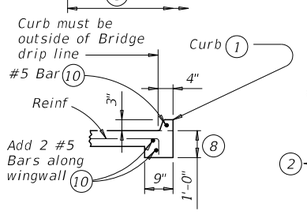
PLAN

SEC C-C

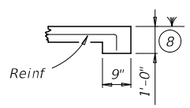
INTERMEDIATE TOEWALL (5)



ELEVATION

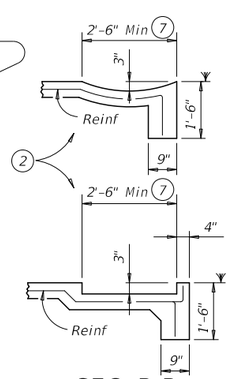


SEC A-A



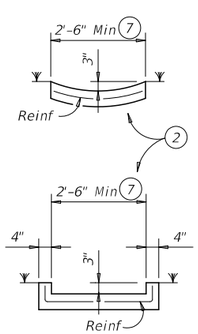
SEC B-B

(No drain)



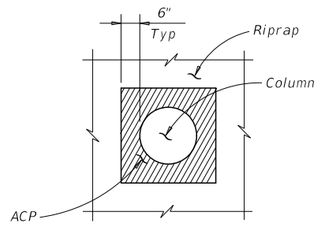
SEC B-B

(Shoulder drain integral with riprap)



SEC D-D

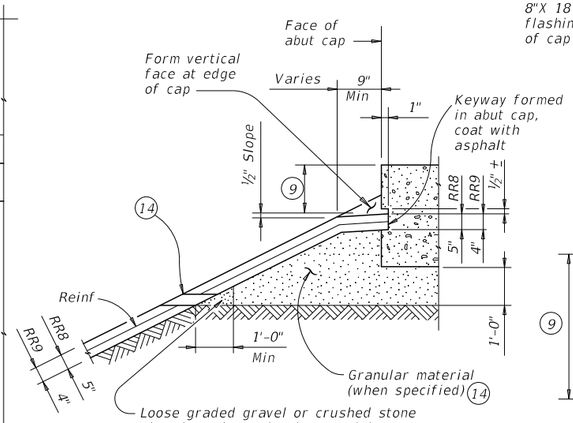
(Shoulder drain)



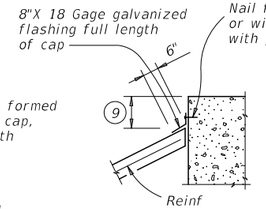
Riprap blockout to be filled with ACP. (Subsidiary to riprap)

RIPRAP DETAIL AT COLUMNS

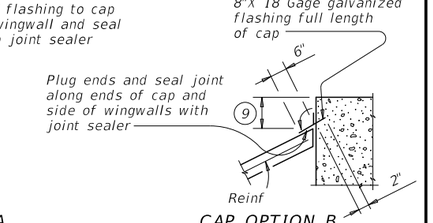
(As directed by the Engineer)



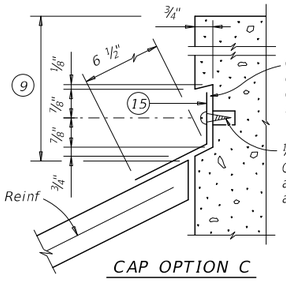
SHOWING KEYWAY OPTION



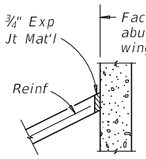
CAP OPTION A



CAP OPTION B

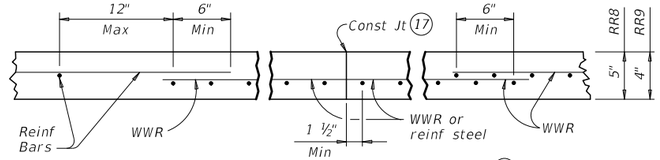


CAP OPTION C



SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)



REINFORCEMENT DETAILS (13)

See General Notes for optional synthetic fiber reinforcement.

(1) When riprap is shown extended around header on layout, extend slab and toewall as shown and eliminate 4" curb.

(2) Limits and configuration of drains and depressions are as shown elsewhere in plans or as directed by the Engineer.

(3) Location of shoulder drain must consider limitations imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.

(4) See details elsewhere in plans for installation of guard fence posts through concrete riprap.

(5) Provide intermediate toewall only when designated elsewhere in the plans or included in the specifications.

(6) Provide lower level of 2" Dia weep holes at 10' c-c backed by 1 CF packet of gravel and galvanized hardware cloth at all locations unless directed by the Engineer to eliminate.

(7) Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer.

(8) Wall extension may be reduced or modified if approved by the Engineer. Increase wall extension to 1'-6" whenever the optional intermediate toewall is called for in the plans.

(9) Top of cap to top of riprap dimension varies as directed by the Engineer. Should be 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

(10) #5 bars shown are required even when synthetic fiber reinforcing option is selected.

(11) Provide sealing option for joint between the face of cap and riprap as designated by the Engineer or as shown elsewhere on plans.

(12) Flashing (shown in Cap Option A) may be used at wingwall in addition to Exp Jt Mat'l if shown on plans or directed by the Engineer.

(13) Provide #3 reinforcing bars at 18" Spa c-c. Provide Welded Wire Reinforcement (WWR) as 6x6-D2.9xD2.9 or D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.

(14) If granular material is specified, provide upper level of 2" Dia weep holes at 10' c-c backed by galvanized hardware cloth.

(15) 8" x 18 Gage Galv Sheet Metal

(16) Provide WWR or #3 bars, with 1'-0" extension into slope.

(17) WWR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-1" minimum into adjacent riprap on each side of construction joint even if synthetic reinforcing fiber is utilized.

FOR CONTRACTOR'S INFORMATION ONLY:
5" of RR8 = 0.015 CY/SF
4" of RR9 = 0.012 CY/SF
#3 Reinf at 18" c-c = 0.501 Lbs/SF
6x6-D3xD3 = 0.408 Lbs/SF

GENERAL NOTES:

Provide Class "B" concrete (f'c = 2,000 psi) unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064, unless otherwise shown.

Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.

Optionally synthetic fibers may be used if approved by the Engineer. Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete.

Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.

Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap".

See Layout for limits of riprap.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

Texas Department of Transportation

Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

FILE: crrstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO. 221

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-221

DATE: 1/4/2023 3:40:35 PM
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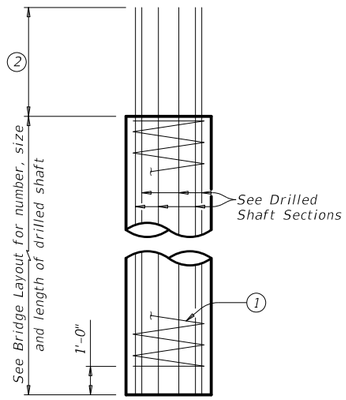
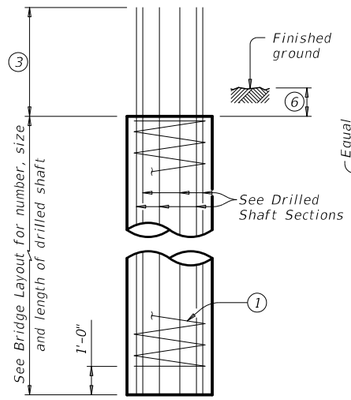
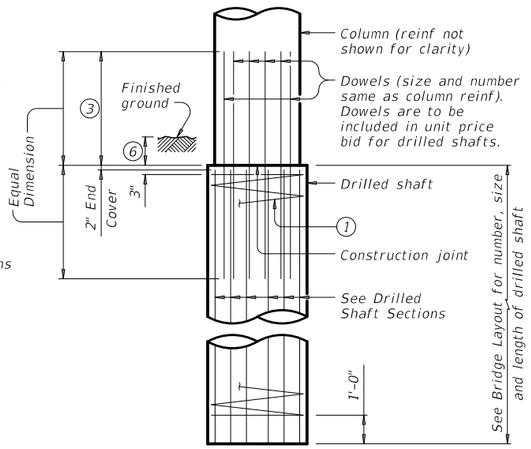


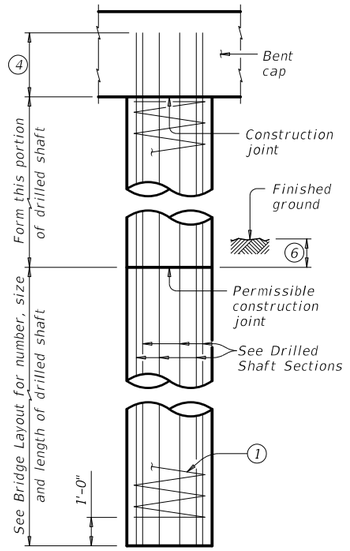
ABUTMENTS, WINGWALLS AND MULTI-DRILLED SHAFT FOOTINGS



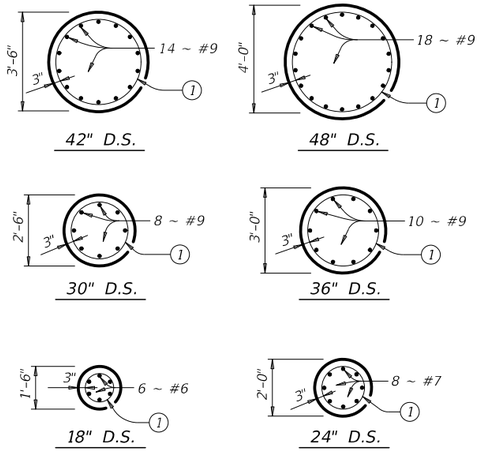
INTERIOR BENTS DRILLED SHAFT DIA EQUAL TO COLUMN DIA



INTERIOR BENTS DRILLED SHAFT DIA GREATER THAN COLUMN DIA



OPTIONAL INTERIOR BENT DRILLED SHAFT DETAIL (5)

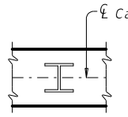


DRILLED SHAFT SECTIONS

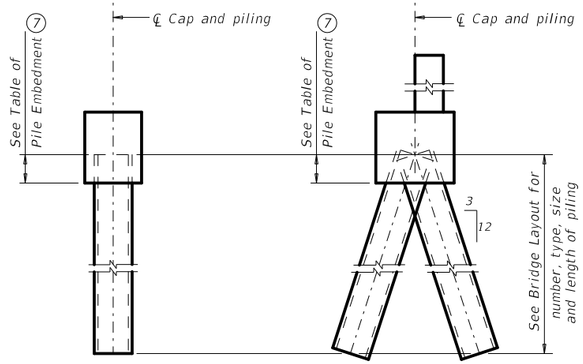
DRILLED SHAFT DETAILS

TABLE OF PILE EMBEDMENT	
Pile Type	Embedment Depth (Ft)
16" Sq Concrete 18" Sq Concrete HP14 Steel HP16 Steel	1'-0"
20" Sq Concrete 24" Sq Concrete HP18 Steel	1'-6"

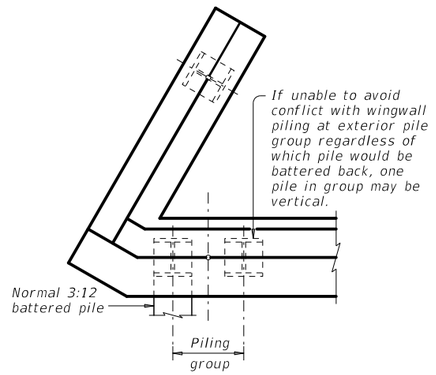
See Prestressed Concrete Piling (CP) standard for additional details on concrete pile embedment.



ORIENTATION OF STEEL H-PILING



PILING DETAILS
(Concrete or steel H)



DETAIL "A"
(Showing plan view of a 30° skewed abutment)

(1) #3 spiral at 6" pitch (one and a half flat turns top and bottom).

(2) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-0"
#9 Bars = 2'-3"

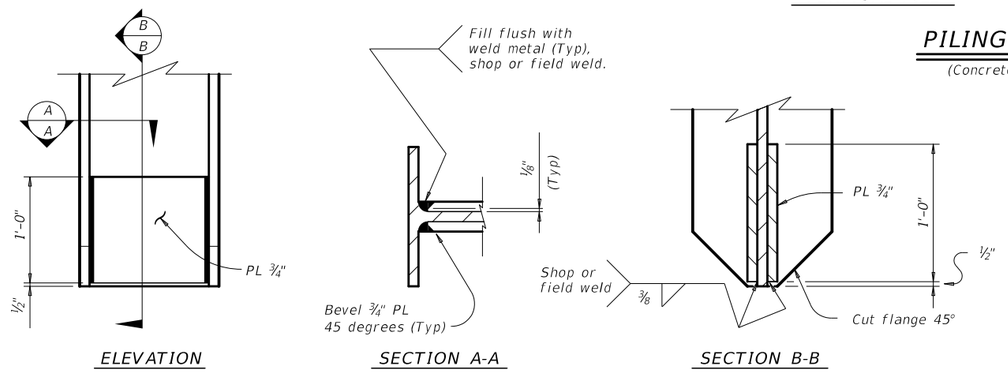
(3) Min lap with column reinf:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(4) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-3"
#9 Bars = 2'-9"

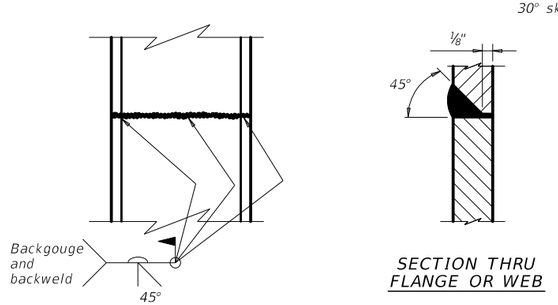
(5) Drilled shafts may extend to the bottom of bent caps for "H" heights of 6 ft and less (as shown on the Bridge Layout), if approved. This option can only be used when the drilled shaft diameter equals the column diameter. Obtain approval of the forming method above the ground line prior to construction. No adjustments in payment will be made if this option is used.

(6) 1'-0" Min, unless shown otherwise on plans.

(7) Or as shown on plans.



STEEL H-PILE TIP REINFORCEMENT
See Item 407 "Steel Piling" to determine when tip reinforcement is required and for options to the details shown.



STEEL H-PILE SPLICE DETAIL
Use when required.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

COMMON FOUNDATION DETAILS

FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO. 222

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-222

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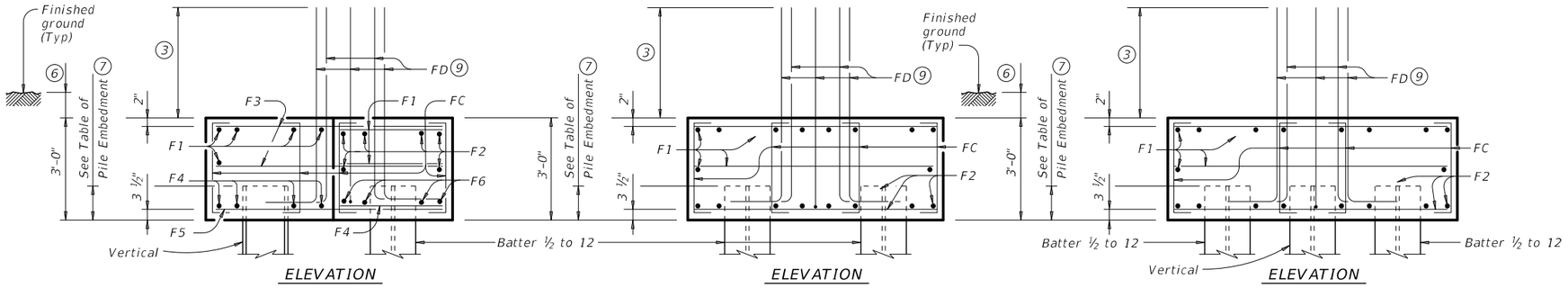
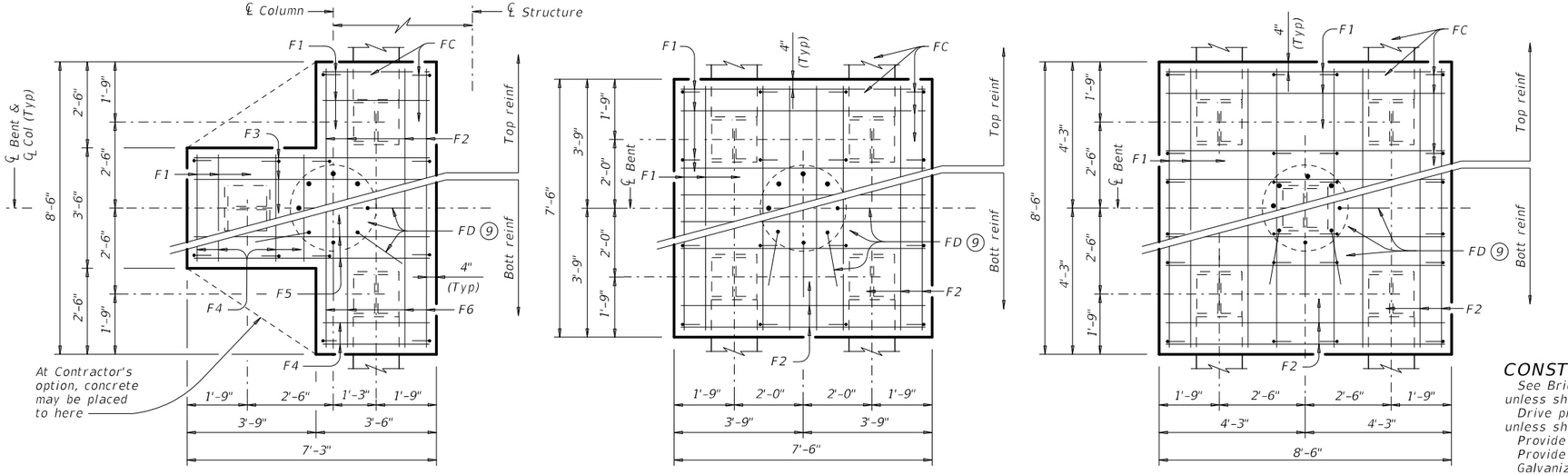




THREE PILE FOOTING (8)

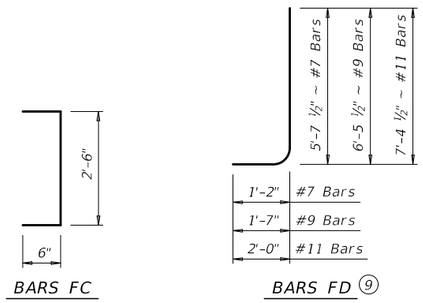
For 36" Dia and smaller columns.

FOUR PILE FOOTING (8)

For 42" Dia and smaller columns.

FIVE PILE FOOTING (8)

For 42" Dia and smaller columns.



(3) Min lap with column reinforcing:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(6) 1'-0" Min, unless shown otherwise on plans.

(7) Or as shown on plans.

(8) See Bridge Layout for type, size and length of piling.

(9) Number and size of FD bars must match column reinforcing. Tie FD bars to the top of the bottom reinforcing mat.

(10) Adjust FD quantity, size and weight as needed to match column reinforcing.

TABLE OF FOOTING QUANTITIES FOR 30" COLUMNS

ONE 3 PILE FOOTING

Bar	No.	Size	Length	Weight
F1	11	#4	3'- 2"	23
F2	6	#4	8'- 2"	33
F3	6	#4	6'- 11"	28
F4	8	#9	3'- 2"	86
F5	4	#9	6'- 11"	94
F6	4	#9	8'- 2"	111
FC	12	#4	3'- 6"	28
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	623
Class "C" Concrete			CY	4.8

ONE 4 PILE FOOTING

Bar	No.	Size	Length	Weight
F1	20	#4	7'- 2"	96
F2	16	#8	7'- 2"	306
FC	16	#4	3'- 6"	37
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	659
Class "C" Concrete			CY	6.3

ONE 5 PILE FOOTING

Bar	No.	Size	Length	Weight
F1	20	#4	8'- 2"	109
F2	16	#9	8'- 2"	444
FC	24	#4	3'- 6"	56
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	829
Class "C" Concrete			CY	8.0

CONSTRUCTION NOTES:

See Bridge Layout for foundation type required. Use these foundation details unless shown otherwise.
Drive piling under abutment wingwalls to a minimum resistance of 10 Tons/Pile unless shown otherwise.
Provide Class C Concrete (f'c = 3,600 psi), unless shown otherwise.
Provide Grade 60 reinforcing steel.
Galvanize reinforcing if shown elsewhere in the plans.
Provide bar laps for drilled shaft reinforcing, where required, as follows:
Uncoated or galvanized (#6) ~ 2'-6"
Uncoated or galvanized (#7) ~ 2'-11"
Uncoated or galvanized (#9) ~ 3'-9"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

DESIGNER NOTES:

Do not use the drilled shaft details shown on this standard for retaining wall, noise wall, barrier, or sign foundations without structural evaluation.
Do not use the footings shown on this standard in direct contact with salt water or exposed to salt water spray.
Maximum allowable pile loads for the footings shown are:
72 Tons/Pile with 24" Dia Columns
80 Tons/Pile with 30" Dia Columns
100 Tons/Pile with 36" Dia Columns
120 Tons/Pile with 42" Dia Columns

Texas Department of Transportation

Bridge Division Standard

COMMON FOUNDATION DETAILS

FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO. 223

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-223

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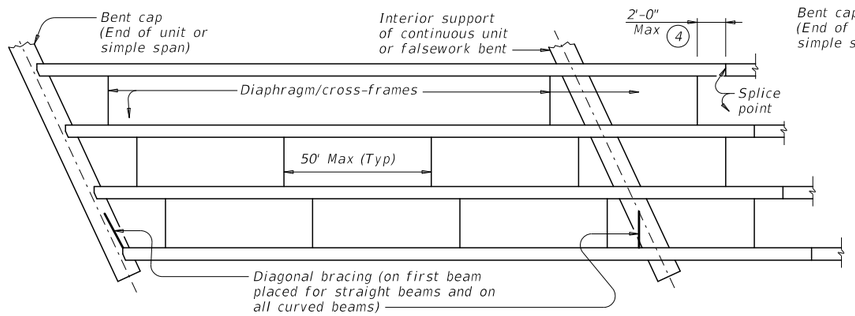
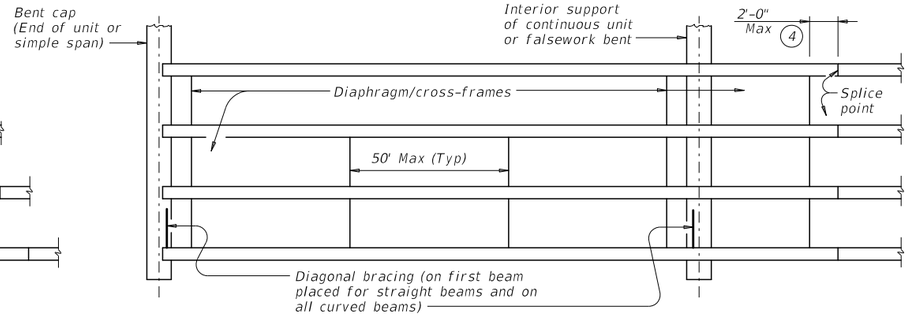
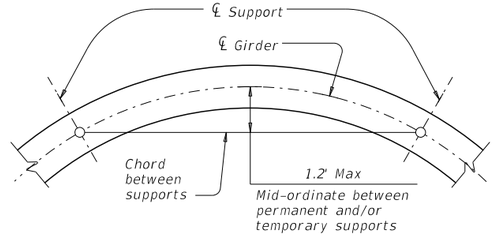


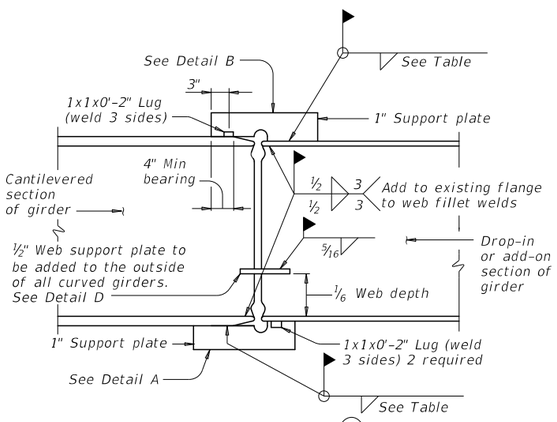


TYPICAL BRACING PLANS

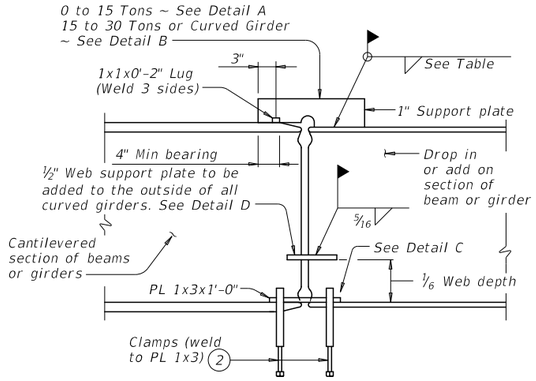


CURVED GIRDER ERECTION SUPPORT DETAIL

SKEWED

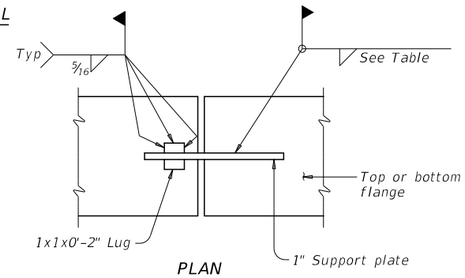


50 TON MAXIMUM (1)



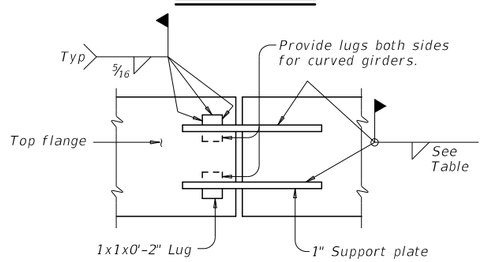
30 TON MAXIMUM (1)

NORMAL



PLAN

DETAIL A



PLAN

DETAIL B

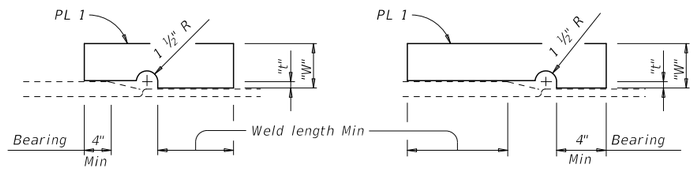
ELEVATION OF TYPICAL WELDED SPLICE SUPPORTS (3)

(1) Weights indicated are total weight of drop-in section. Special design will be required when weight of drop-in section exceeds 50 Tons or supported reaction of add-on section exceeds 25 Tons.

(2) Use extra heavy duty or extra heavy service clamps with a minimum screw diameter of ¾".

(3) Place all top and bottom flange support plates before the beam or girder is erected; attach web plates and lugs immediately after erection. Exercise care in removing the support plates and lugs. After removing support plates and lugs, grind flange and web smooth.

(4) Provide additional timber bracing if permanent diaphragms/cross-frames do not meet requirements shown.

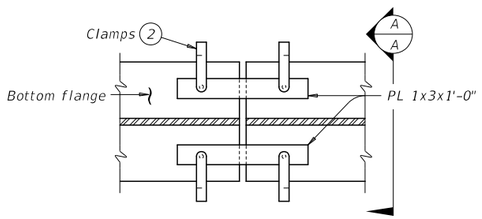


SHOWING PLATE WELDED TO THINNER OR EQUAL FLANGE

SHOWING PLATE WELDED TO THICKER FLANGE

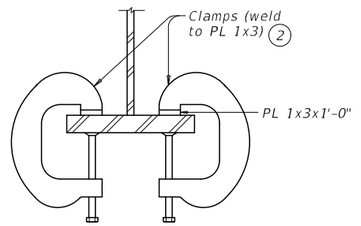
SUPPORT PLATE DETAILS

"t"	1 PL to 15 T or 2 PLs ~ 15 T to 30 T				3 PLs ~ 30 T to 50 T				
inches	"W"	Required Weld Length			"W"	Required Weld Length			
		5/16" Weld	3/8" Weld	7/16" Weld		5/16" Weld	3/8" Weld	7/16" Weld	½" Weld
0 to ½	6"	10"	10"	10"	7"	15"	13"	12"	10"
½ to 1 ½	8"	12"	11"	10"	9 ½"	18"	16"	14"	12"

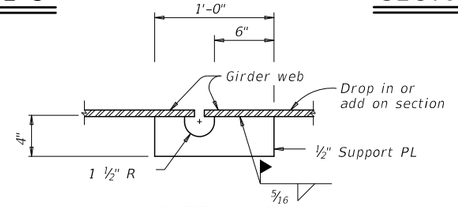


PLAN

DETAIL C



SECTION A-A



DETAIL D

Web support plates to be used for single line erection of curved girders.

GENERAL NOTES:

This standard is to be used as a guide in preparing the required erection drawings (see Item 441). The contractor is responsible for the adequacy of bracing and shoring at all times.

Do not use timber sections less than 4 x 4 (nominal) as brace or shoring members. Do not use pressure treated landscape timbers or timbers that are twisted, warped or cracked as brace or shoring members.

All hardware used with cables must be able to develop the cable's ultimate strength, specified on the erection drawings. Use thimbles at all loops in cable. Install cable clamps with saddles bearing on the live end and U-bolt bearing on the dead end. Do not use worn, frayed, kinked, or corroded cable.

