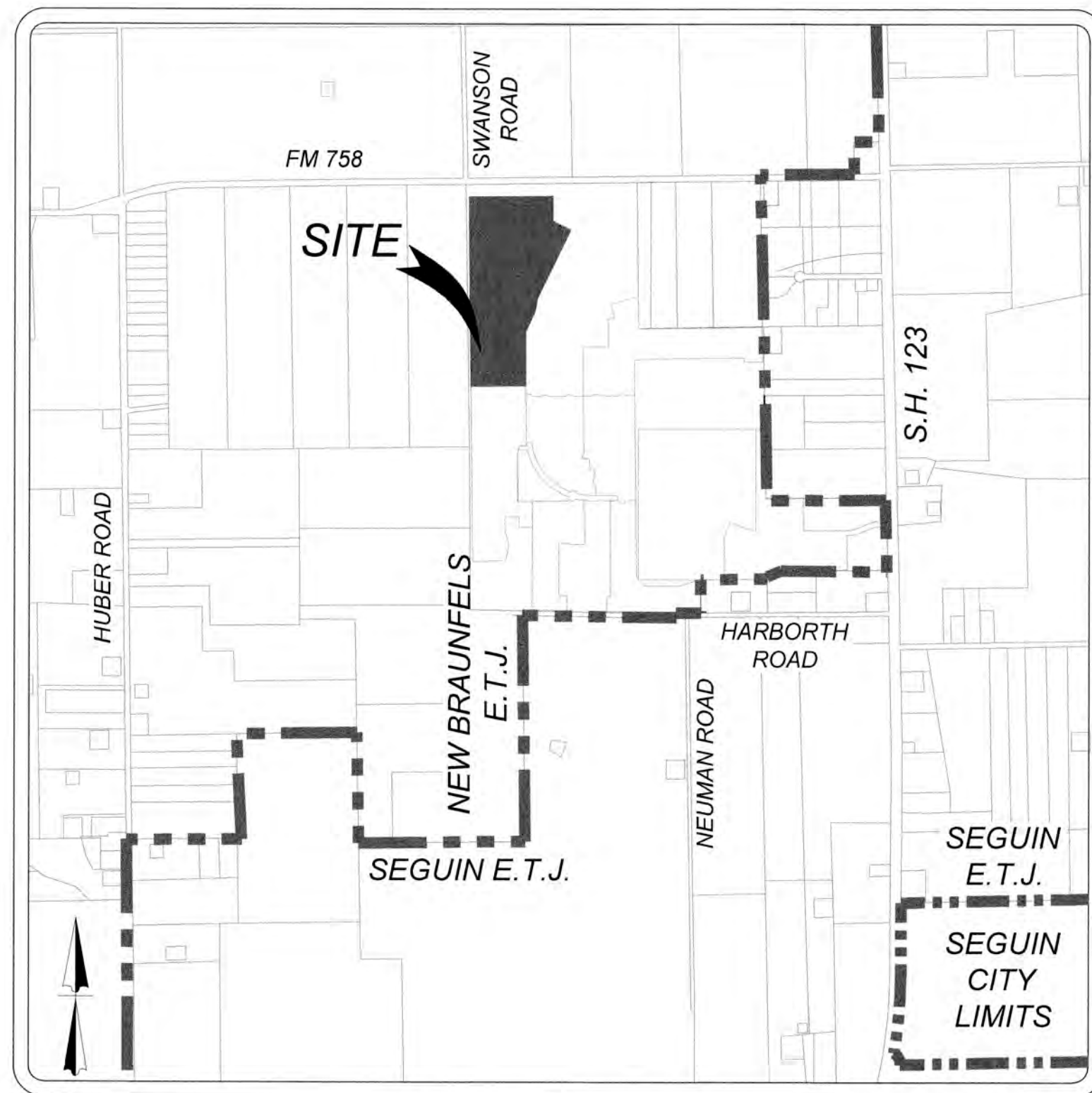


NAVARRO SUBDIVISION - UNIT 8

(TYPE 3 DEVELOPMENT)

GUADALUPE COUNTY, NEW BRAUNFELS ETJ, TEXAS STREET, DRAINAGE, WATER, SANITARY SEWER & UTILITY IMPROVEMENTS



LOCATION MAP
NOT-TO-SCALE

IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR
OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT
APPROVAL IS NO LONGER VALID.

LONE OAK FARM MUNICIPAL UTILITY DISTRICT (MUD)

DISTRICT ENGINEER: KEN HEROY - JONES-HEROY ASSOCIATES, INC.

REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO WATER,
WASTEWATER AND DRAINAGE AND DOES NOT INDICATE A REVIEW
OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN
APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE
ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

SEQUENCE OF CONSTRUCTION:

CONSTRUCTION ACTIVITY WILL INCLUDE:

1. INSTALLATION OF TEMPORARY BMP's
2. SITE CLEARING AND GRUBBING ACTIVITIES FOR STREETS.
3. ROUGH SUBGRADE PREPARATION: EARTHWORK,
GRADING, STREETS, EXCAVATION AND EMBANKMENT.
4. UTILITY TRENCHING AND INSTALLATION.
5. FINAL STREET PREPARATION, CURBING, AND PAVING
ACTIVITIES.
6. HOME CONSTRUCTION.
7. SITE CLEAN UP AND REMOVAL OF TEMPORARY BMP's.

PERMITS OR APPROVALS MUST BE OBTAINED FROM THE
FOLLOWING REGULATORY AGENCIES LISTED BELOW:

- CITY OF NEW BRAUNFELS
- CITY OF SEGUIN UTILITIES
- CRYSTAL CLEAR SPECIAL UTILITY DISTRICT
- GUADALUPE VALLEY ELECTRIC COOPERATIVE

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS
REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING
THESE PLANS, THE CITY OF NEW BRAUNFELS MUST RELY UPON
THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.

ANY REVISIONS REQUIRED PER THE REGULATORY AGENCIES
THAT CHANGE THE CIVIL SITE PLANS MUST BE SUBMITTED TO
THE CITY OF NEW BRAUNFELS FOR ACCEPTANCE.

LEGAL DESCRIPTION

NAVARRO SUBDIVISION UNIT 8

BEING A 46.98 ACRE TRACT OF LAND SITUATED IN THE
ANTONIO MARIA ESNURIZAR SURVEY, ABSTRACT 20,
GUADALUPE COUNTY, TEXAS, AND BEING PORTIONS OF A
CALLED 94.00 ACRE TRACT OF LAND CONVEYED TO LENNAR
HOMES OF TEXAS LAND AND CONSTRUCTION, LTD
RECORDED IN DOCUMENT NO. 202199023129 AND A PORTION
OF A CALLED 96.41 ACRE TRACT OF LAND CONVEYED TO 325
NAVARRO FARM LP RECORDED IN DOCUMENT NO.
202199023129 OF THE OFFICIAL PUBLIC RECORDS OF
GUADALUPE COUNTY, TEXAS.

FEMA FLOODPLAIN
NO PORTION OF ANY RESIDENTIAL LOTS ON NAVARRO SUBDIVISION, UNIT-8
ARE IN THE SPECIAL FLOOD HAZARD ZONE ACCORDING TO FEMA FLOOD MAP
COMMUNITY PANEL NO. 48187C0130F, DATED NOVEMBER 2, 2007.

EDWARDS AQUIFER
NO PORTION OF ANY LOTS ON NAVARRO SUBDIVISION, UNIT-8 ARE LOCATED
WITHIN EDWARDS AQUIFER TRANSITION ZONE, CONTRIBUTING ZONE OR
RECHARGE ZONE.

GAS UTILITY
GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL
GAS UTILITY DESIGN SHALL BE APPROVED BY THE CITY FOR ANY WORK WITHIN
PUBLIC RIGHT-OF-WAY.

KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, A. NICHOLAS REYNOLDS, A
PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF
TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING
CONSIDERATION HAS BEEN GIVEN TO THESE PLANS AND ALL
ENGINEERING ASPECTS ARE IN COMPLIANCE WITH CITY AND
STATE ENGINEERING REGULATIONS AND LAWS.

REGISTERED PROFESSIONAL ENGINEER
P.E. REGISTRATION NO. 111666



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KFW
ENGINEERS + SURVEYING
162 W Mill St., New Braunfels, TX. 78130
Phone #: (830) 220-6042 • Fax #: (830) 627-9097
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

DEVELOPER INFORMATION:
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100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TEXAS 78216
PHONE: (210) 403-6282

K&W
ENGINEERS + SURVEYING
162 W Mill St., New Braunfels, Tx. 78130
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REVISIONS	ISSUE DATE
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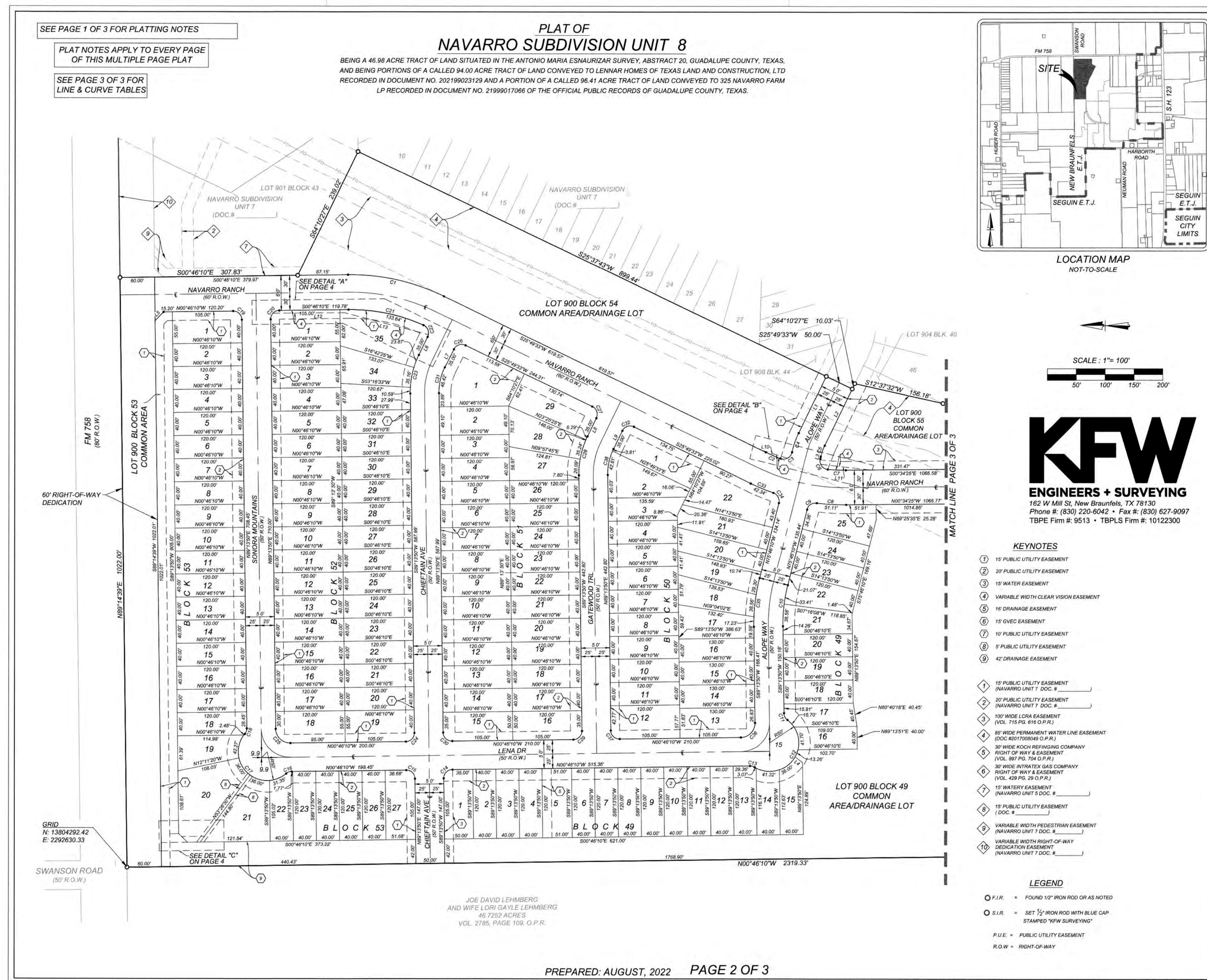
FOR
REFERENCE
ONLY

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

SUBDIVISION PLAT

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

0.3

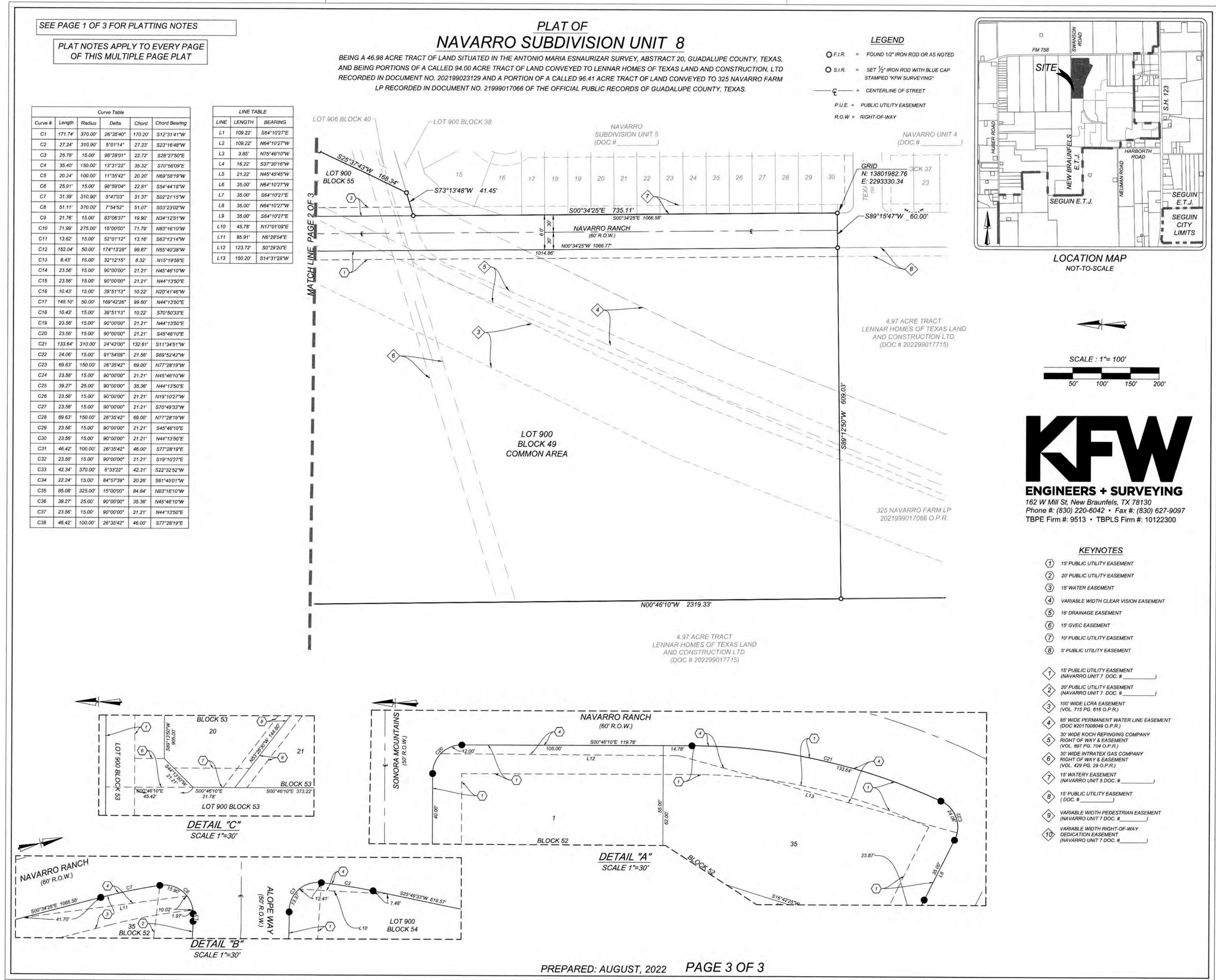


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Date: Jul 12, 2023, 10:38am User ID: jferguson
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THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

A PRELIMINARY PLAT FOR NAVARRO SUBDIVISION UNIT 8 HAS NOT BEEN SUBMITTED TO THE PLANNING COMMISSION FOR CONSIDERATION.

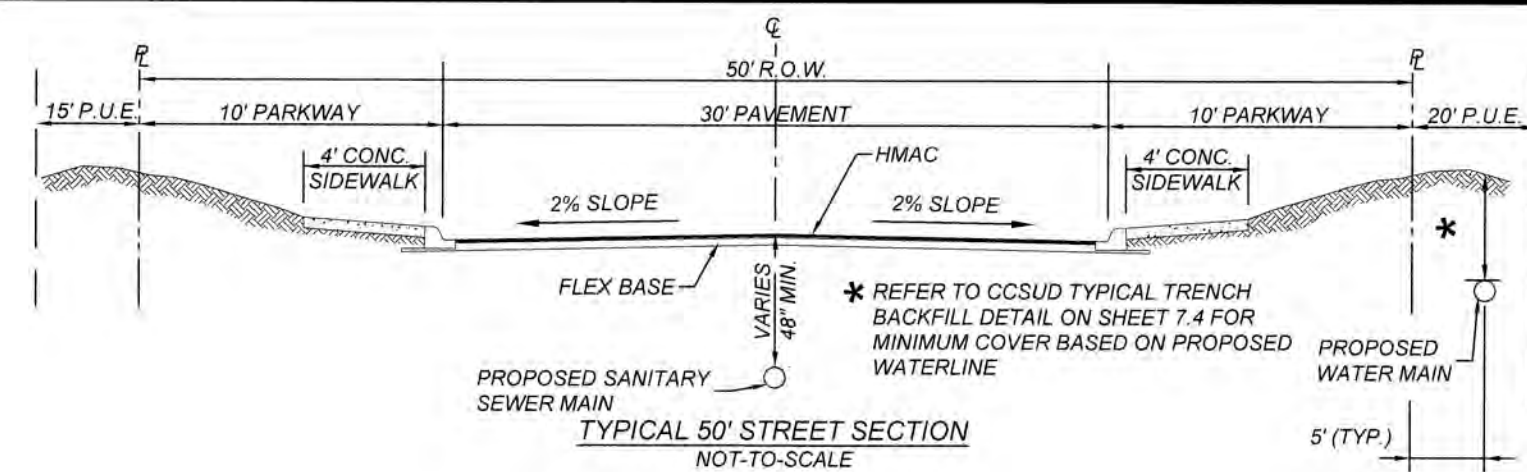


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TRENCH EXCAVATION SAFETY PROTECTION:
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!!
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

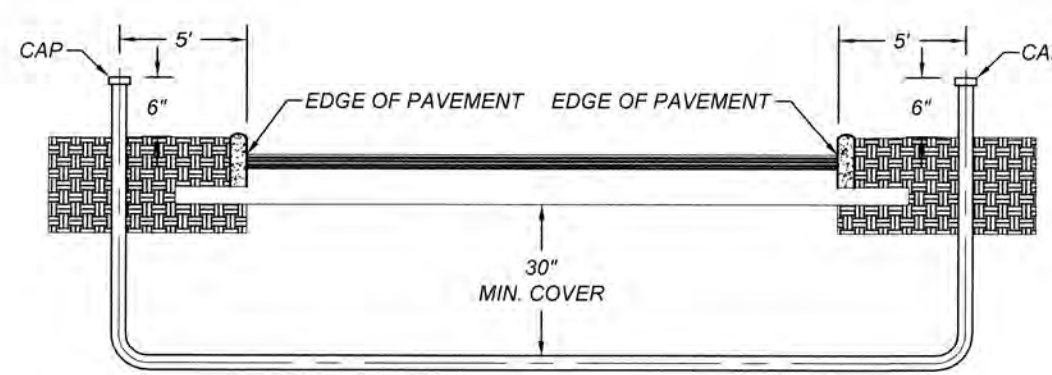
DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.



CITY OF SEGUIN WASTEWATER SYSTEM NOTE:

SANITARY SEWER LATERALS / SERVICE LINES SHALL BE DESIGNED AND INSTALLED TO ENSURE THAT CLEANOUTS WILL NOT BE LOCATED WITHIN THE RESIDENTIAL DRIVEWAY, DRIVEWAY APRON, SIDEWALK, CURB AND / OR PUBLIC STREETS. THE BUILDER AND / OR DEVELOPER WILL BE RESPONSIBLE FOR REPAIR TO ROADWAY AND UTILITY INFRASTRUCTURE IF PUBLIC UTILITIES ARE INSTALLED INCORRECTLY.

RECONSTRUCTION OF MAN-HOLE STRUCTURE AND CONE MAY REQUIRE RE-COATING OF WASTEWATER MANHOLE IN ACCORDANCE WITH CITY REQUIREMENTS. CONFIRM WITH FIELD INSPECTOR AND WATER / WASTEWATER MAINTENANCE MANAGER.