On the erection drawings, indicate the following:

1. Assumed loads (dead, live, wind, etc.) used to design the brace and shoring members.
2. Timber species, grade, and moisture content.
3. Grade and size of steel sections used for bracing or shoring members
4. Grade and size of all threaded hardware (bolts, lag screws, concrete anchors, etc.) required for bracing and shoring.
5. Minimum embedment of concrete anchors.
6. Required weld sizes and lengths.
7. Manufacturer's name and model number of manufactured shoring or bracing with a professional Engineer's seal and signature.

HORIZONTALLY CURVED I-GIRDERS:

Unless shown otherwise on the erection drawings, support girder sections such that the mid-ordinate of the girder does not exceed 1.2' between support points. See "Curved Girder Erection Support Detail". Brace girders at all supports. Do not remove temporary supports until continuous girders are supported by at least three permanent supports, cross-frames or diaphragms are fully installed, and splices built in conformance with Item 441 are completed.

When using the support plate details shown on this standard, as a minimum, use a support near the center of the girder section until the splice is completed.

Texas Department of Transportation

Bridge Division Standard

MINIMUM ERECTION AND BRACING REQUIREMENTS
STEEL GIRDERS AND BEAMS

MEBR(S)

FILE: mebsste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
	DIST	COUNTY		SHEET NO.
				224

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-224

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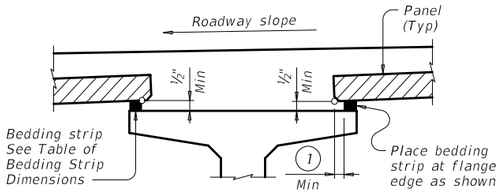
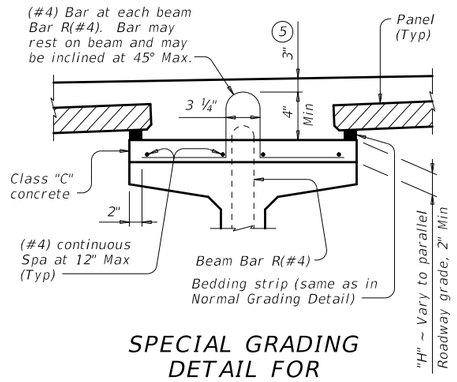


NORMAL GRADING DETAIL (3)

Showing prestressed concrete I-girders.
(Other beam types similar)



SPECIAL GRADING DETAIL FOR CONCRETE BEAMS

Showing prestressed concrete I-girders.
(Other beam types similar)

TABLE OF BEDDING STRIP DIMENSIONS		
WIDTH	HEIGHT (4)	
	Min	Max
1" (Min)	½"	2"
1 ¼"	½"	2 ½"
1 ½"	½"	3"
1 ¾"	½"	3 ½"
2"	½"	4"
2 ¼"	½"	4 ½" (2)
2 ½"	½"	5" (2)
2 ¾"	½"	5 ½" (2)
3" (Max)	½"	6" (2)

(1) 2" Min for I-giders, 1 ½" Min for all other beam types.

(2) Allowed for I-girders, not allowed on other beam types.

(3) To reduce the quantity of cast-in-place concrete, bedding strip thickness may be increased in ¼" increments. Bedding strips must be comprised of one layer. Bond bedding strips to the beams with an adhesive compatible with bedding strips. Bedding strips over 2.5" high may need to be bonded to panels. The same thickness strip must be used under any one panel edge and the maximum change in thickness between adjacent panels is ¼". Alternatively, bedding strips may be cut to grade. Panels may be supported by an alternate method, using a commercial product, if approved by the Engineer of Bridge Design, Bridge Division. If bedding strips exceed 6" high for I-Girders, 4" high for all other beam types, use Special Grading Detail for Concrete Beams or submit an alternate method to the Bridge Division for approval.

(4) Height must not exceed twice the width.

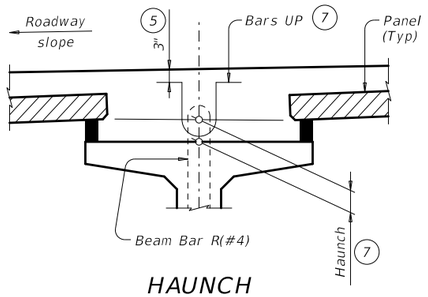
(5) Provide clear cover as indicated unless otherwise shown on Span Details.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(7) Space Bars UP(#4) with Beam Bars R(#4) in all areas where measured haunch exceeds 3 ½" with I-girders, and 3" for all other beam types. Epoxy coating for Bars UP is not required.

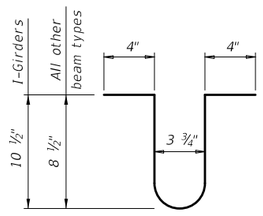
(8) Do not locate construction joints on top of a panel.

(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..



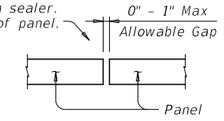
HAUNCH REINFORCING DETAIL

Showing prestressed concrete I-girders.
(Other beam types similar)



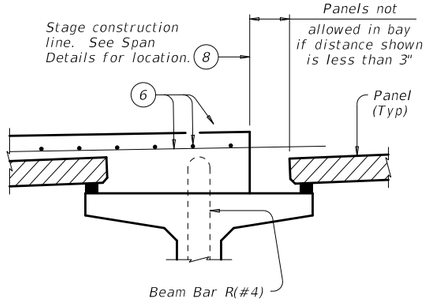
BARS UP (#4) (7)

Seal joint between panels when gap exceeds ¼" with polyurethane sealant or expanding foam sealer. Make seal flush with top of panel.

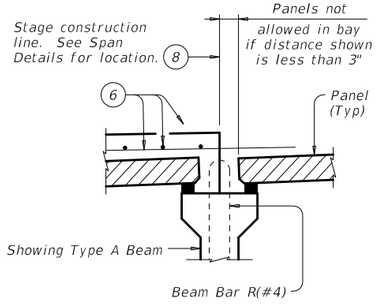


PANEL JOINTS

(Panel reinforcing not shown for clarity.
The gap cannot be considered as a panel fabrication tolerance. Adjust panel placement to minimize joint openings.)



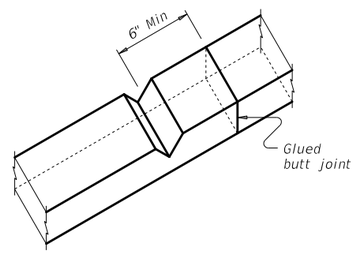
PRESTR CONC I-GIRDERS



PRESTR CONC I-BEAMS

STAGE CONSTRUCTION LIMITATIONS

(Other beam types similar)



BEDDING STRIP DETAIL (9)

CONSTRUCTION NOTES:

Erected panels must bear uniformly on bedding strips of extruded polystyrene placed along top flange edges.

Placing panels to minimize joint openings is recommended.

If additional blocking is needed, special grading details for supporting the panels and extra reinforcing between beam and slab will be considered subsidiary to deck construction.

Bars U, shown on PCP-FAB, may be bent over or cut off if necessary.

Care must be taken to ensure proper cleaning of construction debris and consolidation of concrete material under the edges of the panels. Bedding strips must be placed at beam flange edges so that adequate space is provided for the mortar to flow a minimum of 1 ½" under the panels as the slab concrete is placed.

To allow the proper amount of mortar to flow between beam and panel, the minimum vertical opening must be at least ½". Roadway cross-slope reduces the opening available for entry of the mortar. Bedding strips varying in thickness across the beam are therefore required.

For clear span between U-beams less than or equal to 18", see Permissible Slab Forming Detail on Miscellaneous Slab Detail sheets, UBMS.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel in the cast-in-place slab. See Table of Reinforcing Steel for size and spacing of reinforcement.

If the top and bottom layer of reinforcing steel is shown on the Span Details to be epoxy coated, then the D, E, P, & Z bars must be epoxy coated.

Provide bar Laps, where required, as follows:

Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Panel placement may follow either Option 1 or Option 2 except Option 1 must be used if the skew exceeds 45 degrees.

Use of Prestressed Concrete Panels is not permitted for horizontally curved steel plate or tub girders. See Span Details for other possible restrictions on their use.

These details are to be used in conjunction with the Span Details, PCP-FAB and other applicable standard drawings.

When panel support (bedding strips) deviates from what is shown herein, provide details signed and sealed by a professional Engineer.

Any additional reinforcement or concrete required on this standard is considered subsidiary to the bid Item "Reinforced Concrete Slab".

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS DECK DETAILS

PCP

FILE: pcpstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
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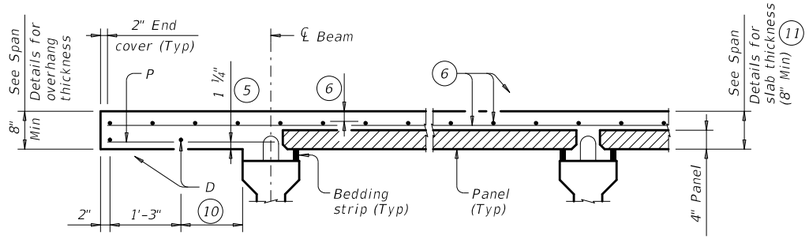
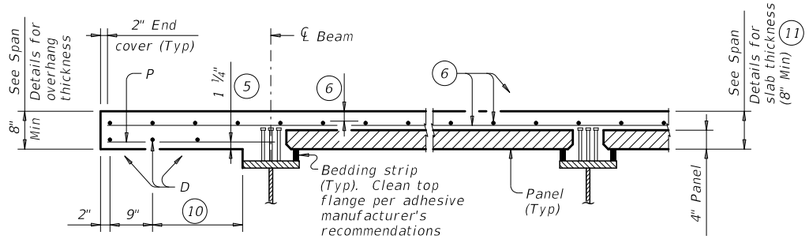
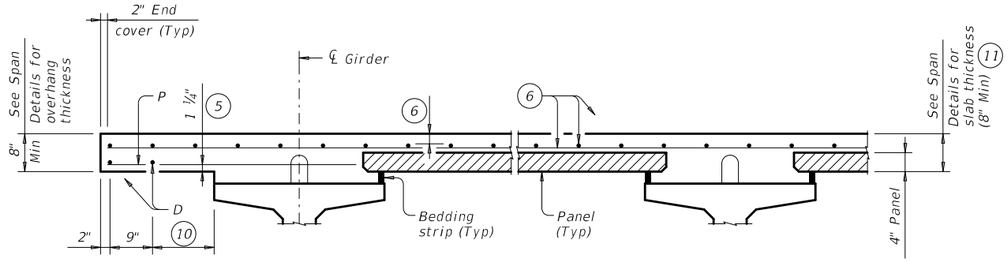


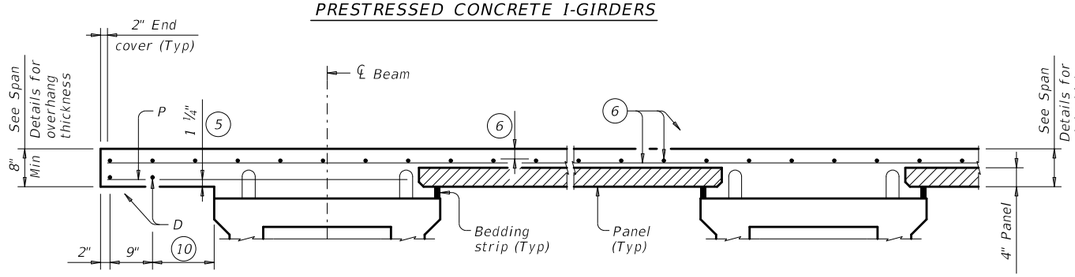
PRESTRESSED CONCRETE I-BEAMS



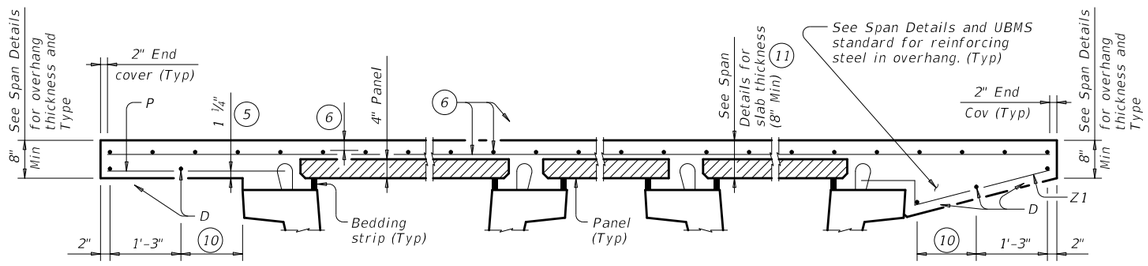
STEEL BEAMS



PRESTRESSED CONCRETE I-GIRDERS



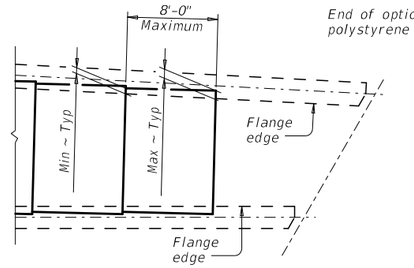
PRESTRESSED CONCRETE X-BEAMS



NORMAL OVERHANG WITH PRESTR CONC U-BEAMS

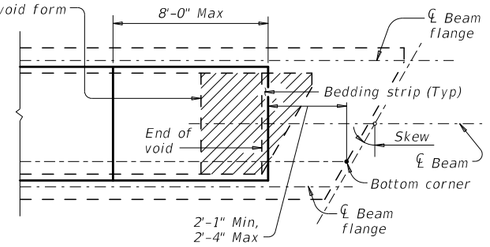
TYPICAL PART TRANSVERSE SECTIONS

SLOPED OVERHANG WITH PRESTR CONC U-BEAMS

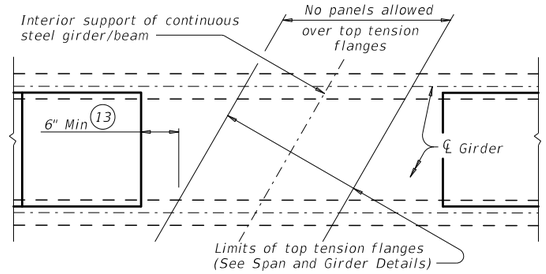


AT FLARED BEAMS OR GIRDERS

See PCP-FAB standard for Min and Max dimensions based on beam/girder type.



OVER CONC U-BEAMS



AT INT SUPPORTS OF CONTINUOUS STEEL GIRDERS

PART PLANS OF PANEL PLACEMENT

(5) Provide clear cover as indicated unless otherwise shown on Span Details.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

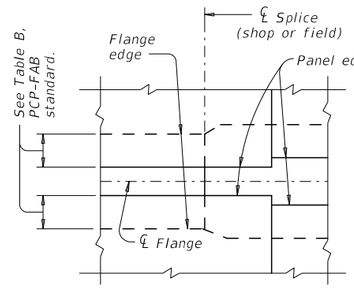
(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..

(10) Equally space additional bar if more than 1'-3" Max.

(11) The actual thickness constructed may exceed the slab thickness shown on the Span Details but the extra thickness may be no more than 2" (1" for prestressed concrete U-beams and steel beams). Bearing seat elevations or finished grade may be adjusted.

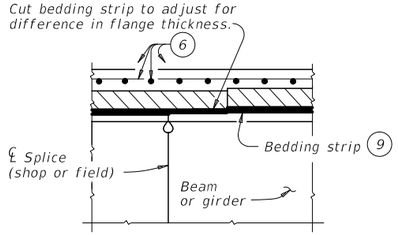
(12) Field adjust Bars Z1(#4) to match actual slope of slab overhangs. Width of slab overhang will vary along span with curved slab edges. Adjust Bar Z1(#4) dimensions to maintain proper cover. Bars Z2(#4) are located at Inverted-Tee stems only.

(13) Location of concrete placement sequence boundaries and bolted field splices should be considered by the contractor in determining panel limits.



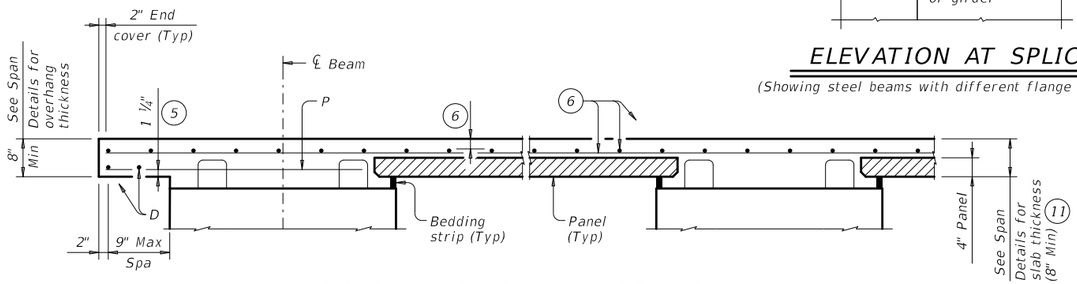
PLAN AT SPLICE

(Showing steel beams with flange width transition)



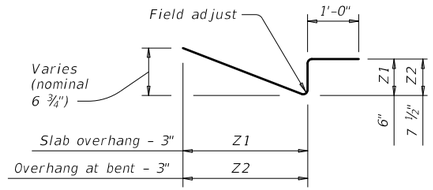
ELEVATION AT SPLICE

(Showing steel beams with different flange thickness)



PRESTRESSED CONCRETE SPREAD SLAB BEAMS

Bars P over exterior beams are still required when no overhang is used. In this case, only one Bar D, 2" from slab edge, is required.



BARS Z (#4) (12)

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Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS DECK DETAILS

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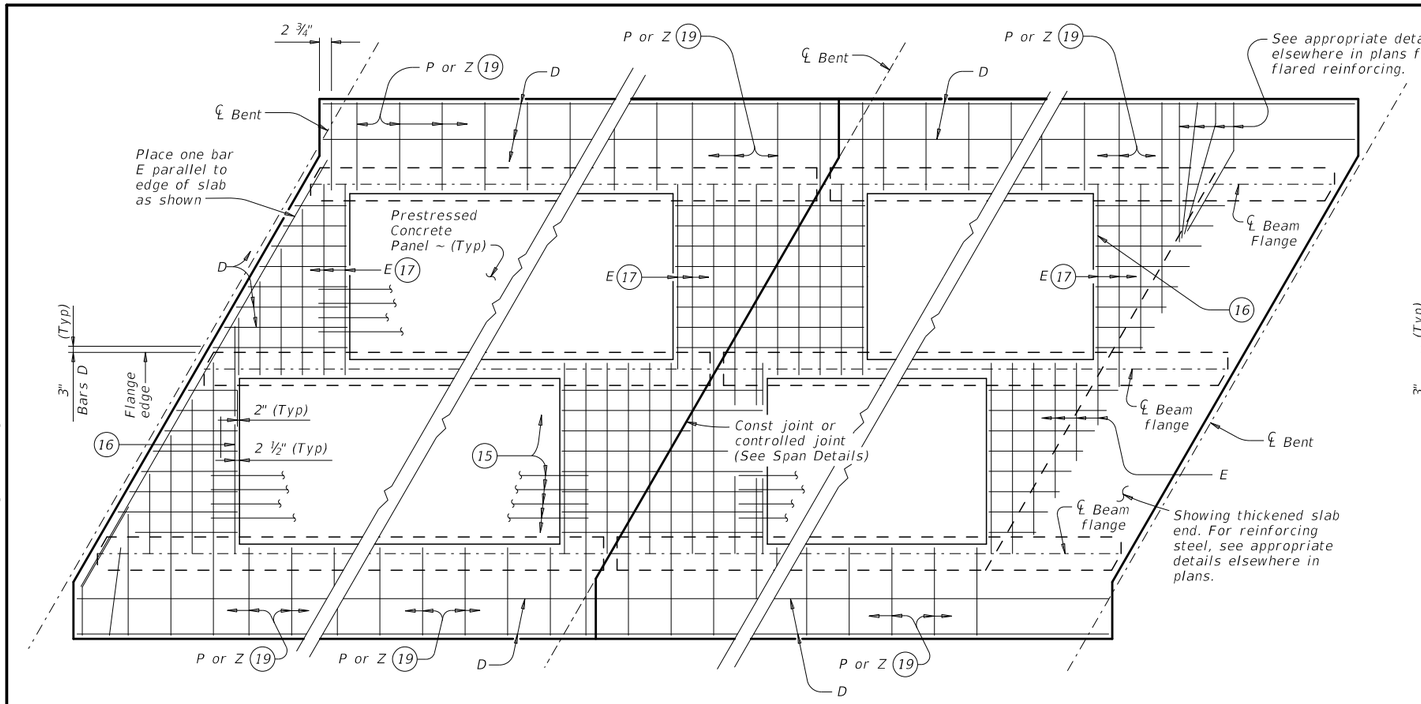
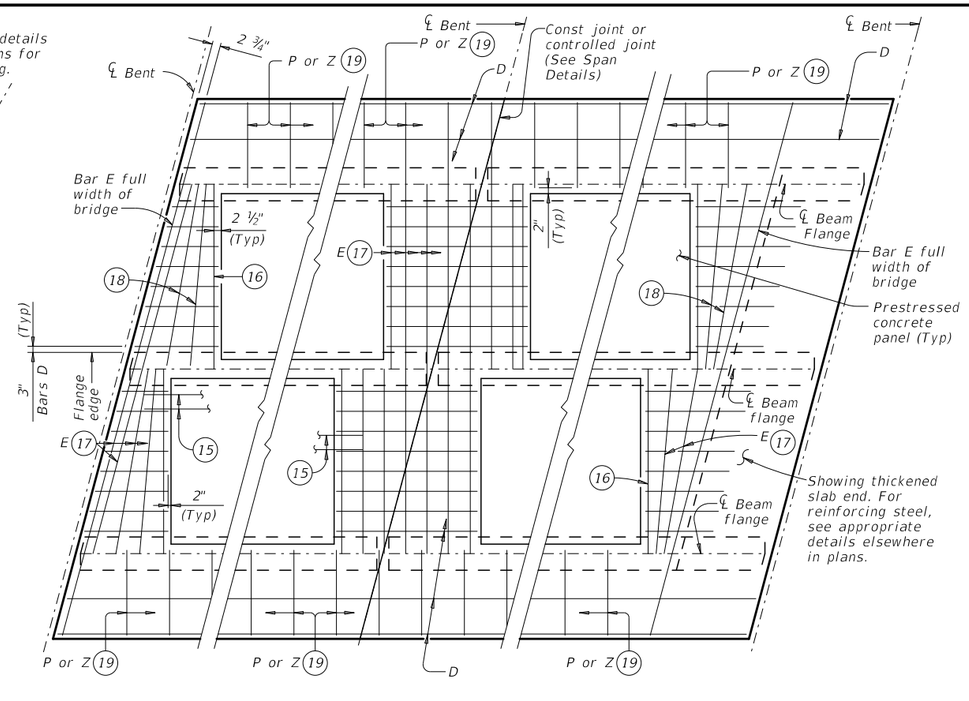


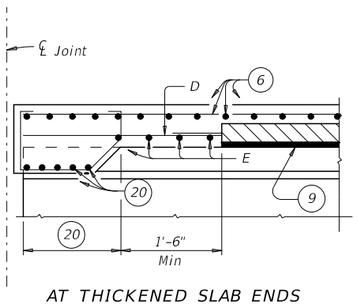
AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

OPTION 1 ~ PLAN OF SLABS WITH NORMAL REINFORCEMENT

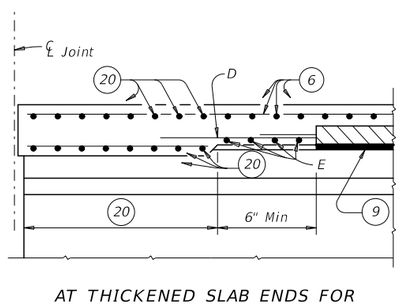


AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

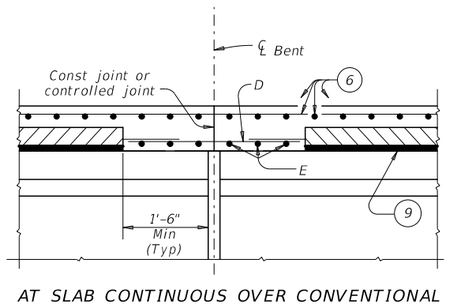
OPTION 1 ~ PLAN OF SLABS WITH SKEWED REINFORCEMENT



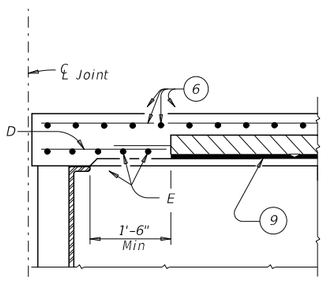
AT THICKENED SLAB ENDS FOR PRESTR CONC U-BMS



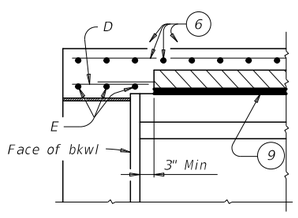
AT THICKENED SLAB ENDS FOR PRESTR CONC I-BMS AND STEEL BMS



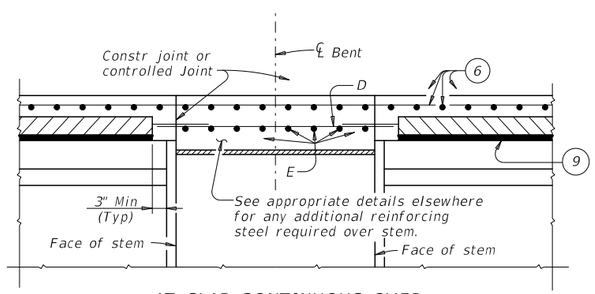
AT SLAB CONTINUOUS OVER CONVENTIONAL INTERIOR BENTS FOR ALL SIMPLE SPAN BMS



AT CONVENTIONAL END DIAPHRAGMS FOR STEEL BMS



AT SLAB OVER ABUTMENT BACKWALL FOR ALL BMS



AT SLAB CONTINUOUS OVER INVERTED-T BENTS FOR ALL BMS

OPTION 1 ~ ELEVATIONS AT BEAM ENDS

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c.

(14) Max Spacing as listed unless otherwise shown.

(15) At connection with cast-in-place slab, extend longitudinal panel reinforcement. See PCP-FAB for details.

(16) Maintain one Bar E(#4) parallel to panel ends (Typ).

(17) Bars E(#4) not continuous over beam flanges must overlap beam flange 6" Min.

(18) Add flared Bars E(#4) (Min Spa = 6", Max Spa = 12") as required at panel ends.

(19) Where possible, Bars E(#4) may be extended into overhangs to replace Bars P(#4). Bars Z(#4) are required for sloped overhangs with U-Beams.

(20) See appropriate thickened slab end details for reinforcing and limits of thickened slab end.

TABLE OF REINFORCING STEEL (14)

BAR	SIZE	Max Spa (in.)
D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18

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Texas Department of Transportation | Bridge Division Standard

PRESTRESSED CONCRETE PANELS
DECK DETAILS

PCP

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REVISIONS	DIST	COUNTY		SHEET NO.
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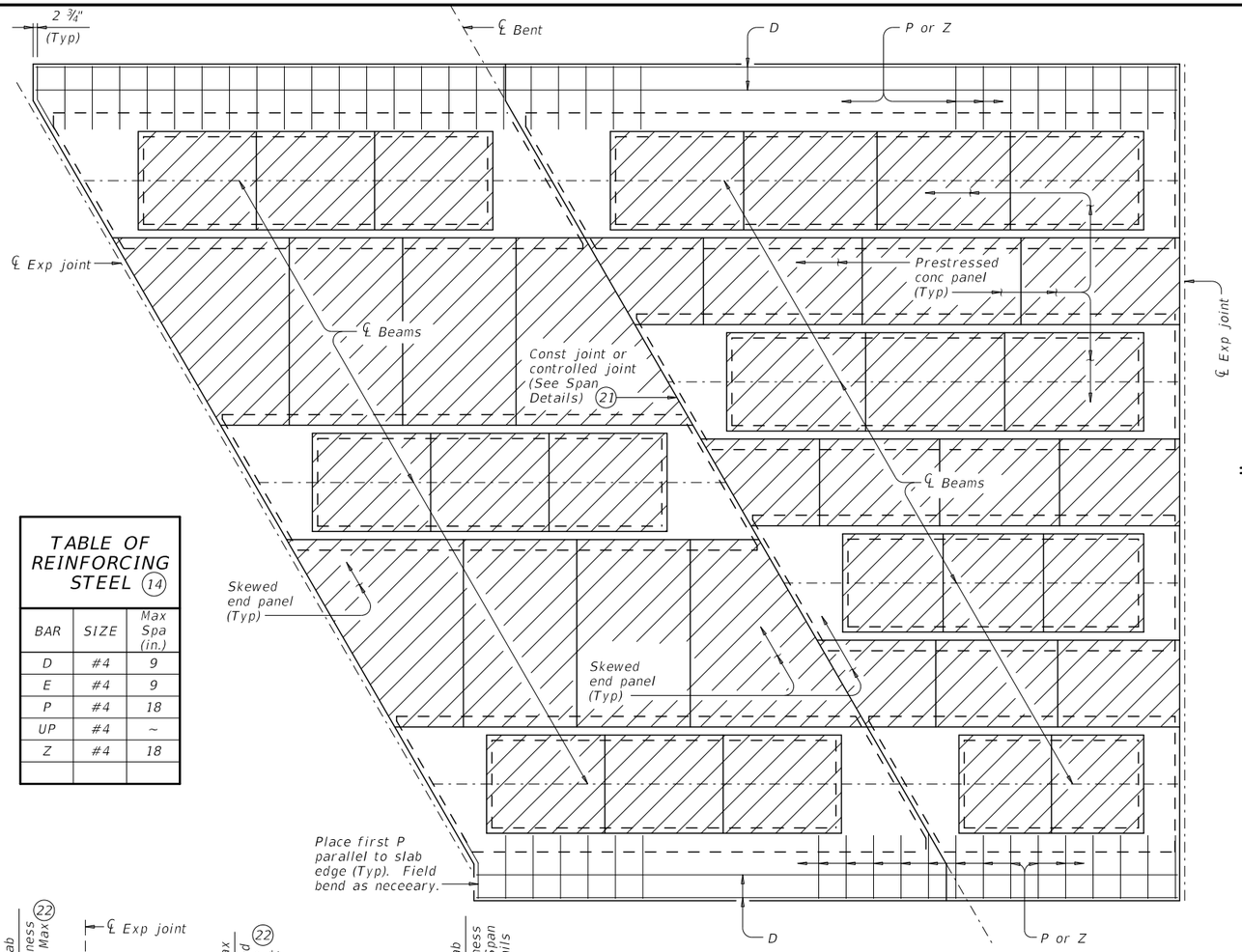
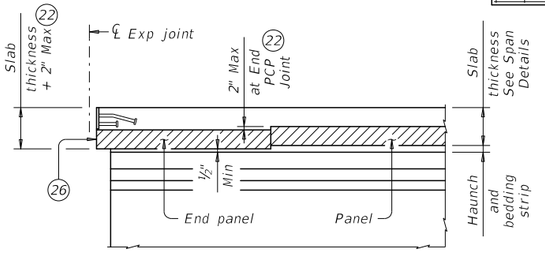


OPTION 2 ~ PLAN OF SLAB

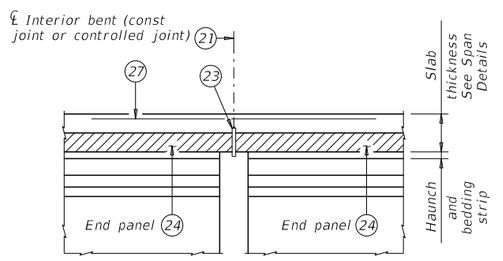
(Showing U-Beams; other beams similar)

TABLE OF REINFORCING STEEL (14)		
BAR	SIZE	Max Spa (in.)
D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18



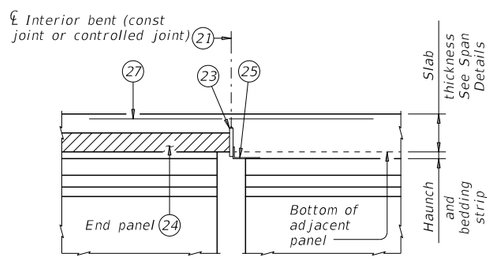
JOINTS (BETWEEN BEAMS/GIRDERS OR AT INV-T STEM)

For SEJ-B, SEJ-M, SEJ-S(0), AJ, and Type A expansion joints only.



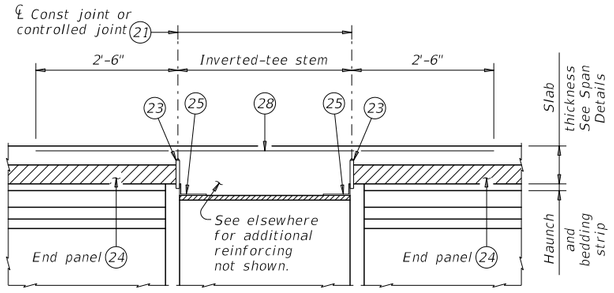
CONVENTIONAL INTERIOR BENT

Panel against panel between beams/girders.



CONVENTIONAL INTERIOR BENT

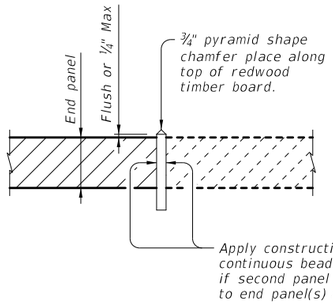
Panel against beam/girder end in adacent span.



INVERTED-T BENT

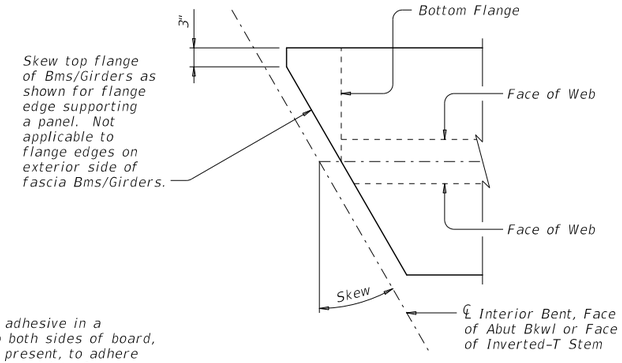
Panels against inverted-tee stem

OPTION 2 ~ ELEVATIONS AT BEAM ENDS (6)



ELEVATION EXAMPLE OF END PANEL AND TIMBER BOARD (23)

See "Option 2 ~ Elevation At Beam Ends".



OPTION 2 ~ SHOWING MODIFICATION TO BEAM/GIRDER TOP FLANGE FOR SKEWS OVER 5°

Showing I-Bm/I-Girder, U-Bms and Steel Bms similar.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(14) Max Spacing as listed unless otherwise shown.

(21) 1 ½" Vinyl or plastic joint former at controlled joints (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer.)

(22) End panel may be set up to 2" lower to accommodate expansion joint hardware, provided bedding strip is not less than ½" thick.

(23) ¾" thick redwood timber board, leave in place. Redwood timber board placed flush with top of panel or within ¼" Max above panel. Place ¾" pyramid shape chamfer along top of timber board. See "Elevation Example of End Panel and Timber Board". Place straight, within ¼" of centerline of bent or face of inverted-tee, across bridge width and end board at exterior flange edge of fascia beams/girders. Do not extend into overhang.

(24) Place panel within ½" of ¾" thick board.

(25) Permanent galvanized steel sheet form. Removable formwork is acceptable.

(26) Place end panel within ½" of expansion joint opening. End panel cannot encroach on required expansion joint opening.

(27) Place additional (#4) bar 5'-0" in length between every slab bars T. Center (#4) bar on Joint.

(28) Place additional (#4) bar continuous 2'-6" beyond each side of Inverted-T Stem between every slab bars T.

SPECIAL OPTION 2 CONSTRUCTION NOTES:

When Option 2 is chosen bottom mat of thickened end slab reinforcing is not required. Use the same top mat as shown on the Thickened Slab End Details sheet.

Placing panels adjacent to expansion joints and bent centerlines prior to completing interior panel placement is recommended. Saw cutting panels to fit is acceptable when approved by the Engineer. Minimum distance from a saw cut edge to a panel strand is 1 ½".

Do not extend the longitudinal panel reinforcement into the cast-in-place slab.

Top flanges of beams and girders on skewed bridges must be modified as shown on this drawing. The Contractor is responsible for coordinating this modification with the beam fabricator prior to submitting shop drawings for approval.

Fabricator may optionally skew the whole end. When electing to skew whole end, girder end details and bearing type at conventional interior bent must be changed to use condition at abutment. Fabricator must coordinate change in bearing type, bearing centerline location, and dowel location with Engineer and Contractor. Show appropriate changes on girder and bearing shop drawings.

Bending of anchor studs of expansion joints shown on standards AJ, SEJ-B, SEJ-M, and SEJ-S(0) is permissible if necessary to clear top of end panels. The Contractor is responsible for coordinating modifications with the joint fabricator. Submit shop drawings for approval when modifications to expansion joint hardware are made.

Bedding strips under skewed end panels must conform to the requirements of Item 422 except their minimum compressive strength must be 60 psi.

Provide Bars AA, G, K and OA from standard IGTS in the slab.

HL93 LOADING

SHEET 4 OF 4

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS

DECK DETAILS

PCP

FILE: pcpstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
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REVISIONS				
	DIST	COUNTY		SHEET NO.
				228

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-228

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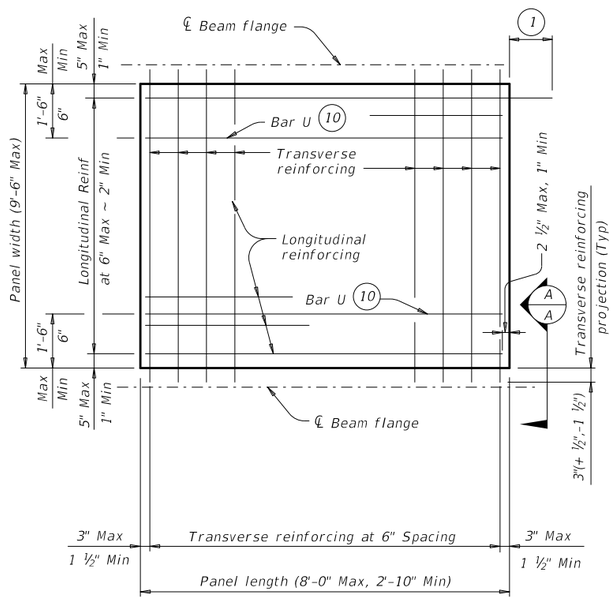
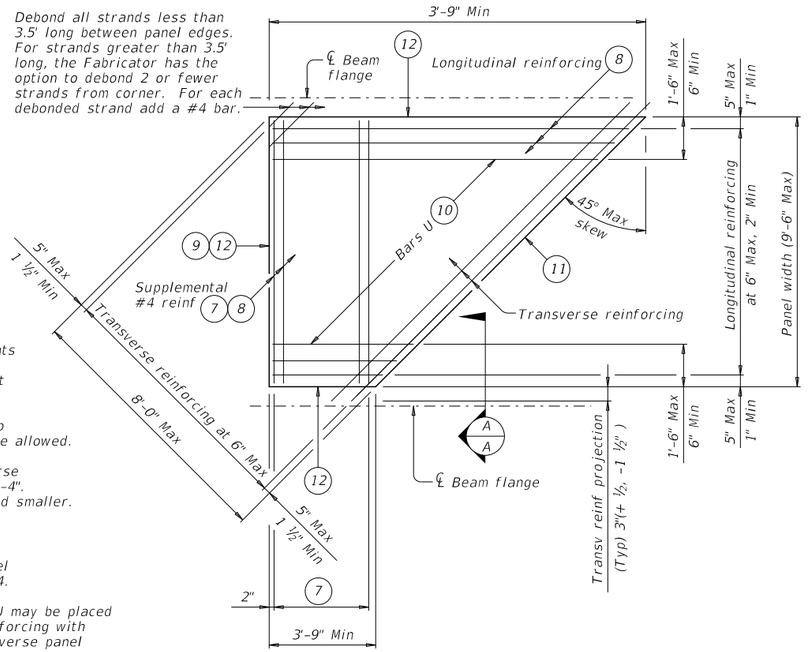


TYPICAL NON-SKEWED PANEL PLAN



TYPICAL SKEWED END PANEL PLAN

(Only to be used with details shown elsewhere in the plans.)

1. At connection with cast-in-place slab, extend longitudinal panel reinforcement 1'-0" (+2",-0") past panel end. Alternatively, provide (#3) x 2'-0" dowels at 6" Max Spacing and extend dowels 1'-0" past panel end.
2. Four loops required per panel.
3. Four loops required per panel. ⅜" or ½" strands may be used.
4. Normal dimensions must be used on spans with parallel beams. Maximum and Minimum dimensions apply only to spans with flared beams.
5. See Normal Grading Detail on PCP standard for lap requirements and bedding strip dimensions. Some laps shown in tables cannot utilize all bedding strip widths.
6. One Splice allowed per panel. No more than two sheets of WWR are allowed.
7. Provide (#4) bars under transverse reinforcing, 10 Spaces at 4" = 3'-4". Omit for 5 degree (1:12) skew and smaller.
8. End Cover 2 ½" Max, 1" Min.
9. Recess strands on indicated panel edge in accordance with Item 424.
10. At the fabricator's option, Bars U may be placed parallel to transverse panel reinforcing with horizontal legs in plane of transverse panel reinforcing.
11. Use length of indicated panel edge as panel width for purpose of determining type of transverse reinforcing.
12. Timber form work permissible this edge.

TABLE A (4) (5)			
Beam Type	Normal (In.)	Min (In.)	Max (In.)
A	3	2 ½	3 ½
B	3	2 ½	3 ½
C	4	3	4 ½
IV	6	4	7 ½
VI	6 ½	4 ½"	8 ½
U40 – 54	5 ½	5 ½	7
Tx28-70	6	5	7 ½
XB20 – 40	4	3	4 ½
XSB12 – 15	4	3	4 ½

TABLE B (4) (5)			
Top Flange Width	Normal (In.)	Min (In.)	Max (In.)
11" to 12"	2 ¾	2 ½	2 ¾
Over 12" to 15"	3 ¼	3	3 ¼
Over 15" to 18"	4	3	4 ¾
Over 18"	5	3 ½	6 ¼

GENERAL NOTES:

Provide Class H concrete for panels. Release strength f'ci=3,500 psi. Minimum 28 day strength f'c=5,000 psi.

Provide ¾" chamfer along bottom edge of panel on beam side.

Do not use epoxy-coated reinforcing steel bar or strand in panels.

Remove laitance from top panel surface.

Finish top of panel to a roughness between a No. 6 and No. 9 concrete surface profile, inclusive, as specified by the International Concrete Repair Institute (ICRI).

Shop drawings for the fabrication of panels will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

A panel layout which identifies location of each panel must be developed by the Fabricator. Permanently mark each panel in accordance with the panel layout. A copy of the layout is to be provided to the Engineer.

TRANSVERSE PANEL REINFORCEMENT:

For panel widths over 5', use ⅜" or ½" Dia (270k) prestressing strands with a tension of 14.4 kips per strand.

For panel widths over 3'-6" up to and including 5', use ⅜" or ½" Dia (270k) prestressing strands with a tension of 14.4 kip per strand. Optionally, (#4) Grade 60 reinforcing bars may be used in lieu of prestressed strands.

For panel widths up to 3'-6", use (#4) Grade 60 reinforcing bars (prestressed strands alone are not allowed).

Place transverse panel reinforcement at panel centroid and space at 6" Max.

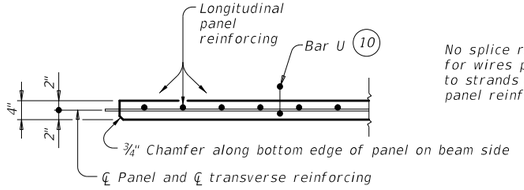
LONGITUDINAL PANEL REINFORCEMENT:

Any of the following options may be used for longitudinal panel reinforcement:

1. (#3) Grade 60 reinforcing steel at 6" Max Spacing. No splices allowed.
2. ⅜" Dia prestressing strands at 4 ½" Max Spacing (unstressed). No splices allowed.
3. ½" Dia prestressing strands at 6" Max Spacing (unstressed). No splices allowed.
4. Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) providing 0.22 sq in per foot of panel width. Wires larger than D11 not permitted. Provide transverse wires to ensure proper handling of reinforcing. One splice per panel is allowed. See WWR Splice Detail.

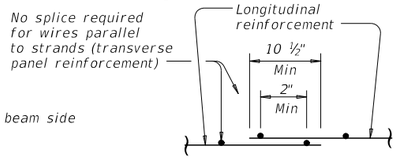
No combination of longitudinal reinforcement options in a panel is allowed.

Place longitudinal panel reinforcement above or below transverse panel reinforcement. Must be placed above transverse panel reinforcement for skewed end panels with supplemental (#4) reinforcement.

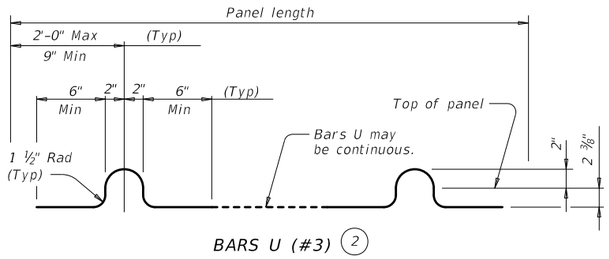


SECTION A-A

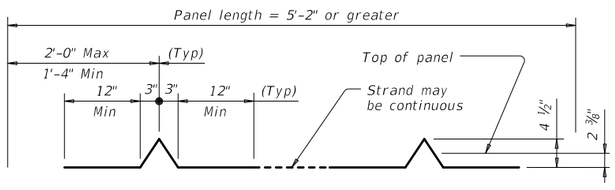
(Not showing supplemental #4 bars for skewed end panels.)



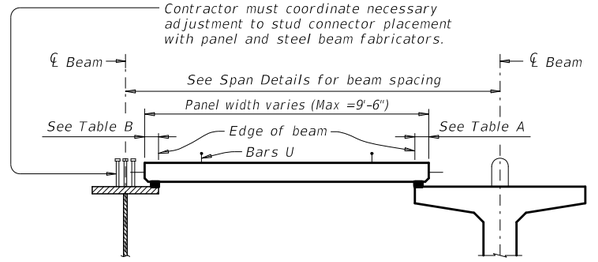
WELDED WIRE REINFORCEMENT (WWR) SPLICE DETAIL (6)



BARS U (#3) (2)



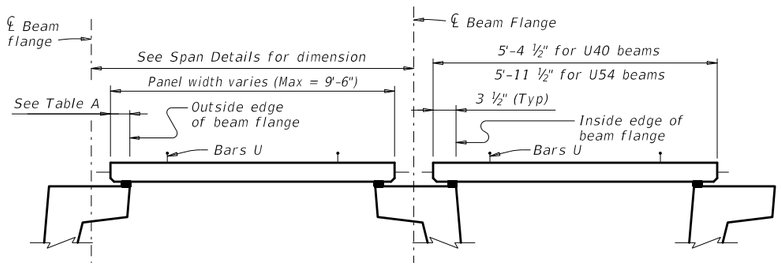
OPTIONAL STRAND FOR BARS U (3)



STEEL BEAMS

PRESTRESSED CONCRETE BEAMS OR GIRDERS

Typ unless noted otherwise



PRESTRESSED CONCRETE U-BEAMS

TYPICAL SECTIONS FOR DETERMINING PANEL WIDTH

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANEL FABRICATION DETAILS

PCP-FAB

FILE: pcpstde2-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: AES
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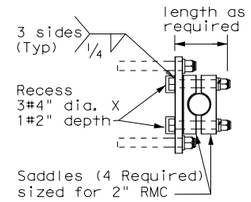
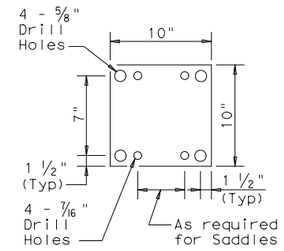
	DIST	COUNTY		SHEET NO. 229

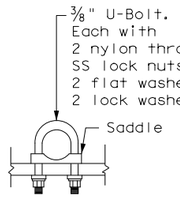
CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-229



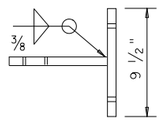
SECTION A-A



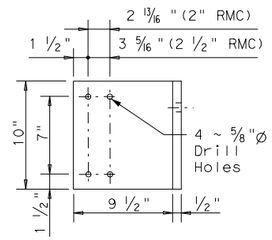
MOUNTING PLATE
(ASTM A-36 or better)



CLAMP DETAIL
(2 Req'd)



PLAN VIEW



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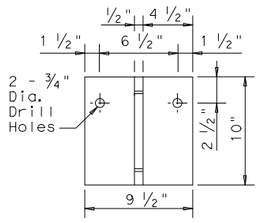
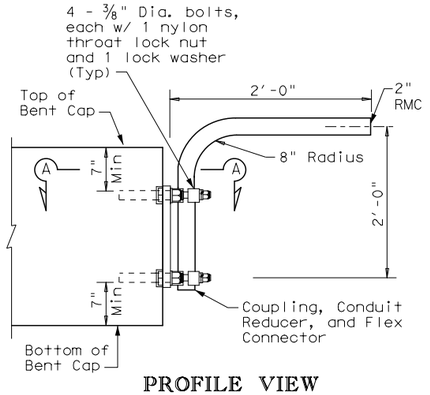
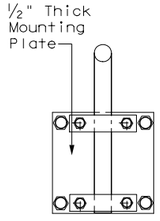


SIDE

BRACKET DETAIL
Make from 1/2" plate (ASTM A-36 or better)

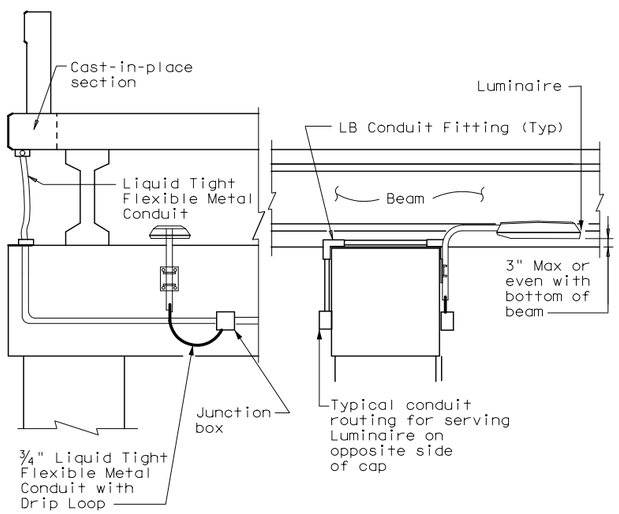


PROFILE VIEW
Or as Required
(See Note A.3)



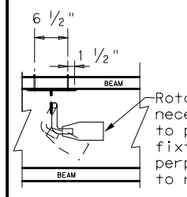
END VIEW

UNDERPASS LIGHTING ARM



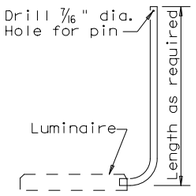
IN RD IL AM (U/P)(TY 1)
If bridge has pre-cast panels under deck, run circuit under deck edge.

UNDERPASS LIGHTING TYPE 1



PLAN VIEW

FIXTURE ORIENTATION



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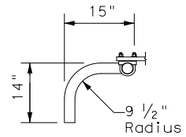
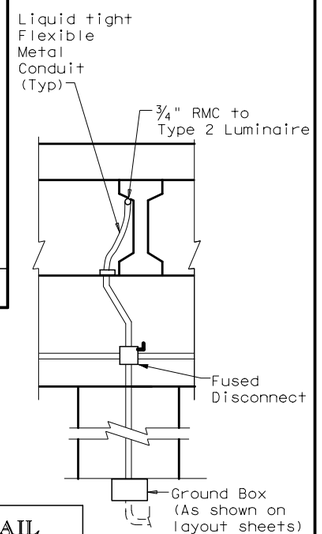
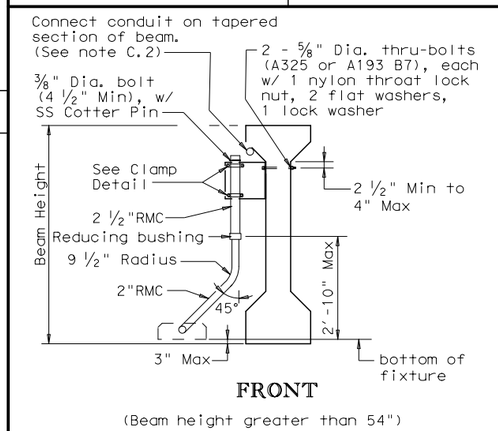


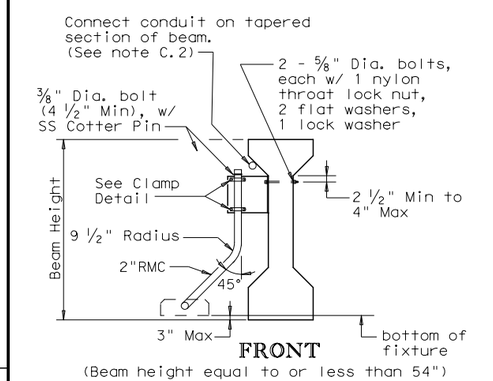
PLAN VIEW

ARM DETAIL





FRONT
(Beam height greater than 54")



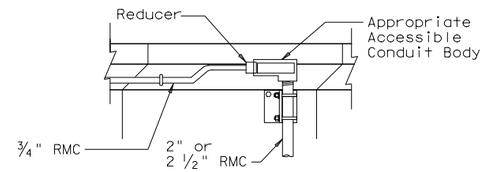
FRONT
(Beam height equal to or less than 54")

IN RD IL AM (U/P)(TY 2)

UNDERPASS LIGHTING TYPE 2

3 - No. 12 XHHW in 3/4" RMC for Branch Circuit runs from fused disconnect to underpass Luminaires

CONDUIT DETAIL



CONDUIT CONNECTION PROFILE

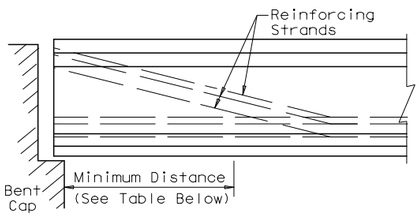


TABLE 5

LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET TABLE

SPAN LENGTH	MINIMUM DISTANCE
≤ 50'	10'-0"
50' - 70'	15'-0"
70' - 90'	20'-0"
> 90'	25'-0"

LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET

GENERAL NOTES:

A. ALL 150 watt HPS and 150 watt equivalent LED Luminaires

1. Luminaire locations, conduit and conductor sizes and routing are typical and diagrammatic only. See project layout sheets for specific details.
2. Conduit will be paid for under Item 618, "Conduit" and conductors will be paid for under Item 620, "Electrical Conductors," unless otherwise shown on the plans.
3. Adjust conduit in saddles to place fixture height and orientation as required. See fixture orientation detail and plans. Where practicable, place luminaires so the bottom of luminaire is above the bottom of the beam, maximum of 3 in. (See detail UNDERPASS LIGHTING ARM TYPE 2)
4. Except as noted, galvanize all structural steel and exposed bolts, nuts, and washers in accordance with Item 445 "Galvanizing".
5. Fabrication of brackets and support arms will not be paid for directly but is subsidiary to Item 610, "Roadway Illumination Assemblies."
6. Install a heavy duty NEMA 3R fused disconnect or breaker enclosure rated at 30 amps and 480 volts to switch underpass luminaires as shown on plans, with at least one per bridge circuit. Install 20 amp time-delay fuses or inverse-time circuit breakers. Mount disconnect or breaker enclosure 10 ft.(min) above grade on columns or bent caps as approved by the Department. Modify disconnect to allow padlocking in the "ON" and "OFF" positions. Padlocks and disconnect switches or circuit breakers for underpass fixtures will not be paid for directly but are subsidiary to the various bid items of the contract.
7. Conduit on columns, caps, and slab is shown surface mounted. For new columns and caps, embed PVC conduit in concrete. Bond and ground metal junction boxes and conduit.

B. TYPE 1

1. Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) for Type 1 arm shaft.
2. Use 3/8 in. stainless steel bolt or stud non-epoxy type expansion anchors for concrete for Type 1 mounting. Except as noted, provide an allowable 2650 lbs minimum pull-out force (after consideration of adjustment factors for edge distance and bolt spacing) for each anchor. Install each anchor to the embedment depth recommended by the manufacturer.
3. Attach conduit to plate with 4 saddles, four - 3/8 in. diameter bolts, nylon throat lock nuts, and lock washers.

C. TYPE 2

1. Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) or provide a combination of 2 1/2 in. (2.875" O.D., 0.193" wall) and 2 in. (2.375" O.D., 0.146" wall) rigid metal conduits with a reducing bushing as beam height stipulated for Type 2 arm shaft. Field cutting and threading will be permitted. Paint cut and threaded areas with zinc rich paint after conduit is connected to adjacent fitting.
2. Connecting conduit may be strapped to tapered section only of precast beams as shown. Anchor as approved by the Engineer. Maximum anchor depth is 1 in.
3. Indiscriminate drilling into precast concrete beams may result in reduced beam strength. Use drilling location and method as directed by the Engineer. See Location of Underpass Lighting Mounting Bracket detail. The locations shown in the table are such that reinforcing strands will not be damaged.