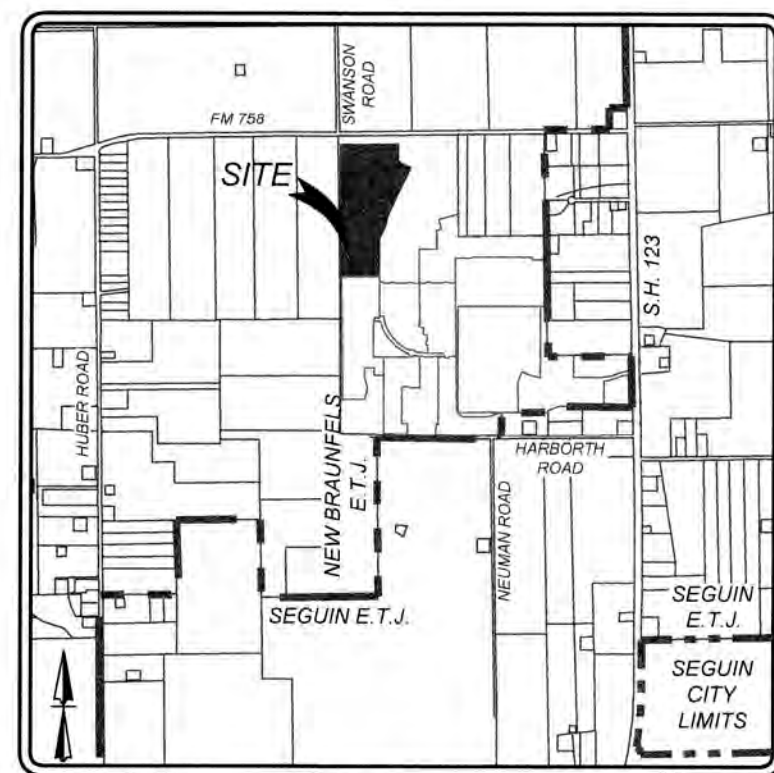
PRIVATE CONDUIT DETAIL
NOT TO SCALE

*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

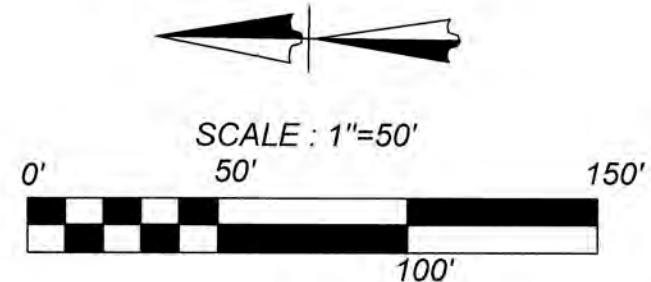
- NOTE:**
- CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH GVEC FACILITY AT ALL STREETS AND DRAIN CROSSING CONSTRUCTION SLEEVES MUST ALSO BE LOCATED FOR GVEC CREWS DURING CONSTRUCTION. (SEPARATE ITEM) SEE FINAL ELECTRIC PROVIDER'S DESIGN AND SPECIFICATION.
 - CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS
 - CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS

LEGEND

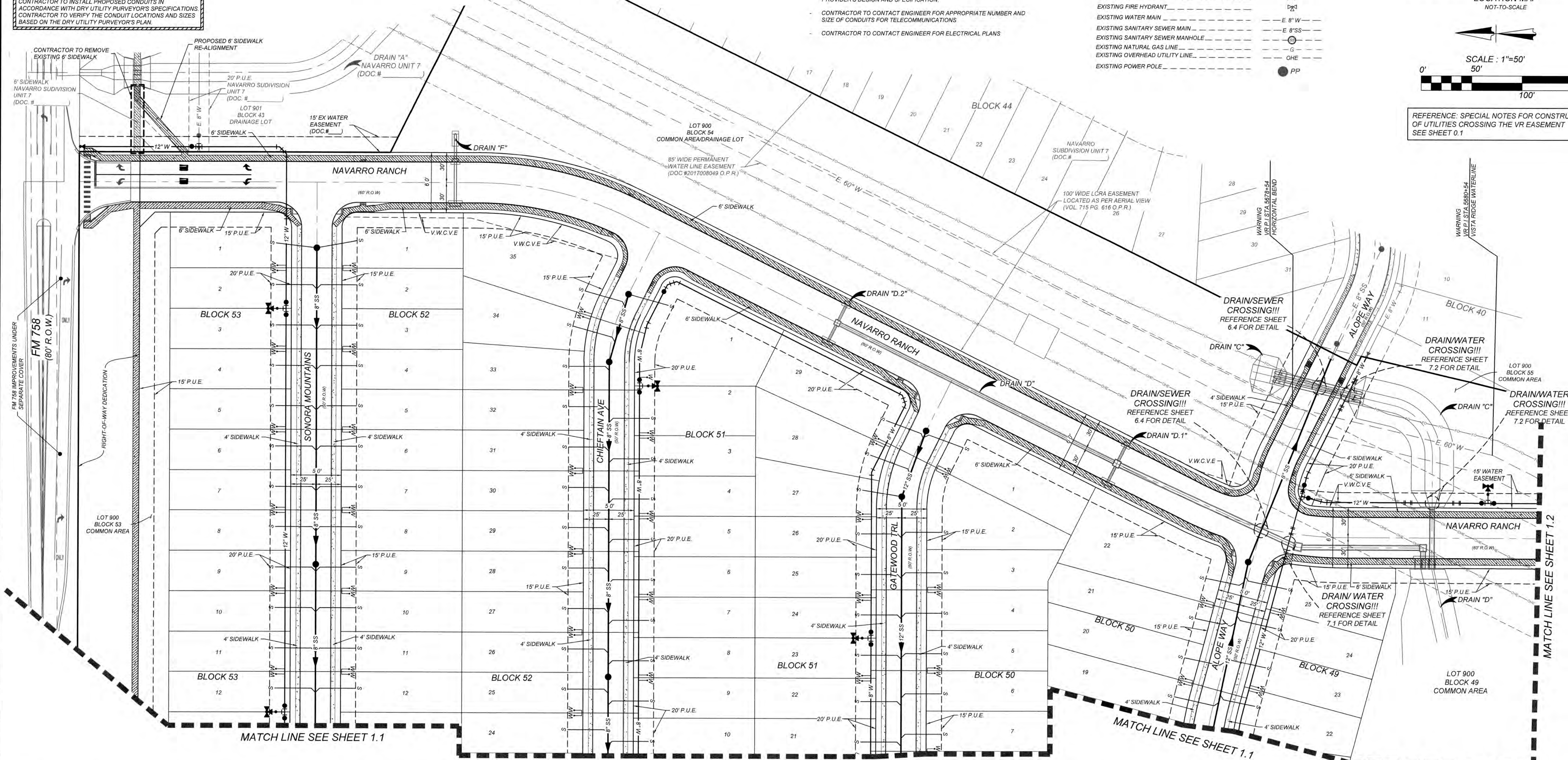
PROPOSED WATER MAIN	8" W
PROPOSED WATER SERVICE & METER BOX	3/4"
PROPOSED WATER 3/4" IRRIGATION SERVICE & W 3/4" WATER METER & METER BOX	3/4"
PROPOSED FIRE HYDRANT	P.U.E.
PUBLIC UTILITY EASEMENT	V.N.A.E.
VEHICULAR NON-ACCESS EASEMENT	R.O.W.
RIGHT OF WAY	V.W.C.V.E.
VARIABLE WIDTH CLEAR VISION EASEMENT	
PROPOSED 8" SANITARY SEWER MAIN	8" SS
PROPOSED 8" SANITARY SEWER MANHOLE	FM
PROPOSED SANITARY SEWER FORCE MAIN	FM
PROPOSED SANITARY SEWER LATERAL	(SUBJECT TO APPROVAL)
PROPOSED STREET LIGHT POLE	
PROPOSED TEE & WATER VALVE	
PROPOSED SIDEWALK	
DEVELOPER INSTALLED SIDEWALK	
EXISTING WATER VALVE	D&I
EXISTING FIRE HYDRANT	D&I
EXISTING WATER MAIN	E 8" W
EXISTING SANITARY SEWER MAIN	E 8" SS
EXISTING SANITARY SEWER MANHOLE	
EXISTING NATURAL GAS LINE	G
EXISTING OVERHEAD UTILITY LINE	OHE
EXISTING POWER POLE	PP



LOCATION MAP
NOT-TO-SCALE



REFERENCE: SPECIAL NOTES FOR CONSTRUCTION OF UTILITIES CROSSING THE VR EASEMENT SEE SHEET 0.1



JOINT RESTRAINT NOTE:
CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESS OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT. OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED USING EBAA IRONS RESTRAINT LENGTH CALCULATOR. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND OTHER JOINT RESTRAINING HARNESS AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE UNIT COST PER LINEAL FOOT OF PIPE INSTALLED.

COMPACTION NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE CITY OF SEGUIN UTILITIES INSPECTOR/TEST ADMINISTRATOR, PER EACH 12 INCH LOOSE LIFT PER 400 LINEAL FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY CITY OF SEGUIN UTILITIES WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

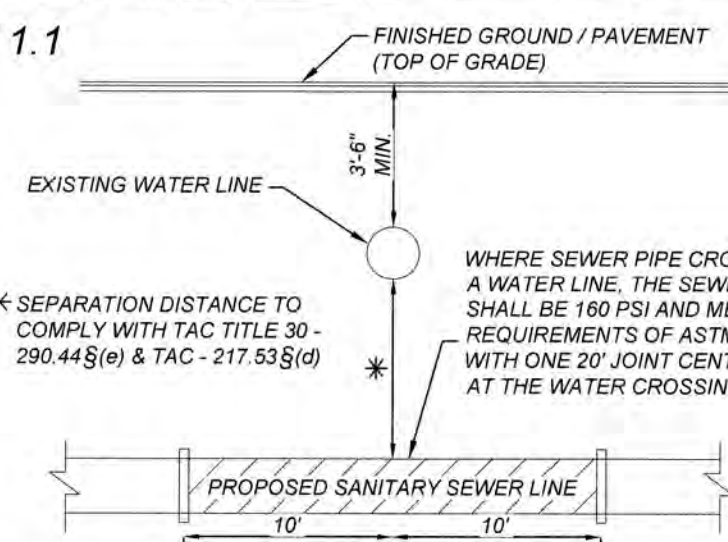
MISCELLANEOUS NOTE:

- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS
- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.

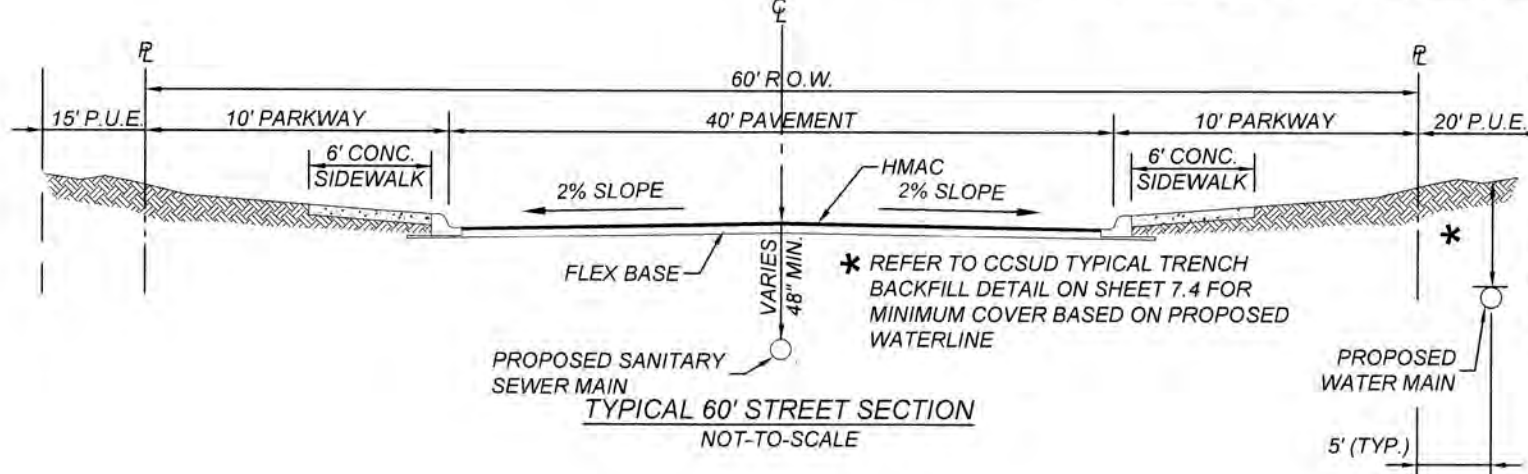
UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK):
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENTS/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

GENERAL NOTE:

- THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.



TYPICAL SANITARY SEWER / WATER CROSSING DETAIL
NOT TO SCALE



TYPICAL 60' STREET SECTION
NOT-TO-SCALE

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

OVERALL UTILITY PLAN

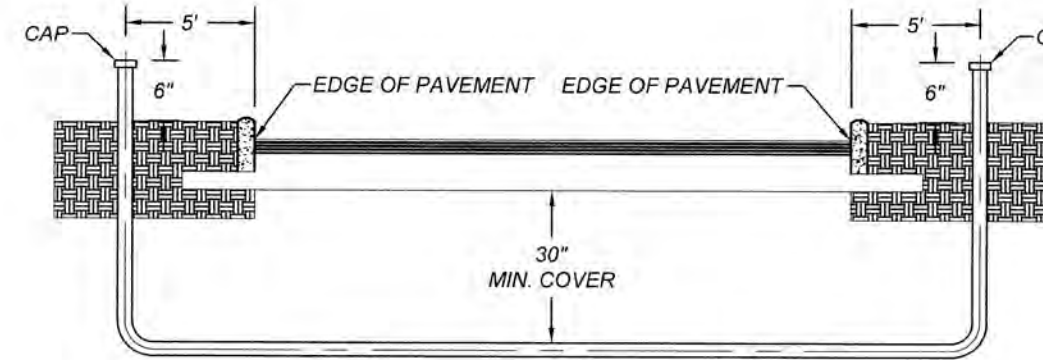
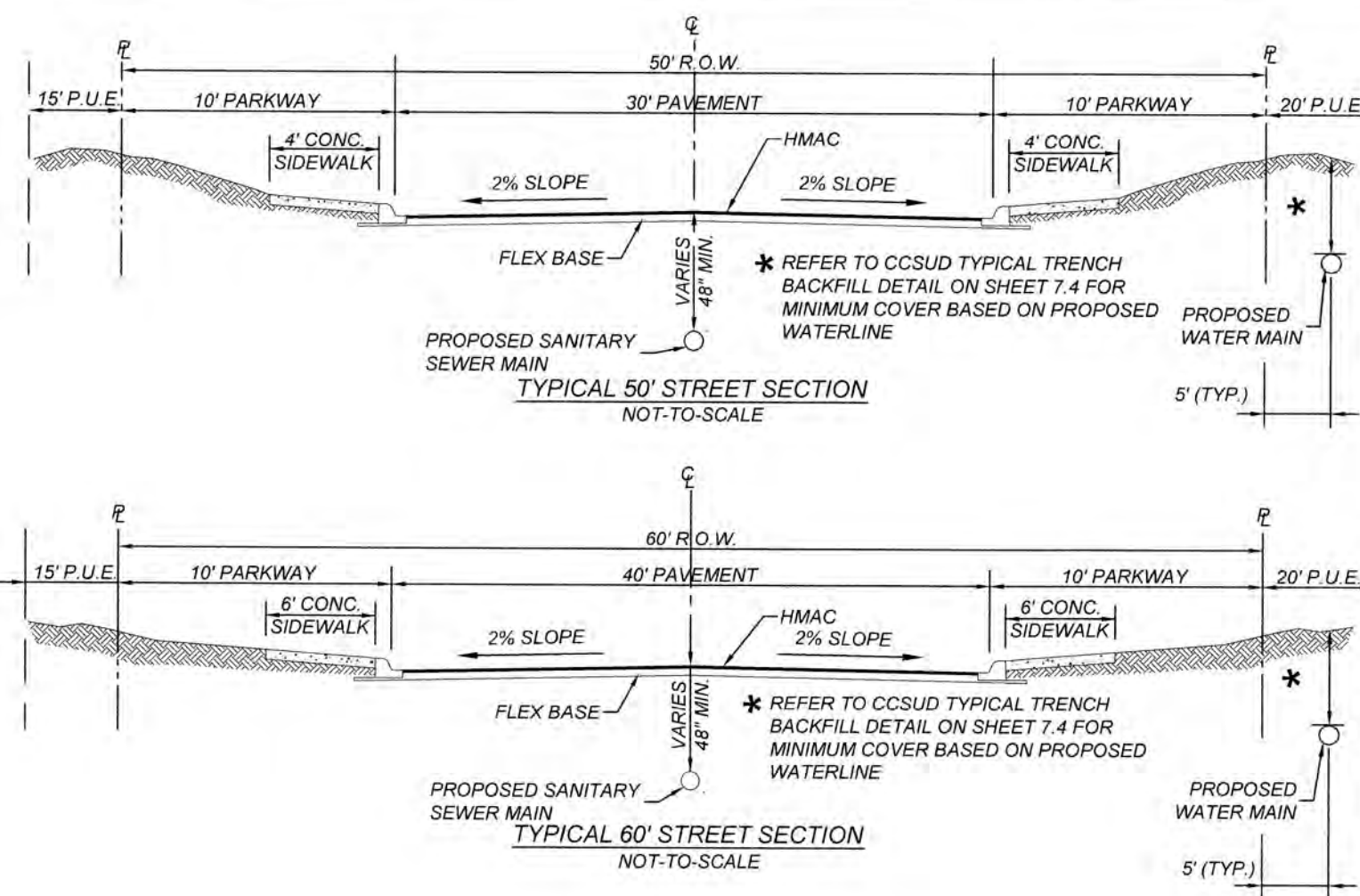
JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

1.0

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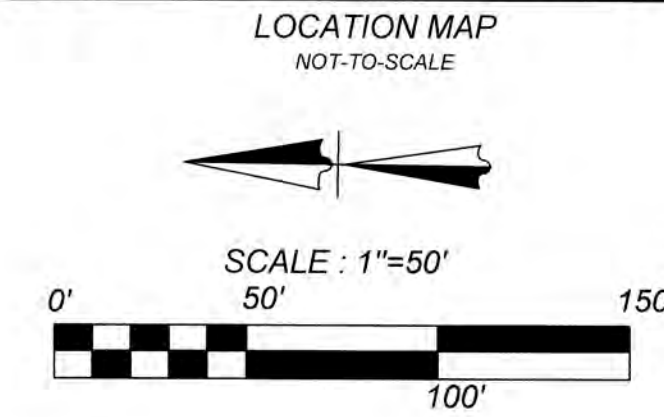
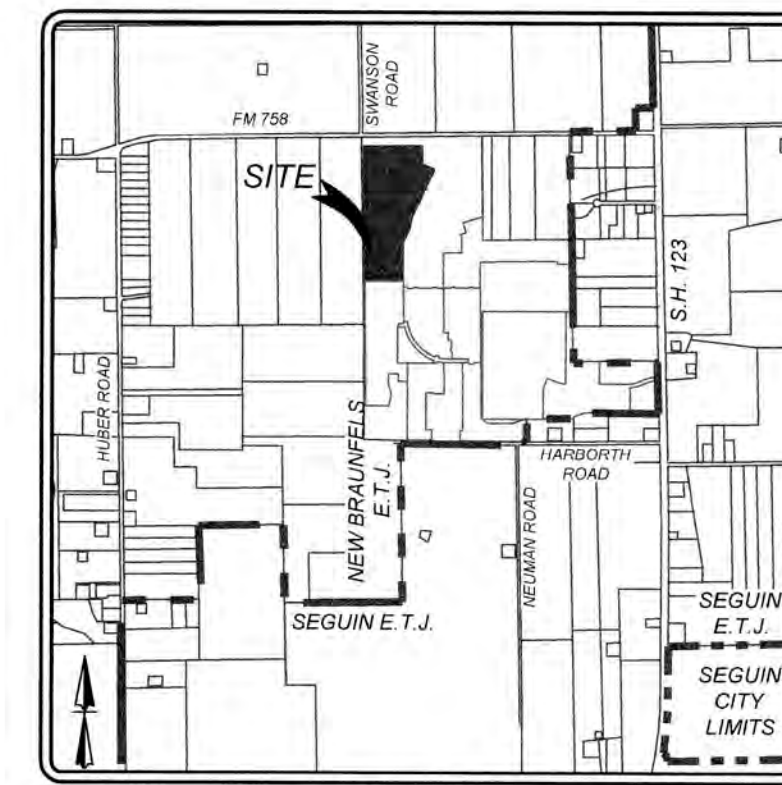
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- CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS
- CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS

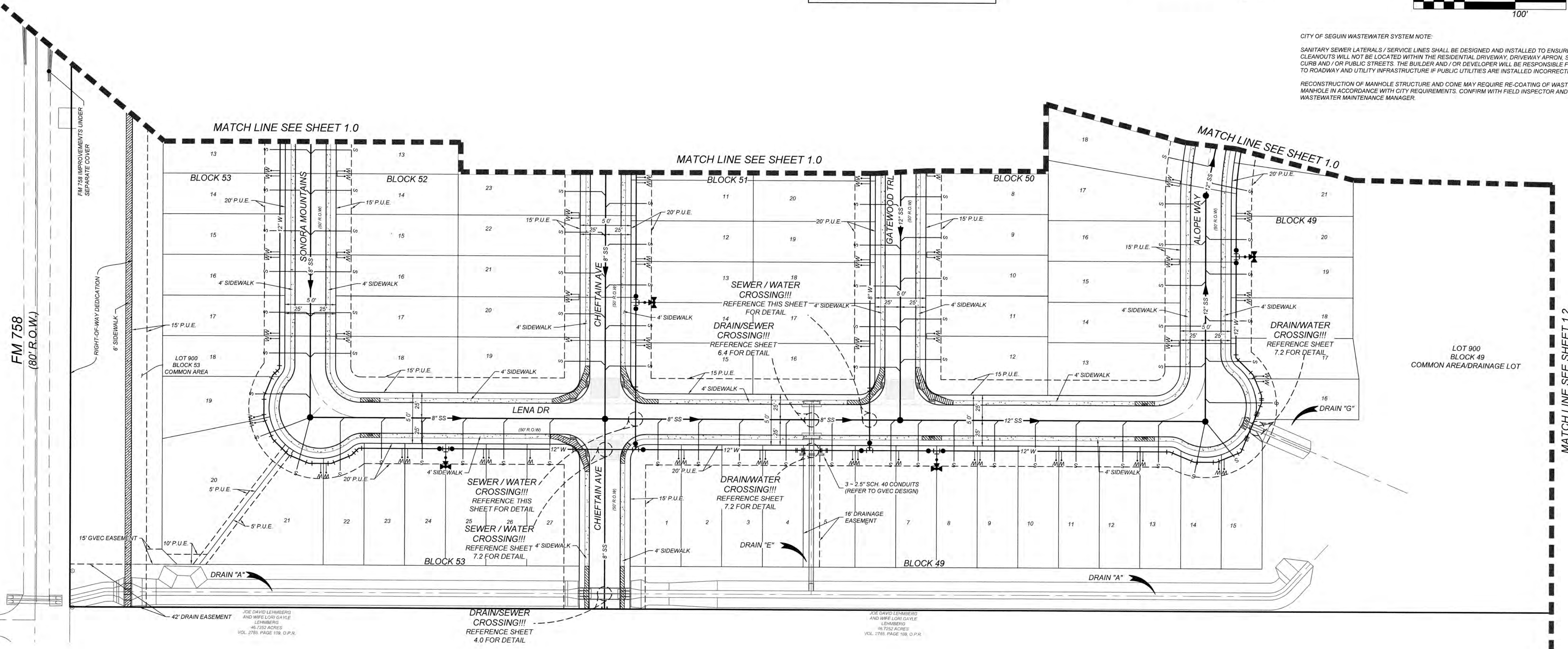
REFERENCE: SPECIAL NOTES FOR CONSTRUCTION OF UTILITIES CROSSING THE VR EASEMENT
SEE SHEET 0.1

LEGEND

PROPOSED WATER MAIN	8" W
PROPOSED WATER SERVICE & METER BOX	3/4" W
PROPOSED WATER 3/4" IRRIGATION SERVICE & 1/2" WATER METER & METER BOX	3/4" W
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PROPOSED SANITARY SEWER FORCE MAIN	FM
PROPOSED SANITARY SEWER LATERAL	8" SS
PROPOSED STREET LIGHT POLE (SUBJECT TO APPROVAL)	SLP
PROPOSED TEE & WATER VALVE	TV
PROPOSED SIDEWALK	SW
DEVELOPER INSTALLED SIDEWALK	DIS
EXISTING WATER VALVE	WV
EXISTING FIRE HYDRANT	FH
EXISTING WATER MAIN	W
EXISTING SANITARY SEWER MAIN	SS
EXISTING SANITARY SEWER MANHOLE	SMH
EXISTING NATURAL GAS LINE	G
EXISTING OVERHEAD UTILITY LINE	OHE
EXISTING POWER POLE	PP



CITY OF SEGUIN WASTEWATER SYSTEM NOTE:
SANITARY SEWER LATERALS / SERVICE LINES SHALL BE DESIGNED AND INSTALLED TO ENSURE THAT CLEANOUTS WILL NOT BE LOCATED WITHIN THE RESIDENTIAL DRIVEWAY, DRIVEWAY APRON, SIDEWALK, CURB AND / OR PUBLIC STREETS. THE BUILDER AND / OR DEVELOPER WILL BE RESPONSIBLE FOR REPAIR TO ROADWAY AND UTILITY INFRASTRUCTURE IF PUBLIC UTILITIES ARE INSTALLED INCORRECTLY.
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JOINT RESTRAINT NOTE:
CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESS OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED USING EBAA IRONS RESTRAINT LENGTH CALCULATOR. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND OTHER JOINT RESTRAINING HARNESS AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE UNIT COST PER LINEAL FOOT OF PIPE INSTALLED.

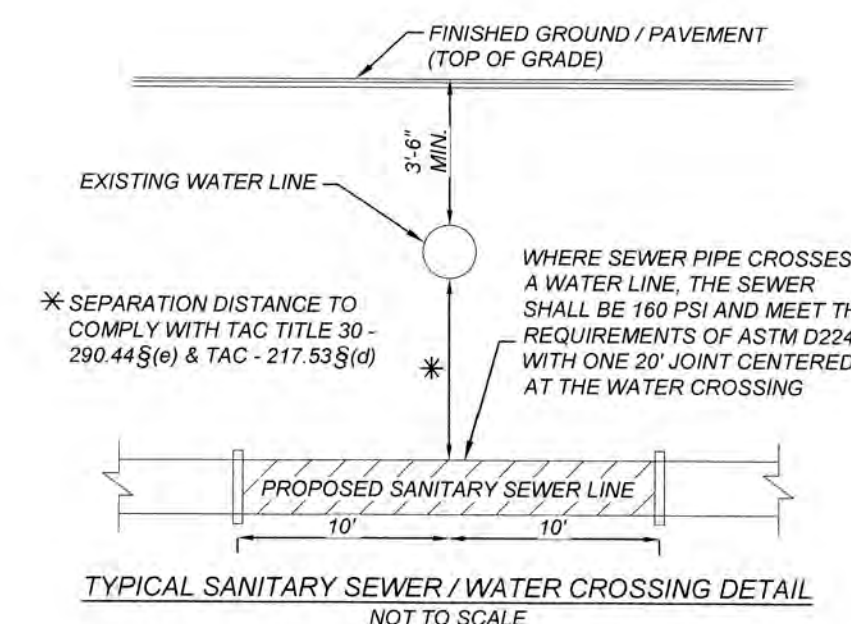
COMPACTION NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE CITY OF SEGUIN UTILITIES INSPECTOR/TEST ADMINISTRATOR. PER EACH 12 INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM PERMITS AND/OR WILL NOT BE ACCEPTED BY CITY OF SEGUIN UTILITIES WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

MISCELLANEOUS NOTE:
1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
2. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
3. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.

UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK):
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT / SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 98% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

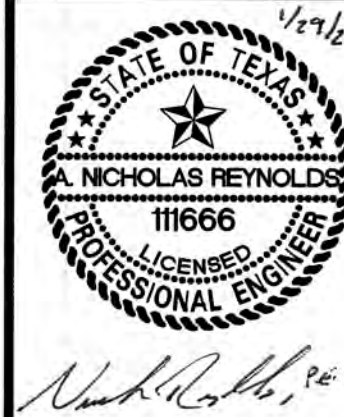
GENERAL NOTE:

- THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.



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TBP# Firm #: 0513 • TBP# Firm #: 1012200

ISSUE DATE
REVISIONS



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
OVERALL UTILITY PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

1.1

TRENCH EXCAVATION SAFETY PROTECTION:
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!!
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

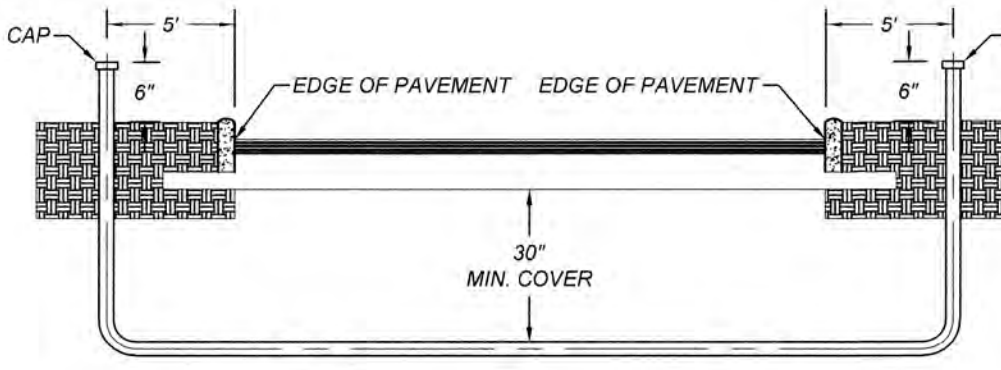
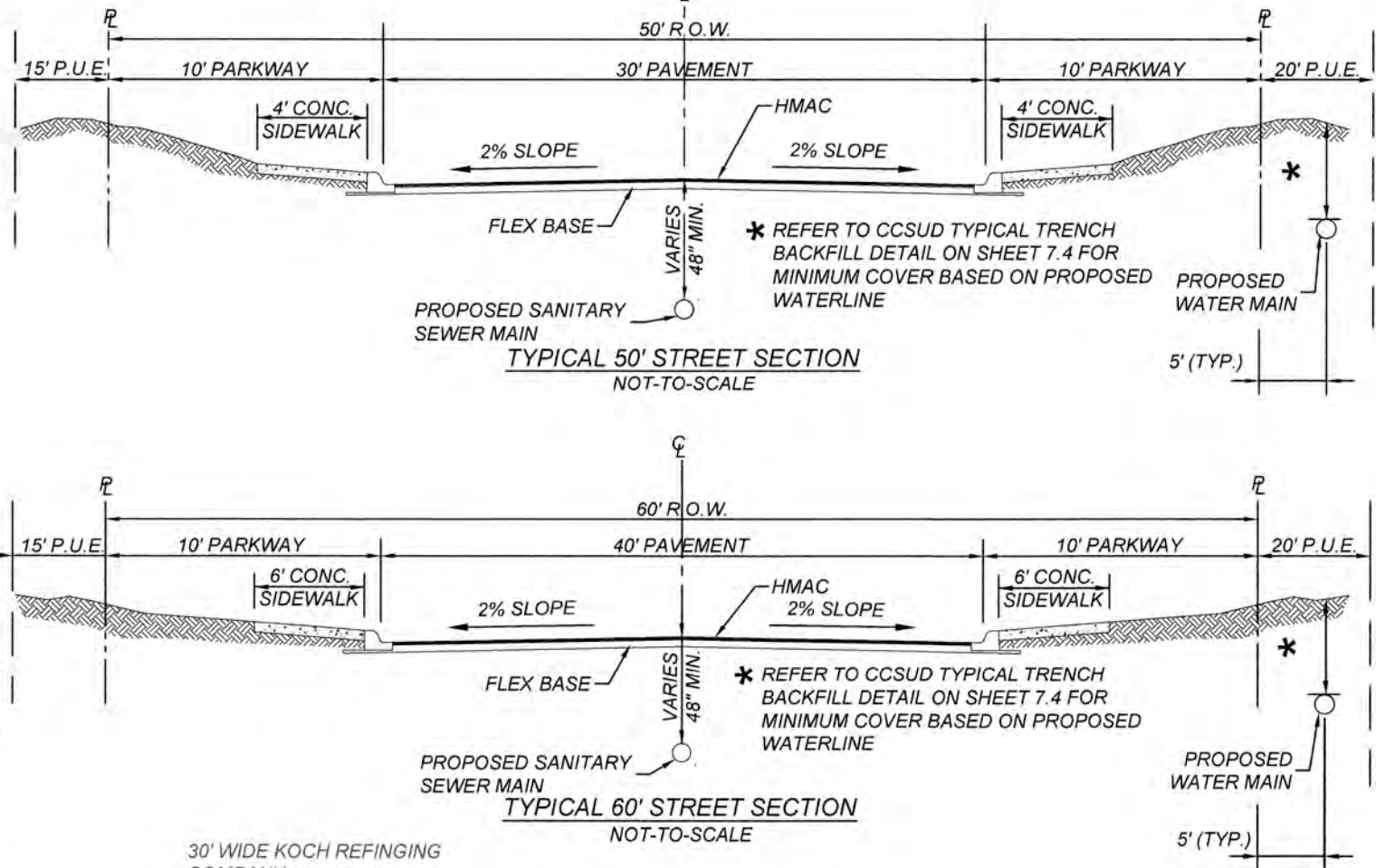
DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

WARNING!!!
EXISTING VR WATER LINE CROSSING!!!
REFERENCE SHEET 7.3 FOR DETAIL

EX. GAS/WATER CROSSING!!!
REFERENCE SHEET 7.3 FOR DETAIL

MATCH LINE SEE SHEET 1.0

MATCH LINE SEE SHEET 1.1

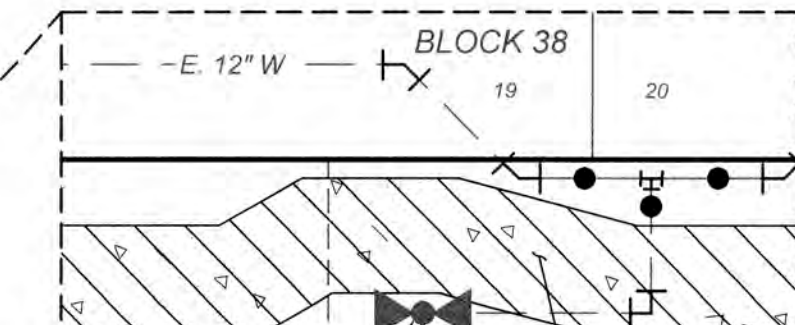
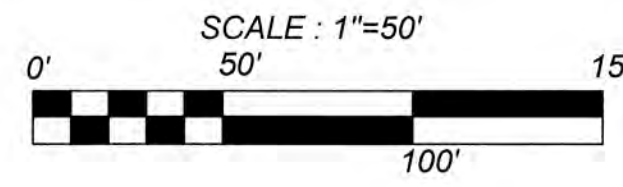
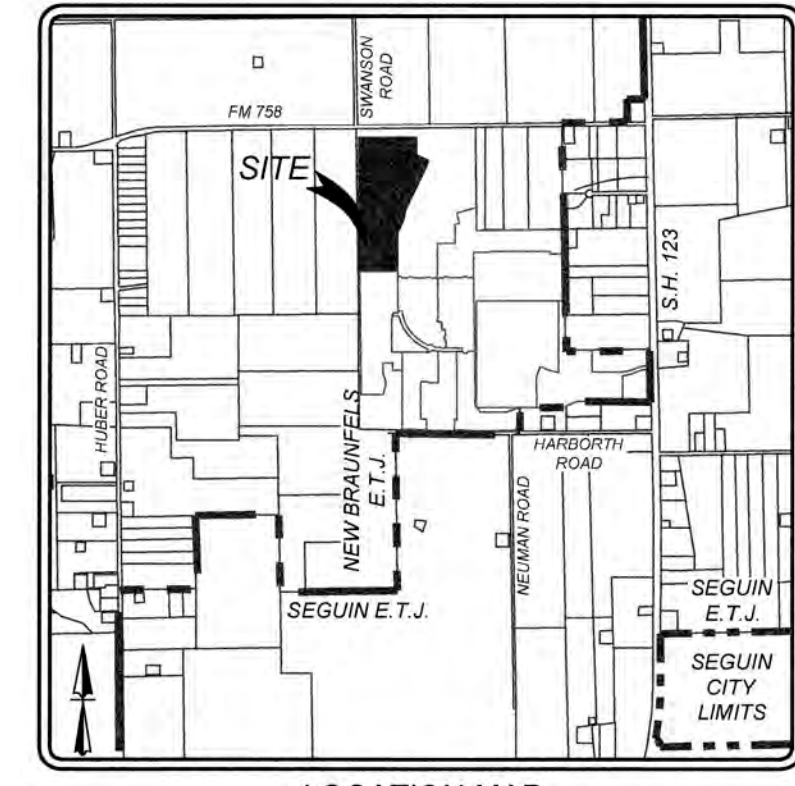


*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

- NOTE:**
- CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH GVEC FACILITY AT ALL STREETS AND DRAIN CROSSING. CONSTRUCTION SLEEVES MUST ALSO BE LOCATED FOR GVEC CREWS DURING CONSTRUCTION. (SEPARATE ITEM) SEE FINAL ELECTRIC PROVIDER'S DESIGN AND SPECIFICATION.
 - CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS
 - CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS

LEGEND

- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE & METER BOX
- PROPOSED WATER 3/4" IRRIGATION SERVICE & W/ 3/4" WATER METER & METER BOX
- PROPOSED FIRE HYDRANT
- PUBLIC UTILITY EASEMENT
- VEHICULAR NON-ACCESS EASEMENT
- RIGHT OF WAY
- VARIABLE WIDTH CLEAR VISION EASEMENT
- PROPOSED 8" SANITARY SEWER MAIN
- PROPOSED 8" SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER FORCE MAIN
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED STREET LIGHT POLE (SUBJECT TO APPROVAL)
- PROPOSED TEE & WATER VALVE
- PROPOSED SIDEWALK
- DEVELOPER INSTALLED SIDEWALK
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING WATER MAIN
- EXISTING SANITARY SEWER MAIN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING NATURAL GAS LINE
- EXISTING OVERHEAD UTILITY LINE
- EXISTING POWER POLE



REFERENCE: SPECIAL NOTES FOR CONSTRUCTION OF UTILITIES CROSSING THE VR EASEMENT SEE SHEET 0.1

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- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS
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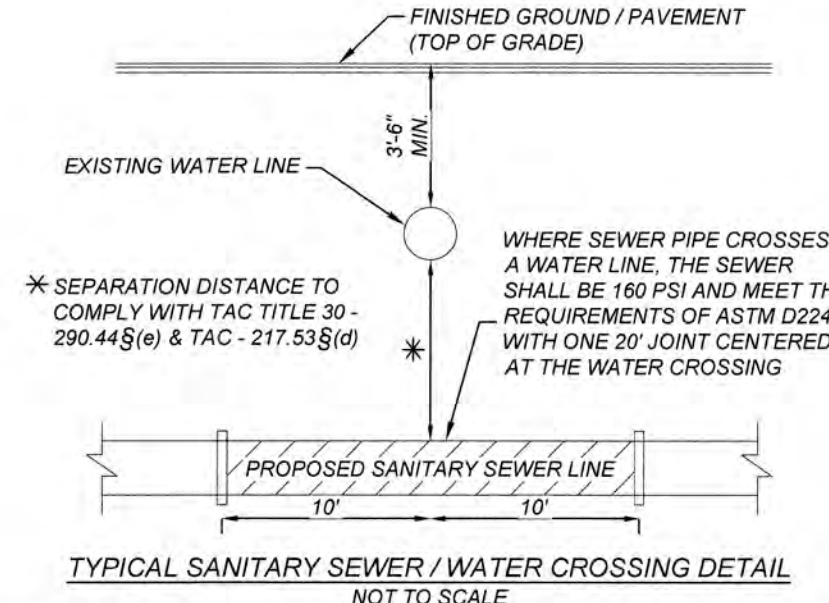
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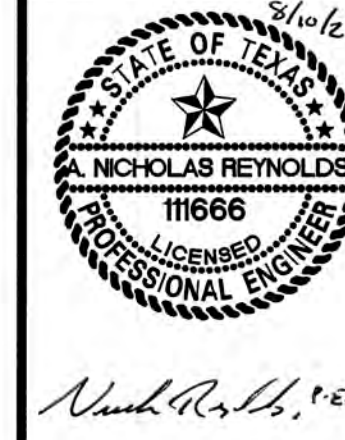
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JOE DAVID LEHMBERG
AND WIFE LORI GAYLE LEHMBERG
46.7252 ACRES
VOL. 2785, PAGE 109, O.P.R.



Nicholas Reynolds, P.E.

ISSUE DATE

REVISIONS

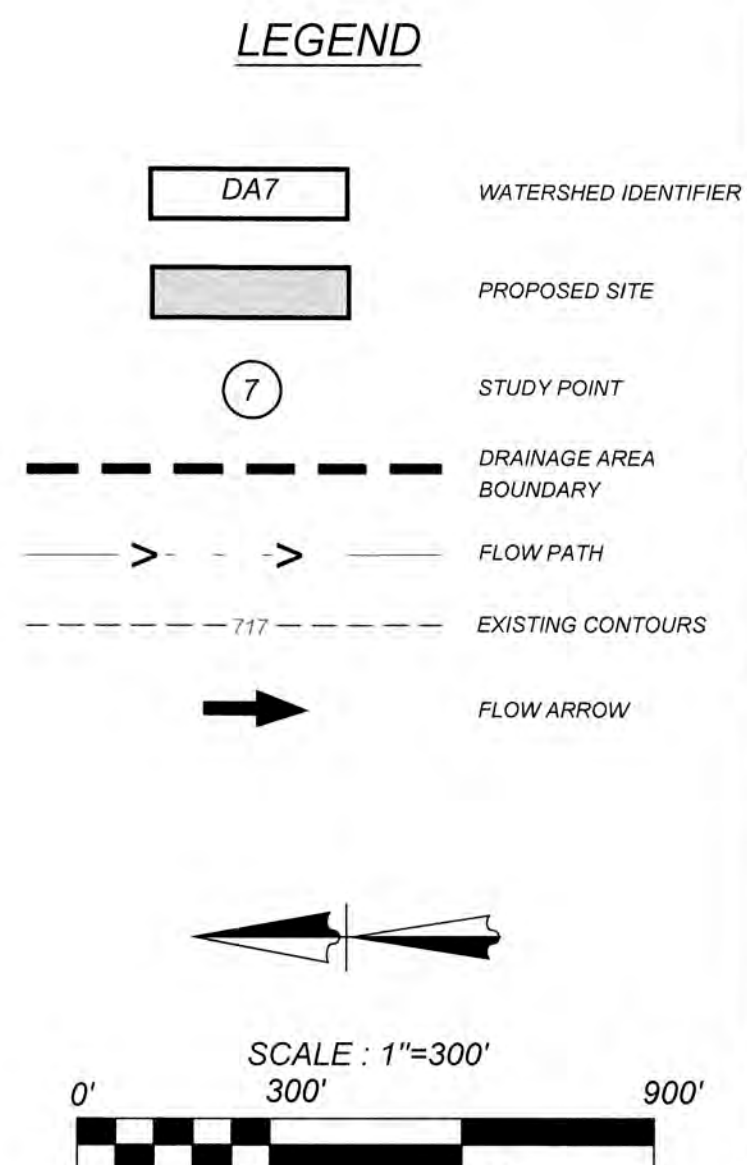
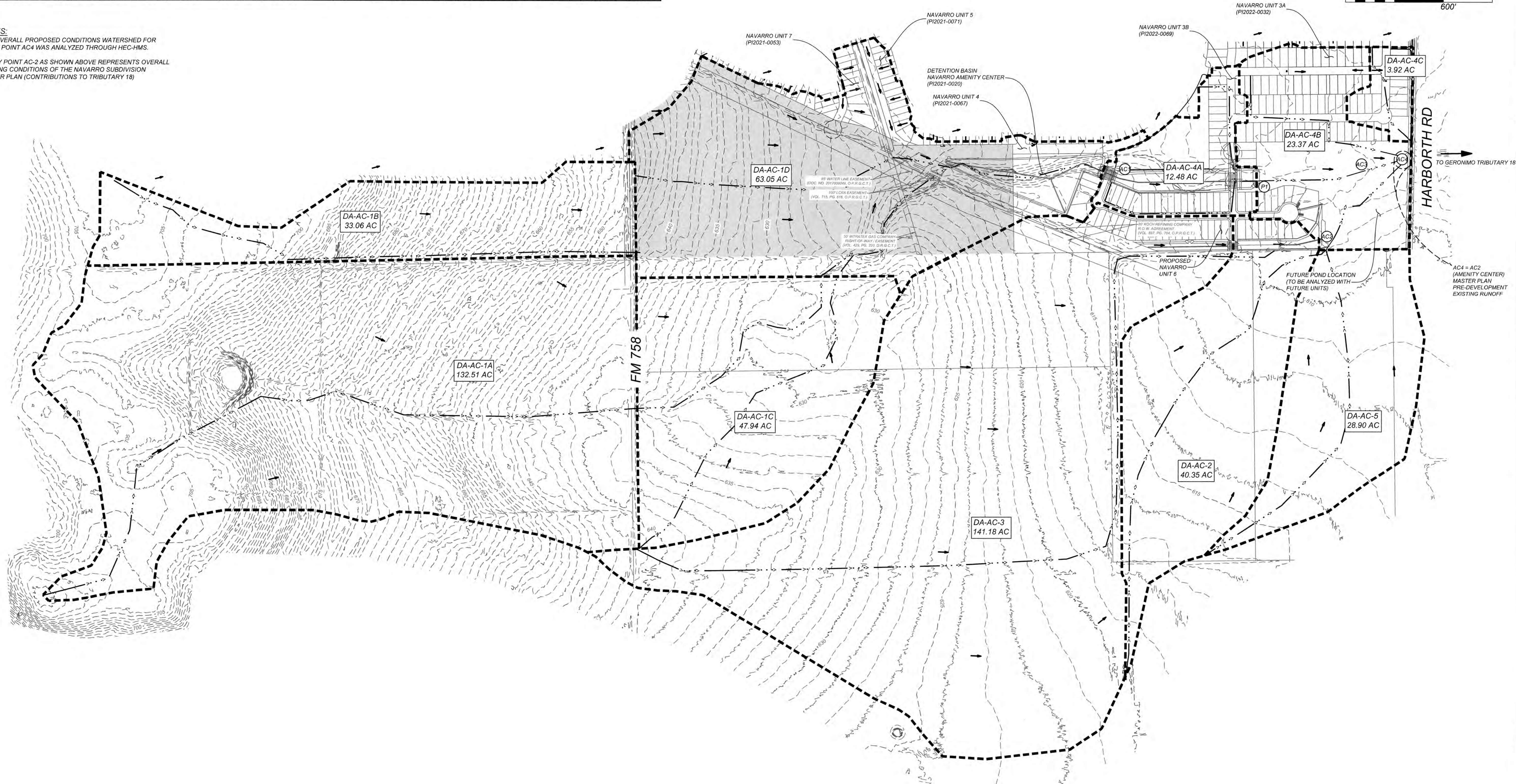
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TBE#S Firm #: 1012280

Date: Jul 12, 2023, 1:18pm User: D:\jerguson
File: U:\Projects\314\28\19\Design\Civil\Drainage\EXISTING DRAINAGE AREA MAP SCS.dwg

EXISTING RUNOFF													
HYDROLOGY SUMMARY - SCS METHOD													
Study Pt.	Drainage Area	(Acres)	Curve Number	T _{carryover} (min)	T _{onset} (min)	T _{sc} (min)	T _{ch} (min)	T _{tot} (min)	T _{lag} (min)	Q ₂ (ft ³ /s)	Q ₁₀ (ft ³ /s)	Q ₂₅ (ft ³ /s)	Q ₁₀₀ (ft ³ /s)
	DA-AC-1A	132.51	81.7		12.70	33.20	0.00	45.90	27.54	161.3	339.3	477.7	743.1
	DA-AC-1B	33.06	79.5		20.00	24.90	0.00	44.90	26.94	37.3	81.5	116.3	183.4
	DA-AC-1C	47.94	78.2		12.70	28.10	0.00	40.80	24.48	53.9	119.7	171.6	273.4
	DA-AC-1D	63.05	79.2		7.70	16.10	2.90	26.70	16.02	88.1	191.9	273.5	430.5
SP-AC-1	POND DISCHARGE	276.56								297.7	627.0	899.1	1423.9
	DA-AC-4A	12.48	88.7		10.80	7.50	0.40	18.70	11.22	27.1	50.6	68.4	102.4
SP-P1	SP-AC-1 + DA-AC-4A	289.04								307.5	644.5	923.8	1464.9
	DA-AC-2	40.35	78.6		16.70	24.80	0.00	41.50	24.90	45.8	101.1	144.6	228.9
	DA-AC-3	141.18	78.4		13.80	31.50	8.40	53.70	32.22	139.0	310.7	446.7	710.0
SP-AC-2	DA-AC-(2+3)	181.53	78.5	DA-AC-3	53.70			53.70	32.22	183.2	407.0	584.0	926.1
SP-AC-3	SP-P1 + SP-AC-2	470.57								487.8	1041.5	1493.8	2387.8
	DA-AC-4B	23.37	83.9		10.80	6.80	1.70	19.30	11.58	43.5	87.4	121.1	185.4
	DA-AC-4C	3.92	85.0		10.80	4.50	0.50	15.80	9.48	8.1	16.0	22.1	33.8
	DA-AC-5	28.90	78.4		16.70	33.90	0.00	50.60	30.36	29.5	65.6	94.2	149.4
SP-AC-4	SP-AC-3 + DA-AC-(4B+4C+5)	526.76								535.6	1141.3	1639.8	2618.6

MASTER PLAN PRE-DEVELOPMENT EXISTING RUNOFF													
HYDROLOGY SUMMARY - SCS METHOD													
Study Pt.	Drainage Area	(Acres)	Curve Number	T _{carryover} (min)	T _{onset} (min)	T _{sc} (min)	T _{ch} (min)	T _{tot} (min)	T _{lag} (min)	Q ₂ (ft ³ /s)	Q ₁₀ (ft ³ /s)	Q ₂₅ (ft ³ /s)	Q ₁₀₀ (ft ³ /s)
SP-AC-2	SP-AC-1 + DA-AC-(4+5)	504.23	79.12	DA-AC-5	49.15		2.23	51.38	30.83	560.40	1234.90	1767.60	2795.90

NOTES:
-THE OVERALL PROPOSED CONDITIONS WATERSHED FOR STUDY POINT AC4 WAS ANALYZED THROUGH HEC-HMS.
-STUDY POINT AC-2 AS SHOWN ABOVE REPRESENTS OVERALL EXISTING CONDITIONS OF THE NAVARRO SUBDIVISION MASTER PLAN (CONTRIBUTIONS TO TRIBUTARY 18)



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ISSUE DATE

REVISIONS

Nicholas Reynolds, P.E.