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS
(UNDERPASS LIGHT FIXTURES)

RID(3)-20

FILE: rid3-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
2-14	DIST	COUNTY		SHEET NO.
7-17				230
12-20				

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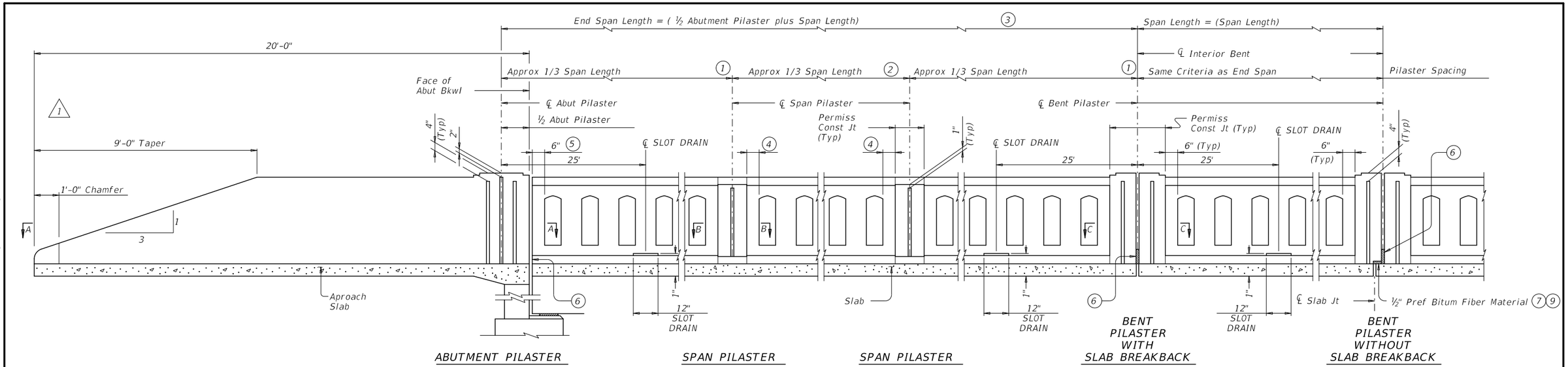
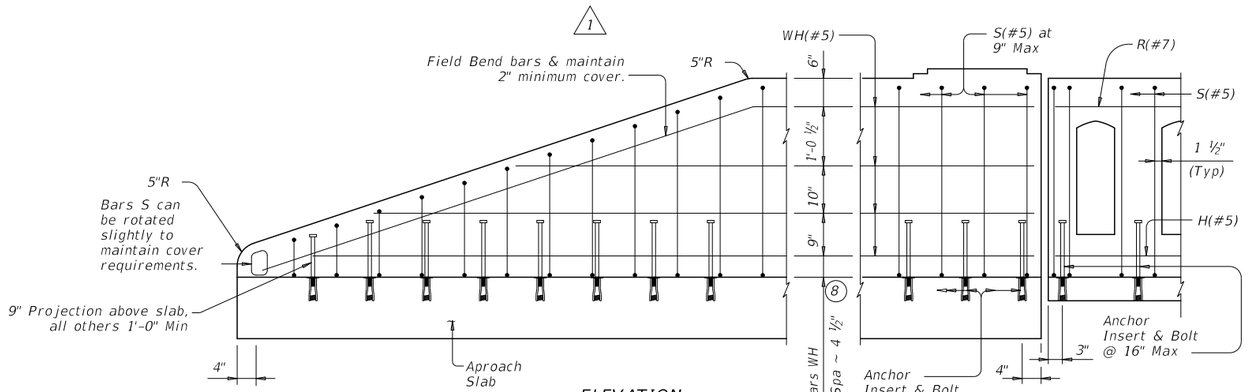


ROADWAY ELEVATION OF RAIL

(Showing without raised sidewalk)

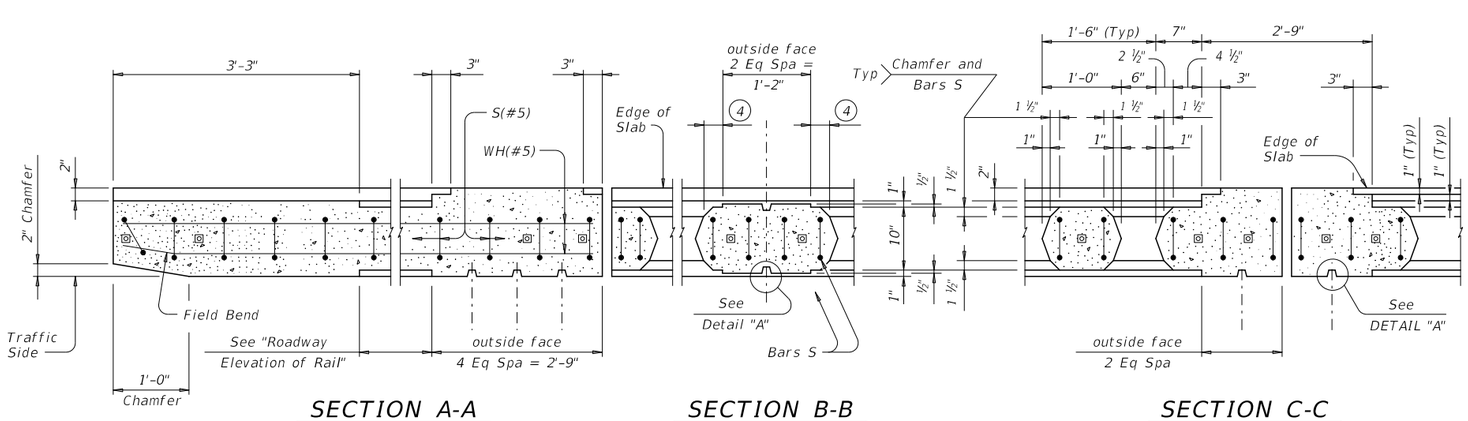
1. Number of windows in exterior bays are equal.
2. Number of windows in interior bay(s) are not less than the amount in (Note 3).
3. Space Span Pilasters at 1/3 span length (Approx) when spans are 100 ft and less, as shown. Space Span Pilasters at 1/5 span length (Approx) for spans greater than 100 ft.
4. Dimension is the same for all posts adjacent to Span Pilasters in a span. Dimension may vary from span to span, Min = 3", Max = 7 ½".
5. Min = 6", Max = 1'-3".
6. Provide rail joints at ends of all spans the same width as Slab joint opening, except that Rail Joints over construction joints must be ¼" Min to ¾" Max in width. Joints must be open if slab joint opening is not sealed. Joints over construction joints and over sealed deck joints must be plugged. Forming material used in joints may be left in place if it is light in color and compressible, such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc. If forming material is not left in place, the bottom 6" must be plugged with slab joint sealing compound to prevent drainage and staining.
7. Place Preformed Bituminous Fiber Material between slab and rail when rail extends over expansion joint. Shift Anchor Inserts & Bolts as necessary.
8. Increase 2" for structures with overlay.
9. Shift Anchor Inserts & Bolts from region below ½" Preformed Bituminous Fiber Material at joints.

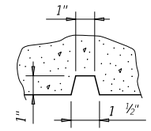


ELEVATION

ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

(Showing without raised sidewalk)





DETAIL "A"

The use of this railing is restricted to speeds of 45 mph or less.

SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

COMBINATION RAIL TEXAS CLASSIC

TYPE C411(MOD)

ERIC K. KRONER 88551 LICENSED PROFESSIONAL ENGINEER
12/27/22

FILE: rlstd021-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
7-20: Bronze star change to one manufacturer.	DIST	COUNTY		SHEET NO.
				231

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-231

DATE: 1/4/2023 3:40:49 PM
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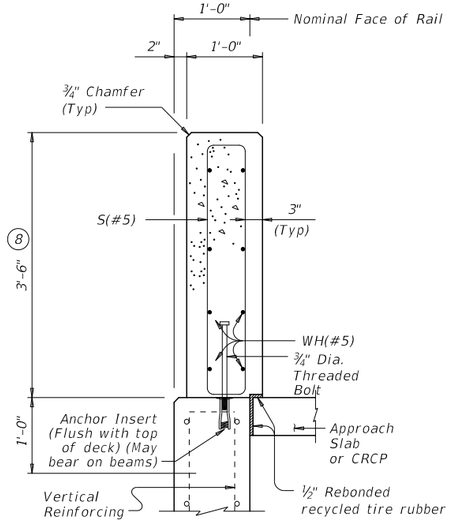
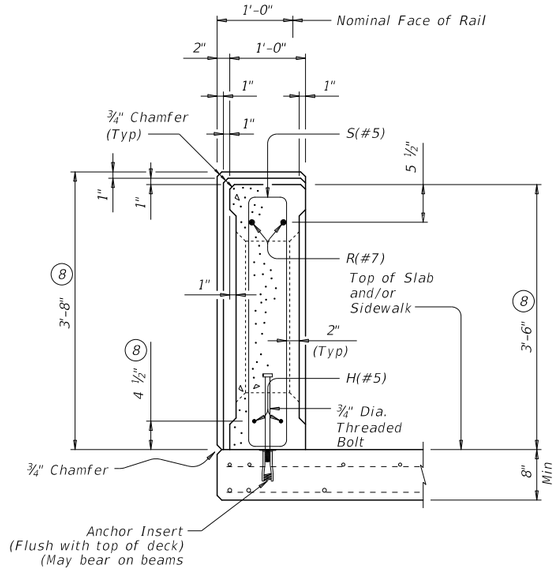
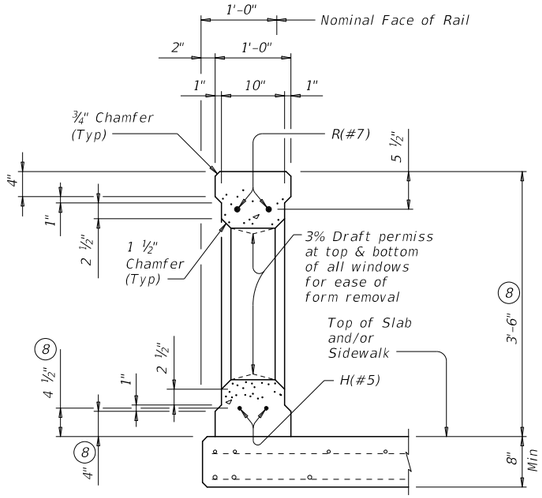


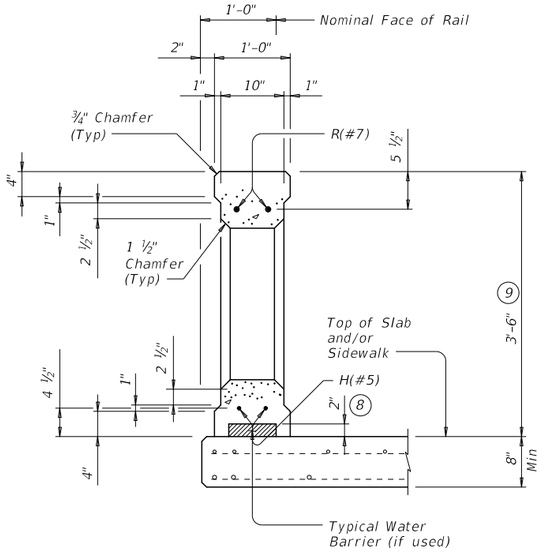
ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS



SECTION THRU POST ON BRIDGE SLAB
(Showing Pilaster)



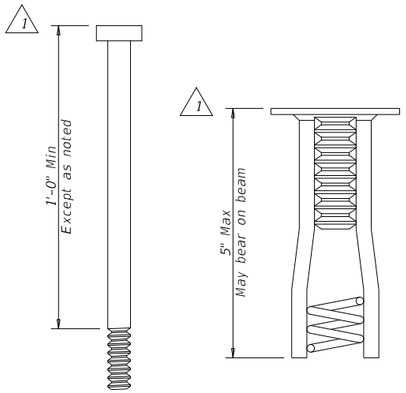
SECTION THRU WINDOW ON BRIDGE SLAB



AT OPEN ON BRIDGE SLAB

1 SECTIONS THRU RAIL WITHOUT RAISED SIDEWALK

(8) Increase 2" for structures with overlay.



1 Note:

Threaded anchor assemblies for the rail to slab attachment shall be galvanized. Threaded anchor assemblies shall conform to Item 449, mild steel anchor bolts or A36 threaded rod with tack-welded nuts (0.906" Min Dia with rolled threads). The embedded, threaded anchor insert may be a Dayton/Richmond F57 NC Expanded Coil Insert with MountING Washer or Engineer Approved Equivalent.

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

Texas Department of Transportation

Bridge Division Standard

COMBINATION RAIL TEXAS CLASSIC

TYPE C411(MOD)

FILE: ristd021-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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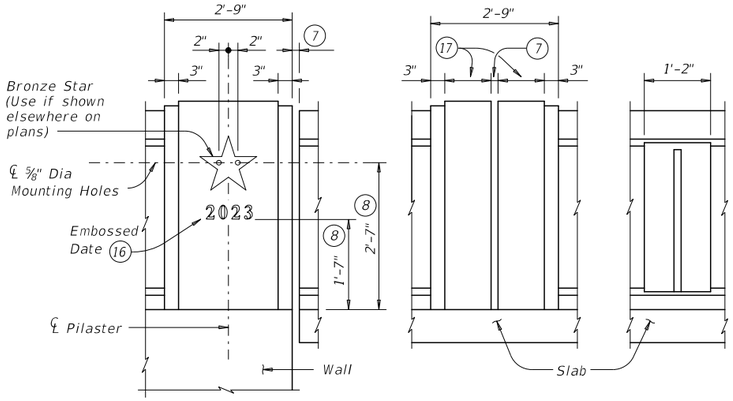
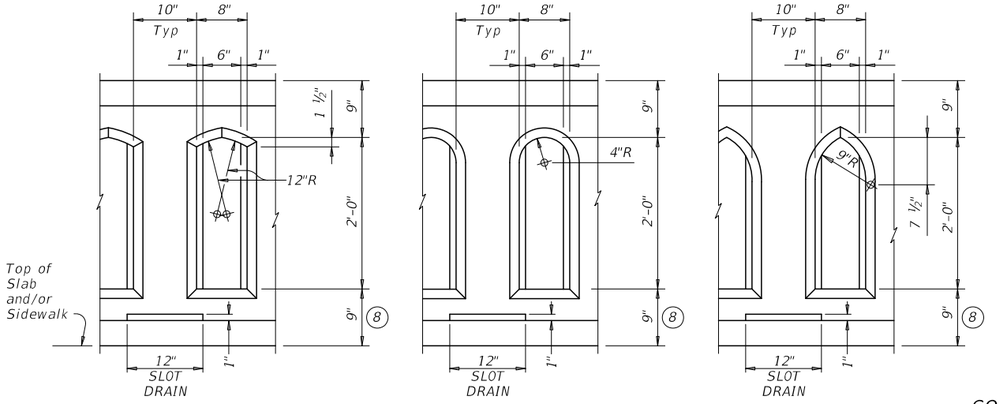
REVISIONS				
7-20: Bronze star change to one manufacturer.	DIST	COUNTY		SHEET NO.
				232

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-232



EXTERIOR PILASTER ELEVATIONS

(Showing without raised sidewalk)



WINDOW TYPES

CONSTRUCTION NOTES:

Attach Bronze Star with a Type III Class C, D, E, or F epoxy adhesive. Clamp star until epoxy achieves set. Remove any visible epoxy "squeeze out" from under star.

Face of rail and pilasters, parapet must be plumb unless otherwise approved.

Apply a one rub finish to all railing surfaces unless otherwise shown elsewhere on the plans.

MATERIAL NOTES:

Provide Class "C" concrete for railing. Provide Class "C" (HPC) concrete if shown elsewhere in the plans.

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.

Bronze Star must be cast of architectural bronze having the following composition: Copper 85 %, Tin 5 %, Lead 5 %, Zinc 5 %.

Provide bar laps, where required, as follows:

Uncoated or galvanized ~ #5 = 2'-0"
Uncoated or galvanized ~ #7 = 2'-11"
Epoxy coated ~ #5 = 3'-0"
Epoxy coated ~ #7 = 4'-4"

GENERAL NOTES:

This rail has been successfully evaluated by full-scale crash test to meet MASH TL-2 criteria. This rail can be used for speeds of 45 mph and less when a TL-2 or TL-3 rated guard fence transition is used. This rail is only approved for low speed use, speeds of 45 mph and less.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

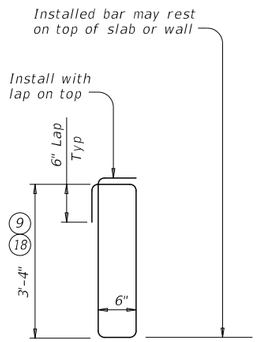
Shop drawings will not be required for this rail.

See Bridge Layout or other plan sheets for the following: dimensions with the number of span pilasters, dimensions with the number of windows, window type, inclusion of bronze stars, inclusion of construction year with abutment identity.

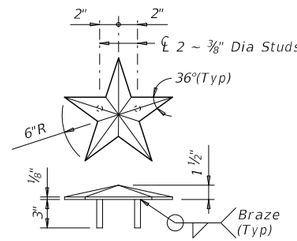
Submit erection drawings showing span number, span pilaster locations, number of windows between pilasters and spacing to first window (see Note 6) to the Engineer for approval.

Average weight of railing with no overlay increase and no pilasters is 350 plf.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



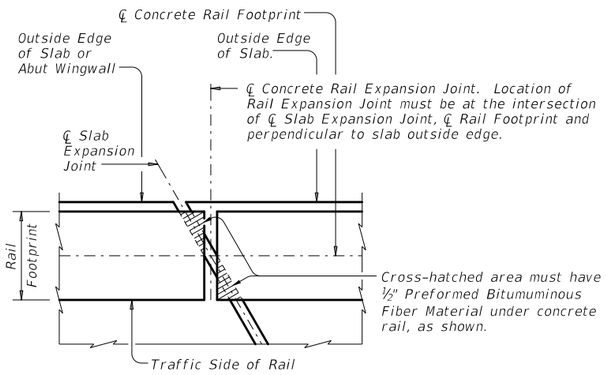
BARS S (#5)



BRONZE STAR DETAIL (19)

One known manufacturer is:

1. Southwell Company
   Corpus Christi, Texas



PLAN OF RAIL AT EXPANSION JOINTS

Example showing Slab Expansion Joints without breakbacks.

(7) Provide rail joints at ends of all spans the same width as Slab joint opening, except that Rail Joints over construction joints must be ¼" Min to ¾" Max in width. Joints must be open if slab joint opening is not sealed. Joints over construction joints and over sealed deck joints must be plugged. Forming material used in joints may be left in place if it is light in color and compressible, such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc. If forming material is not left in place, plug the bottom 6" with slab joint sealing compound to prevent drainage and staining.

(8) Increase 2" for structures with overlay.

(16) Construction year (use if shown elsewhere on plans) 3" High "Plantin Bold" Typeface with ¼" recess. Placed at one Abutment only or as directed by the Engineer.

(17) Dimensions must be the same on each side of joint.

(18) Reduce by 2" or field bend over Preformed Bituminous Fiber Material to gain cover.

(19) Bronze Star dimensions of the final product can be slightly smaller due to shrinkage after casting.

STATE OF TEXAS
ERIC K. KRONER
88551
LICENSED
PROFESSIONAL ENGINEER
12/27/22

CITY OF MESQUITE
RECORD DWG INDEX NO.
2023-029-233

SHEET 3 OF 3

Texas Department of Transportation

Bridge Division Standard

COMBINATION RAIL
TEXAS CLASSIC

TYPE C411(MOD)

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7-20: Bronze star change to one manufacturer.	DIST	COUNTY		SHEET NO.
				233

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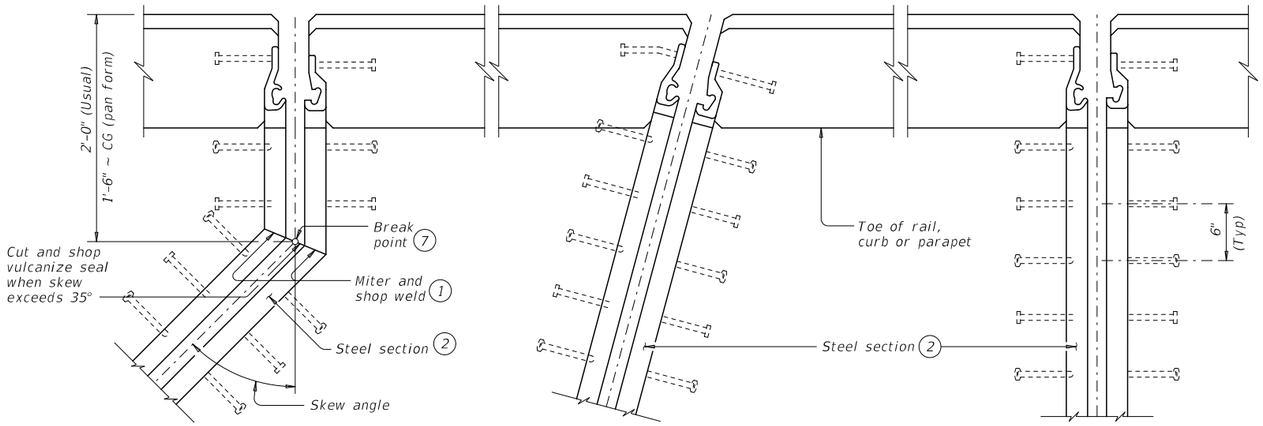
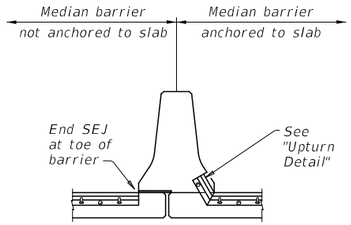
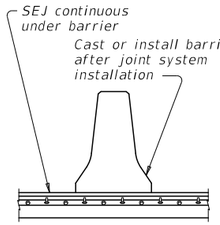


SHOWING SKEWS WITH SLAB BREAKBACKS | SHOWING SKEWS WITHOUT SLAB BREAKBACKS | SHOWING WITHOUT SKEWS AND SLAB BREAKBACKS

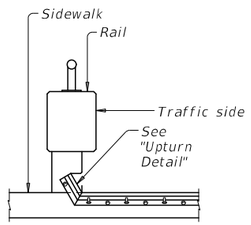
PLANS OF END CONDITIONS



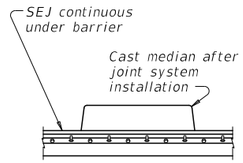
WITH OPEN DECK JOINT BELOW MEDIAN BARRIER



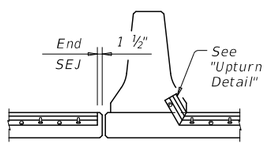
AT MEDIAN BARRIER



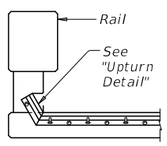
AT SIDEWALK BEHIND BRIDGE RAIL



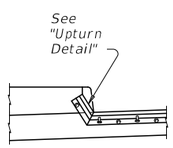
AT RAISED MEDIAN



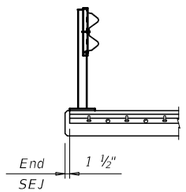
WITH OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL

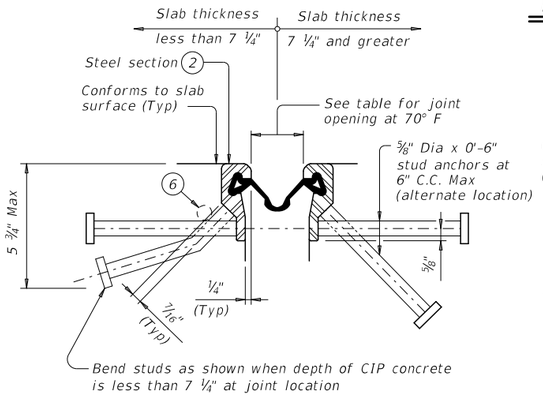


AT SIDEWALK

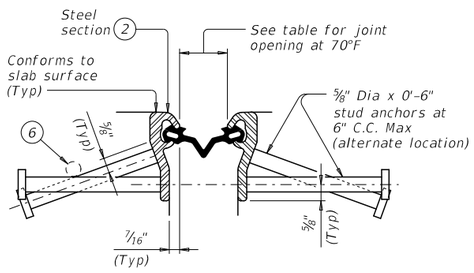


AT STEEL POST BRIDGE RAIL

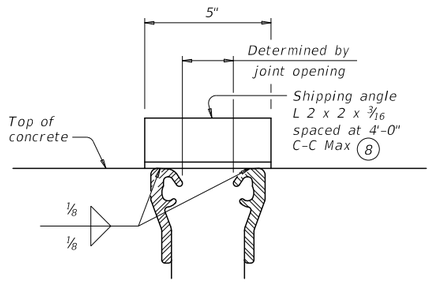
TYPICAL SECTIONS (5)



SECTION THRU WATSON BOWMAN ACME (SE-400 OR SE-500) JOINTS



SECTION THRU D.S. BROWN (A2R-400 OR A2R-XTRA) JOINTS



SHOWING D.S. BROWN (Ty SSCM2)
(All joints are similar.) (Studs are not shown for clarity.)

SHIPPING ANGLE

An alternate method of securing joint sections may be used if approved by the Bridge Division. Erection bolts are not allowed.

TABLE OF SEALED EXPANSION JOINT INFORMATION

MANUFACTURER	STEEL SECTION (2)	STRIP SEAL			
		4" JOINT		5" JOINT	
		Seal Type	Joint Opening (3)	Seal Type	Joint Opening (3)
D.S. Brown	Type SSCM2	A2R-400	1 ¾"	A2R-XTRA	2"
Watson Bowman Acme	Type R	SE-400	1 ¾"	SE-500	2"

REDUCED LONGITUDINAL MOVEMENT RANGE		
SKEW (deg)	JOINT SIZE	
	4"	5"
0	4.0"	5.0"
15	4.0"	5.0"
30	3.5"	4.3"
45	2.8"	3.5"

DESIGN NOTES:

Joints installed on a skew have reduced ability to accommodate longitudinal movement. Use table values to determine the correct joint size for skewed installations.

For other skews over 25 degrees, calculate reduced movement range by multiplying joint size by cosine (skew).

(1) Remove all burrs which will be in contact with seal prior to making splice.

(2) Shape of steel section shown is typical. Variations in sections must be approved by the Engineer.

(3) These openings are also the recommended minimum installation openings.

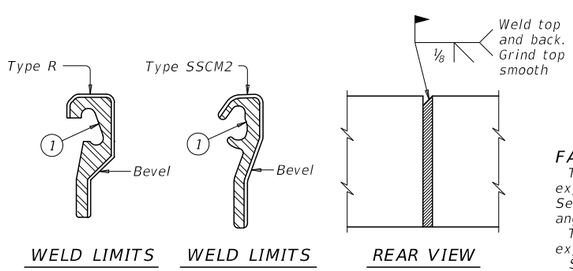
(4) Reduce for sidewalk or parapet heights less than 6".

(5) Other conditions affecting the joint profile should be noted elsewhere.

(6) Move transverse bars that are in conflict with SEJ studs, in either the bridge slab or approach slab, to rest at the junction of the studs.

(7) See Span details for location of break point.

(8) Align shipping angle perpendicular to joint.



WELD LIMITS | WELD LIMITS | REAR VIEW

FIELD SPLICE DETAIL

FABRICATION NOTES:

Temporarily shop assemble corresponding sections of sealed expansion joints (SEJ), check for fit, and match mark for shipment. Secure corresponding sections together for shipment with shipping angle. Do not use erection bolts.

The seal must be continuous and included in the price bid for sealed expansion joint.

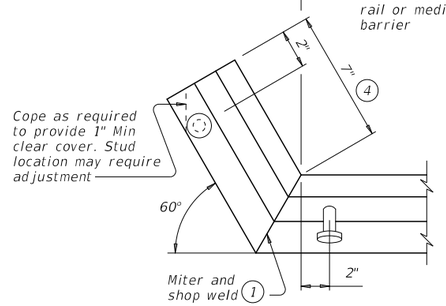
Ship steel sections in convenient lengths of 10'-0" Min and 24'-0" Max unless necessary for staged construction or widenings. One shop splice is permitted in each shipping length provided no piece is less than 2'-0" long and sufficient studs are added to limit the stud to shop splice distance to 2" Min and 4" Max.

Weld studs in accordance with AWS D1.1.

Butt weld all shop and field splices and grind smooth areas in contact with seal. Make all necessary field splice joint preparations in the shop.

Paint the entire steel section with System II or IV primer in accordance with Item 446, "Field Cleaning and Painting Steel", unless required to galvanize when shown in the plans. Provide galvanizing in accordance with Item 445, "Galvanizing". Provide paints in accordance with Item 446.2. Prepare steel and apply paint in accordance with Item 446.4.7.3 and 446.4.7.4.

Shop drawings for the fabrication of sealed expansion joints will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.



UPTURN DETAIL

CONSTRUCTION NOTES:

Secure the sealed expansion joint in position and place to the proper grade and alignment by welding braces to adjacent reinforcing steel, to prestressed beam stirrups, or to anchors cast in concrete diaphragms. Include cost of temporary bracing in the price bid for sealed expansion joint.

Remove shipping angle immediately after each joint half is secured in place. Grind smooth, and touch up with organic zinc-rich paint.

Clean and prepare seal cavity for seal installation as per the Manufacturer's installation procedures.

GENERAL NOTES:

Provide sealed expansion joints in the size and at locations shown on the plans.

Minimum slab and overhang thickness required for the use of SEJ-M is 6 ½".

Texas Department of Transportation

Bridge Division Standard

SEALED EXPANSION JOINT TYPE M
WITHOUT OVERLAY

SEJ-M

FILE: sejmste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
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REVISIONS				
	DIST	COUNTY		SHEET NO.
				234

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(1) Applicable to EE bearings only.

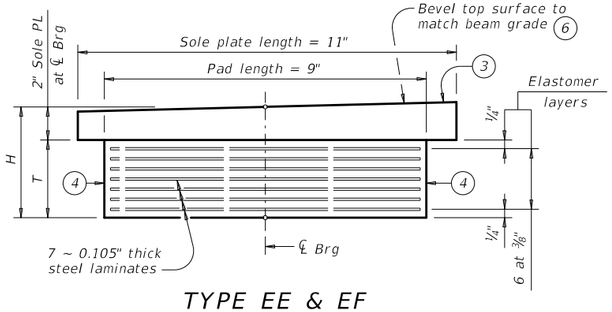
(2) Min DL can be reduced by the ratio of (actual exp length/max exp length).

(3) Locate "Bearing Type" identification here.

(4) Locate permanent mark here.

(5) Min Bearing Seat width, normal to girder, is "S" + 8".

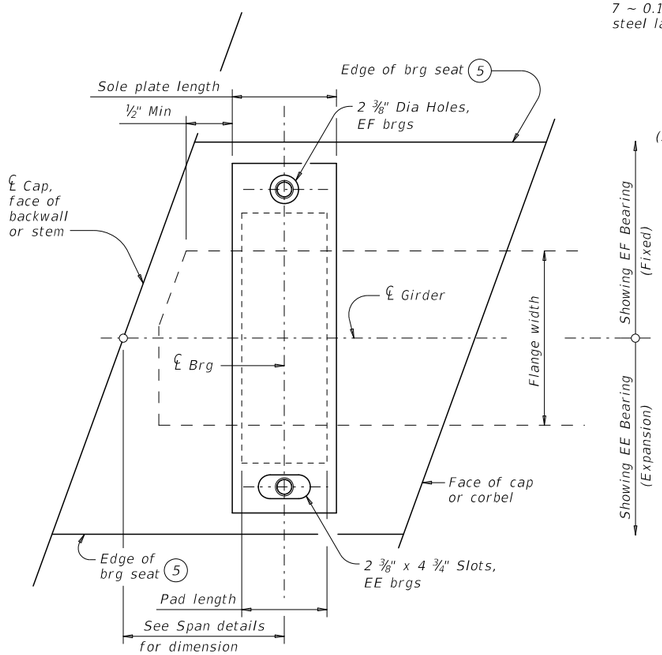
(6) See span details for beam grade (slope) at bearing locations.



TYPE EE & EF LAMINATED ELASTOMERIC BEARING DETAIL

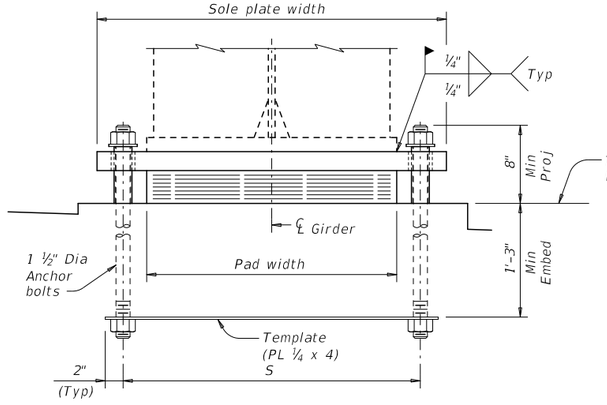
(50 Durometer) (Vulcanize sole plate to elastomer)

Bearing Type	Neoprene Pad		Sole Plate		H	S	T	Flange Width		Reactions (Unfactored)			Max Expansion Length (1)
	Width	Length	Width	Length				Min	Max	(1)(2) Min DL	Max DL	Max Total	
	in	in	in	in	in	in	in	in	in	kip	kip	kip	ft
EE1 or EF1	15	9	25.5	11	5.5	20.0	3.49	10	15	59	115	144	250
EE2 or EF2	18	9	28.5	11	5.5	23.0	3.49	10	18	71	148	185	250
EE3 or EF3	21	9	31.5	11	5.5	26.0	3.49	11	21	83	181	226	250
EE4 or EF4	24	9	34.5	11	5.5	29.0	3.49	14	24	95	215	269	250
EE5 or EF5	27	9	37.5	11	5.5	32.0	3.49	17	27	106	249	312	250
EE6 or EF6	30	9	40.5	11	5.5	35.0	3.49	20	30	118	284	355	250
EE7 or EF7	32	9	42.5	11	5.5	37.0	3.49	22	32	126	307	384	250
EE8 or EF8	34	9	44.5	11	5.5	39.0	3.49	24	34	134	331	414	250
EE9 or EF9	36	9	46.5	11	5.5	41.0	3.49	26	36	142	355	443	250

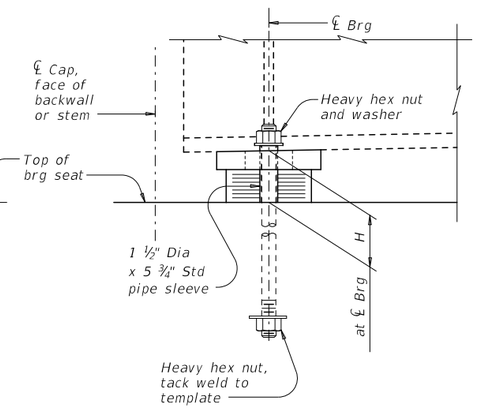


PLAN

Pipe sleeves, washers and nuts not shown for clarity



FRONT ELEVATION



SIDE ELEVATION

END FIXED (EF) AND EXPANSION (EE) BEARINGS

Paid for at unit price bid for "Elastomeric Bearing" as per Item 434.

MATERIAL NOTES:

Provide anchor bolts conforming to ASTM F1554 Grade 105 or ASTM A193 Grade B7. Provide nuts conforming to ASTM A563 Grade DH, heavy hex or A194 Grade 2H, heavy hex. Provide washers conforming to ASTM F436. Provide pipe sleeves conforming to the requirements of ASTM A53 Grade B or A 500 Grade B. Hot-dip galvanize all anchor bolts (exposed end plus 6" Min), nuts not embedded in concrete, and pipe sleeves as per Item 445, "Galvanizing".

For painted bridges, provide steel for sole plates conforming to ASTM A36 or A588. For unpainted (weathering) bridges, provide steel for sole plates conforming to ASTM A588.

GENERAL NOTES:

The bearings shown on this standard are intended for use with continuous and simple span rolled beams and plate girders. None of the bearings shown are designed to resist uplift.

See span details for bearing type and location.

The bearing fabricator is required to develop a bearing layout which identifies location and orientation of all bearings. Permanently mark each bearing in accordance with the bearing layout. A copy of the bearing layout is to be provided to the Engineer.

Submit shop drawings for approval. Dimension sole plates to the nearest 1/16" based on required thickness at centerline of bearing and slope of the girder in the finished structure. Thickness tolerance variation from the shop drawings is 1/16" +/-, except the variation from a plane parallel to the theoretical top surface can not exceed 1/16" total.

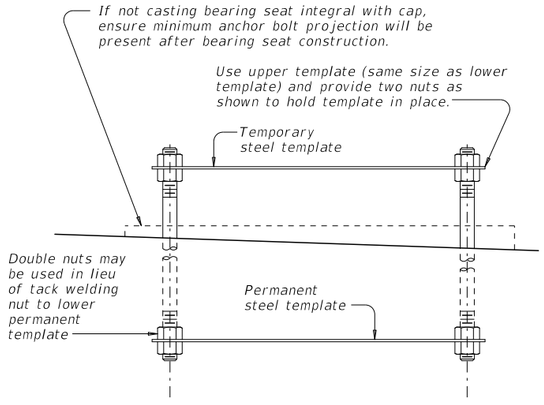
Install anchor bolt nuts finger-tight or loosely snug.

(7) Form hole with either plastic duct meeting the requirements of Item 426.2.2 or galvanized corrugated metal post-tensioning duct. Do not use PVC or other smooth plastic or steel duct. Do not drill hole.

(8) Fill void with a pre-qualified grout conforming to DMS-4675 and capable of 4,000 psi compressive strength. Void may also be filled with epoxy grout using Type VIII epoxy conforming to DMS-6100. Clean holes before filling.

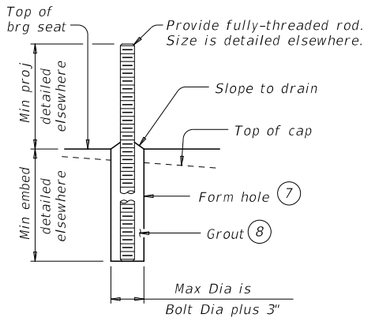
All bearings on this standard require wood float bearing seat surfaces that are clean and free of all loose material before placement of bearings.

These bearings are not intended for use with bridges over 100 ft wide. The anchor bolts are not designed to restrain temperature-induced lateral movement.



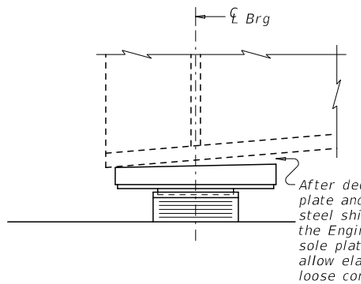
ANCHOR BOLT SETTING DETAIL

Applies to all bearings on this standard. Verify and correct, if necessary, anchor bolt location immediately after concrete placement, before initial set.



OPTIONAL ANCHOR BOLT SETTING DETAIL

Applies to all bearings on this standard.



GIRDER TO SOLE PLATE WELD DETAIL

Applies to all end bearings on this standard. Small gaps between girders and sole plates are anticipated under steel dead load only.

SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

ELASTOMERIC BEARING DETAILS
STEEL GIRDERS AND BEAMS

SGEB

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(2) Min DL can be reduced by the ratio of (actual exp length/max exp length).

(3) Locate "Bearing Type" identification here.

(4) Locate permanent mark here.

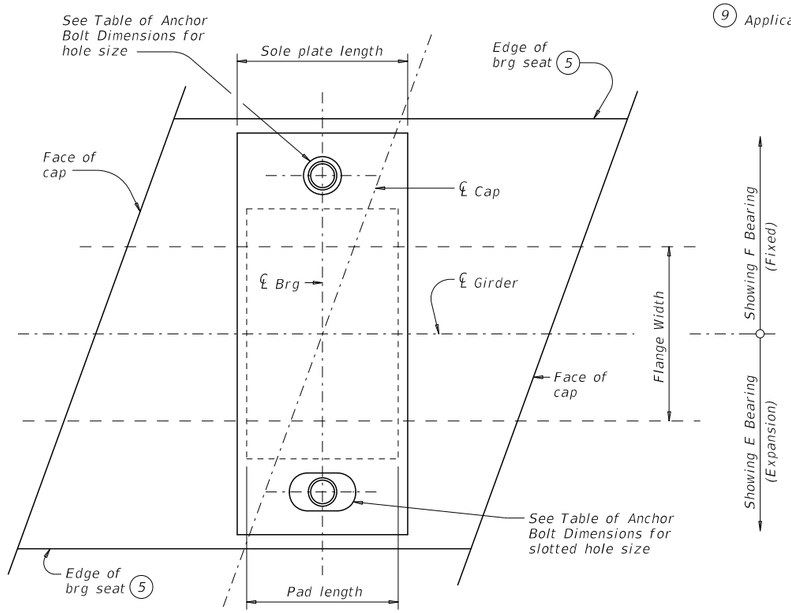
(5) Min Bearing Seat width, normal to girder, is "S" + 8".

(6) See span details for beam grade (slope) at bearing locations.

(9) Applicable to E bearings only.

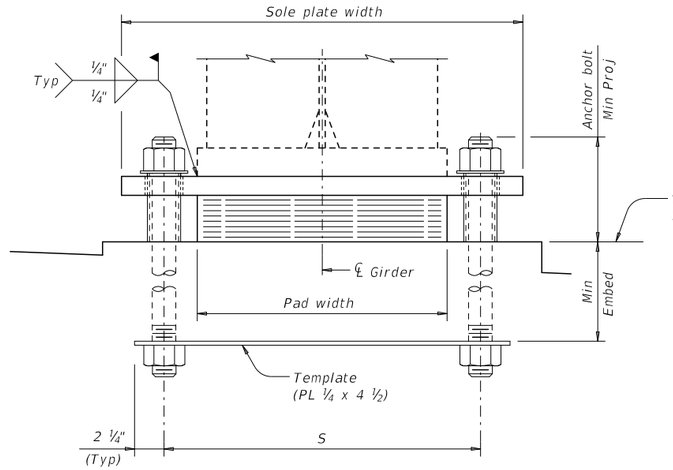
TABLE OF INTERIOR BEARING DESIGNS

Bearing Type	Neoprene Pad		Sole Plate		H	S	T	Flange Width		Reactions (Unfactored)			Max Expansion Length (9)
	Width	Length	Width	Length				Min	Max	(9)(2) Min DL	Max DL	Max Total	
	in	in	in	in	in	in	in	in	in	kip	kip	kip	ft
E1 or F1	15	10	27.0	12	5.1	20.5	3.09	10	15	66	180	225	206
E2 or F2	18	10	30.0	12	5.1	23.5	3.09	10	18	79	216	270	206
E3 or F3	21	10	33.0	12	5.1	26.5	3.09	11	21	92	252	315	206
E4 or F4	24	14	38.5	16	6.4	30.5	4.45	12	24	147	403	504	321
E5 or F5	27	14	41.5	16	6.4	33.5	4.45	15	27	165	454	567	321
E6 or F6	30	14	44.5	16	6.4	36.5	4.45	18	30	184	504	630	321
E7 or F7	32	16	48.0	18	6.9	39.0	4.93	19	32	224	614	768	355
E8 or F8	34	16	50.0	18	6.9	41.0	4.93	21	34	238	653	816	355
E9 or F9	36	16	52.0	18	6.9	43.0	4.93	23	36	252	691	864	355

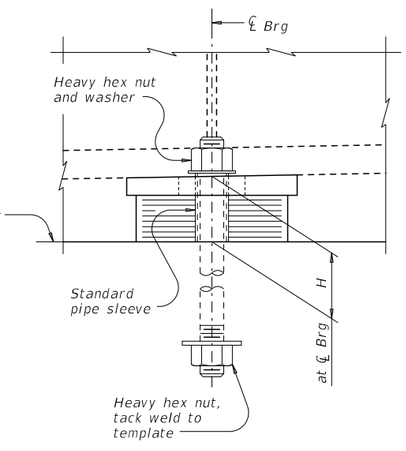


PLAN

Pipe sleeves, washers and nuts not shown for clarity



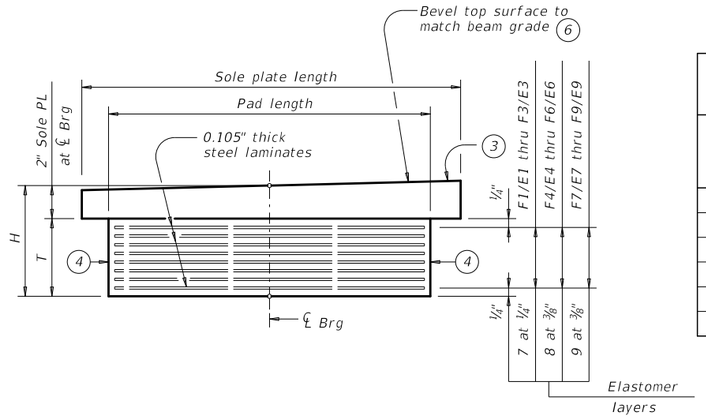
FRONT ELEVATION



SIDE ELEVATION

INTERIOR FIXED (F) AND EXPANSION (E) BEARINGS

Paid for at unit price bid for "Elastomeric Bearing" as per Item 434.



TYPE E & F LAMINATED ELASTOMERIC BEARING DETAIL

(50 Durometer) (Vulcanize sole plate to elastomer)

TABLE OF ANCHOR BOLT DIMENSIONS FOR TYPE E AND F BEARINGS

Bearing Type	Anchor Bolt Dia	Pipe Sleeve Size (Dia x Length)	Sole Plate Hole Size	Anchor Bolt	
				Embed	Proj
F1 thru F3	1 ¾"	2" x 5 ⅜"	2 ¾" Dia	1'- 6"	8"
F4 thru F6	2 ¼"	2 ½" x 6 ⅝"	3 ¼" Dia	2'- 0"	9 ½"
F7 thru F9	2 ½"	3" x 7 ¼"	3 ⅞" Dia	2'- 1"	10 ½"
E1 thru E3	1 ¾"	2" x 5 ⅜"	2 ¾" x 4 ½"	1'- 6"	8"
E4 thru E6	2 ¼"	2 ½" x 6 ⅝"	3 ¼" x 6 ¼"	2'- 0"	9 ½"
E7 thru E9	2 ½"	3" x 7 ¼"	3 ⅞" x 7"	2'- 1"	10 ½"

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Texas Department of Transportation

Bridge Division Standard

ELASTOMERIC BEARING DETAILS

STEEL GIRDERS AND BEAMS

SGEB

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TABLE OF END SLIDING BEARING DESIGNS

Bearing Type	Neoprene Pad		Sole Plate		H	S	T	Flange Width		Reactions (Unfactored)		Max Expansion Length
	Width	Length	Width	Length				Min	Max	Max DL	Max Total	
	in	in	in	in	in	in	in	in	in	kip	kip	ft
ES1	15	9	25.5	17	5.5	20.0	2.65	10	15	108	203	500
ES2	18	9	28.5	17	5.5	23.0	2.65	10	18	130	243	500
ES3	21	9	31.5	17	5.5	26.0	2.65	11	21	151	284	500
ES4	24	9	34.5	17	5.5	29.0	2.65	14	24	173	324	500
ES5	27	9	37.5	17	5.5	32.0	2.65	17	27	194	365	500
ES6	30	9	40.5	17	5.5	35.0	2.65	20	30	216	405	500
ES7	32	9	42.5	17	5.5	37.0	2.65	22	32	230	432	500
ES8	34	9	44.5	17	5.5	39.0	2.65	24	34	245	459	500
ES9	36	9	46.5	17	5.5	41.0	2.65	26	36	259	486	500

(3) Locate "Bearing Type" identification here.

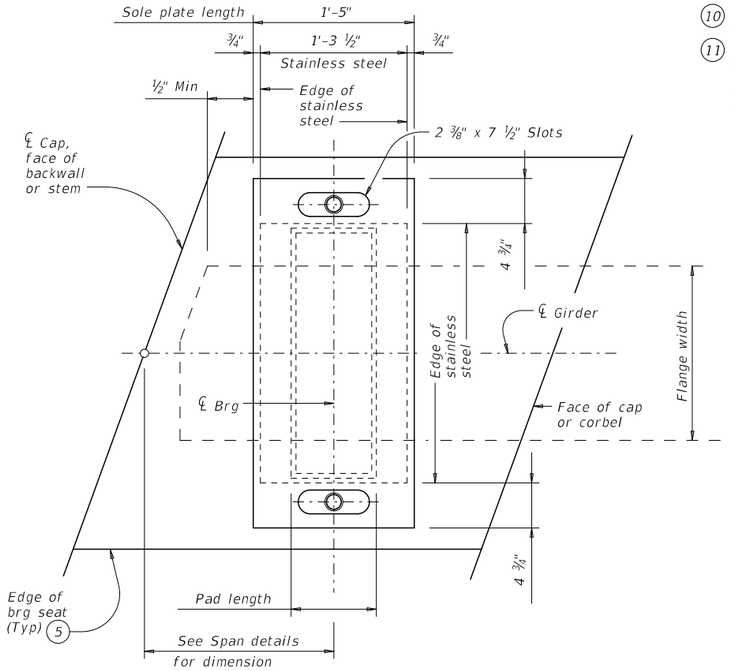
(4) Locate permanent mark here.

(5) Min bearing seat width, normal to girder, is "S" + 8".

(6) See span details for beam grade (slope) at bearing locations.

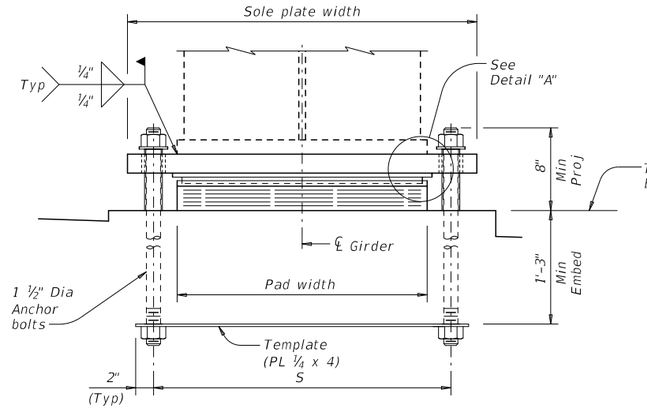
(10) Bond PTFE to ½" plate with an approved adhesive.

(11) Provide steel for ½" plate conforming to ASTM A36. Vulcanize plate to elastomer. Paint plate (in the shop) with System III-B in accordance with Item 446. No paint is permitted in recess or on PTFE.

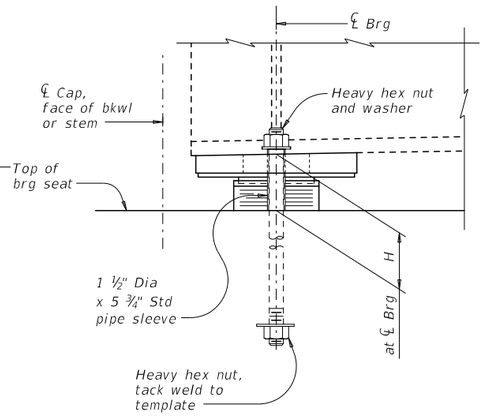


PLAN

Pipe sleeves, washers and nuts not shown for clarity



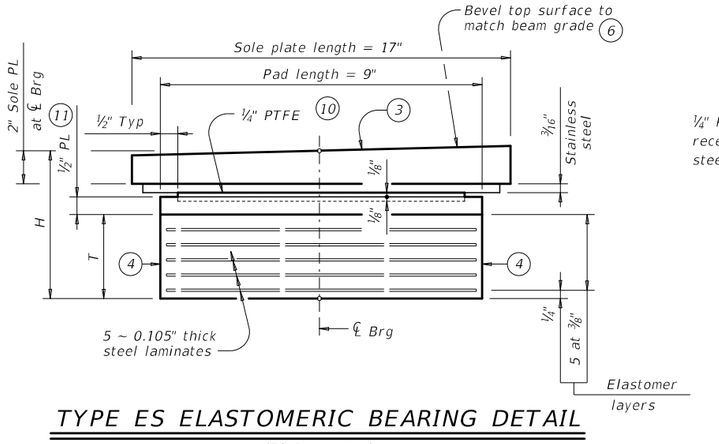
FRONT ELEVATION



SIDE ELEVATION

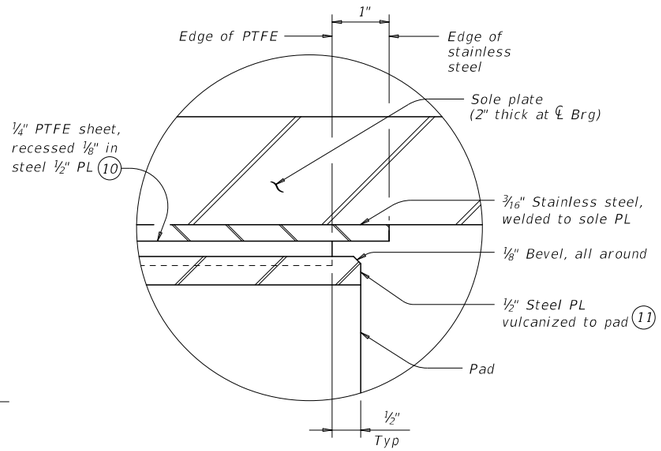
END SLIDING (ES) EXPANSION BEARINGS

Paid for at unit price bid for "Sliding Elastomeric Bearing" as per Item 434.



TYPE ES ELASTOMERIC BEARING DETAIL

(70 Durometer)



DETAIL "A"

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ELASTOMERIC BEARING DETAILS

STEEL GIRDERS AND BEAMS

SGEB

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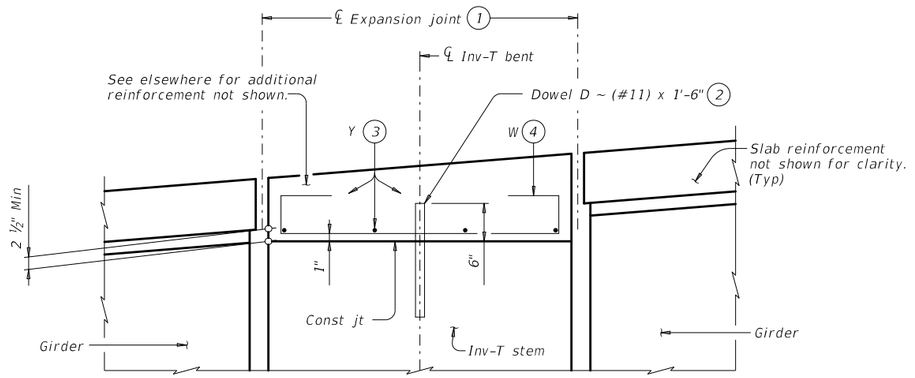
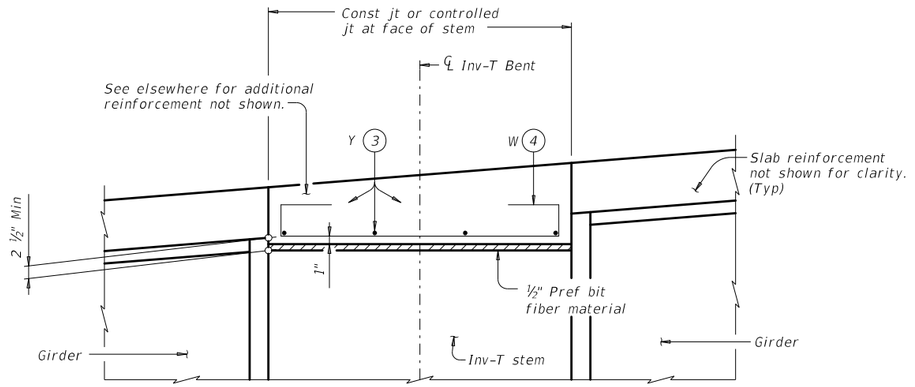
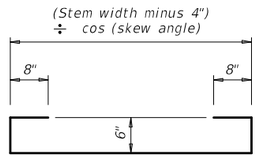


SHOWING EXPANSION JOINTS

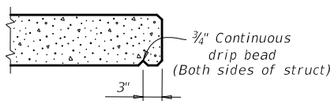


SHOWING CONST JTS OR CONTROLLED JTS

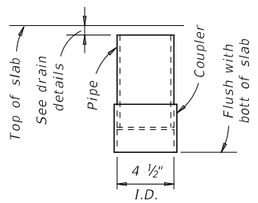
REINFORCEMENT OVER INV-T BENTS



BARS W (#4)

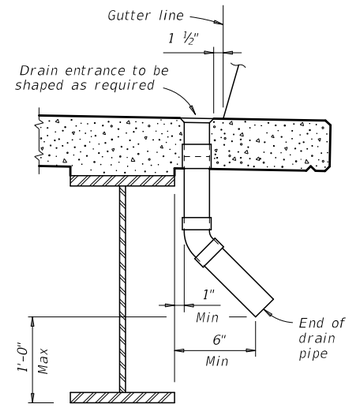


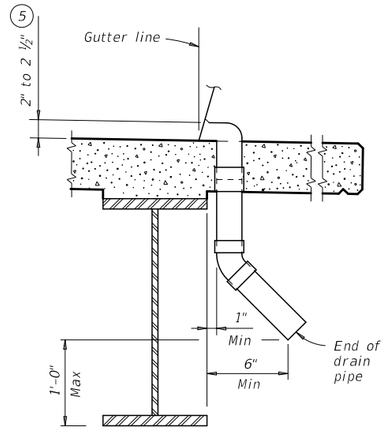
DRIP BEAD DETAIL



C-I-P DRAIN DETAIL

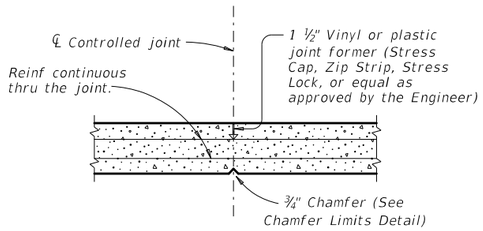
Note: Roughen outside of PVC with coarse rasp or equal to ensure bond with cast-in-place concrete.





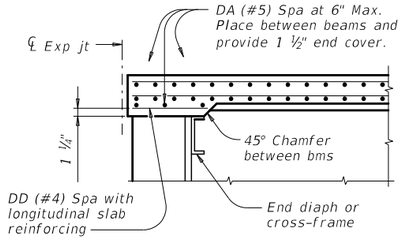
DRAIN DETAILS

Note: All drain pipe and fittings to be 4" diameter (Sch 40) PVC. See Item 481 "Pipe for Drains" for pipe, connections and solvent welding. Bend reinforcing steel to clear PVC 1". Drain length and location are as directed by the Engineer. Drains are not permitted over roadways or railways, or within 10'-0" of bent caps. Degrease outside of exposed PVC, apply acrylic water base primer, then coat with same surface finishing material as used for outside girder face. Variations of the above designs, as required for the type of rail used and its location on the structure, may be installed with the approval and direction of the Engineer. Water may not be discharged onto girders.



CONTROLLED JOINT DETAIL

(Saw-cutting is not allowed)



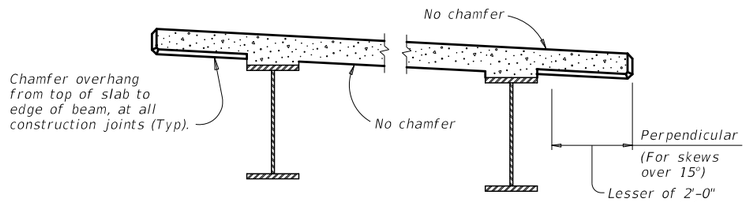
SECTION AT SLAB ENDS

Showing additional required slab reinforcement when Thickened Slab Ends, shown on standard SGTS, are not indicated on the span details.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
All items (reinforcing steel, drains, joint formers, etc.) shown on this sheet are subsidiary to other bid items.
Provide Grade 60 reinforcing steel.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

1. See Layout for joint type.
2. Dowels D (#11) spaced at 5 Ft Max. See inv-T bents for quantity and location.
3. Space Bars Y (#4) at 12" Max. Use 2" end cover. Number of Bars Y must satisfy spacing limit. Place parallel to bent.
4. Space Bars W at 12" Max (3" from end of cap). Tilt if necessary to maintain cover requirements. Place parallel to longitudinal slab reinforcement.
5. Drain entrance formed in rail or sidewalk.