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
EXISTING OVERALL DRAINAGE AREA MAP

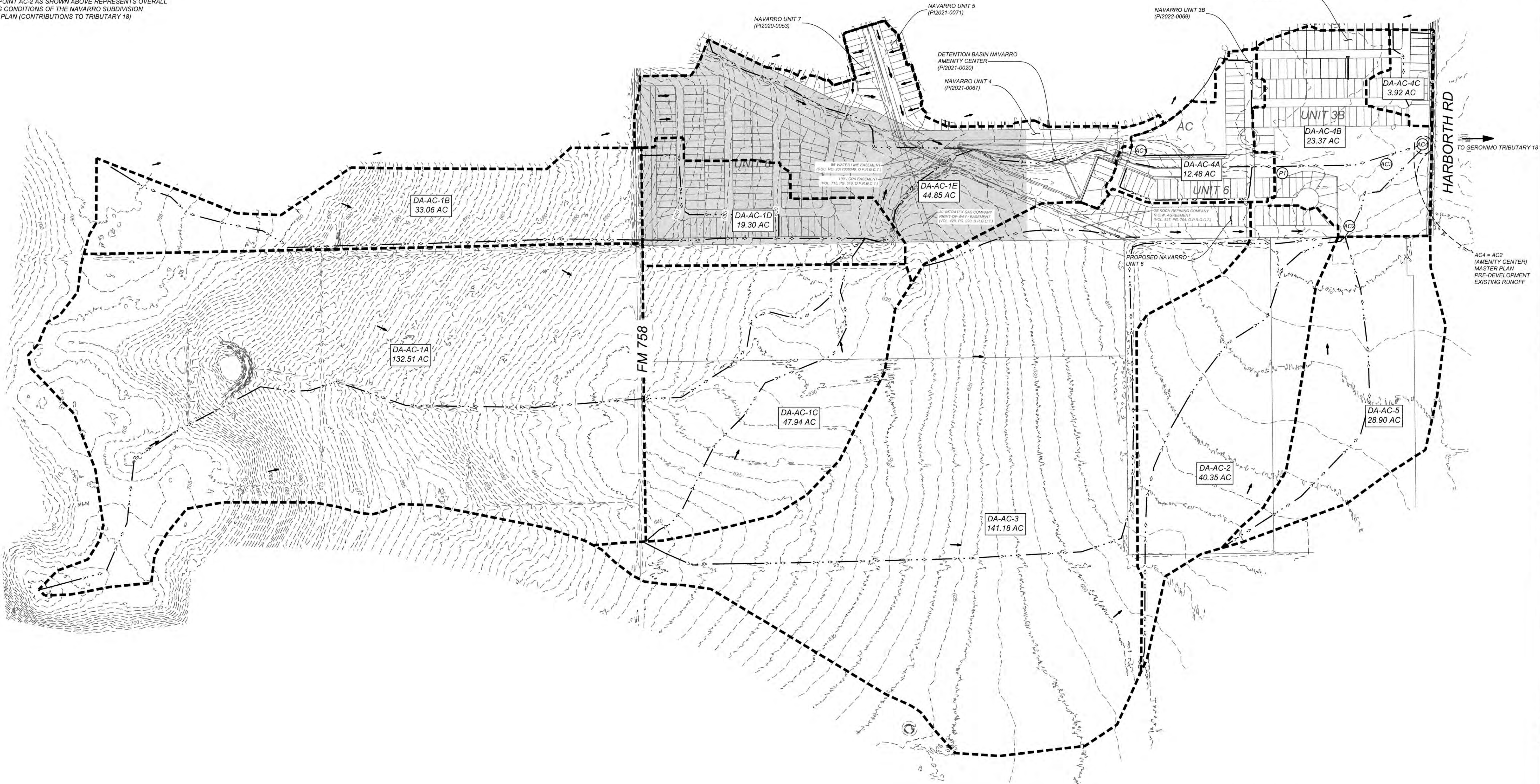
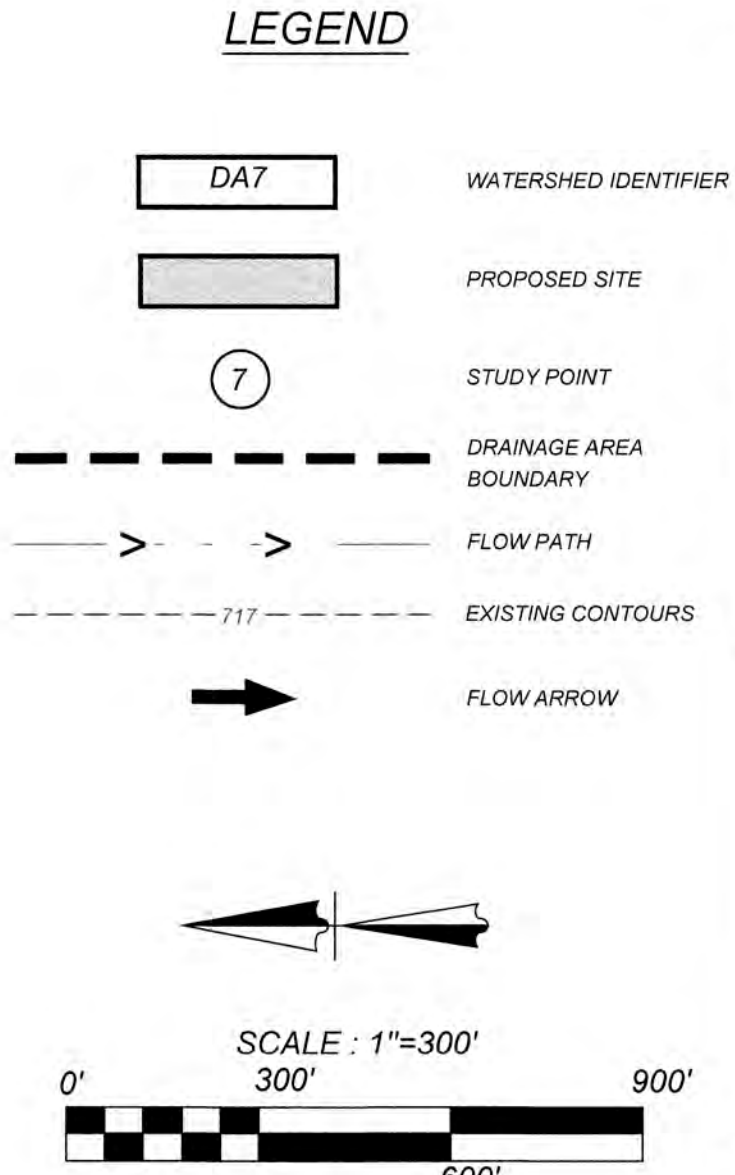
JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:
2.0

PROPOSED RUNOFF													
HYDROLOGY SUMMARY - SCS METHOD													
Study Pt.	Drainage Area	(Acres)	Curve Number	T _{cover} over (min)	T _{on} t (min)	T _{sc} (min)	T _{ck} (min)	T _{tot} (min)	T _{lag} (min)	Q2 (ft ³ /s)	Q10 (ft ³ /s)	Q25 (ft ³ /s)	Q100 (ft ³ /s)
	DA-AC-1A	132.51	81.7		12.70	33.20	0.00	45.90	27.54	161.3	339.3	477.7	743.1
	DA-AC-1B	33.06	79.5		20.00	24.90	0.00	44.90	26.94	37.3	81.5	116.3	183.4
	DA-AC-1C	47.94	78.2		12.70	28.10	0.00	40.80	24.48	53.9	119.7	171.7	273.5
	DA-AC-1D	19.30	84.6		10.80	5.60	2.70	19.10	11.46	36.9	73.3	101.1	154.2
	DA-AC-1E	44.85	83.7		10.80	8.10	1.80	20.70	12.42	81.5	164.7	228.5	350.6
SP-AC-1	POND DISCHARGE	277.66		REFERENCE HEC-HMS MODEL						301.6	628.1	893.0	1413.4
	DA-AC-4A	12.48	88.7		10.80	7.50	0.40	18.70	11.22	27.1	50.6	68.4	102.4
SP-P1	SP-AC-1 + DA-AC-4A	290.14		REFERENCE HEC-HMS MODEL						311.9	646.5	918.7	1455.2
	DA-AC-2	40.35	78.6		16.70	24.80	0.00	41.50	24.90	45.8	101.1	144.6	228.9
	DA-AC-3	141.18	78.4		13.80	31.50	8.40	53.70	32.22	139.0	310.7	446.7	710.0
SP-AC-2	DA-AC-(2+3)	181.53	78.5	DA-AC-3	53.70		0.00	53.70	32.22	183.2	407.0	584.0	926.1
SP-AC-3	SP-P1 + SP-AC-2	471.67		REFERENCE HEC-HMS MODEL						493.0	1046.0	1499.5	2380.7
	DA-AC-4B	23.37	83.9		10.80	6.80	1.70	19.30	11.58	43.5	87.4	121.1	185.4
	DA-AC-4C	3.92	85.0		10.80	4.50	0.50	15.80	9.48	8.1	16.0	22.1	33.8
	DA-AC-5	28.90	78.4		16.70	33.90	0.00	50.60	30.36	29.5	65.6	94.2	149.4
SP-AC-4	SP-AC-3 + DA-AC-(4B+4C+5)	527.86		REFERENCE HEC-HMS MODEL						543.8	1151.5	1648.7	2616.1

MASTER PLAN PRE-DEVELOPMENT EXISTING RUNOFF													
HYDROLOGY SUMMARY - SCS METHOD													
Study Pt.	Drainage Area	(Acres)	Curve Number	T _{cover} over (min)	T _{on} t (min)	T _{sc} (min)	T _{ck} (min)	T _{tot} (min)	T _{lag} (min)	Q2 (ft ³ /s)	Q10 (ft ³ /s)	Q25 (ft ³ /s)	Q100 (ft ³ /s)
SP-AC-2	SP-AC-1 + DA-AC-(4+5)	504.23	79.12	DA-AC-5	49.15		2.23	51.38	30.83	560.40	1234.90	1767.60	2795.90

NOTES:
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NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
PROPOSED OVERALL DRAINAGE AREA MAP

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

2.1



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TBP# Firm # 5513 • TBP#S Firm # 1012300

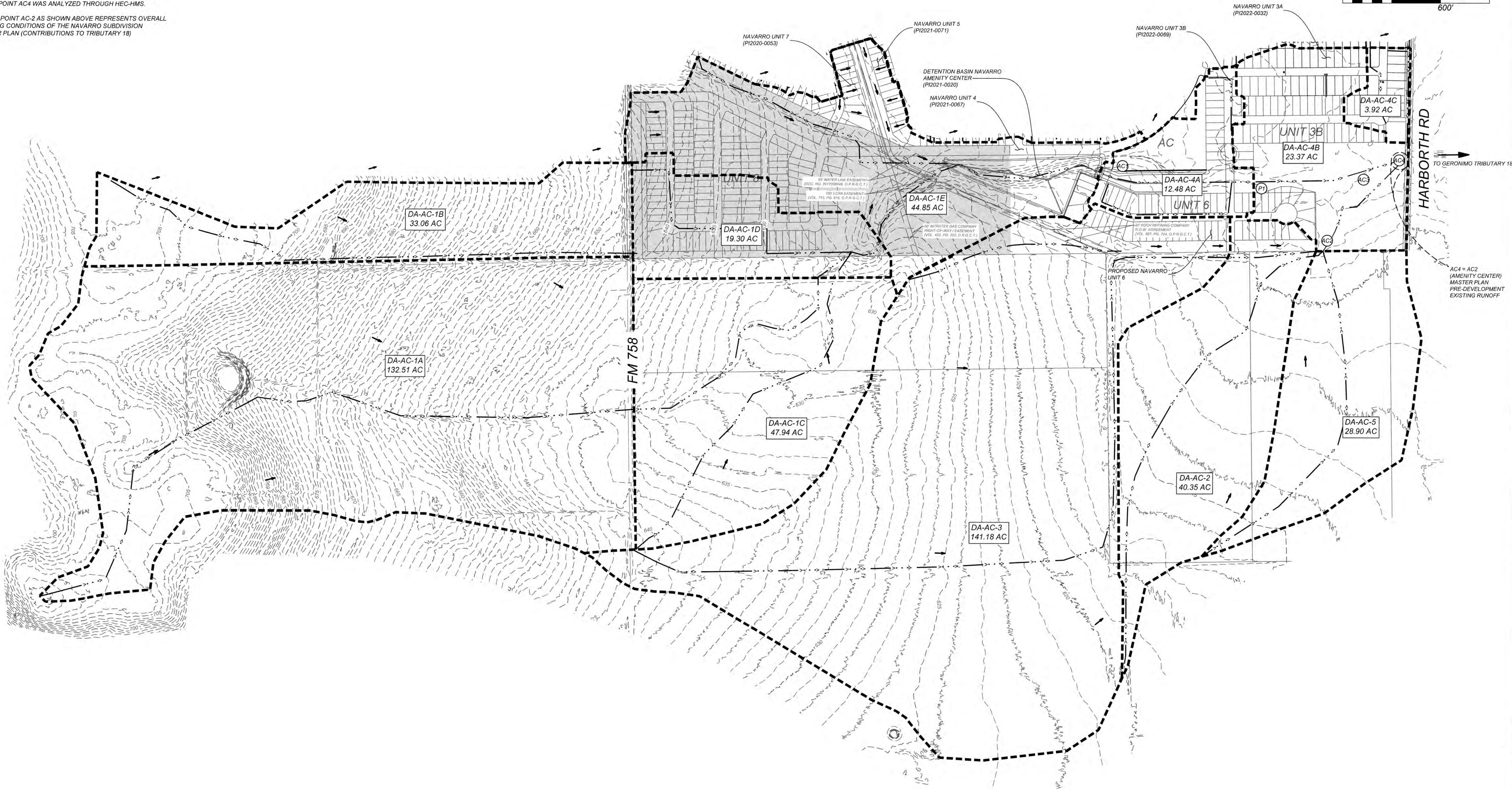
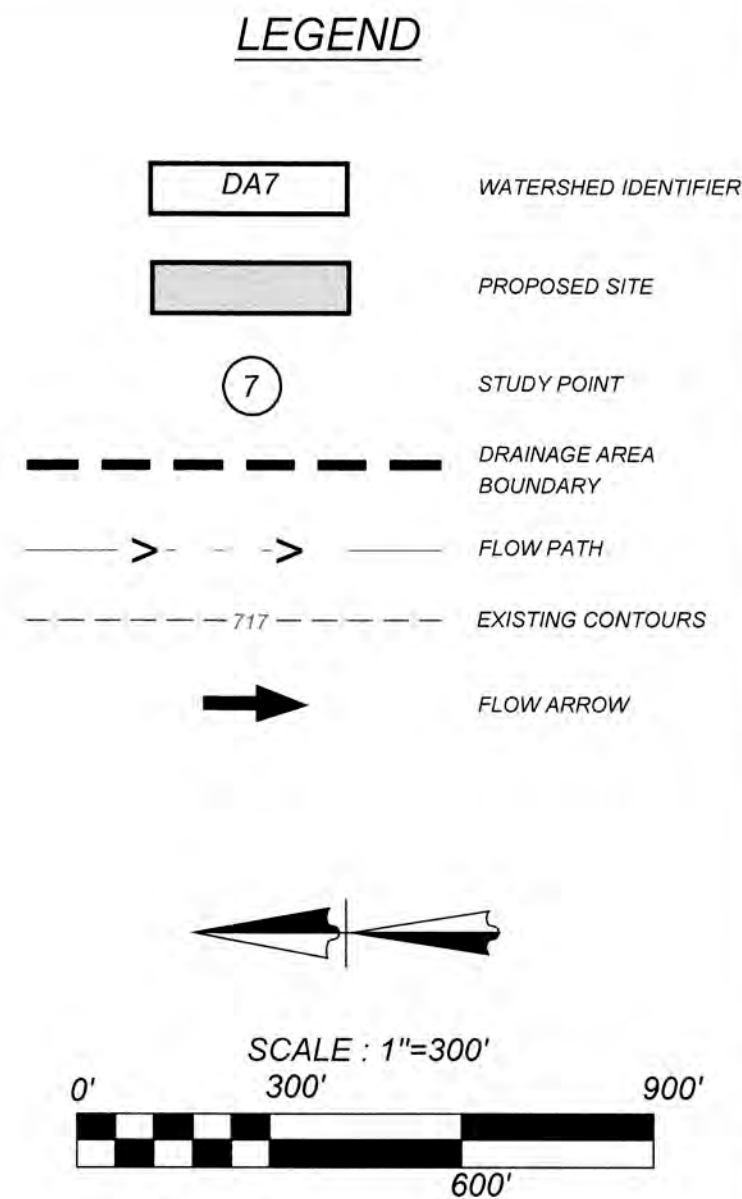
ISSUE DATE

REVISIONS

ULTIMATE RUNOFF													
HYDROLOGY SUMMARY - SCS METHOD													
Study Pt.	Drainage Area	(Acres)	Curve Number	T _{carrover} (min)	T _{overt} (min)	T _{sc} (min)	T _{ch} (min)	T _{tot} (min)	T _{lag} (min)	Q ₂ (ft ³ /s)	Q ₁₀ (ft ³ /s)	Q ₂₅ (ft ³ /s)	Q ₁₀₀ (ft ³ /s)
	DA-AC-1A	132.51	87.0		12.70	33.20	0.00	45.90	27.54	194.1	374.5	511.8	773.7
	DA-AC-1B	33.06	87.0		20.00	24.90	0.00	44.90	26.94	49.0	94.4	129.0	194.9
	DA-AC-1C	47.94	87.0		12.70	28.10	0.00	40.80	24.48	73.9	142.5	194.9	294.9
	DA-AC-1D	19.30	87.0		10.80	5.60	2.70	19.10	11.46	39.8	76.2	103.8	156.5
	DA-AC-1E	44.85	87.0		10.80	8.10	1.80	20.70	12.42	90.7	174.2	237.6	358.4
SP-AC-1	POND DISCHARGE	277.66		REFERENCE HEC-HMS MODEL						366.4	702.6	966.0	1483.4
	DA-AC-4A	12.48	89.2		10.80	7.50	0.40	18.70	11.22	27.5	51.0	68.7	102.6
SP-P1	SP-AC-1 + DA-AC-4A	290.14		REFERENCE HEC-HMS MODEL						376.7	721.5	993.9	1525.5
	DA-AC-2	40.35	87.0		16.70	24.80	0.00	41.50	24.90	61.9	118.8	162.5	245.9
	DA-AC-3	141.18	87.0		13.80	31.50	8.40	53.70	32.22	191.4	369.4	505.0	763.7
SP-AC-2	DA-AC-(2+3)	181.53	87.00	DA-AC-3	53.70		0.00	53.70	32.22	250.3	481.7	657.8	994.3
SP-AC-3	SP-P1 + SP-AC-2	471.67		REFERENCE HEC-HMS MODEL						623.8	1198.0	1651.6	2519.5
	DA-AC-4B	23.37	87.0		10.80	6.80	1.70	19.30	11.58	48.1	92.1	125.5	189.3
	DA-AC-4C	3.92	85.0		10.80	4.50	0.50	15.80	9.48	8.1	16.0	22.1	33.8
	DA-AC-5	28.90	87.0		16.70	33.90	0.00	50.60	30.36	40.4	77.7	106.1	160.3
SP-AC-4	SP-AC-3 + DA-AC-(4B+4C+5)	527.86		REFERENCE HEC-HMS MODEL						686.7	1317.2	1814.9	2768.1

MASTER PLAN PRE-DEVELOPMENT EXISTING RUNOFF													
HYDROLOGY SUMMARY - SCS METHOD													
Study Pt.	Drainage Area	(Acres)	Curve Number	T _{carryover} (min)	T _{owl} (min)	T _{sc} (min)	T _{ch} (min)	T _{tot} (min)	T _{lag} (min)	Q2 (ft ³ /s)	Q10 (ft ³ /s)	Q25 (ft ³ /s)	Q100 (ft ³ /s)
SP-AC-2	SP-AC-1 + DA-AC-(4+5)	504.23	79.12	DA-AC-5	49.15		2.23	51.38	30.83	560.40	1234.90	1767.60	2795.90

NOTES:
-THE OVERALL PROPOSED CONDITIONS WATERSHED FOR STUDY POINT AC4 WAS ANALYZED THROUGH HEC-HMS.
-STUDY POINT AC-2 AS SHOWN ABOVE REPRESENTS OVERALL EXISTING CONDITIONS OF THE NAVARRO SUBDIVISION MASTER PLAN (CONTRIBUTIONS TO TRIBUTARY 18)



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ISSUE DATE

REVISIONS

Nick Reynolds, P.E.