CHAMFER LIMITS DETAILS

Note: See Span details for const jt locations.

Texas Department of Transportation

Bridge Division Standard

MISCELLANEOUS SLAB DETAILS
STEEL GIRDERS AND BEAMS

SGMS

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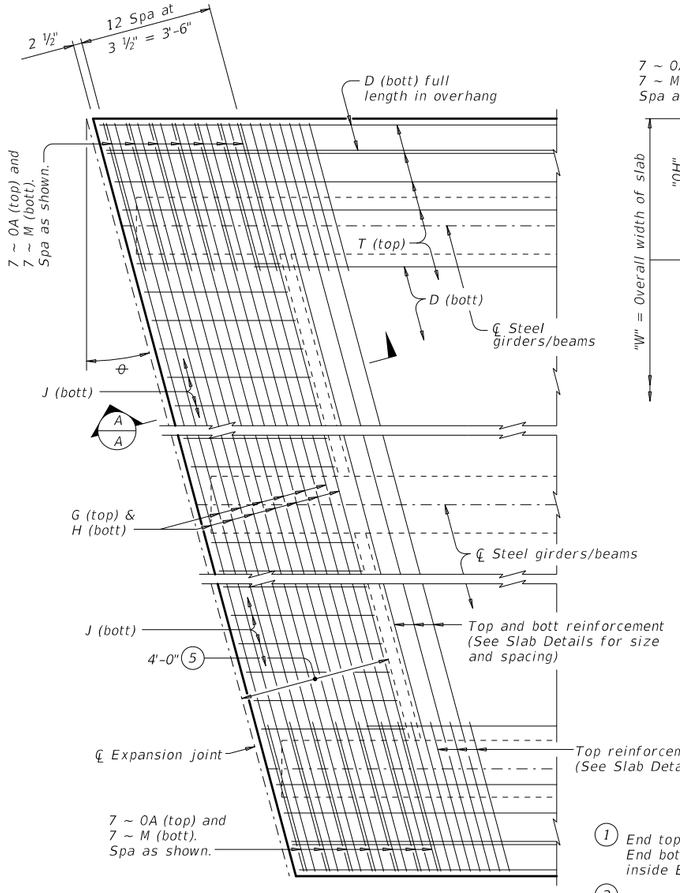
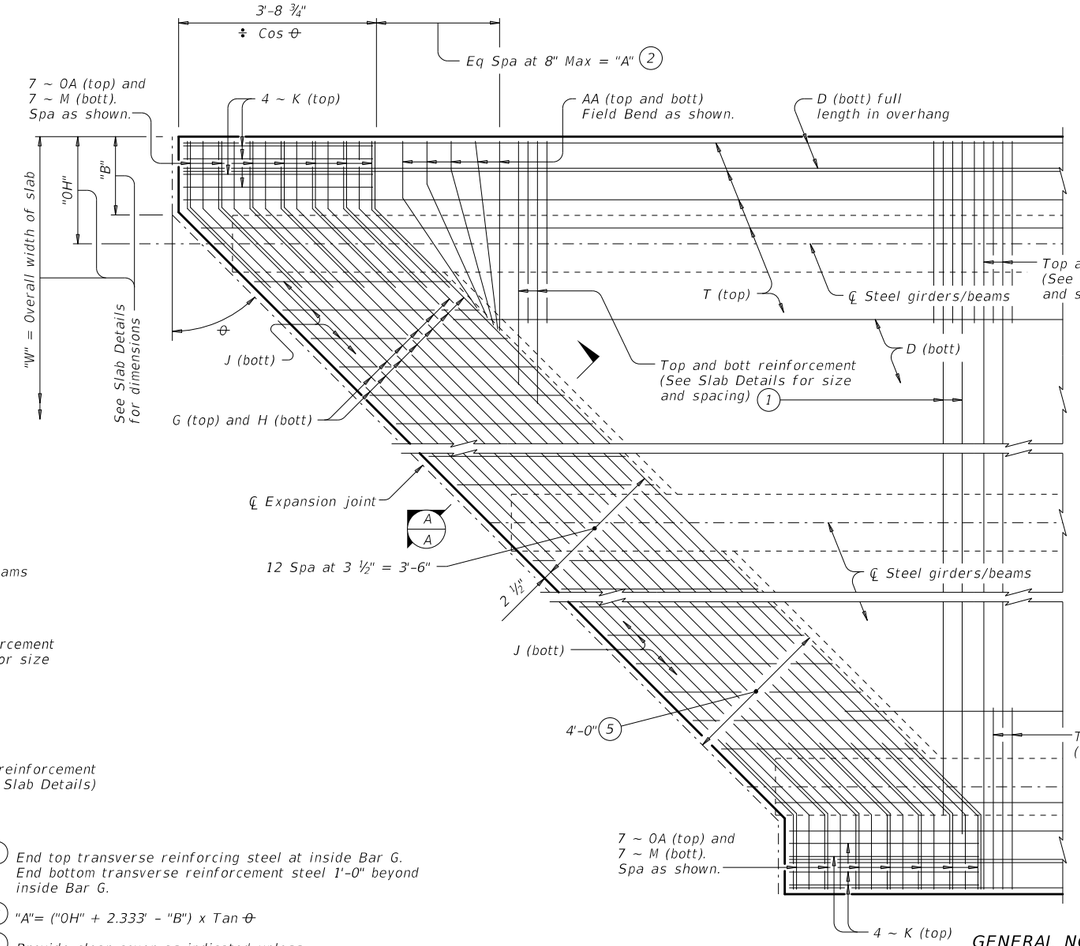


PARTIAL PLAN FOR SLABS WITHOUT BREAKBACK



PARTIAL PLAN FOR SLABS WITH BREAKBACK

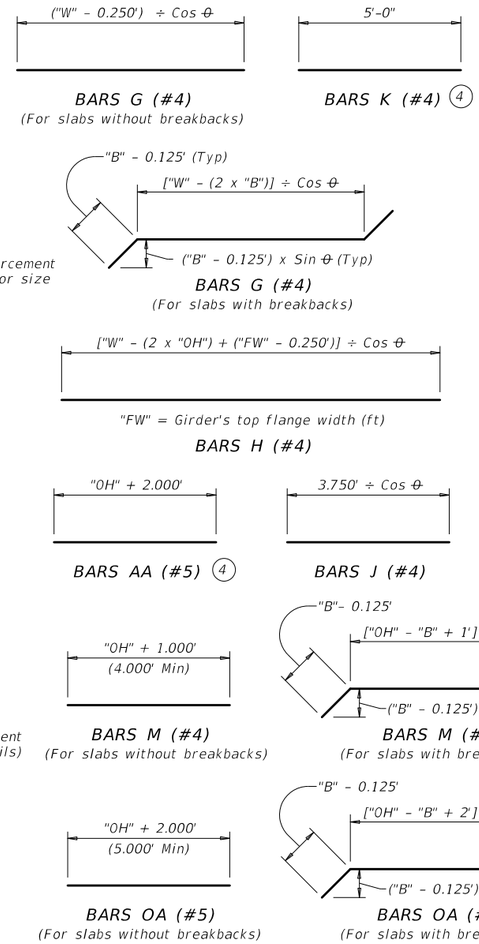
(1) End top transverse reinforcing steel at inside Bar G. End bottom transverse reinforcement steel 1'-0" beyond inside Bar G.

(2) "A"= ("OH" + 2.333' - "B") x Tan θ

(3) Provide clear cover as indicated unless otherwise shown on Span Details.

(4) Only required on slabs with breakbacks.

(5) Thickened Slab End dimensioned perpendicular to Face of Bkwl, Centerline Interior Bent or Face of Inverted-T Stem.



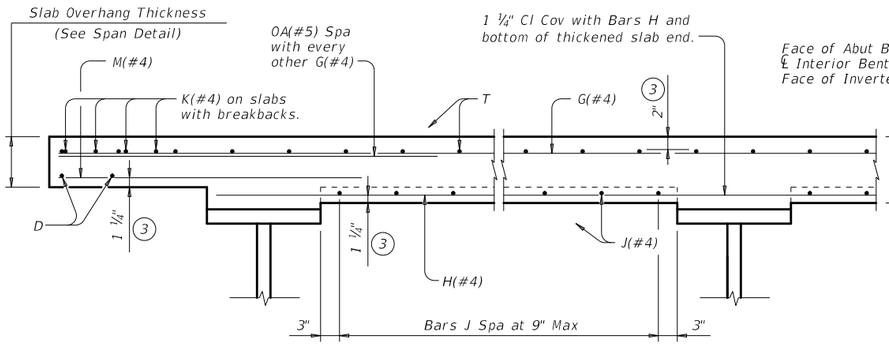
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
These details are restricted to steel girder and beam spans.
These details are to be used in conjunction with the span details and Prestressed Concrete Panels (PCP) standard details (if prestressed concrete panels are used).
When Option 2 from Prestressed Concrete Panels (PCP) standard is used, provide Bars AA, G, K and OA in the slab.

MATERIAL NOTES:

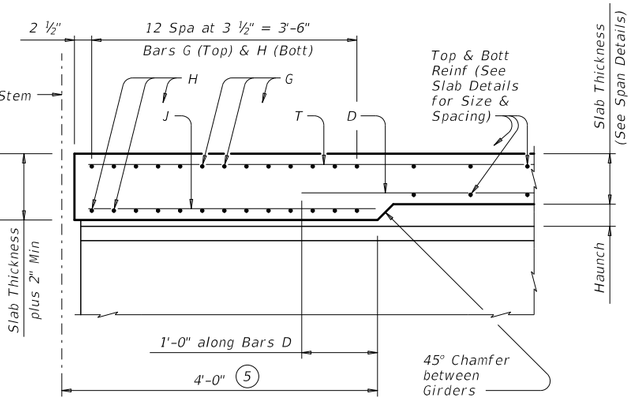
Provide Grade 60 reinforcing steel.
If slab reinforcing steel is shown on the slab details to be epoxy coated, then Bars AA, G, K, H, J, M and OA must be epoxy coated.
Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



TYPICAL TRANSVERSE SECTION

(Showing Steel Girders at ℄ Brg)



SECTION A-A

(Showing with 2" and more of Haunch)

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

THICKENED SLAB END DETAILS

STEEL GIRDERS AND BEAMS

SGTS

FILE: sgtsste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
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REVISIONS	DIST	COUNTY		SHEET NO.
				239

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-239

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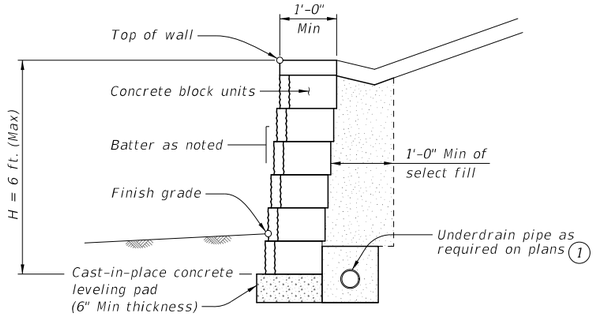
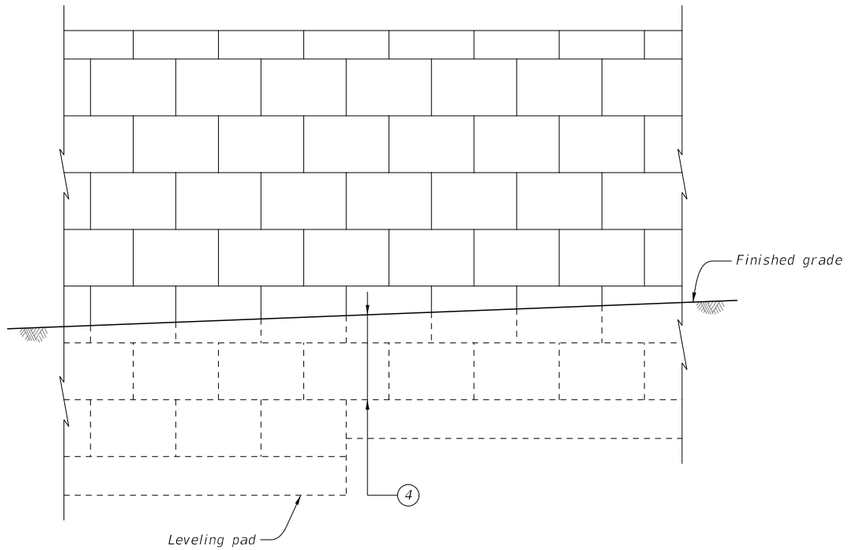
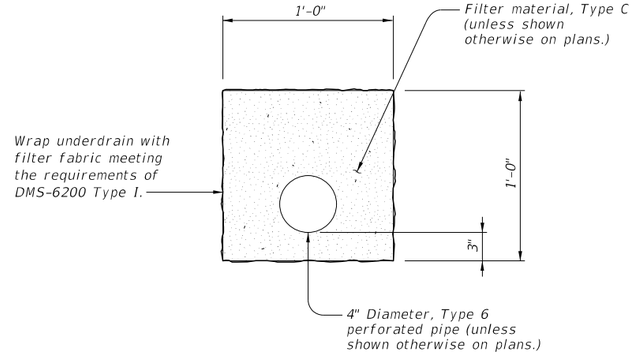


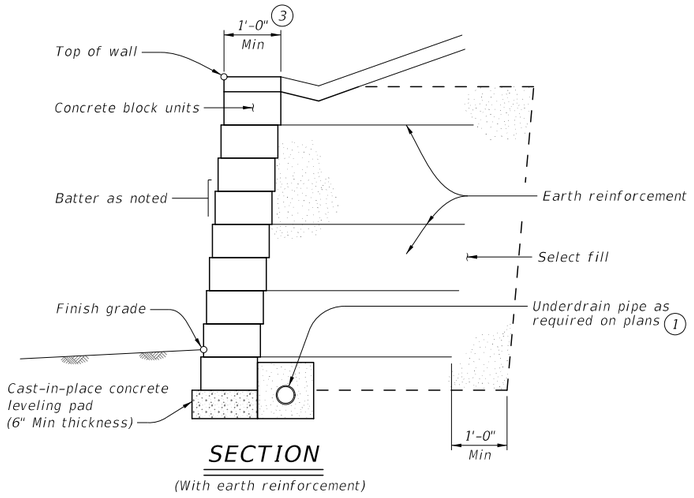
SECTION
(No earth reinforcement) (2)



TYPICAL ELEVATION



UNDERDRAIN DETAIL (1)



SECTION
(With earth reinforcement)

(1) Provide underdrain pipe and filter material in accordance with Item 556, "Pipe Underdrains."

(2) For walls which are designated as landscape walls and are less than 6 feet 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.
Walls may be constructed without earth reinforcement if all stability criteria are met with the blocks alone. If all stability criteria are not satisfied, provide earth reinforcement with a 4-foot minimum length.

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

(3) For systems utilizing continuous structural pins passing through a minimum of 3 block layers, use a minimum block depth of 8 inches. Provide 24-inch maximum vertical spacing of primary reinforcement on these systems. Intermediate reinforcement will not be required.

(4) Minimum embedment conforming to values given on the Concrete Block Retaining Wall Design Data (RW[CB]DD) standard.

(5) Base soil design parameters on long term soil strength. List design parameters on the RW(CB)DD standard sheet.

DESIGN CRITERIA NOTES:

Design Parameters:
Base design of retaining walls on the following design parameters unless stated elsewhere in the plans:

Retained Soil	Unit Weight = 125 pcf ϕ = (5) C = 0 psf
Foundation Soil	ϕ = (5) C = 0 psf
Select Backfill	Unit Weight = See Table (6) ϕ = 34° C = 0 psf
Cement Stabilized Select Backfill	Unit Weight = 125 pcf ϕ = 45° C = 0 psf

Stability Criteria:
Base design on the following factors of safety: (2)

Sliding along the base of the structure	Factor of Safety ≥ 1.5
Overturning	Factor of Safety ≥ 2.0

Design the wall such that the base pressure resultant falls within the middle third of the retaining wall.

EARTH REINFORCEMENT:

Calculate the long term design strength (LTDS) of earth reinforcement in accordance with current AASHTO Standard Specifications for Highway Bridges and Interim Specifications.

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

Provide connection strength data for the combination of concrete block and geogrid chosen. Limit the allowable connection load to the connection strength developed at ¾" displacement, divided by a 1.5 safety factor. (2)

Assume the failure plane originates at the back of the concrete blocks for internal stability calculations.

Determine the factor of safety against pullout of the earth reinforcement from test data evaluated at ¾" strain.

Space the primary earth reinforcement layers at a maximum vertical spacing of 40 inches. (3)

The minimum length of primary earth reinforcement for structural walls (non-landscaped) is 8 feet or 70% of the wall height, measured from the front of the blocks as shown on the Concrete Block Retaining Wall Design Data (RW[CB]DD) standard. (2)

Provide a layer of intermediate reinforcement between primary reinforcement when the spacing between primary layers exceeds twice the horizontal depth of the concrete block unit. Provide a minimum intermediate reinforcement length of 4 feet to provide local stability for the concrete block units. (3)

Extend select backfill (including unit fill) a minimum of 1 foot horizontally beyond the end of the earth reinforcement from the back of the blocks.

GENERAL NOTES:

Sections and typical elevation shown are for informational purposes only. Determine specific geometry based on wall layouts and other plan information.

Limit wall batter to a maximum of 3 inches per foot unless otherwise shown in the plans. Place blocks horizontally and provide a positive means of obtaining batter such as pins, keyways, or concrete lips.

(6)

SELECT BACKFILL UNIT WEIGHT			
Type AS,BS & DS	Unit Weight	Internal Stability	External Stability
	105 pcf	Pullout	Sliding, Overturning, Eccentricity
	125 pcf	Rupture	Bearing

Texas Department of Transportation

Bridge Division Standard

CONCRETE BLOCK RETAINING WALL

RW(CB)

FILE: RW-CB-22.dgn	DN: TxDOT	CK: TxDOT	DW: JER	CK: RLE
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REVISIONS				
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2023-029-240

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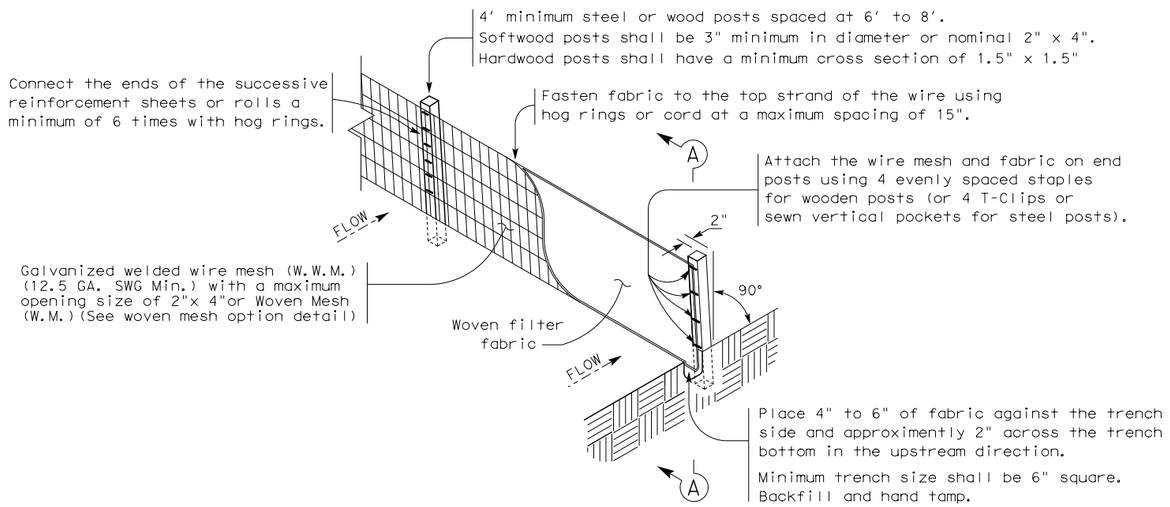
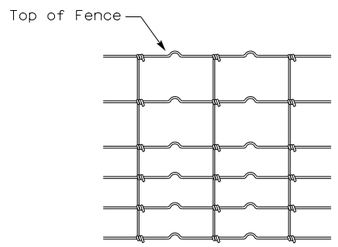
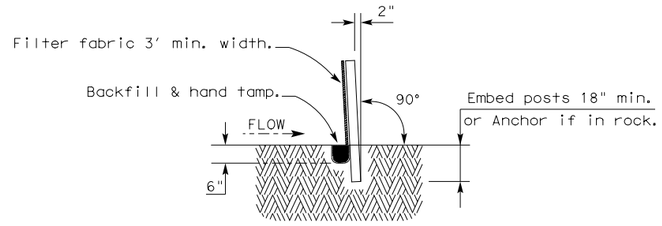


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

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

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

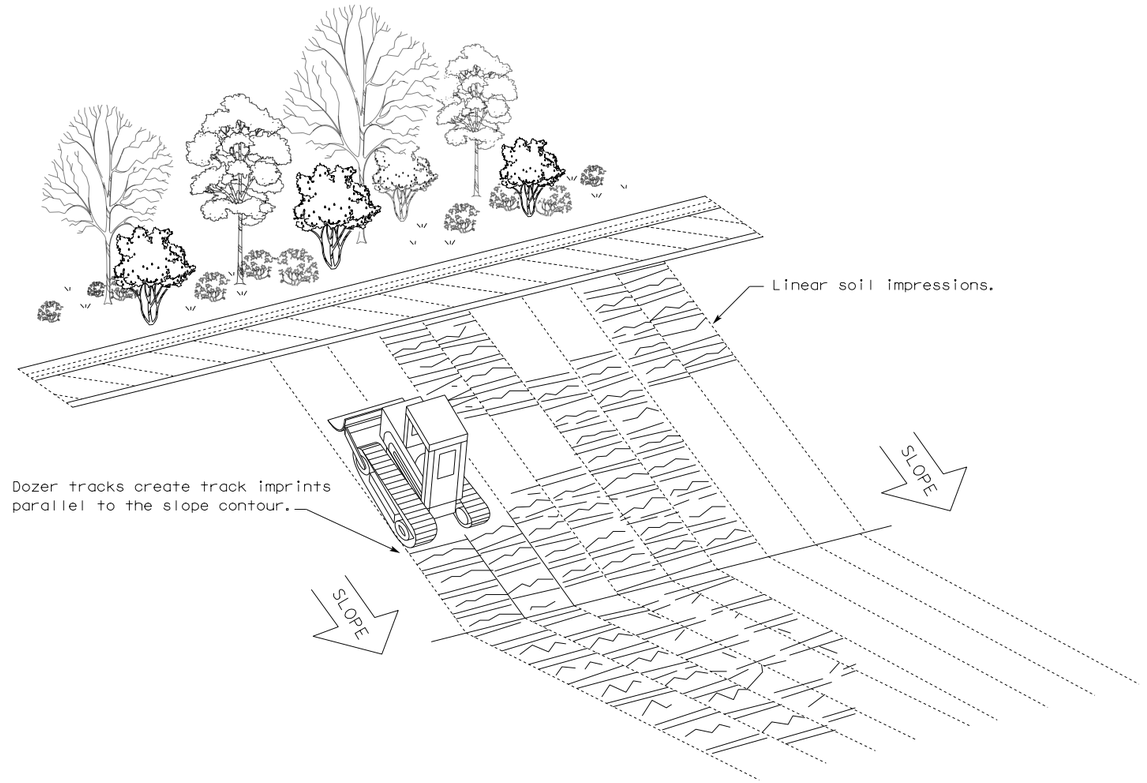
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

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



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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REVISIONS				
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				241

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-241

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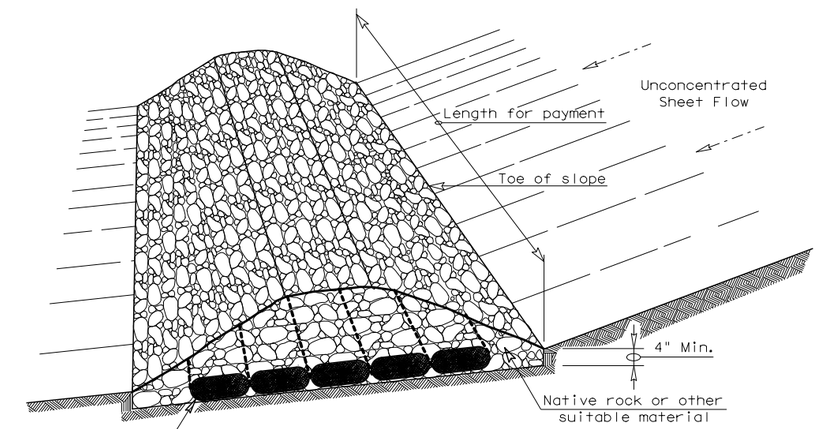
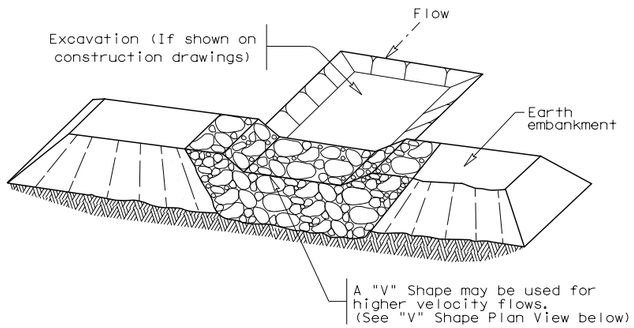


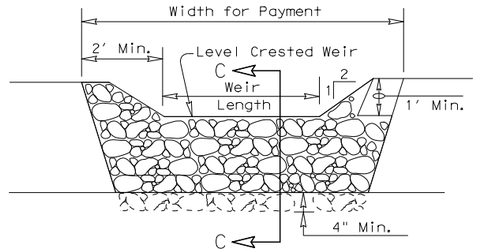
FILTER DAM AT TOE OF SLOPE

RFD1

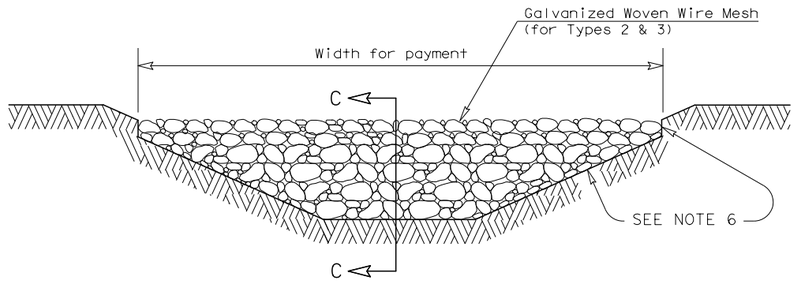


FILTER DAM AT SEDIMENT TRAP

RFD1 — OR — RFD2

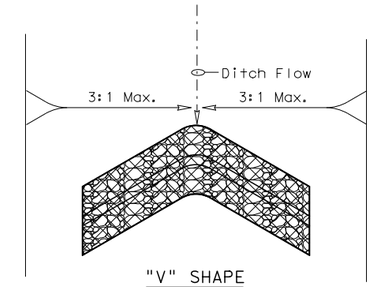


PROFILE

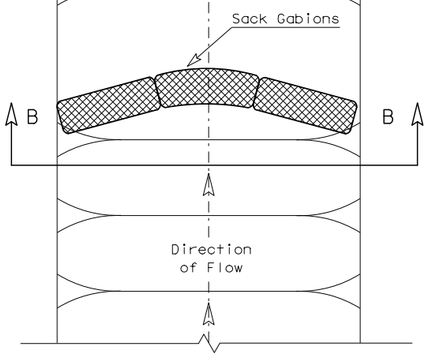


FILTER DAM AT CHANNEL SECTIONS

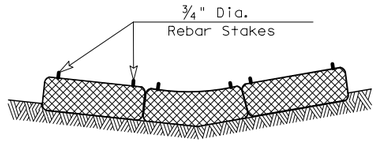
RFD1 — OR — RFD2 — OR — RFD3



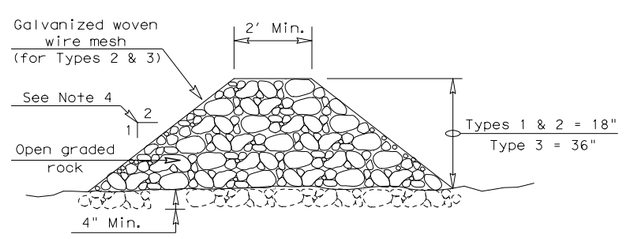
"V" SHAPE
PLAN VIEW



PLAN VIEW



SECTION B-B



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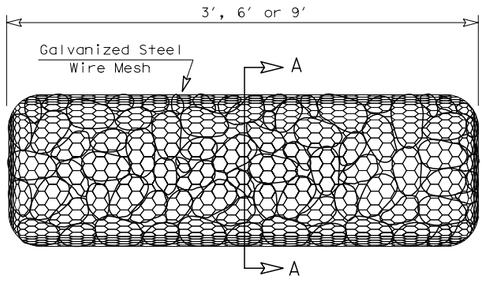
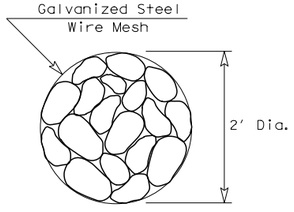


TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3
Type 4 Rock Filter Dam — RFD4

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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REVISIONS				
	DIST	COUNTY		SHEET NO.
				242

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2023-029-242

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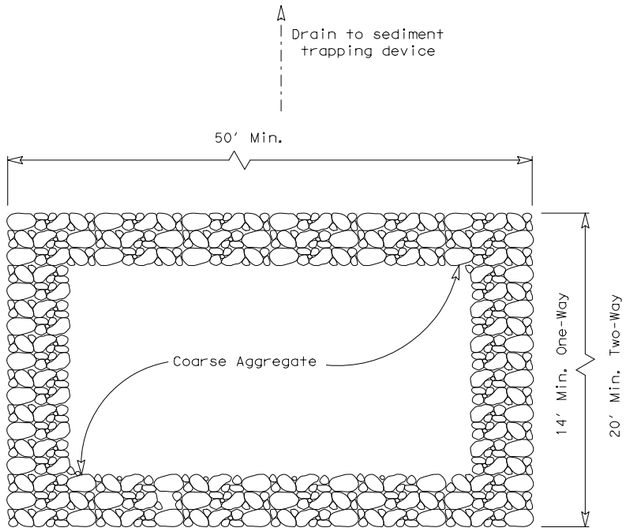
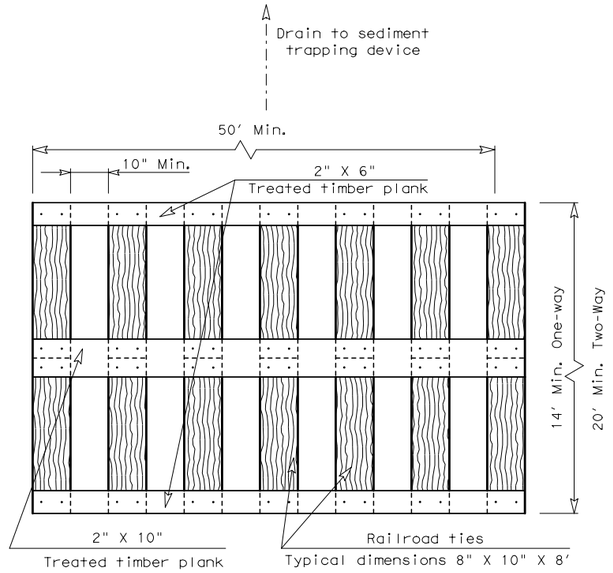


PLAN VIEW



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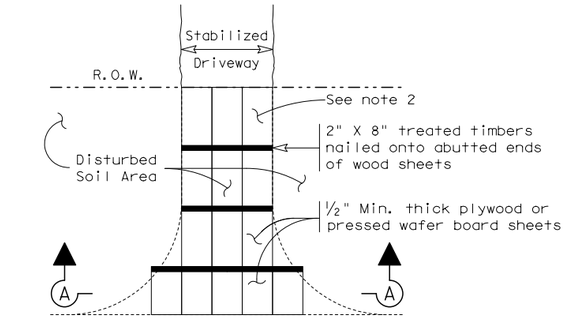

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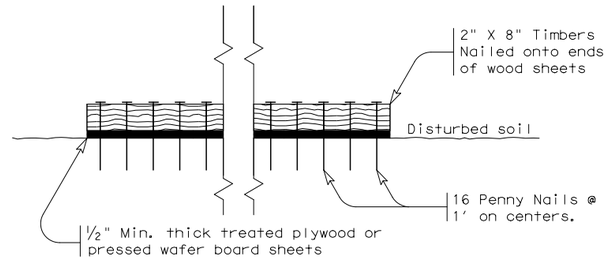
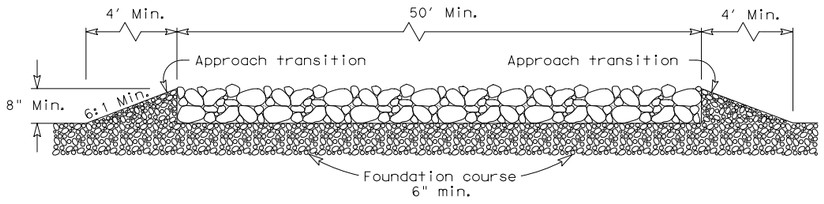


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

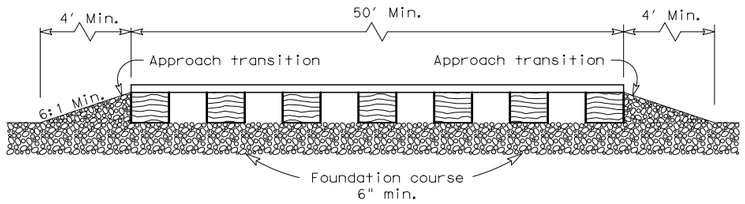
SHORT TERM



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
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2023-029-243

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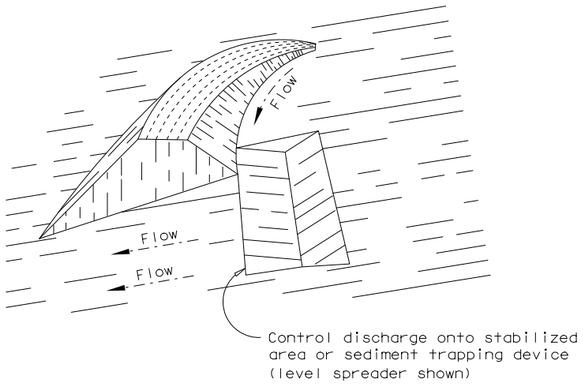
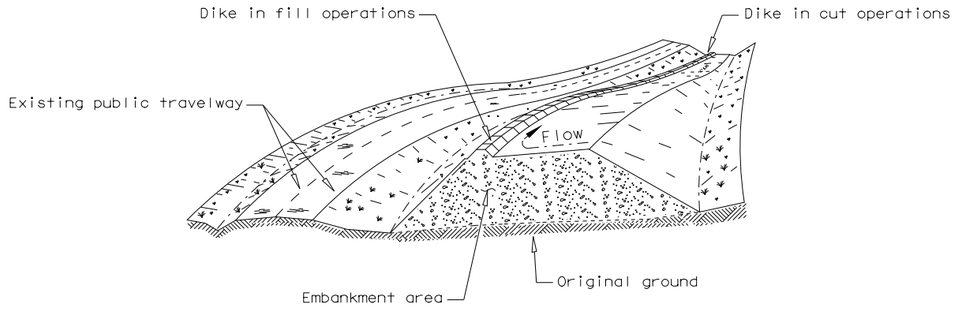
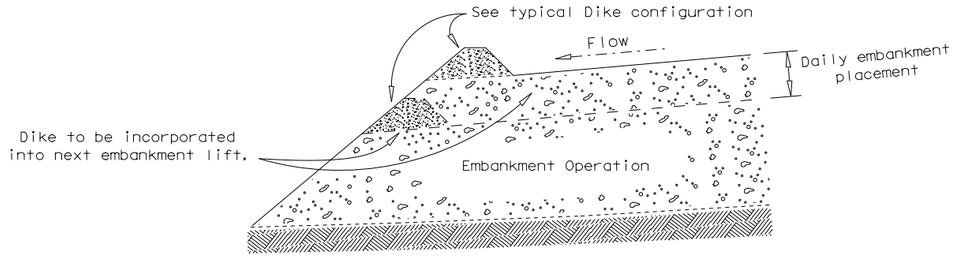


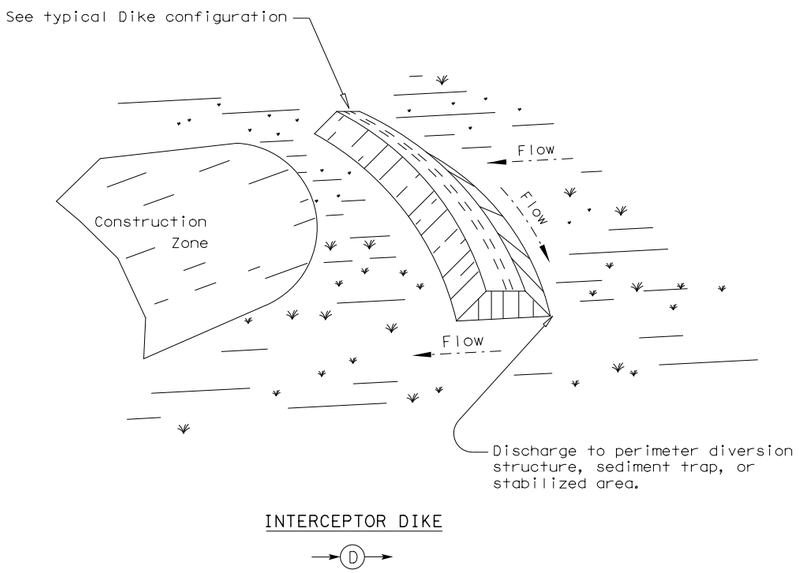
PERIMETER DIKE



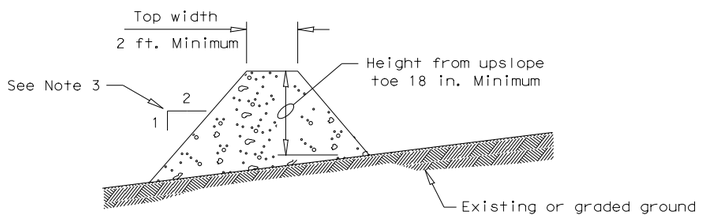
DIVERSION DIKE



EMBANKMENT SECTION - DIVERSION DIKE



INTERCEPTOR DIKE



TYPICAL DIKE CONFIGURATION

GENERAL NOTE

1. Soil used in dike construction shall be machine compacted.
2. Top width and height of dike may be modified with prior approval of the Engineer.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter.
4. Grading shall be shown elsewhere in the plans or as directed by the Engineer.
5. The Engineer reserves the right to modify the dimensions shown for the dike dependent on runoff volume characteristics.
6. Dikes that are in place for more than 14 calendar days should be stabilized to prevent sediment runoff.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Remove sediment and debris when accumulation affects the performance of the devices, after a rain and when directed by the engineer.

DIKE USAGE GUIDELINES

A Dike may be used to intercept runoff and divert it around unstabilized areas or to divert sediment laden runoff to an erosion control device (sediment basin or trap, rock filter dam, etc.).

The drainage area contributing runoff to a dike should not exceed 5 acres. The spacing of dikes should be as follows:

Slope of disturbed areas above dike	greater than 10%	5 - 10%	less than 5%
Maximum distance between dikes	100′	200′	300′

Intercepted runoff flowing along a dike should outlet to a stabilized area (vegetation, rock, etc.).

PLANS SHEET LEGEND

DIKE →(D)→

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DIKES (EARTHWORK FOR EROSION CONTROL)

EC(4)-16

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2023-029-244

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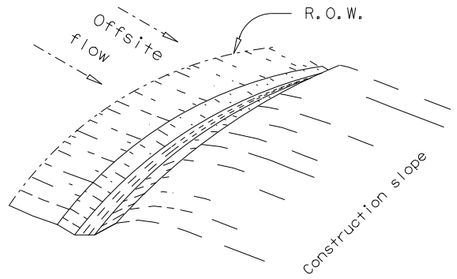
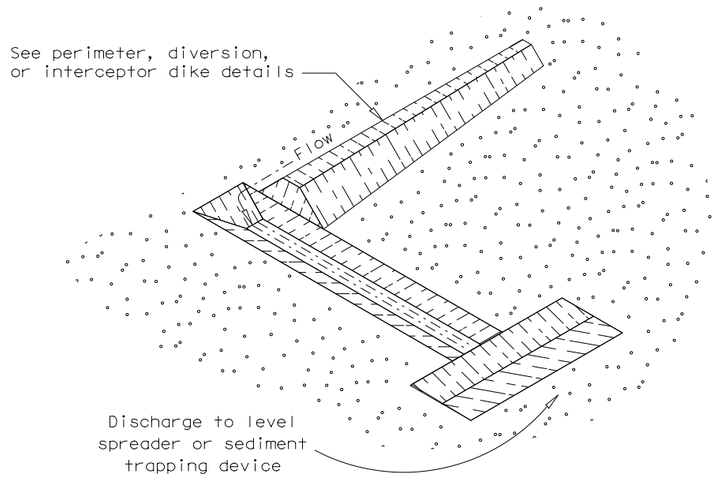


PERIMETER SWALE



DIVERSION SWALE

GENERAL NOTE

1. Dimensions of swale may be modified with prior approval of the Engineer.
2. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter.
3. Grading shall be shown elsewhere on the plans or as directed by the Engineer.
4. The Engineer reserves the right to modify the dimensions shown for the swale dependent on runoff volume characteristics.
5. Swales that are in place for more than 14 calender days should be stabilized through seeding or other measures to control sediment runoff.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Remove sediment and debris when accumulation affects the performance of the devices, after a rain and when directed by the Engineer.

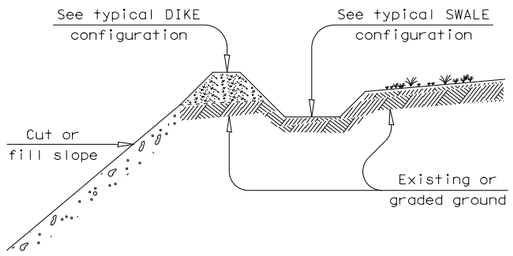
SWALE AND DIKE/SWALE USAGE GUIDELINES

A swale or dike/swale may be used to intercept runoff and divert it around unstabilized areas or to divert sediment laden runoff to an erosion control device (sediment basin or trap, rock filter dam, etc.).

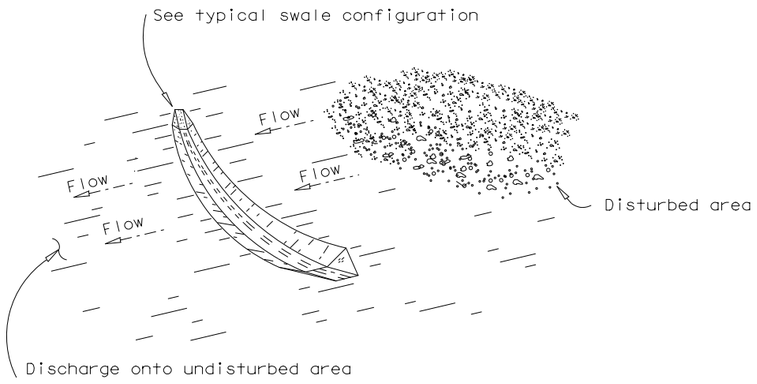
The drainage area contributing runoff to a swale or dike/swale should not exceed 5 acres. The spacing of swales and dike/swales should be as follows:

Slope of disturbed areas above dike	greater than 10%	5 - 10%	less than 5%
Maximum distance between dikes	100′	200′	300′

Intercepted runoff flowing in a swale or dike/swale should outlet to a stabilized area (vegetation, rock, etc.).



DIVERSION DIKE WITH SWALE

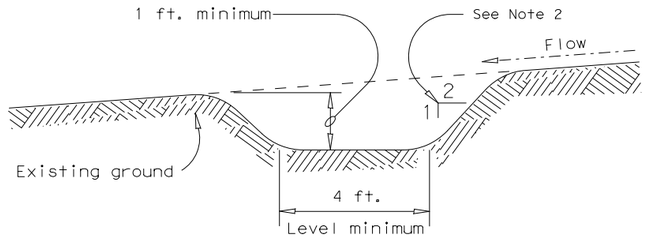


INTERCEPTOR SWALE

PLAN SHEET LEGEND

SWALE → (S) →

DIKE → (D) →



TYPICAL SWALE CONFIGURATION

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
SWALES
(EARTHWORK FOR EROSION CONTROL)

EC(5)-16

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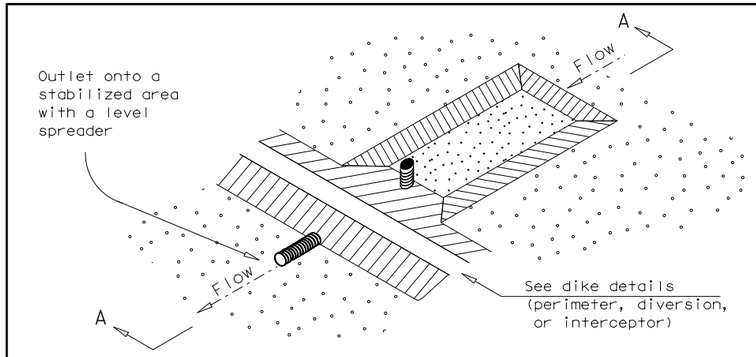
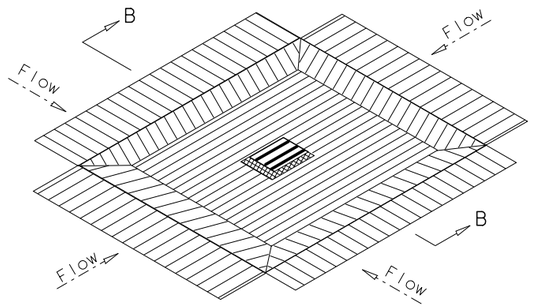


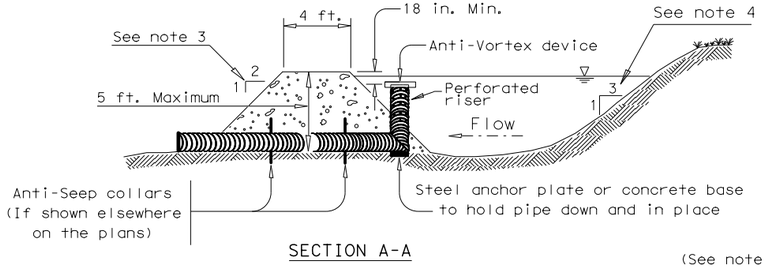
SEDIMENT BASIN AND/OR TRAP WITH PIPE OUTLET

ST/PO

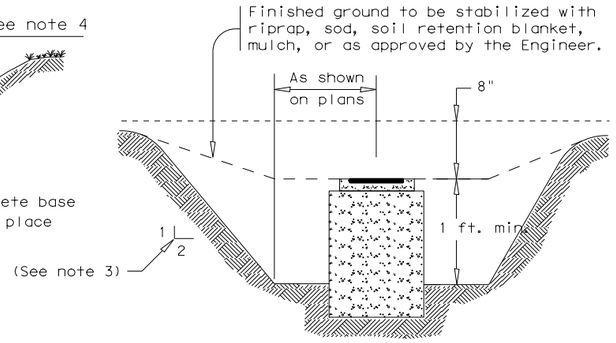


DROP INLET SEDIMENT TRAP

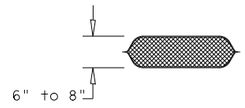
ST-DI



SECTION A-A

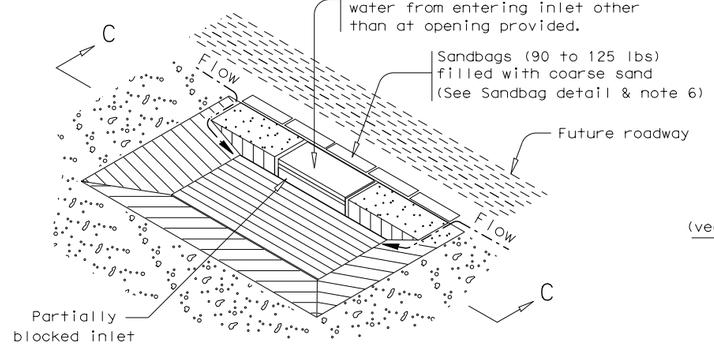


SECTION B-B



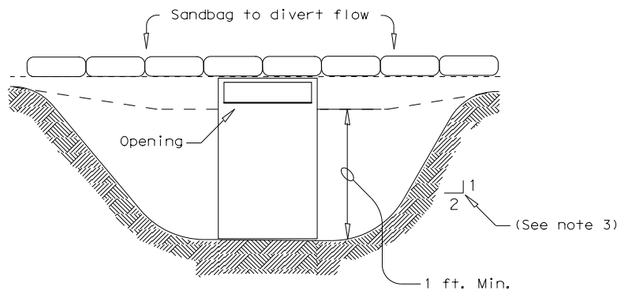
SECTION E-E

SANDBAG DETAIL

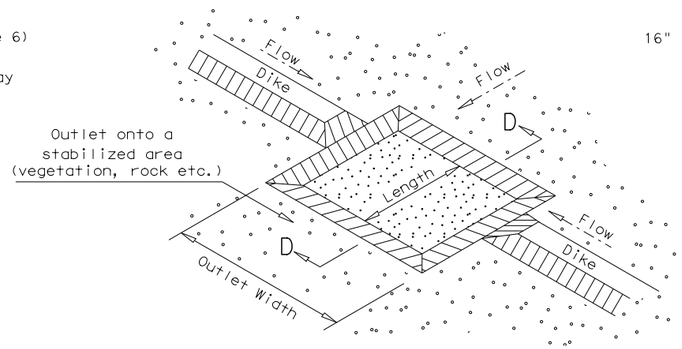


CURB INLET SEDIMENT TRAP

ST-CI

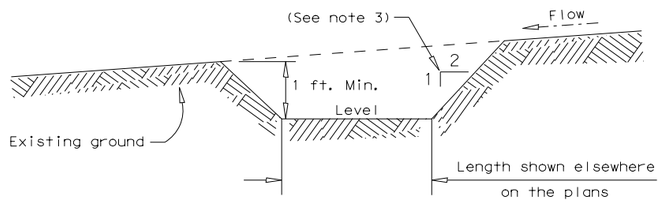


SECTION C-C



SEDIMENT TRAP WITH LEVEL STABILIZED OUTLET

ST



SECTION D-D

GENERAL NOTES

1. Pipe outlet material shall conform to the Item "Pipe Underdrains" or as accepted by the Engineer.
2. All pipe connections shall be watertight.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter. Protect the traveling public from inlet stacks within the clear zone.
4. Sediment basins shall have side slopes of 3:1 or flatter.
5. The dimensions and limits of excavation for sediment basins and traps will be as shown elsewhere on the plans.
6. The sandbag material shall be made of polypropylene, polyethylene or polyamide woven fabric, min. unit weight 4 ounces /SY, Mullen burst strength exeeding 300 psi and ultraviolet stability exeeding 70%.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

A sediment basin and/or trap may be used to precipitate sediment out of runoff draining from an unstabilized area.

Basins: The drainage area for a sediment basin should not exceed 100 acres. The basin capacity shall be at least 1800 CF/Acre of drainage area (0.5" over the drainage area). If the disturbed area draining to the basin is larger than 10 acres, the basin capacity should be 3600 CF/Acre (1.0" over the drainage area).

The basin should have a 40 hour draw-down time with an emergency spillway. The spillway may be designed to pass the peak rate of runoff from a 25 year frequency storm. The 100 year storm should be investigated to consider possible flooding impacts.

The entrance into the basin should be protected from erosion. The basin should be cleaned when the capacity has been reduced by 1/3.

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).

Sediment traps should be placed in the following locations:
1. Within drainage ditches spaced @ 500'± on center
2. Immediately preceding ditch inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way

The trap outlet may either be through a perforated riser and pipe assembly designed to achieve a 40 hour draw-down time or over a level stabilized area (vegetation, rock, etc.).

The trap should be cleaned when the capacity has been reduced by ½ or the sediment has accumulated to a depth of 1', whichever is less.

PLANS SHEET LEGEND

ST/PO — Sediment Basin and / or Trap with Pipe Outlet

ST-DI — Drop Inlet Sediment Trap

ST-CI — Curb Inlet Sediment Trap

ST — Sediment Trap with Level Stabilized Outlet

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-246

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

SEDIMENT BASINS AND TRAPS (EARTHWORK FOR EROSION CONTROL)

EC(6)-16

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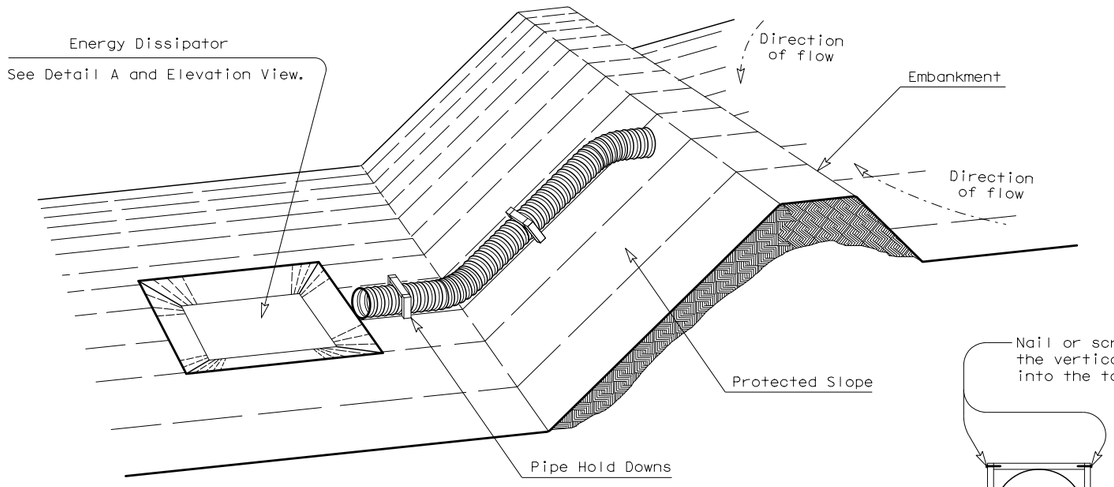
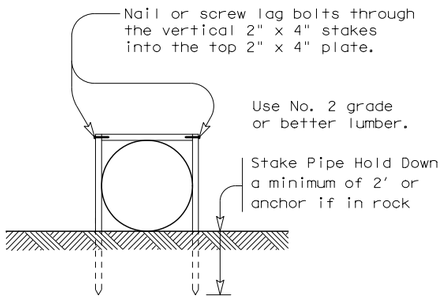
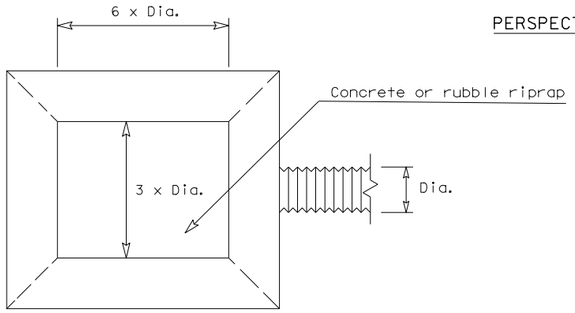


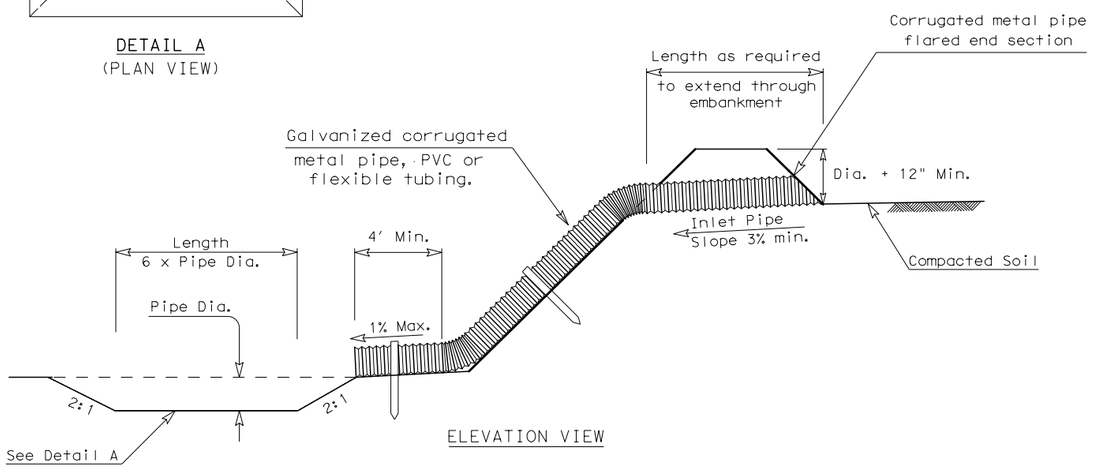
PERSPECTIVE VIEW



DETAIL B
(ELEVATION VIEW)



DETAIL A
(PLAN VIEW)



ELEVATION VIEW

PIPE SLOPE DRAIN WITH ENERGY DISSIPATOR

PSD

GENERAL NOTES

1. The inlet pipe shall have a slope of 3 percent or greater. Pipe diameter shall be as indicated on the construction drawings.
2. The top of embankment shall be at least 12" higher than the top of the inlet pipe at all points.
3. The pipe shall be galvanized corrugated metal pipe, PVC, or flexible tubing with watertight connection bands.
4. Pipe shall be secured with hold-down grommets spaced a maximum of 10' on centers or with pipe hold downs as shown in Detail B.
5. Construct embankment for the drainage system in 8" lifts to the required elevations. Hand tamp the soil around and under the entrance section to the top of the embankment as shown on the plans or as directed by the engineer.
6. The sediment trap shall be constructed to the dimensions as shown and in accordance with Special Specification, "Earthwork for Erosion Control". As otherwise detailed on the plans, the sediment trap may be stabilized using concrete or rubble riprap as per Item, "Riprap".
7. A standard corrugated metal pipe flared end section shall be used at the entrance of the pipe slope drain.
8. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PIPE SLOPE DRAIN
DESIGN CRITERIA

PIPE/TUBING SIZE	DIAMETER	MAXIMUM DRAINAGE AREA
PSD 12	12"	0.5 Acre
PSD 18	18"	1.5 Acres
PSD 21	21"	2.5 Acres
PSD 24	24"	3.5 Acres
PSD 30	30"	5.0 Acres

PIPE SLOPE DRAIN USAGE GUIDELINES

A Pipe Slope Drain (PSD) should be constructed to drain concentrated surface runoff safely down slopes without causing erosion. The drainage area contributing runoff to a PSD should not exceed 5 acres. The PSD should be sized to drain the peak rate of runoff without over-topping at the earth dike entrance. A 25 year storm frequency may be used to calculate the flow rate.