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
ULTIMATE OVERALL DRAINAGE AREA MAP

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:
2.2

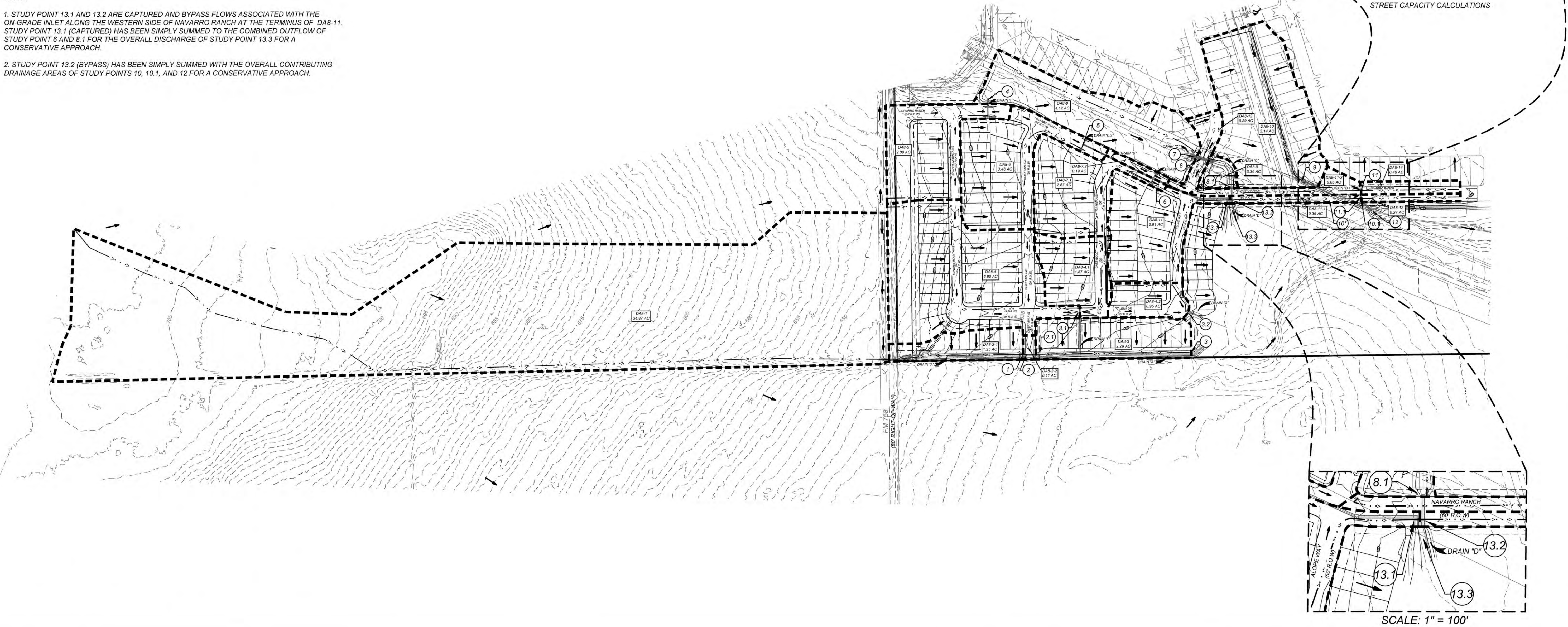
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PROPOSED - ULTIMATE UNIT 8 RUNOFF CALCULATIONS - RATIONAL METHOD																								
Study Point	Drainage Area(s)	(Acres)	C2	C10	C25	C50	C100	T _{carryover} (min)	T _{ovrt} (min)	T _{sc} (min)	T _{th} (min)	T _{tot} (min)	I ₂ (in/hr)	I ₁₀ (in/hr)	I ₂₅ (in/hr)	I ₅₀ (in/hr)	I ₁₀₀ (in/hr)	Q ₂ (ft ³ /s)	Q ₁₀ (ft ³ /s)	Q ₂₅ (ft ³ /s)	Q ₅₀ (ft ³ /s)	Q ₁₀₀ (ft ³ /s)		
	DA8-1	34.87	0.47	0.53	0.57	0.61	0.65		20.0	24.9	0.0	44.9	2.18	3.45	4.21	4.83	5.54	35.51	63.30	83.82	102.02	125.66		
	DA8-2-1	1.25	0.39	0.45	0.49	0.52	0.56																	
1	DA8-1 + DA8-2-1	36.12	0.46	0.52	0.57	0.60	0.65	DA8-1	44.9		1.5	46.4	2.13	3.38	4.13	4.74	5.43	35.73	63.92	84.75	103.20	126.96		
	DA8-2-2	0.11	0.73	0.81	0.86	0.90	0.95		5.0	1.3		10.0	4.92	7.56	9.07	10.41	11.94	0.40	0.67	0.86	1.03	1.25		
2	SP1 + HALF OF DA8-2-2	36.18	0.46	0.52	0.57	0.60	0.65	SP1	46.4			46.4	2.13	3.38	4.13	4.74	5.43	35.82	64.07	84.95	103.43	127.25		
	SP1 + DA8-2-2	36.23	0.47	0.52	0.57	0.60	0.65	SP1	46.4			46.4	2.13	3.38	4.13	4.74	5.43	35.91	64.22	85.14	103.67	127.53		
	DA8-3	2.29	0.48	0.54	0.58	0.61	0.66																	
3	SP2.1 + DA8-3 + SP3.1	47.19	0.47	0.53	0.58	0.61	0.66	SP2.1	46.4		1.8	48.2	2.08	3.30	4.03	4.63	5.31	46.44	82.93	109.63	133.59	164.34		
	DA8-4	6.80	0.50	0.56	0.60	0.64	0.68			6.7	7.3		14.0	4.27	6.53	7.84	8.99	10.29	14.52	24.87	31.99	39.12	47.58	
	DA8-4-1	1.87	0.52	0.58	0.63	0.66	0.71			10.8	5.6		16.4	3.96	6.05	7.28	8.34	9.55	3.85	6.56	8.58	10.29	12.68	
3.2	DA8-4-2	0.95	0.55	0.62	0.66	0.70	0.74			10.8	1.95		12.7	4.46	6.82	8.20	9.40	10.77	2.33	4.02	5.14	6.25	7.57	
3.1	DA8-4 + DA8-4.1	8.67	0.50	0.56	0.61	0.64	0.69	DA8-4.1	16.4			16.4	3.96	6.05	7.28	8.34	9.55	17.31	29.60	38.28	46.59	56.84		
4	DA8-5	2.88	0.51	0.58	0.62	0.65	0.70		6.7	6.6		13.3	4.37	6.68	8.03	9.20	10.54	6.42	11.16	14.34	17.22	21.25		
5	DA8-6	3.48	0.57	0.64	0.69	0.72	0.77		10.8	8.1		18.9	3.68	5.64	6.79	7.78	8.90	7.30	12.56	16.30	19.49	23.85		
	DA8-7-1	2.67	0.52	0.59	0.63	0.66	0.71		11.4	7.2		18.6	3.71	5.68	6.85	7.84	8.97	5.15	8.95	11.52	13.82	17.00		
	DA8-7-2	0.18	0.69	0.77	0.82	0.85	0.90		5.0	3.1		10.0	4.92	7.56	9.07	10.41	11.94	0.61	1.05	1.34	1.59	1.93		
6	SP5 + DA8-7.1 + DA8-7.2	6.33	0.55	0.62	0.67	0.70	0.75	SP5	18.9			18.9	3.68	5.64	6.79	7.78	8.90	12.87	22.23	28.73	34.39	42.16		
	DA8-8	4.12	0.36	0.41	0.45	0.48	0.52		9.5	8.4		17.9	3.79	5.79	6.98	7.99	9.15	5.62	9.78	12.94	15.80	19.60		
7	DA8-8 + SP4	7.00	0.42	0.48	0.52	0.55	0.59	DA8-8	17.9			17.9	3.79	5.79	6.98	7.99	9.15	11.19	19.45	25.40	30.76	38.05		
	DA8-13	0.59	0.61	0.68	0.72	0.76	0.81		10.8	2.1		12.9	4.43	6.77	8.14	9.33	10.69	1.59	2.72	3.46	4.18	5.11		
8	SP7 + HALF OF DA8-13	7.30	0.43	0.49	0.53	0.57	0.61	SP7	17.9			17.9	3.79	5.79	6.98	7.99	9.15	11.87	20.65	27.11	32.94	40.87		
	DA8-9	0.36	0.39	0.44	0.48	0.52	0.56					10.0	4.92	7.56	9.07	10.41	11.94	0.69	1.20	1.57	1.95	2.41		
8.1	SP7 + DA8-13 + DA8-9	7.95	0.43	0.49	0.53	0.56	0.61	SP7	17.9		0.8	18.7	3.70	5.67	6.83	7.82	8.95	12.77	22.22	28.94	35.07	43.30		
9	DA8-10	5.14	0.44	0.50	0.54	0.57	0.62		10.8	0.8	1.8	13.4	4.35	6.66	8.00	9.17	10.51	9.84	17.12	22.20	26.87	33.49		
	DA8-11	2.91	0.54	0.61	0.65	0.69	0.73		8.6	6.1		14.7	4.17	6.38	7.67	8.79	10.06	6.55	11.33	14.51	17.65	21.37		
13.1	DA8-11 CAPTURED FLOW																		6.30	9.15	10.59	11.82	13.11	
13.2	DA8-11 BYPASS FLOW																		0.25	2.18	3.92	5.83	8.26	
13.3	(SP8.1 + SP6) + SP13.1	14.28	0.49	0.55	0.59	0.62	0.67	SP6	18.90			18.9	3.68	5.64	6.79	7.78	8.90	31.87	53.48	68.09	81.11	98.33		
	DA8-11-1	0.36	0.68	0.75	0.80	0.84	0.89			5.00	6.70		11.7	4.62	7.07	8.49	9.74	11.17	1.13	1.91	2.45	2.95	3.58	
	DA8-12	0.27	0.67	0.75	0.80	0.84	0.89			5.00	1.80		10.0	4.92	7.56	9.07	10.41	11.94	0.89	1.53	1.96	2.36	2.87	
10	13.2 + DA8-11-1	SIMPLY SUMMED WITH DA8-11-1																	1.38	4.09	6.37	8.78	11.84	
10.1	(DA8-11-1 + DA8-12) + 13.2	0.63	0.68	0.75	0.80	0.84	0.89	0.36	11.7			11.7	4.62	7.07	8.49	9.74	11.17	2.22	5.52	8.20	10.98	14.52		
	DA8-11-2	0.65	0.58	0.65	0.69	0.73	0.78			5.0	6.7		11.7	4.62	7.07	8.49	9.74	11.17	1.74	2.99	3.81	4.62	5.66	
	DA8-14	0.46	0.53	0.60	0.64	0.68	0.72			5.0	1.8		10.0	4.92	7.56	9.07	10.41	11.94	1.20	2.09	2.67	3.26	3.95	
11	DA8-11-2 + DA8-14	1.11	0.56	0.63	0.67	0.71	0.76	DA8-11-2	11.7			11.7	4.62	7.07	8.49	9.74	11.17	2.87	4.94	6.31	7.67	9.36		
11.1	SP9 + SP11	6.25	0.46	0.52	0.56	0.59	0.64	SP9	13.4			13.4	4.35	6.66	8.00	9.17	10.51	12.79	23.95	32.07	39.92	50.56		
12	(DA8-10 + DA8-11-1 + DA8-11-2 + DA8-12 + DA8-14) + 13.2	6.88	0.48	0.54	0.58	0.62	0.67	SP11.1	13.4			13.4	4.35	6.66	8.00	9.17	10.51	14.64	27.10	36.10	44.77	56.46		

*NOTE:

1. STUDY POINT 13.1 AND 13.2 ARE CAPTURED AND BYPASS FLOWS ASSOCIATED WITH THE ON-GRADE INLET ALONG THE WESTERN SIDE OF NAVARRO RANCH AT THE TERMINUS OF DA8-11. STUDY POINT 13.1 (CAPTURED) HAS BEEN SIMPLY SUMMED TO THE COMBINED OUTFLOW OF STUDY POINT 6 AND 8.1 FOR THE OVERALL DISCHARGE OF STUDY POINT 13.3 FOR A CONSERVATIVE APPROACH.

2. STUDY POINT 13.2 (BYPASS) HAS BEEN SIMPLY SUMMED WITH THE OVERALL CONTRIBUTING DRAINAGE AREAS OF STUDY POINTS 10, 10.1, AND 12 FOR A CONSERVATIVE APPROACH.



LEGEND

- DA7 WATERSHED IDENTIFIER
- PROPOSED SITE
- STUDY POINT
- DRAINAGE AREA BOUNDARY
- FLOW PATH
- EXISTING CONTOURS

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
PROPOSED-ULTIMATE ONSITE DRAINAGE AREA MAP

JOB NO 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

2.3

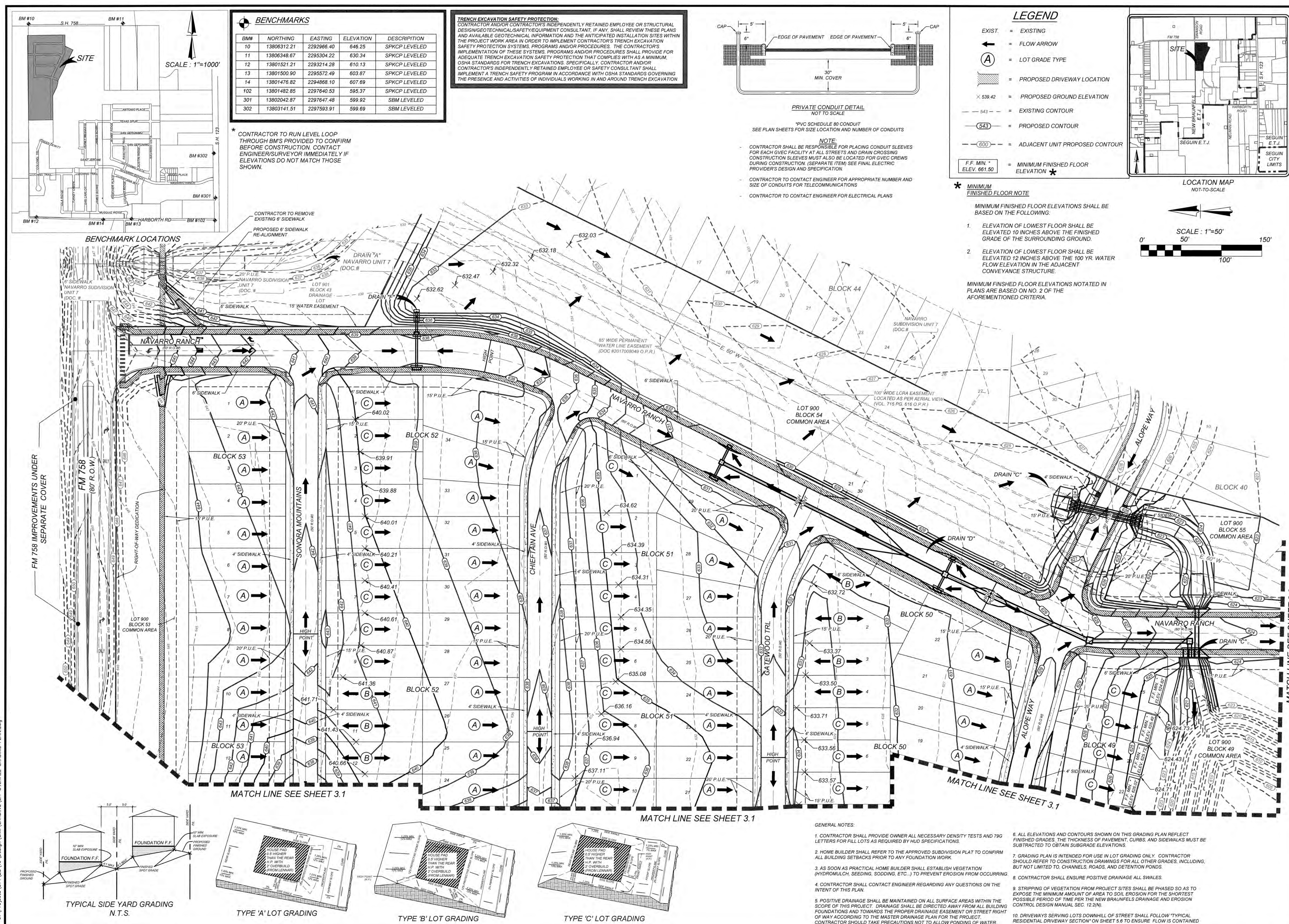


Handwritten signature: Nick Reynolds, P.E.

ISSUE DATE

REVISIONS

Date: Jan 30, 2024, 10:18am User ID: nrecoo
File: U:\Projects\314-28\19\Design\Civil\Grading\3.1 OVERALL GRADING PLAN.dwg



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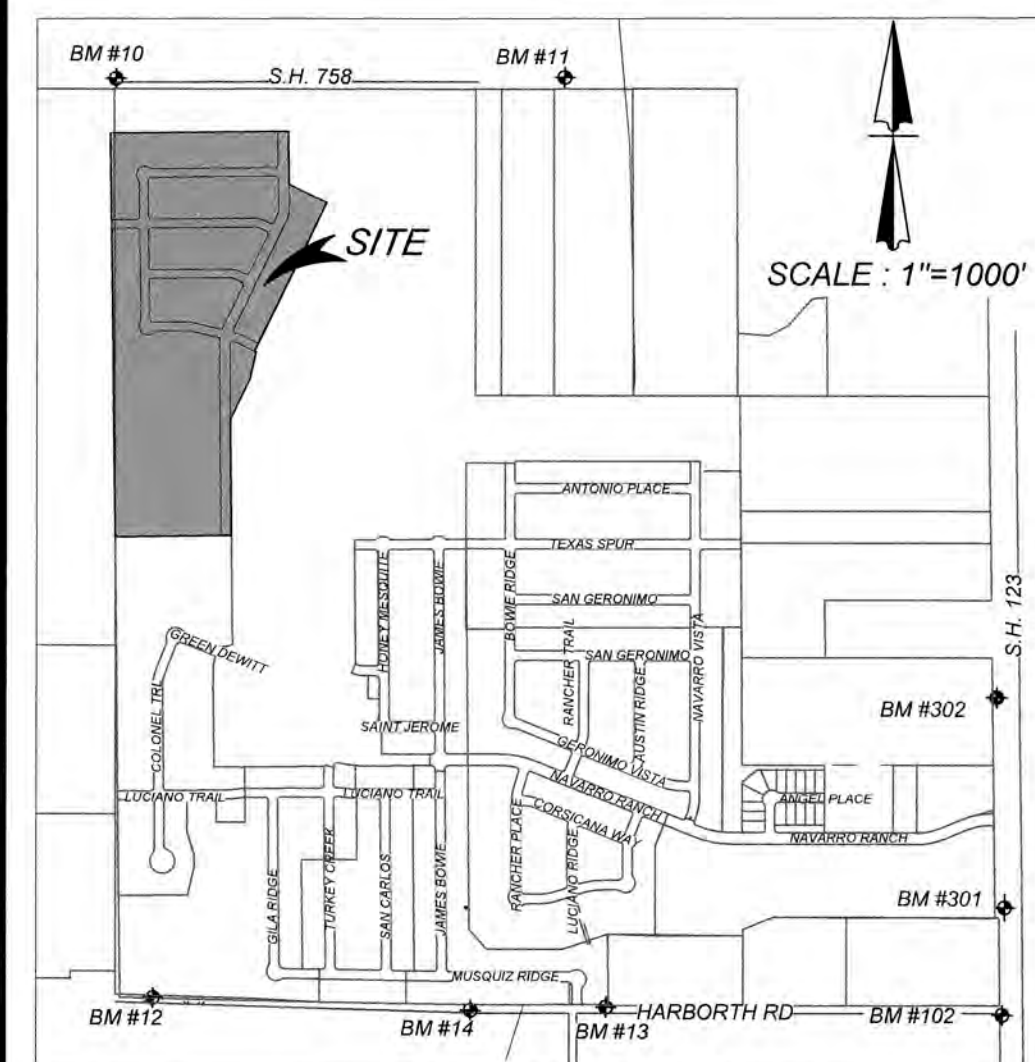
ISSUE DATE: 1/14/24
REVISIONS:

STATE OF TEXAS
NICHOLAS REYNOLDS
11666
LICENSED PROFESSIONAL ENGINEER
N. Reynolds

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
OVERALL GRADING PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
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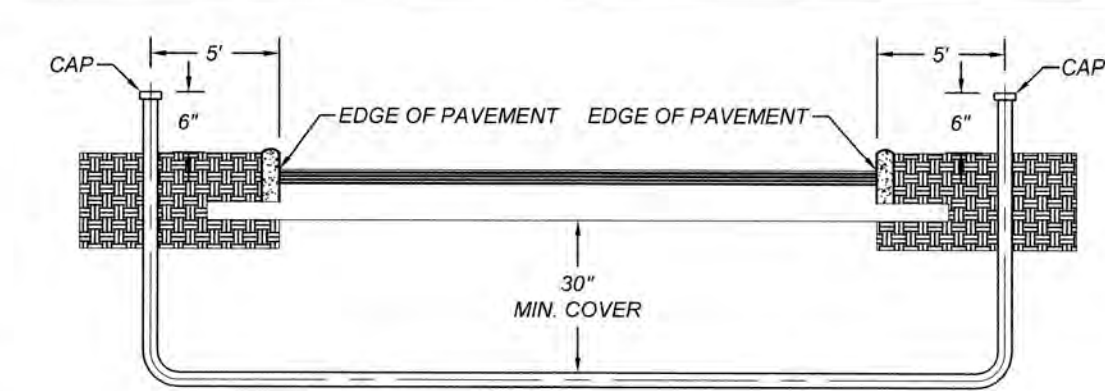
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BENCHMARKS				
BM#	NORTHING	EASTING	ELEVATION	DESCRIPTION
10	13806312.21	2292966.40	646.25	SPKCP LEVELED
11	13806348.67	2295304.22	630.34	SPKCP LEVELED
12	13801521.21	2293214.28	610.13	SPKCP LEVELED
13	13801500.90	2295572.49	603.87	SPKCP LEVELED
14	13801476.82	2294868.10	607.69	SPKCP LEVELED
102	13801482.85	2297640.53	595.37	SPKCP LEVELED
301	13802042.87	2297647.48	599.92	SBM LEVELED
302	13803141.51	2297593.91	599.69	SBM LEVELED

* CONTRACTOR TO RUN LEVEL LOOP THROUGH BMS PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

TRENCH EXCAVATION SAFETY PROTECTION:
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



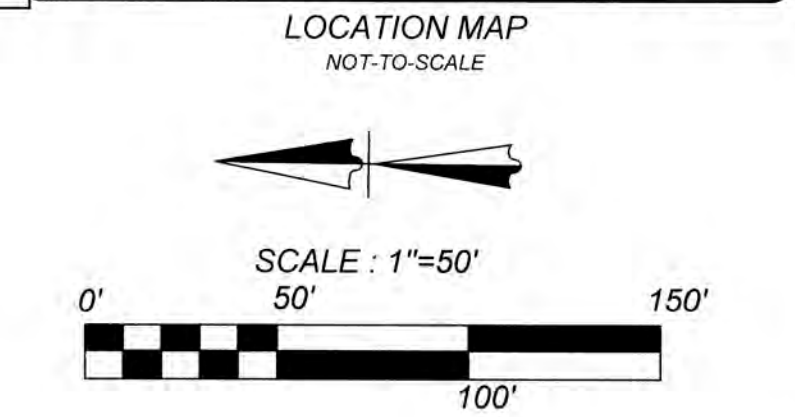
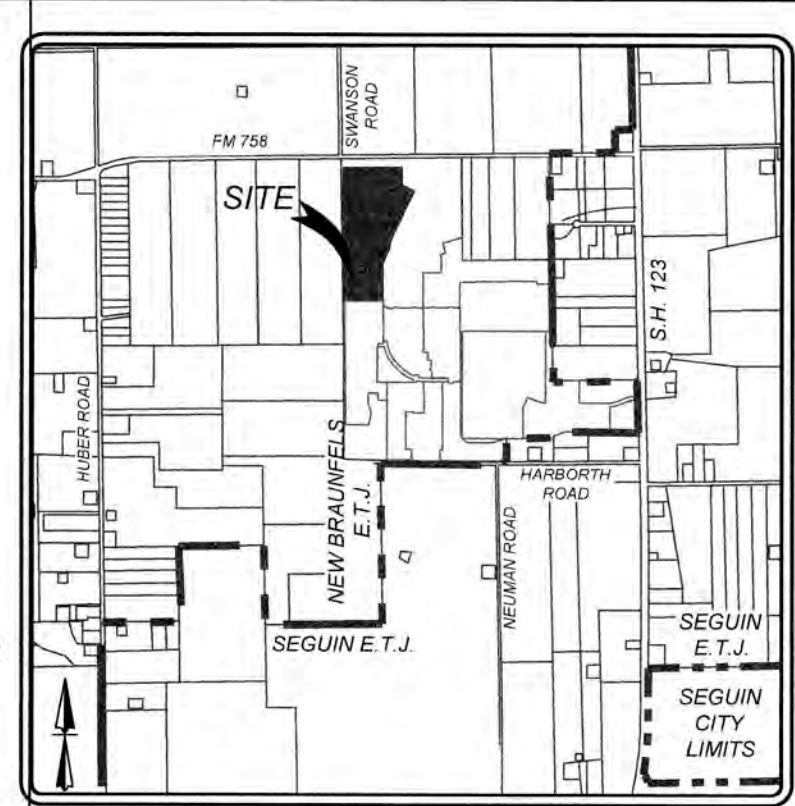
*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH GVEC FACILITY AT ALL STREETS AND DRAIN CROSSING CONSTRUCTION SLEEVES MUST ALSO BE LOCATED FOR GVEC CREWS DURING CONSTRUCTION. (SEPARATE ITEM) SEE FINAL ELECTRIC PROVIDER'S DESIGN AND SPECIFICATION.

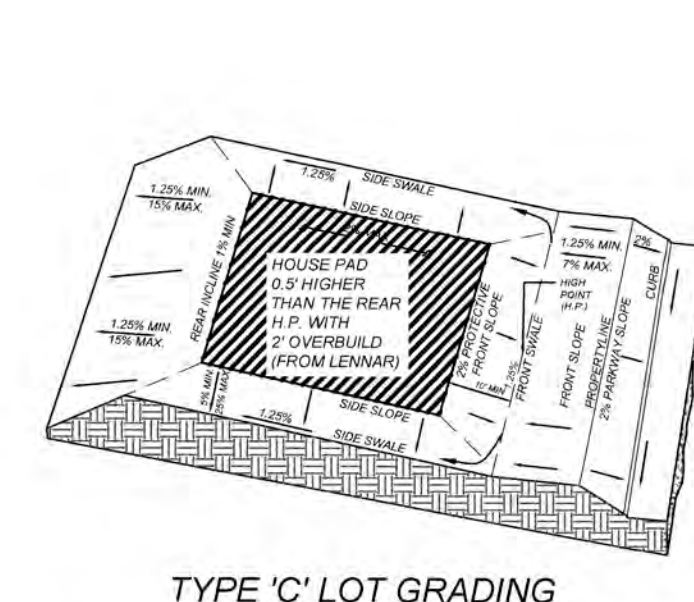
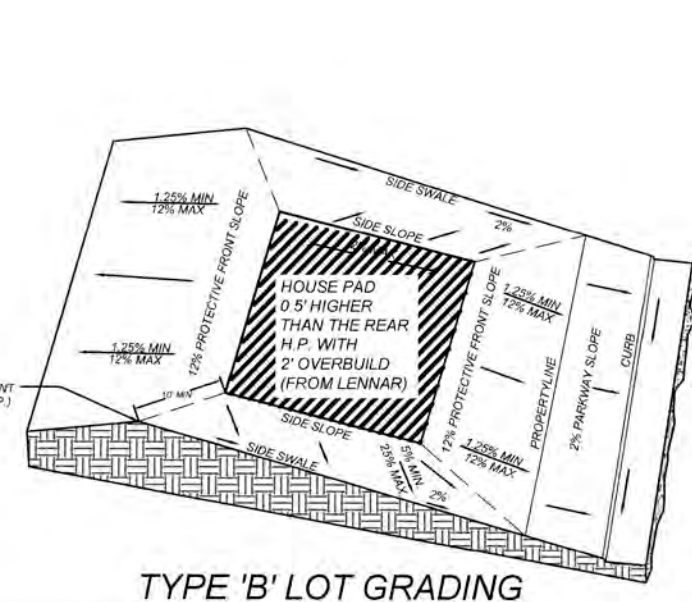
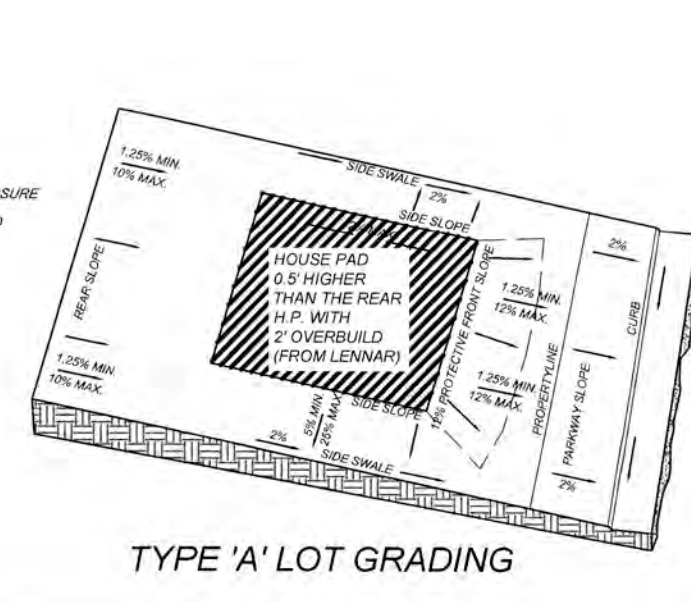
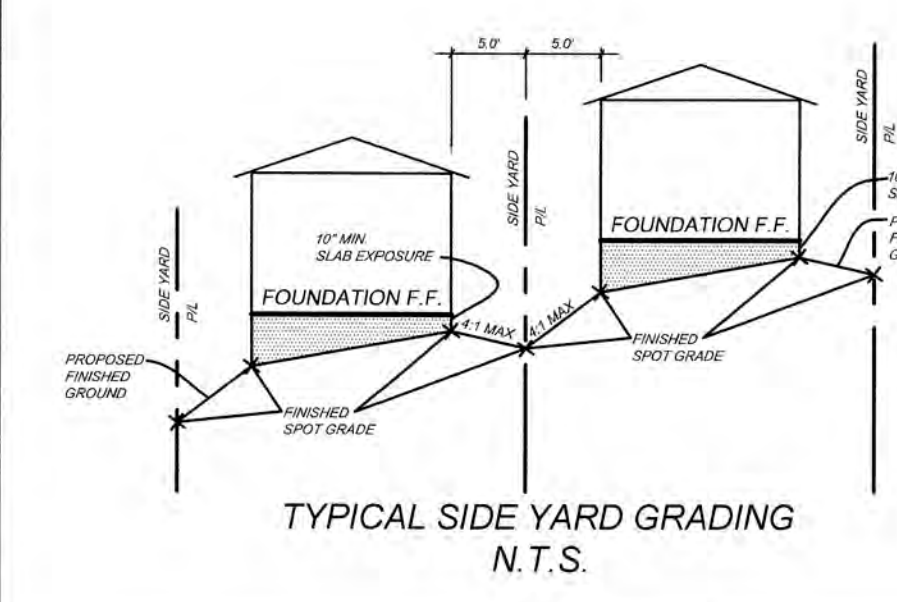
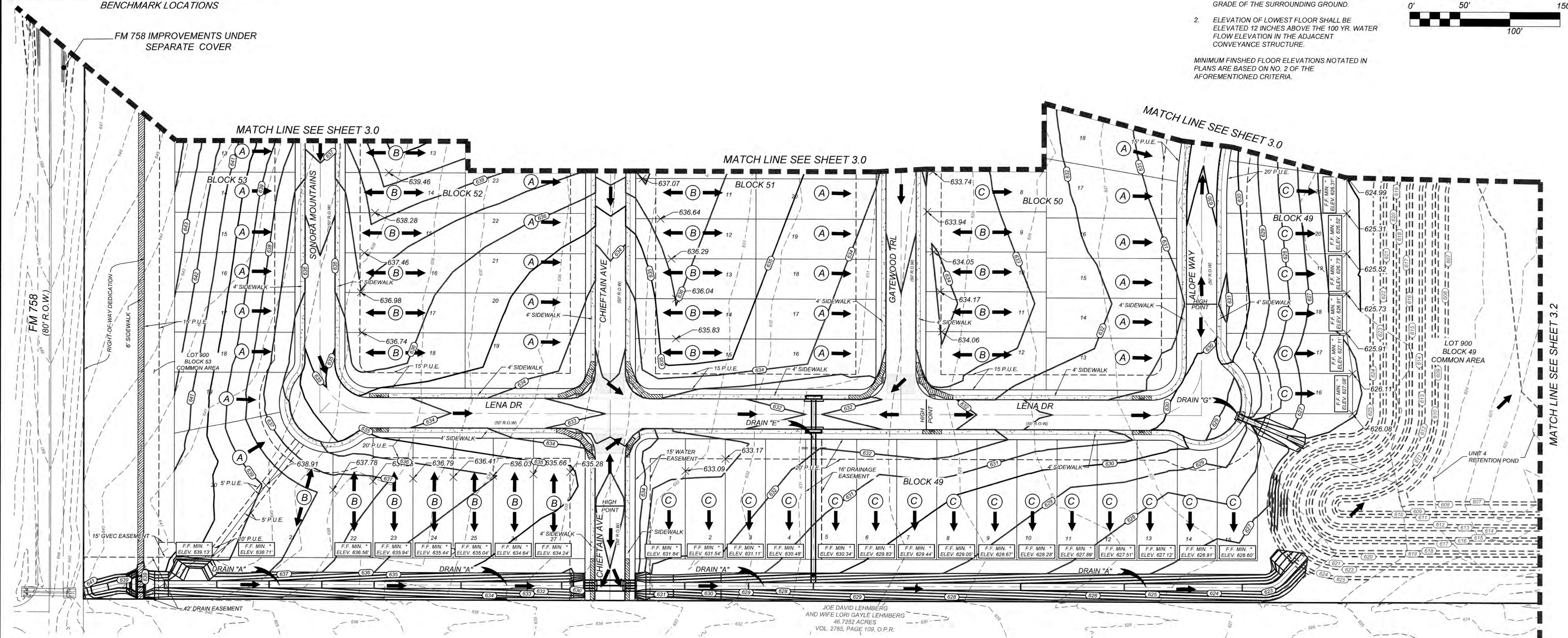
CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS

CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS

- LEGEND**
- EXIST. = EXISTING
 - ← = FLOW ARROW
 - (A) = LOT GRADE TYPE
 - [Hatched] = PROPOSED DRIVEWAY LOCATION
 - x 539.42 = PROPOSED GROUND ELEVATION
 - 543 - = EXISTING CONTOUR
 - (543) = PROPOSED CONTOUR
 - (600) - = ADJACENT UNIT PROPOSED CONTOUR
 - F.F. MIN. * ELEV. 661.50 = MINIMUM FINISHED FLOOR ELEVATION *



- * **MINIMUM FINISHED FLOOR NOTE**
- MINIMUM FINISHED FLOOR ELEVATIONS SHALL BE BASED ON THE FOLLOWING:
- ELEVATION OF LOWEST FLOOR SHALL BE ELEVATED 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND.
 - ELEVATION OF LOWEST FLOOR SHALL BE ELEVATED 12 INCHES ABOVE THE 100 YR. WATER FLOW ELEVATION IN THE ADJACENT CONVEYANCE STRUCTURE.
- MINIMUM FINISHED FLOOR ELEVATIONS NOTATED IN PLANS ARE BASED ON NO. 2 OF THE AFOREMENTIONED CRITERIA.



- GENERAL NOTES:**
- CONTRACTOR SHALL PROVIDE OWNER ALL NECESSARY DENSITY TESTS AND 79G LETTERS FOR FILL LOTS AS REQUIRED BY HUD SPECIFICATIONS.
 - HOME BUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
 - AS SOON AS PRACTICAL HOME BUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC.) TO PREVENT EROSION FROM OCCURRING.
 - CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
 - POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS AND TOWARDS THE PROPER DRAINAGE EASEMENT OR STREET RIGHT OF WAY ACCORDING TO THE MASTER DRAINAGE PLAN FOR THE PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW PONDING OF WATER.
 - ALL ELEVATIONS AND CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVEMENT, CURBS, AND SIDEWALKS MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.
 - GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
 - CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.
 - STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME PER THE NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL SEC. 12.2(N).
 - DRIVEWAYS SERVING LOTS DOWNHILL OF STREET SHALL FOLLOW "TYPICAL RESIDENTIAL DRIVEWAY SECTION" ON SHEET 5.6 TO ENSURE FLOW IS CONTAINED WITHIN THE RIGHT-OF-WAY.

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

K&W ENGINEERS & SURVEYING
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TBE Firm # 1513 • TBE Firm # 1012300

ISSUE DATE

REVISIONS

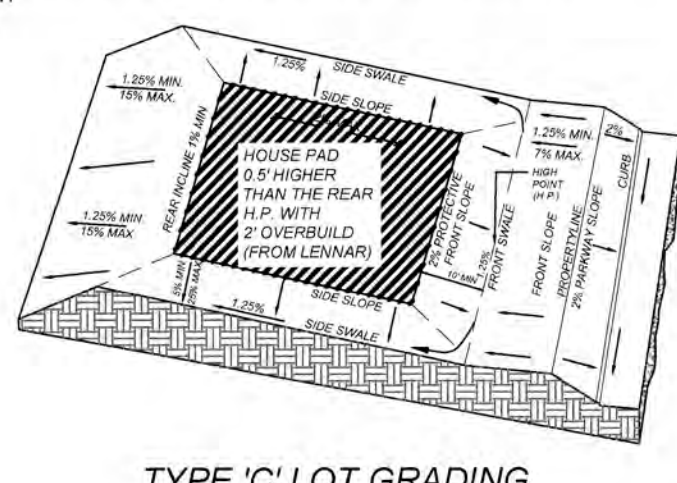
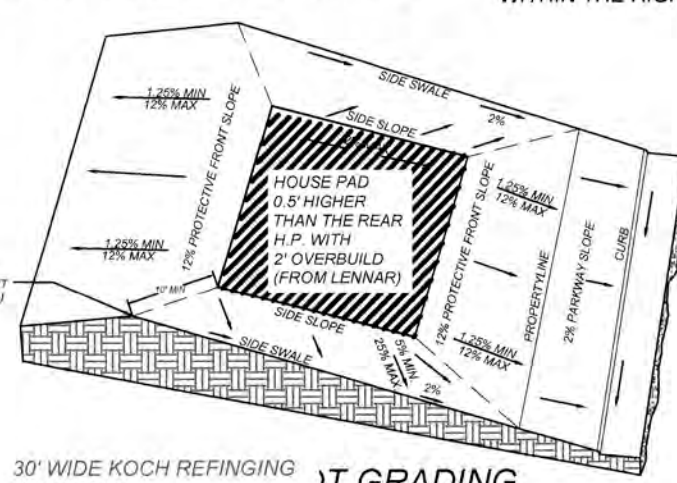
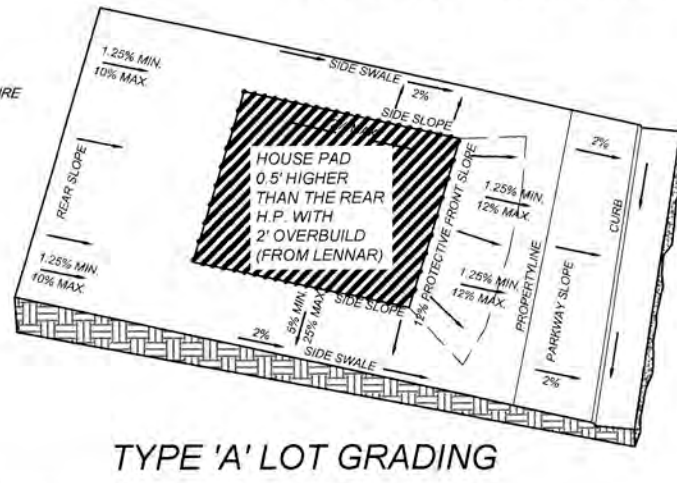
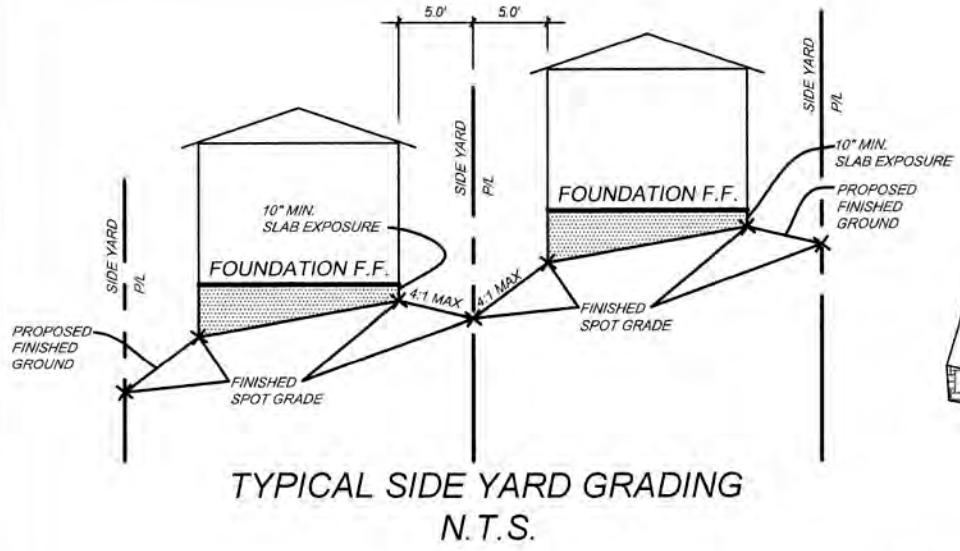
NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

OVERALL GRADING PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

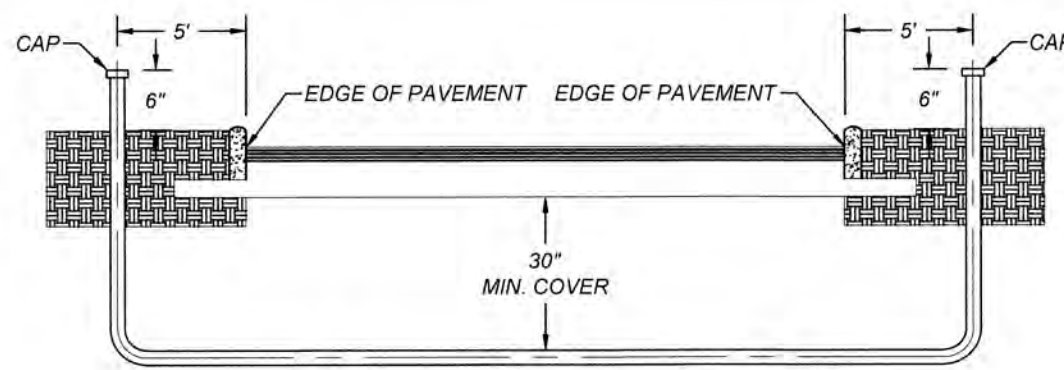
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TRENCH EXCAVATION SAFETY PROTECTION:
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS, SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE OWNER ALL NECESSARY DENSITY TESTS AND 796 LETTERS FOR FILL LOTS AS REQUIRED BY HUD SPECIFICATIONS.
2. HOME BUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
3. AS SOON AS PRACTICAL HOME BUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC.) TO PREVENT EROSION FROM OCCURRING.
4. CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
5. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS AND TOWARDS THE PROPER DRAINAGE EASEMENT OR STREET RIGHT OF WAY ACCORDING TO THE MASTER DRAINAGE PLAN FOR THE PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW PONDING OF WATER.
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7. GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
8. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.
9. STRIPPING OF VEGETATION FROM PROJECT SITES SHALL BE PHASED SO AS TO EXPOSE THE MINIMUM AMOUNT OF AREA TO SOIL EROSION FOR THE SHORTEST POSSIBLE PERIOD OF TIME PER THE NEW BRAUNFELS DRAINAGE AND EROSION CONTROL DESIGN MANUAL SEC. 12.2(N).
10. DRIVEWAYS SERVING LOTS DOWNHILL OF STREET SHALL FOLLOW TYPICAL RESIDENTIAL DRIVEWAY SECTION ON SHEET 5.6 TO ENSURE FLOW IS CONTAINED WITHIN THE RIGHT OF WAY.

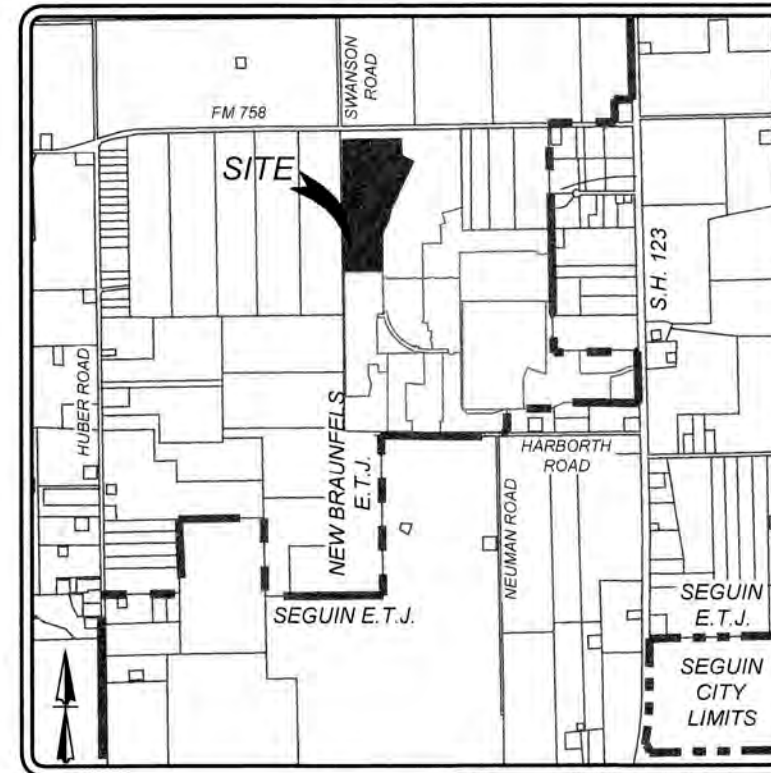


PRIVATE CONDUIT DETAIL
NOT TO SCALE

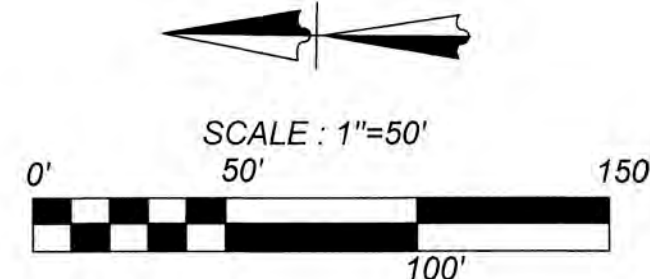
*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

NOTE:

- CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH GVEC FACILITY AT ALL STREETS AND DRAIN CROSSING CONSTRUCTION SLEEVES MUST ALSO BE LOCATED FOR GVEC CREWS DURING CONSTRUCTION. (SEPARATE ITEM SEE FINAL ELECTRIC PROVIDER'S DESIGN AND SPECIFICATION).
- CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS
- CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS



LOCATION MAP
NOT-TO-SCALE



LEGEND

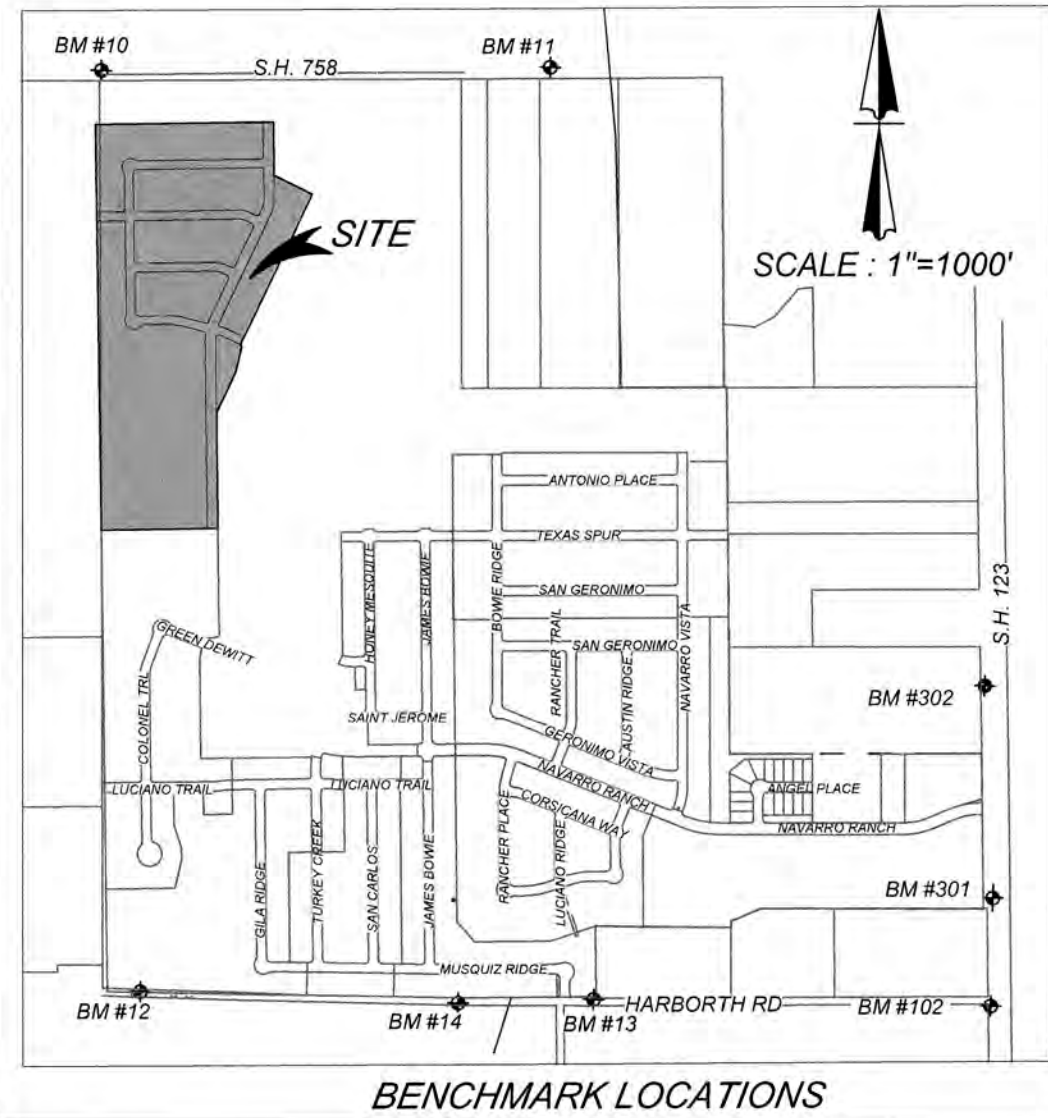
- EXIST. = EXISTING
- ← = FLOW ARROW
- (A) = LOT GRADE TYPE
- [Hatched] = PROPOSED DRIVEWAY LOCATION
- x 539.42 = PROPOSED GROUND ELEVATION
- - - 543 - - - = EXISTING CONTOUR
- (543) = PROPOSED CONTOUR
- - - 600 - - - = ADJACENT UNIT PROPOSED CONTOUR
- F.F. MIN. * ELEV. 661.50 = MINIMUM FINISHED FLOOR ELEVATION *

- * MINIMUM FINISHED FLOOR NOTE
- MINIMUM FINISHED FLOOR ELEVATIONS SHALL BE BASED ON THE FOLLOWING:
1. ELEVATION OF LOWEST FLOOR SHALL BE ELEVATED 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND.
 2. ELEVATION OF LOWEST FLOOR SHALL BE ELEVATED 12 INCHES ABOVE THE 100 YR. WATER FLOW ELEVATION IN THE ADJACENT CONVEYANCE STRUCTURE.
- MINIMUM FINISHED FLOOR ELEVATIONS NOTATED IN PLANS ARE BASED ON NO. 2 OF THE AFOREMENTIONED CRITERIA.