PLAN SHEET LEGEND

Pipe Slope Drain — PSD

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
TEMPORARY PIPE SLOPE DRAINS
EC(7)-16

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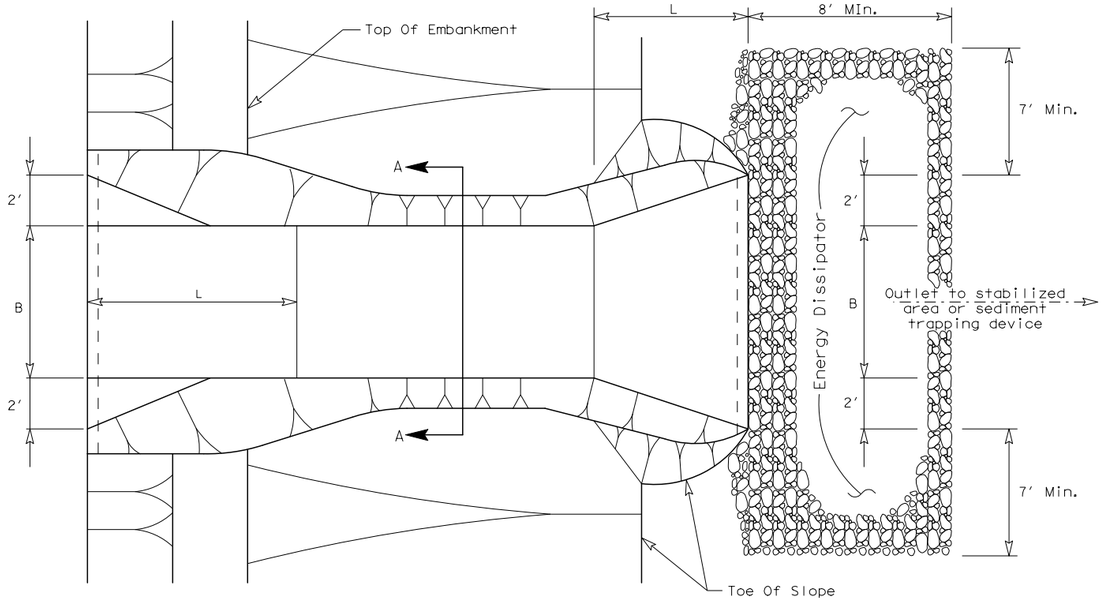
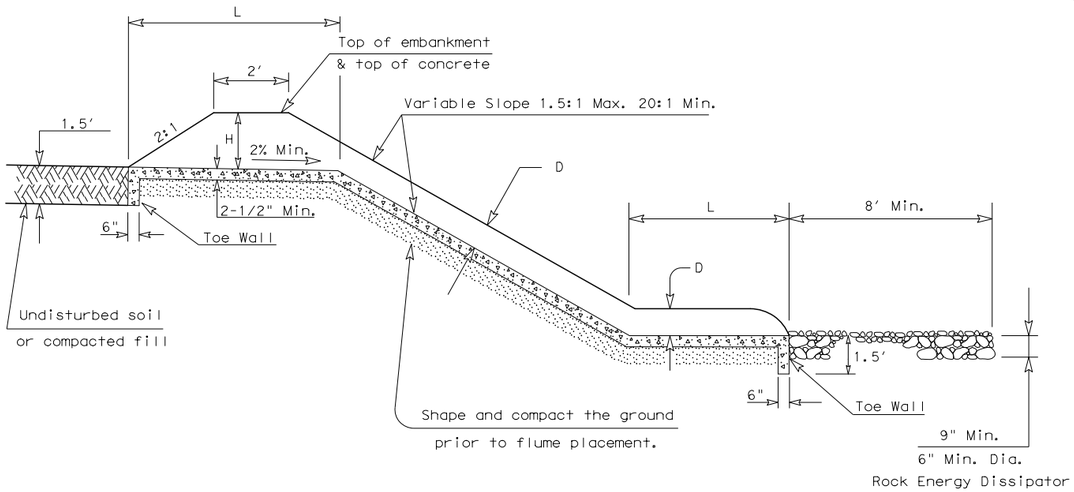


PLAN VIEW

SECTION A-A



ELEVATION VIEW

PAVED FLUME

PF

GENERAL NOTES

1. The group / size is a designator for the dimensions of the paved flume. The group / size is designated by a letter (A or B) and the bottom (B) dimension. The appropriate size shall be indicated on the construction plans.
2. Provide rock or rubble with a minimum diameter of 6" and a maximum volume of 1/2 cubic feet for construction of energy dissipaters.
3. For high velocity flows, the aggregate of the energy dissipator should be secured with 20-gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggegrate should be placed on the mesh to the dimensions specified. The mesh shall be folded at the upstream side over the aggegrate and tightly secured to itself on the downstream side using wire ties or hog rings.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PAVED FLUME USAGE GUIDELINES

A Paved Flume should be constructed to drain concentrated surface runoff safely down slopes without causing erosion. The drainage area contributing runoff to a paved flume should not exceed that given in the Design Criteria above. The paved flume should be sized to drain the peak rate of runoff without overtopping the embankment at the earth dike entrance. A 25 year storm frequency may be used to calculate the flow rate.

DESIGN CRITERIA					
Group/Size	B Bottom Width	H Min.	D Min.	L Min.	Maximum Drainage Area
A-2	2'	1.5'	8"	5'	5 Acres
A-4	4'	1.5'	8"	5'	8 Acres
A-6	6'	1.5'	8"	5'	11 Acres
A-8	8'	1.5'	8"	5'	14 Acres
A-10	10'	1.5'	8"	5'	18 Acres
B-4	4'	2'	10"	6'	14 Acres
B-6	6'	2'	10"	6'	20 Acres
B-8	8'	2'	10"	6'	25 Acres
B-10	10'	2'	10"	6'	31 Acres
B-12	12'	2'	10"	6'	36 Acres

PLANS SHEET LEGEND

Paved Flume — PF

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

TEMPORARY PAVED FLUMES

EC(8)-16

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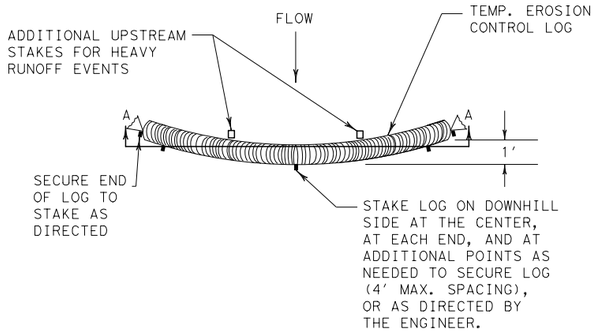
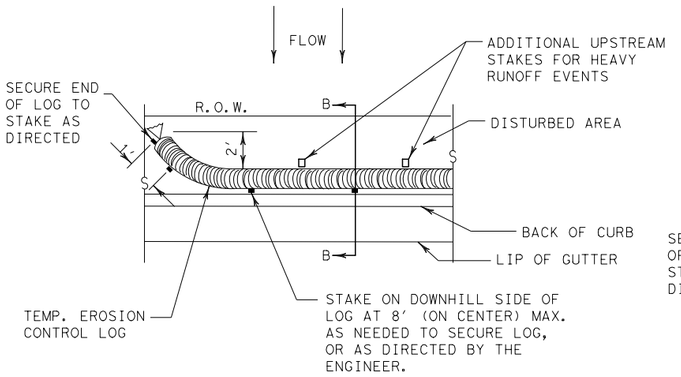


PLAN VIEW



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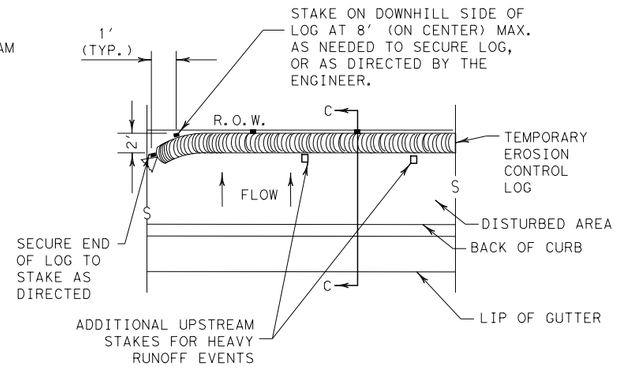

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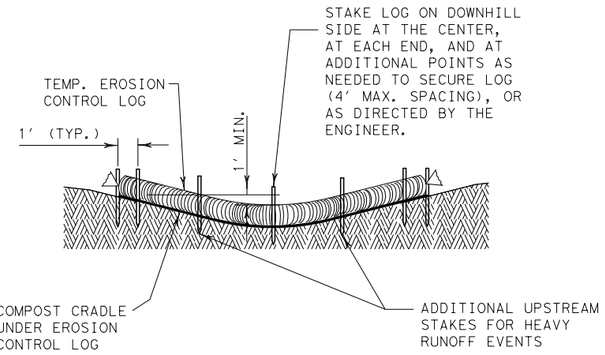
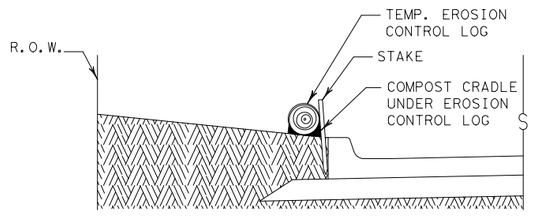


SECTION A-A

EROSION CONTROL LOG DAM

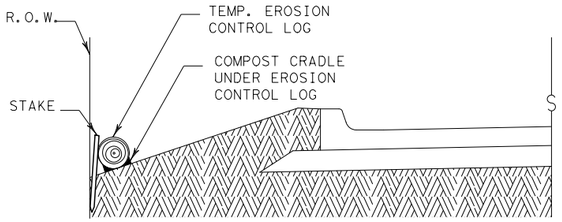
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

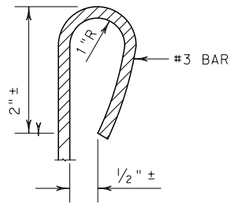
CL-BOC



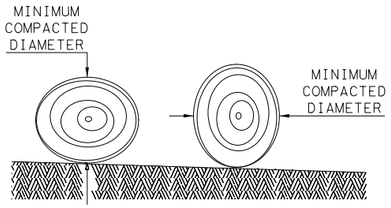
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

CITY OF MESQUITE RECORD DWG INDEX NO. 2023-029-249

SHEET 1 OF 3

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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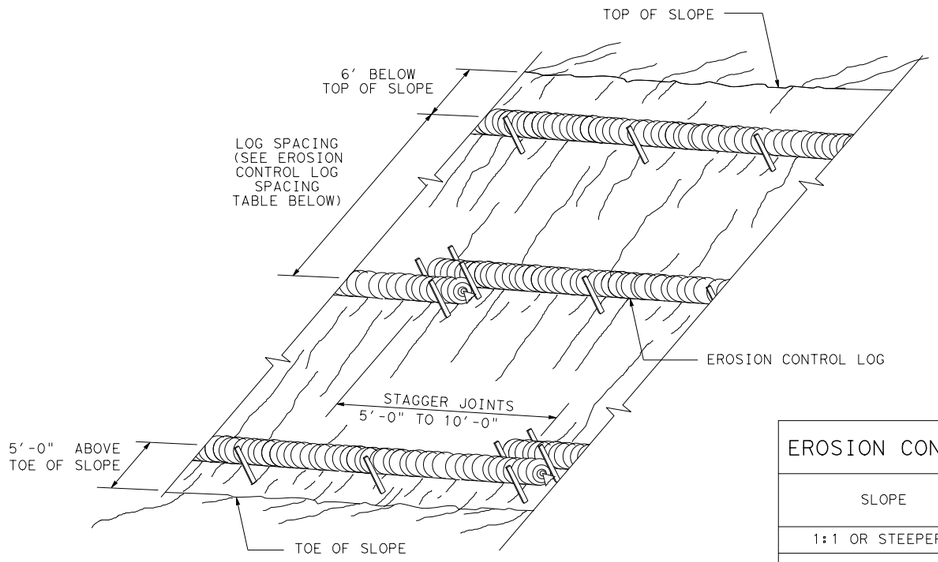
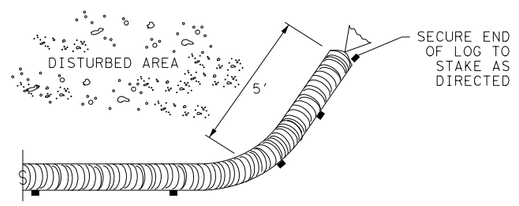


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

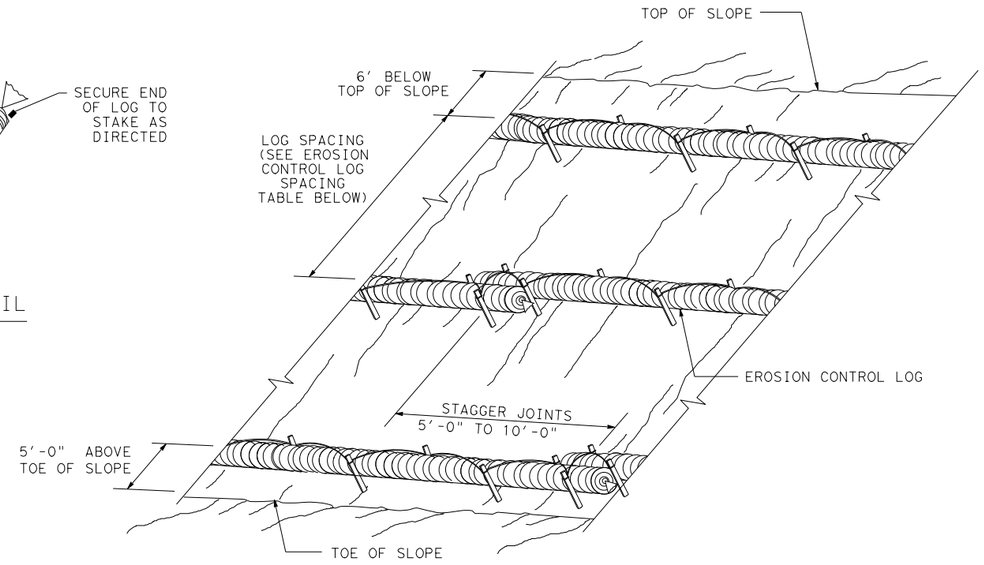
CL-SST



END SECTION RAP DETAIL

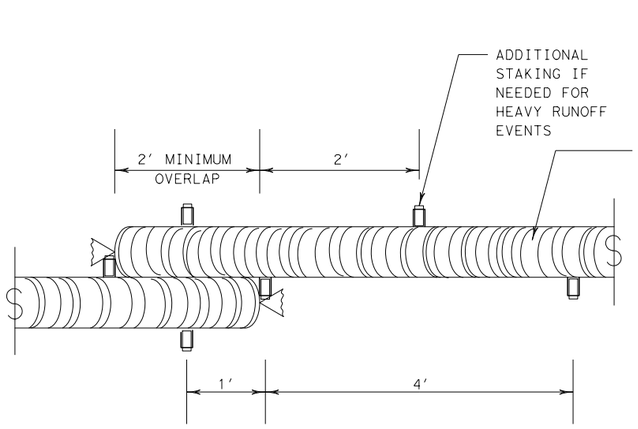
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5′	10′	15′	20′
2:1	10′	20′	30′	40′
3:1	15′	30′	45′	60′
4:1 OR FLATTER	20′	40′	60′	80′

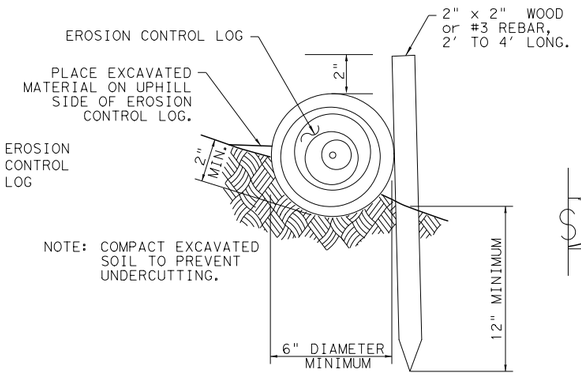
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

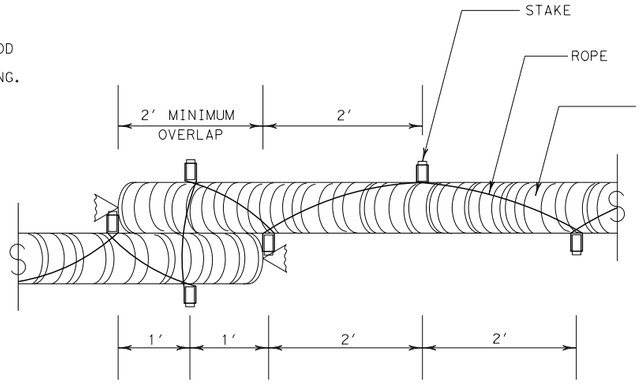


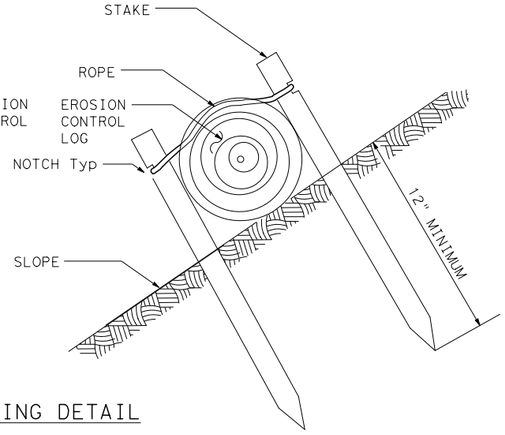


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

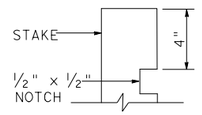
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





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

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				250

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-250

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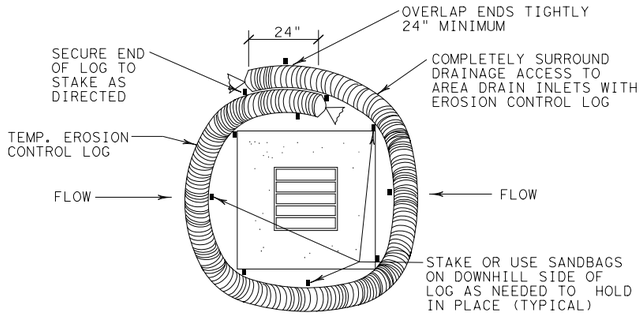
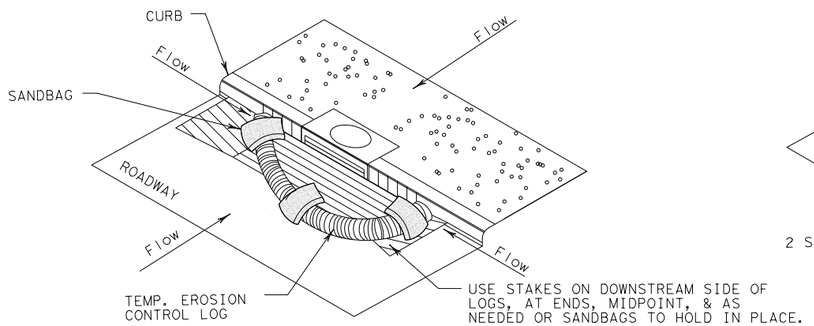


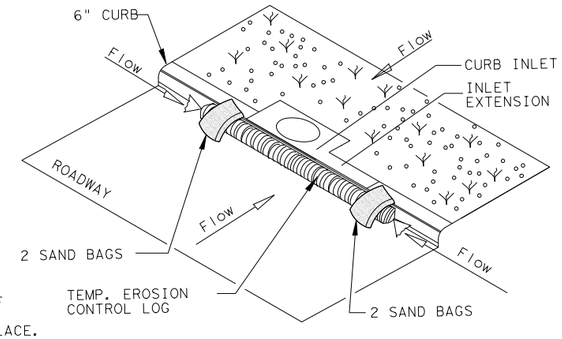
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

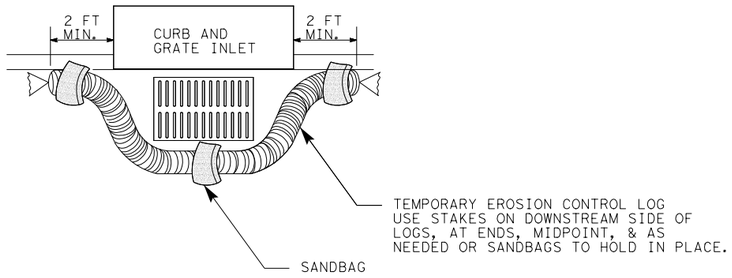
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

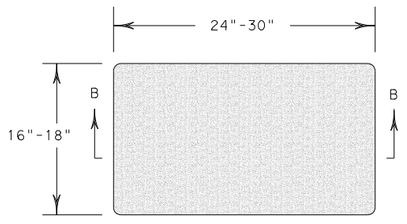
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

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.
				251

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-251

SEEDING FOR EROSION CONTROL

PLANTING SEASON	PERMANENT DRILL SEED MIX ITEM 164 DRILL SEED(PERM) (WARM OR COOL) SY	PERMANENT BROADCAST SEED MIX ITEM 164 BRDCST SEED(PERM) (WARM OR COOL) SY	TEMPORARY DRILL SEED MIX ITEM 164 DRILL SEED(TEMP) (WARM OR COOL) SY	TEMPORARY BROADCAST SEED MIX ITEM 164 BRDCST SEED(TEMP) (WARM OR COOL) SY
WARM SEASON Mar.15th, April, May, June, July, August, Sept. 15th	Pure Live Seed Rate Green Sprangletop (Leptochloa dubia) - 15 lbs/acre Hulled - Common Bermuda (Cynodon dactylon) - 50 lbs/acre Buffalograss (Buchloe dactyloides) - 25 lbs/acre total: 90 lbs/acre	Pure Live Seed Rate Green Sprangletop (Leptochloa dubia) - 15 lbs/acre Hulled - Common Bermuda (Cynodon dactylon) - 50 lbs/acre Buffalograss (Buchloe dactyloides) - 25 lbs/acre total: 90 lbs/acre	Pure Live Seed Rate Foxtail Millet (Setaria italica) - 75 lbs/acre	Pure Live Seed Rate Foxtail Millet (Setaria italica) - 75 lbs/acre
COOL SEASON Sept 16th, Oct, Nov, Dec, Jan, Feb, Mar 14th	Pure Live Seed Rate Red Winter Wheat (Triticum aestivum) - 30 lbs/acre Crimson Clover (Trifolium incarnatum) - 25 lbs/acre Hulled - Common Bermuda (Cynodon dactylon) - 50 lbs/acre Unhulled - Common Bermuda(Cynodon dactylon) - 50 lbs/acre total: 155 lbs/acre	Pure Live Seed Rate Red Winter Wheat (Triticum aestivum) - 30 lbs/acre Crimson Clover (Trifolium incarnatum) - 25 lbs/acre Hulled - Common Bermuda (Cynodon dactylon) - 50 lbs/acre Unhulled - Common Bermuda(Cynodon dactylon) - 50 lbs/acre total: 155 lbs/acre	Pure Live Seed Rate Red Winter Wheat (Triticum aestivum) - 30 lbs/acre	Pure Live Seed Rate Red Winter Wheat (Triticum aestivum) - 30 lbs/acre

SEEDING NOTES:

1. Refer to Item 164 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. Apply seed upon completion of each construction stage (dependent on planting date requirements) without compensation for additional move-ins.
3. All seed will meet labelling, delivery, analysis, and testing requirements as described in Item 164.2(A).
4. Hydromulch machines will not be allowed.
5. Fertilizer will be applied under Item 166 prior to seeding to help drill fertilizer into soil.
6. Refer to Item 166 Fertilizer this sheet for specifications.
7. All areas to be seeded will be cultivated to a depth as described in Item 164.3.
8. Seed will be drilled to a depth as described in Item164.3(D).
9. Vegetative watering will be paid for under Item 168 as shown on this sheet.
10. **BROADCAST SEEDING METHOD OF APPROPRIATE PERMANENT OR TEMPORARY SEED MIX MAY ONLY BE USED WHERE SITE CONDITIONS PREVENT DRILL SEEDING.**

FERTILIZER ITEM 166 FERTILIZER AC

FERTILIZER RATE
Unless otherwise stated in the plans, perform one soil analysis on each project before fertilization and submit results to the Engineer with recommended fertilizer rates based on soil analysis. Soil analysis maybe waived if both compost and sod are used on entire project.

FERTILIZER NOTES:

1. Refer to Item 166 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. Fertilizer will be applied before seeding and sodding.
3. Fertilizer will be delivered in bags unless otherwise specified or approved prior to delivery. Bags will be clearly labeled showing contents. When non-bagged, loose fertilizer is approved, documentation will be required for each load of material delivered verifying authenticity of material.
4. Fertilizer will be granular and essentially dust free.

VEGETATIVE WATERING FOR SEED AND SOD ITEM 168 VEGETATIVE WATERING MG

WATERING SCHEDULE

MONTH	RATE	TIME SCHEDULE	TOTAL WATER
March, April, May, October	7000 gallons/acre per working day	Vegetative watering for seed and/or sod shall begin on the day after placement for 20 consecutive working days	140,000 gallons/acre (20 working days)
June, July, August, September	12,000 gallons/acre per working day	Vegetative watering for seed and/or sod shall begin on the day after placement for 20 consecutive working days	240,000 gallons/acre (20 working days)
November, December, January, February	1000 gallons/acre per working day	Vegetative watering for seed and/or sod shall begin on the day after placement for 15 consecutive working days	15,000 gallons/acre (15 working days)

Rate and frequency may be adjusted, with the approval of the Engineer, to meet site conditions (especially with sod).
For informational purposes only: 1,000 gallons equals 1 MG

VEGETATIVE WATERING NOTES:

1. Refer to Item 168 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. All watering equipment will have a metering device.
3. Water will be evenly distributed over entire area(s) designated for seeding and/or sodding.
4. If 1/4 inch or more of rainfall occurs on site on any given working day, no vegetative watering will be needed on that working day (Note: 1/4 inch rain equals 7000 gallons of water per acre).
5. **Should the Contractor fail to apply the specified amount of water within the time allowed any seed or sod in poor condition will be replaced, fertilized, and watered at the Contractor's expense.**

SODDING FOR EROSION CONTROL ITEM 162 BLOCK SOD (BERMUDA) SY

BLOCK OR ROLL SOD

COMMON NAME	BOTANICAL NAME
Common Bermuda Grass	Cynodon dactylon

SODDING NOTES:

1. Refer to Item 162 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. All sod (blocks or rolls) will be placed within 24 hours of delivery to the site.
3. Sod will be placed only after soil preparation is complete and fertilizer has been applied to soil.
4. Sod blocks will be placed firmly against adjacent sod blocks.
5. Sod will be placed with joints alternating on each row to prevent all joints from lining up.
6. Vegetative watering will be paid for under Item 168 as shown on this sheet. Sod will be watered immediately following placement.

COMPOST APPLICATION ITEM 161 COMPOST MANF. TOPSOIL (BOS) (4") SY

APPLICATION RATE
A one inch uniform layer of compost will be placed on grade. The compost will then be incorporated into the existing soil (by till or disk) to a 3 to 4 inch depth.

COMPOST NOTES:

1. Refer to Item 161 - Compost for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. Erosion Control Compost (ECC) will be used to control erosion on slopes. ECC will be used in lieu of Soil Retention Blankets and other slope applications on slopes 3:1 and flatter. The ECC will be uniformly placed on the slope in a minimum one inch layer.
3. Filter berms will be placed in locations where concentration of flow may cause erosion - reference current Special Specification for Compost/Mulch Filter Berm.

ROADSIDE MOWING ITEM 730 PROJECT MAINTENANCE AC

Mowing will be included during project construction. Provide six mowing cycles per year during the project.

Once seed is established, mowing will be used to promote the warm season grasses by mowing the cool season and/or temporary grasses.

REQUIRED ITEMS:

- COMPOST MANUFACTURED TOPSOIL
- FERTILIZER TO BE USED WITH ALL SEEDING AND MOST SODDING.
- VEGETATIVE WATERING TO BE USED WITH ALL SEEDING AND SODDING.
- ONLY BROADCAST SEED IN AREAS WHERE CANNOT DRILL SEED OR SOD.

SEQUENCE OF WORK:

PREPARE SOIL WITH COMPOST
APPLY FERTILIZER
PLACE SEED AND/OR SOD
APPLY WATER FOR SEED AND SOD AREAS
MOW TO PROMOTE WARM SEASON GRASSES

DALLAS DISTRICT STANDARD
VEGETATION ESTABLISHMENT SHEET

DESIGN	FED. RD./DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
ORIGINAL 1/15/03	6	(SEE TITLE SHEET)		
REVISIONS	STATE	DISTRICT	COUNTY	SHEET NO.
REVISED 2/25/03	TEXAS	DALLAS	DALLAS	
	CONTROL	SECTION	JOB	252

CITY OF MESQUITE RECORD DWG INDEX NO.
2023-029-252

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