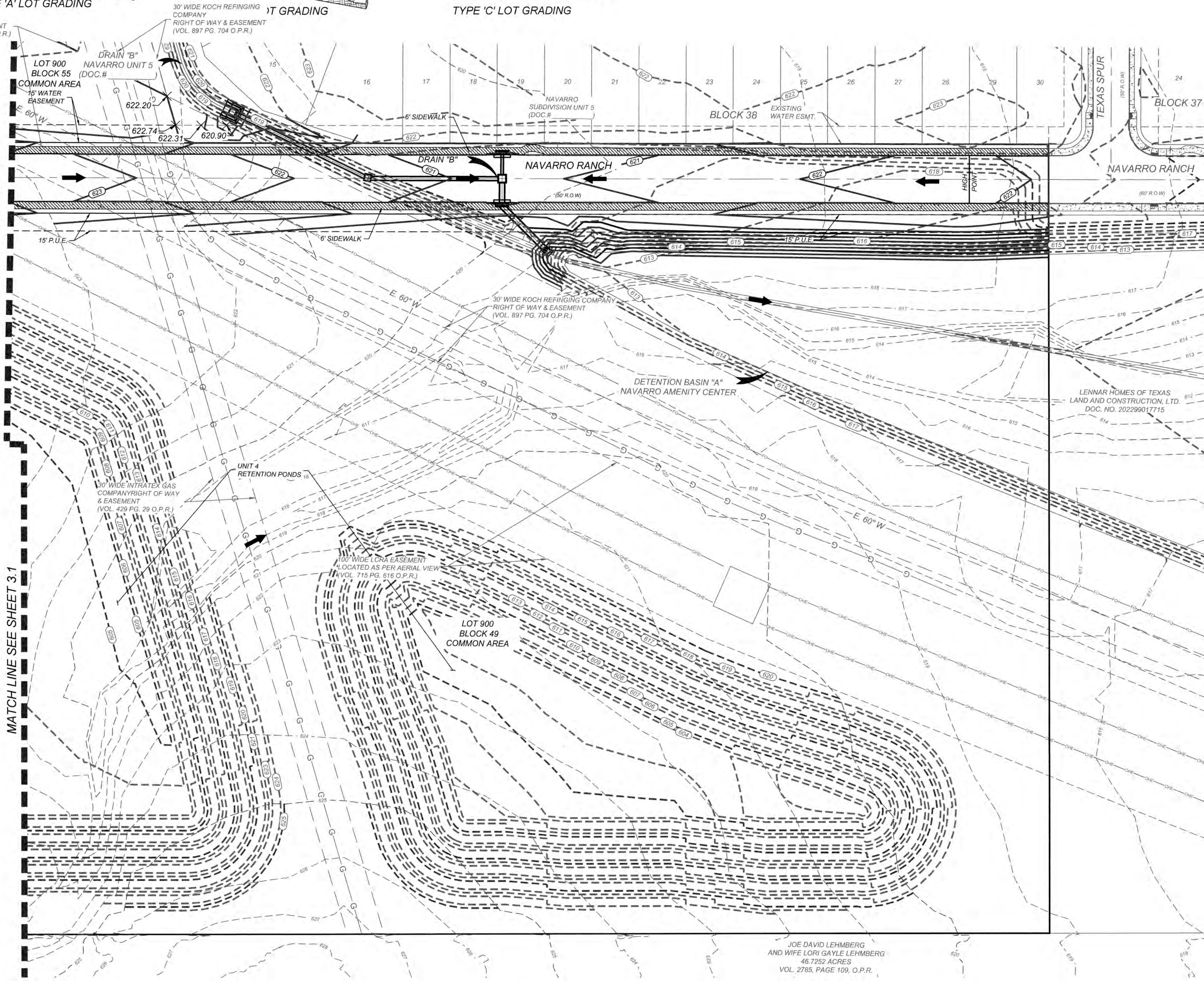
* CONTRACTOR TO RUN LEVEL LOOP THROUGH BM'S PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

BENCHMARKS

BM#	NORTHING	EASTING	ELEVATION	DESCRIPTION
10	13806312.21	2282966.40	646.25	SPKCP LEVELED
11	13806348.67	2295304.22	630.34	SPKCP LEVELED
12	13801521.21	2293214.28	610.13	SPKCP LEVELED
13	13801500.90	2295572.49	603.87	SPKCP LEVELED
14	13801476.82	2294868.10	607.69	SPKCP LEVELED
102	13801482.85	2297640.53	595.37	SPKCP LEVELED
301	13802042.87	2297647.48	599.92	SBM LEVELED
302	13803141.51	2297593.91	599.69	SBM LEVELED



BENCHMARK LOCATIONS



JOE DAVID LEHMBERG
AND WIFE LORI GAYLE LEHMBERG
48.7252 ACRES
VOL. 2786, PAGE 109, O.P.R.

K&W
ENGINEERS + SURVEYING
1821 Mill St., New Braunfels, TX 78130
Phone # (830) 220-6042 • Fax # (830) 627-9087
TBP# E Firm # 9513 • TBP# S Firm # 1012200

ISSUE DATE
REVISIONS

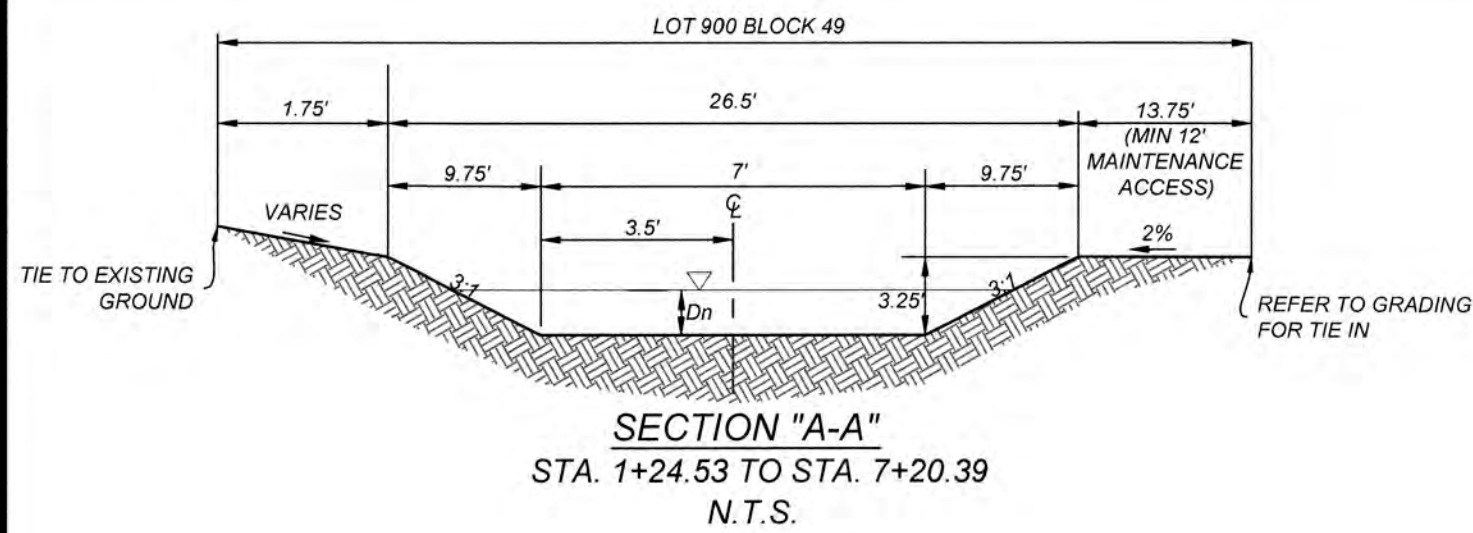


NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

OVERALL GRADING PLAN

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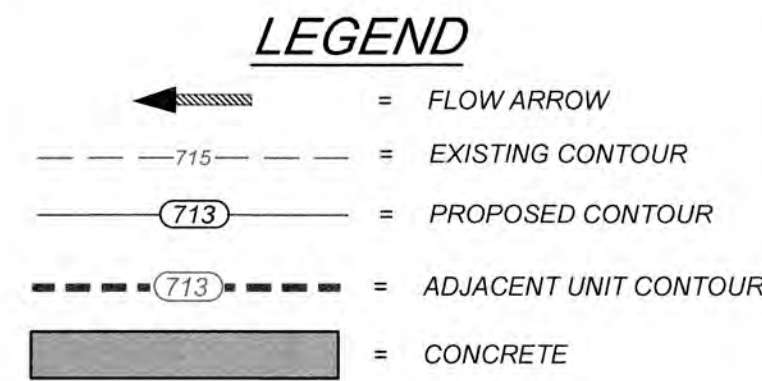


TRENCH EXCAVATION SAFETY PROTECTION

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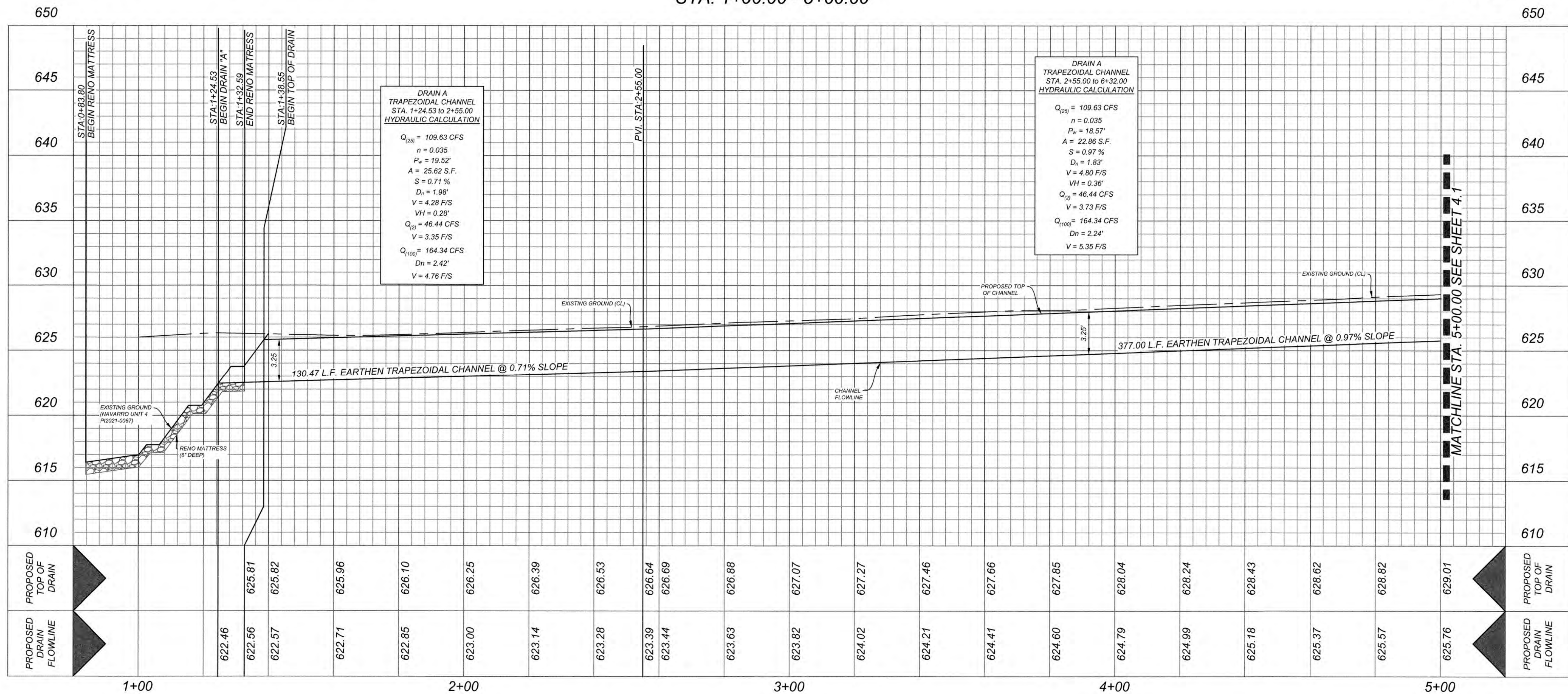
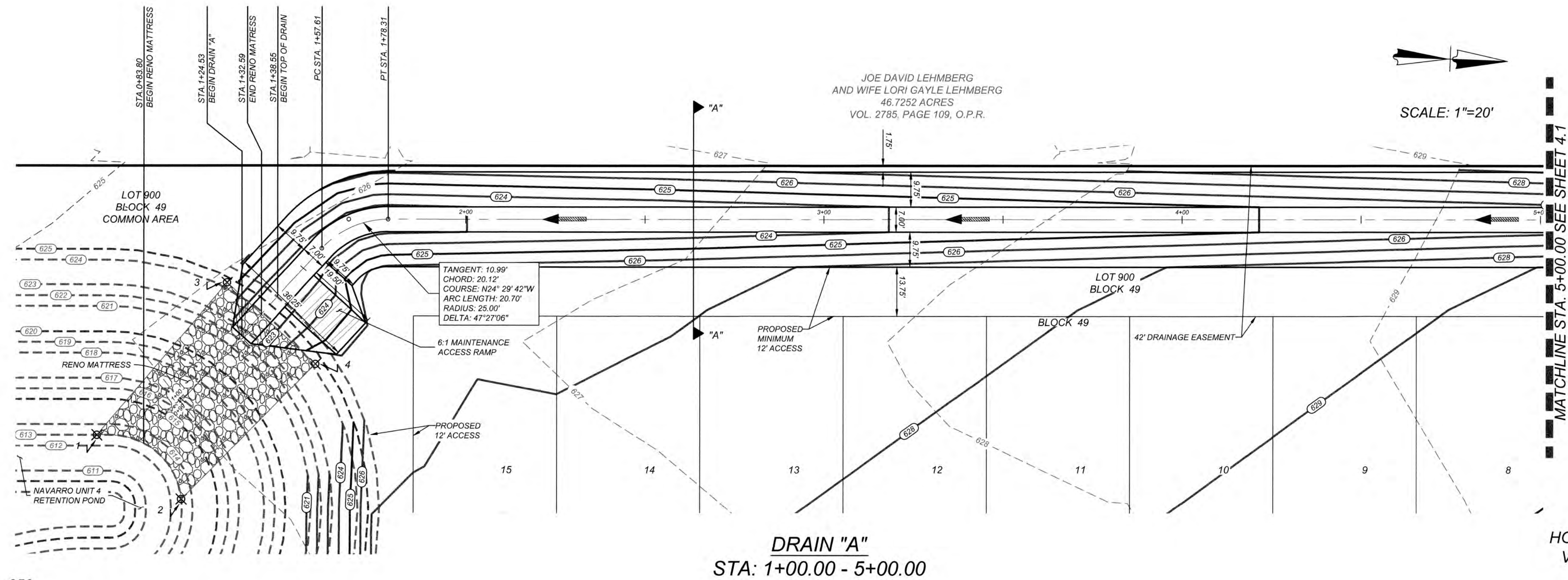
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- NOTE:
1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
 2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
 3. ALL DRAINAGE EASEMENTS WILL BE OWNED AND MAINTAINED BY THE DEVELOPER.
 4. ALL EARTHEN CHANNELS MUST NOT EXCEED 3:1 SIDE SLOPES (MAX).

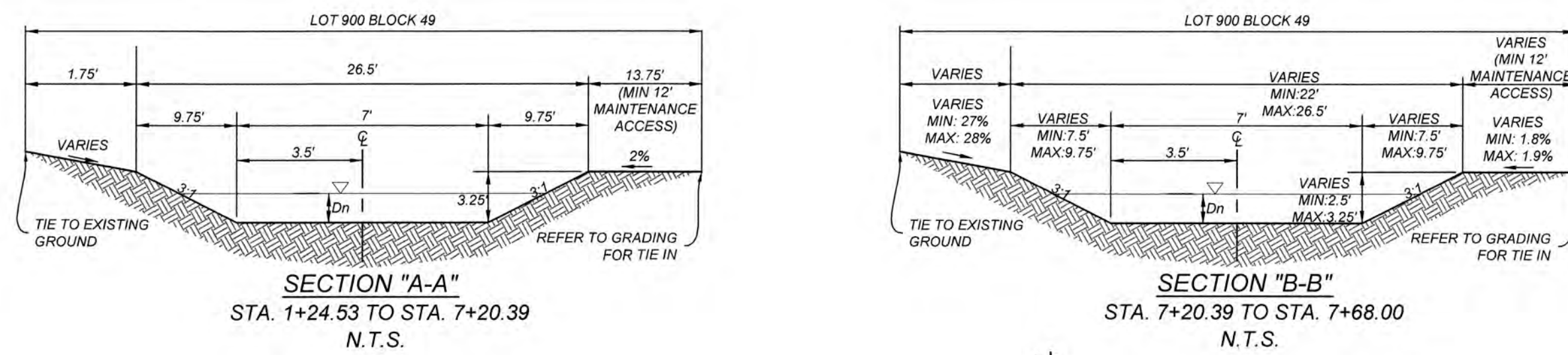
RENO MATRESS	
Point #	Elevation
1	613.00
2	613.00
3	624.00
4	624.00



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
DRAIN A STA. 1+00.00 TO STA. 5+00.00

JOB NO. 314-28-19
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4.0



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LEGEND

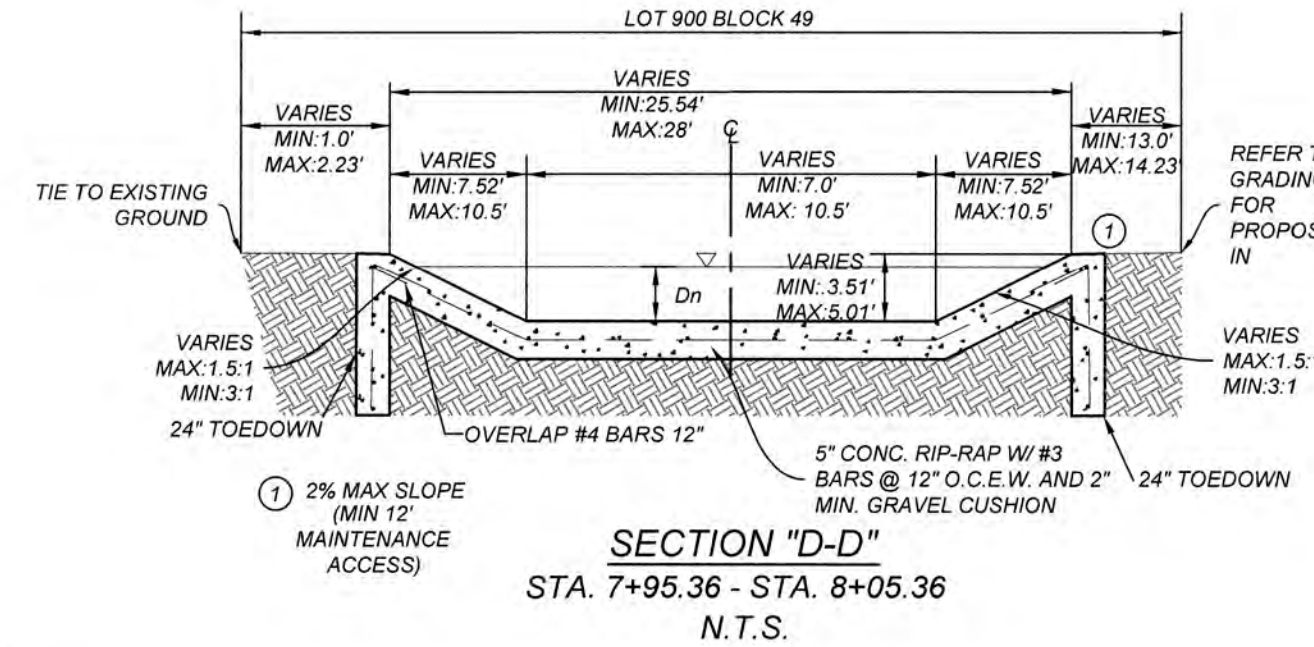
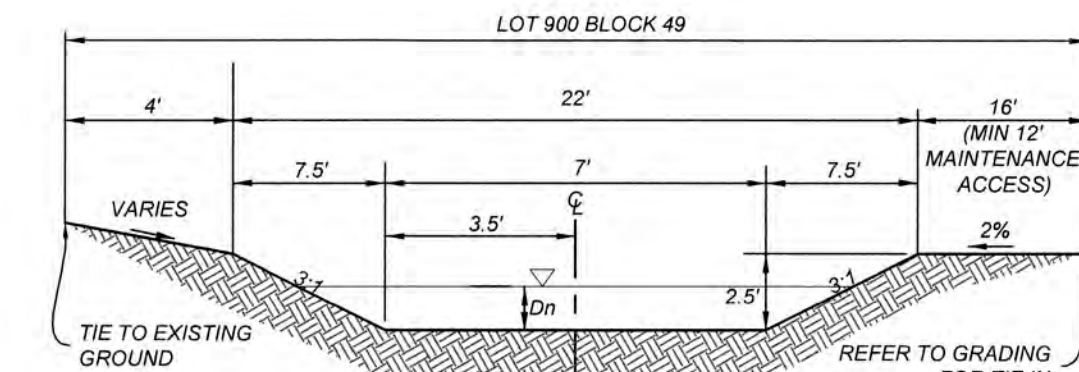
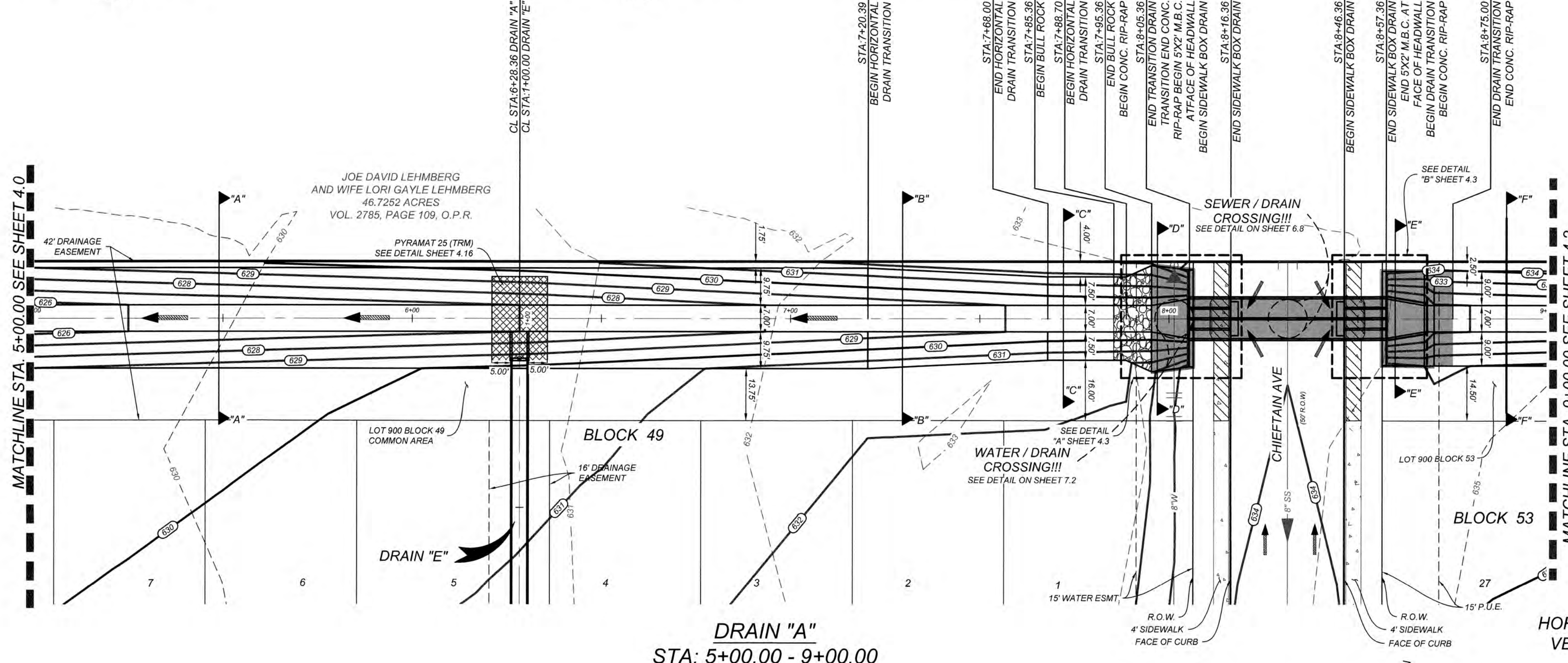
- 715 — = EXISTING CONTOUR
- 713 — = PROPOSED CONTOUR
- 713 --- = ADJACENT UNIT CONTOUR
- = CONCRETE



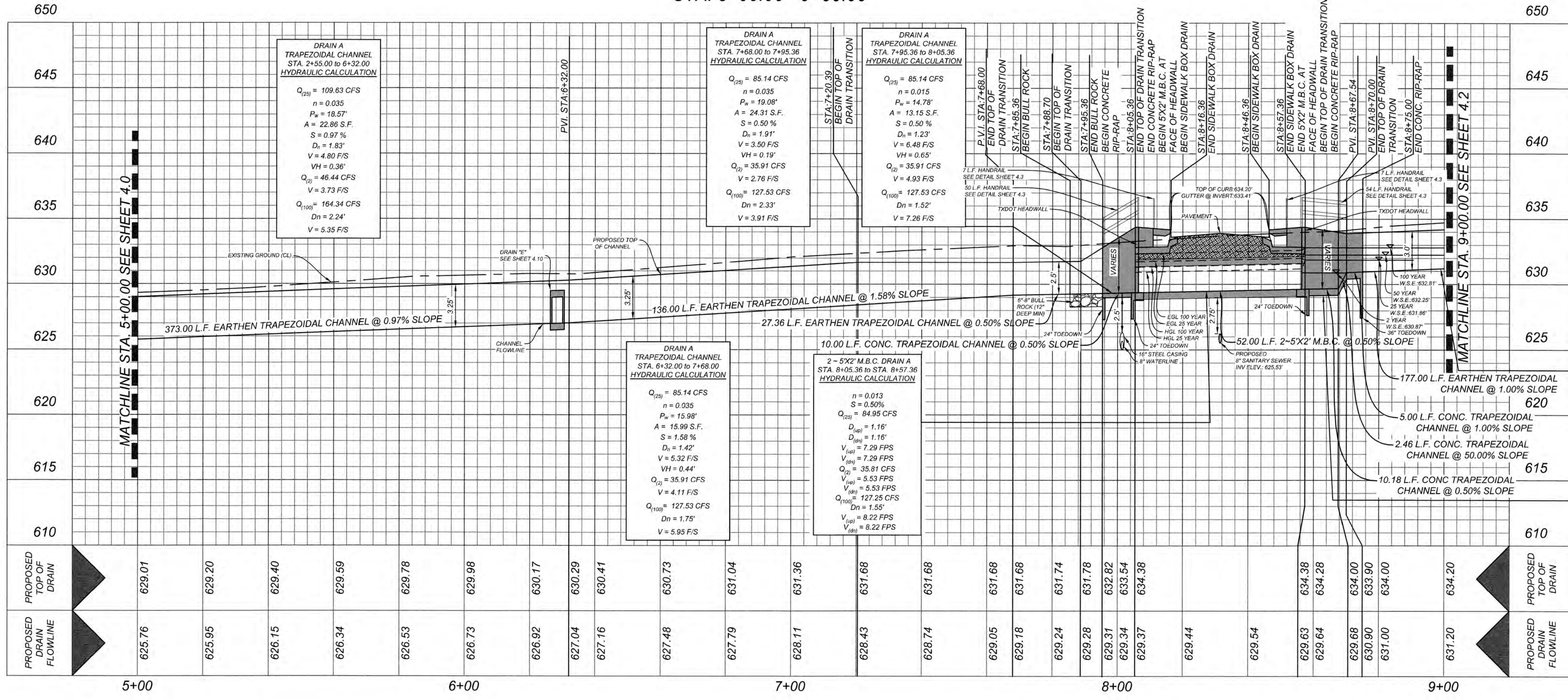
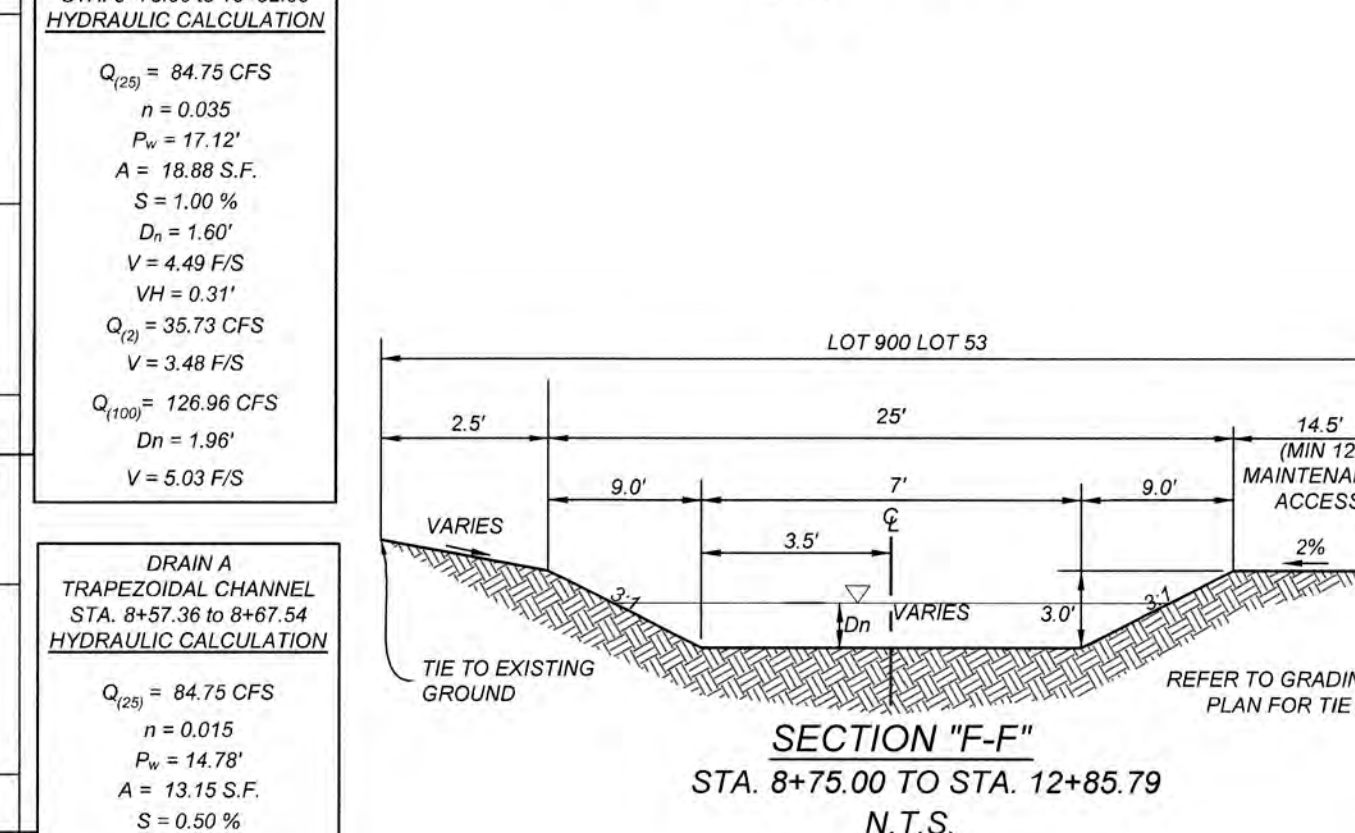
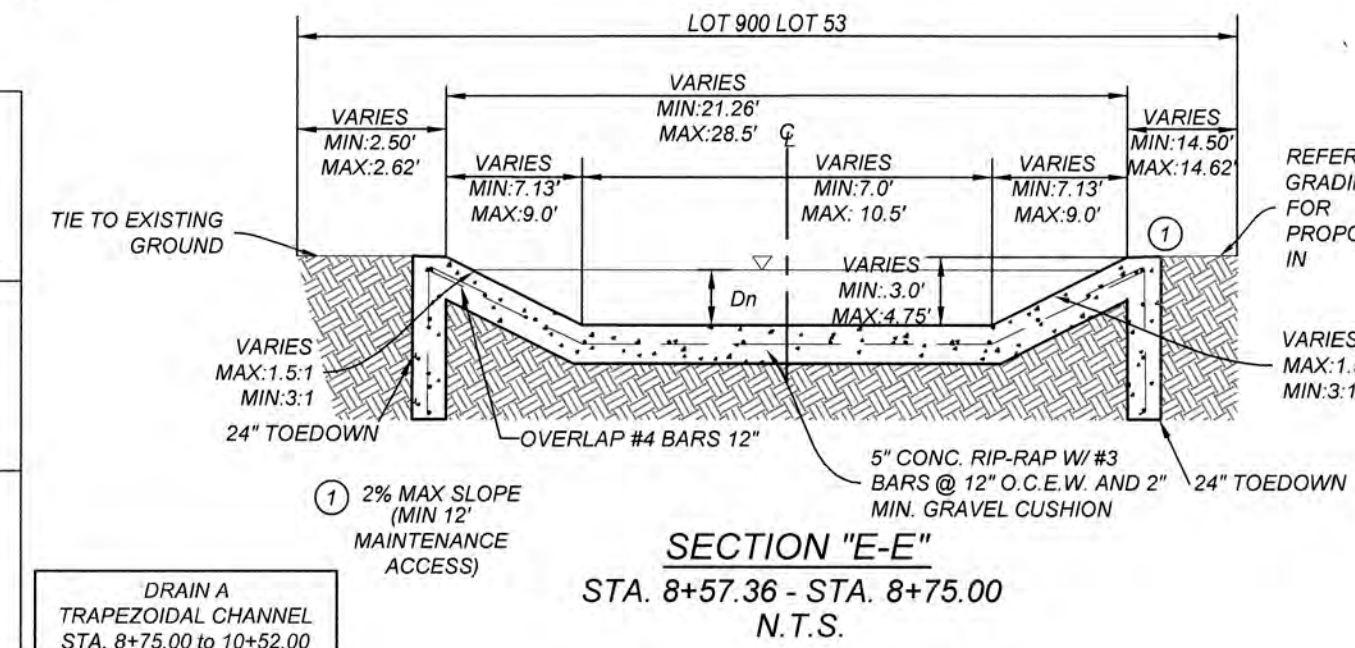
SCALE: 1"=20'

MATCHLINE STA. 5+00.00 SEE SHEET 4.0

MATCHLINE STA. 9+00.00 SEE SHEET 4.2

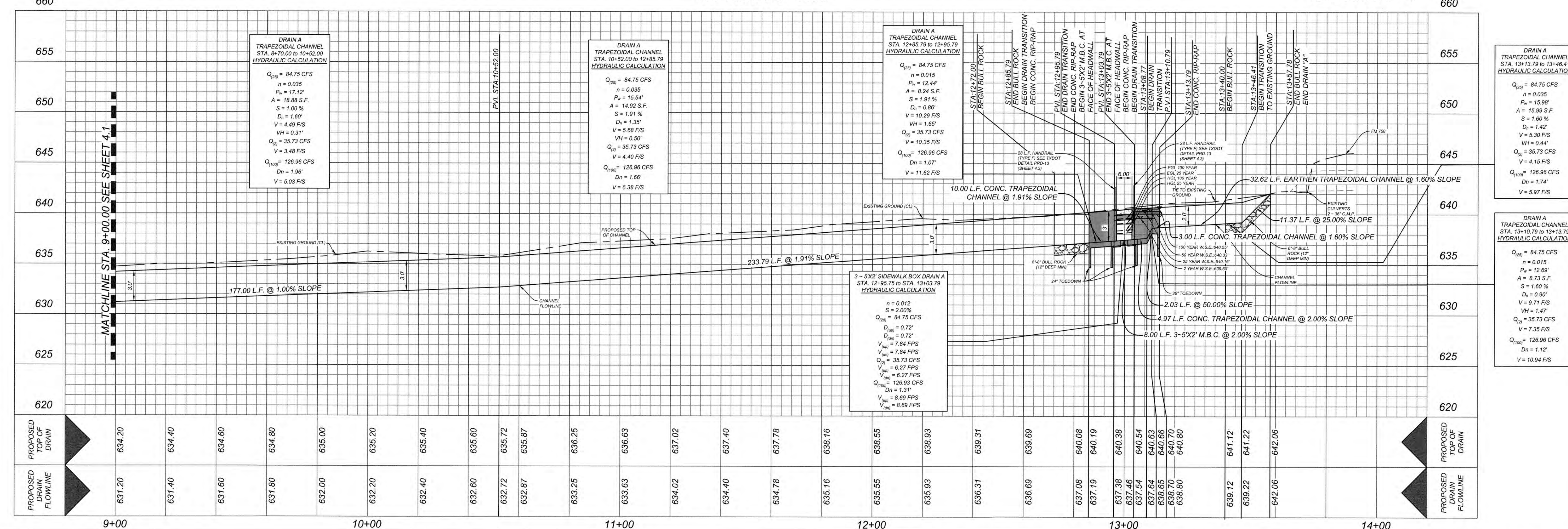
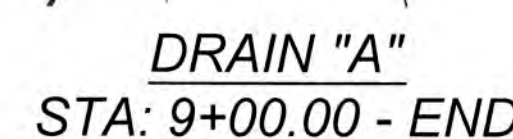
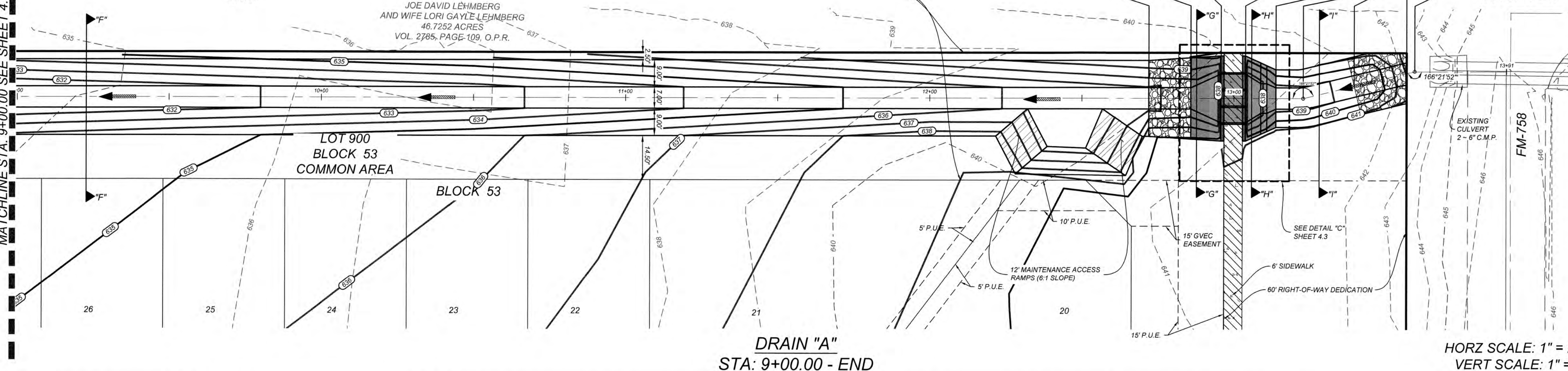
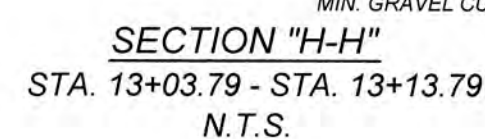
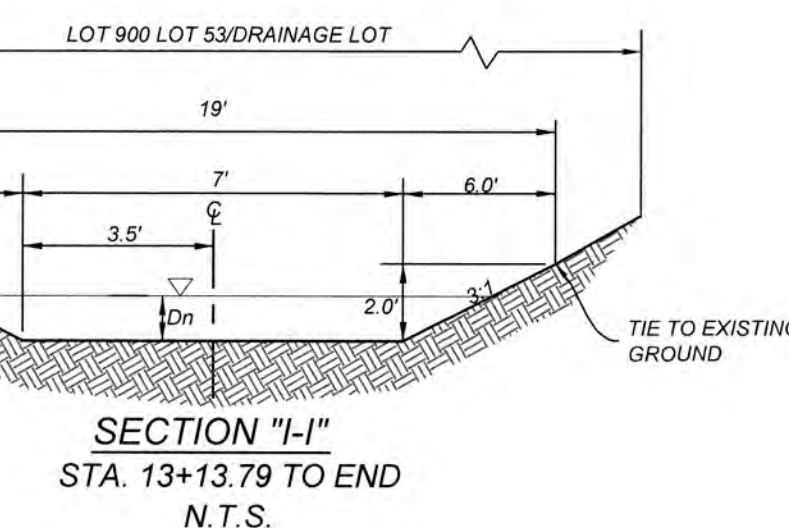
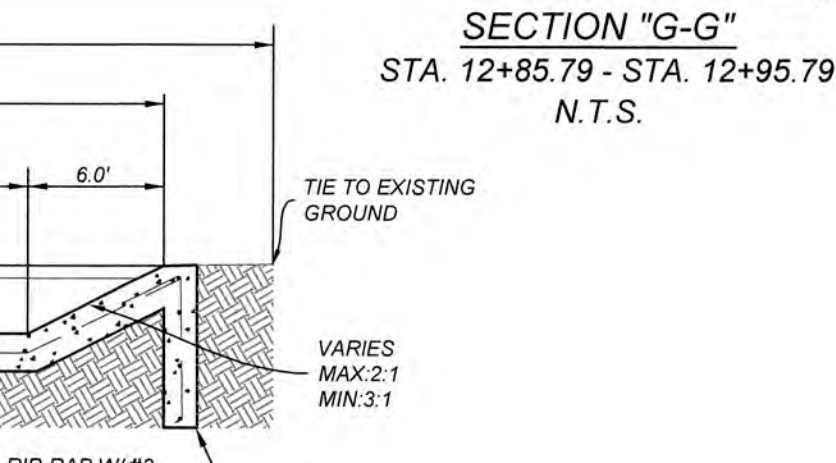
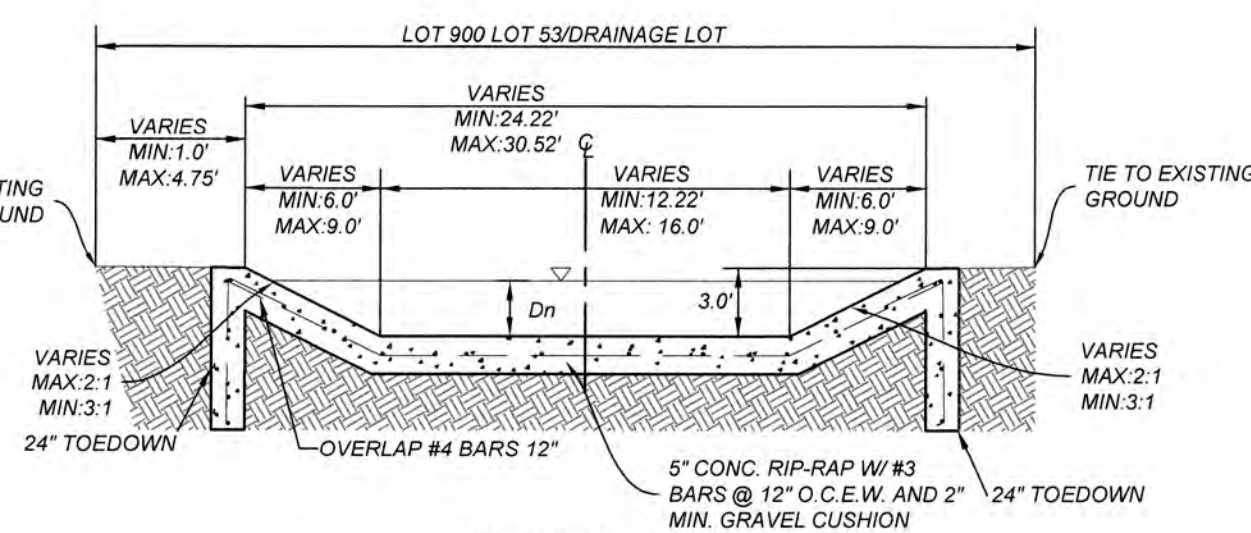


HORZ SCALE: 1" = 20'
VERT SCALE: 1" = 5'



NAVARRO SUBDIVISION - UNIT 8
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LEGEND

	= FLOW ARROW
	= EXISTING CONTOUR
	= PROPOSED CONTOUR
	= ADJACENT UNIT CONTOUR
	= CONCRETE

NOTE:

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- 4. ALL EARTHEN CHANNELS MUST NOT EXCEED 3:1 SIDE SLOPES (MAX).**

K&W
ENGINEERS + SURVEYING
62 W Mill St., New Braunfels, Tx. 78130
Phone #: (830) 220-0042 • Fax #: (830) 627-9097

REVISIONS

3/10/63

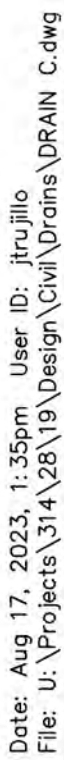
STATE OF TEXAS
A. NICHOLAS REYNOLDS
111666
LICENSED
PROFESSIONAL ENGINEER

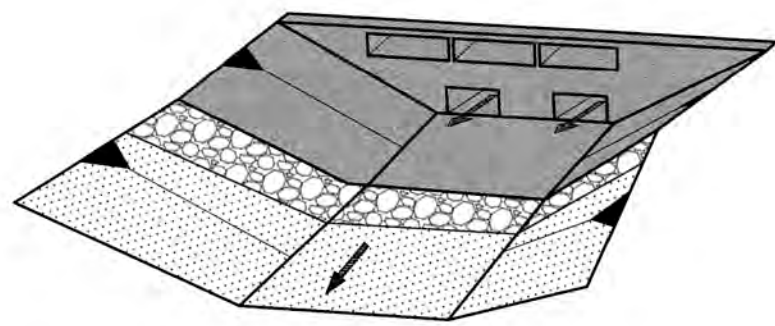
Nicholas Reynolds, P.E.

NAVARRO SUBDIVISION - UNIT 8
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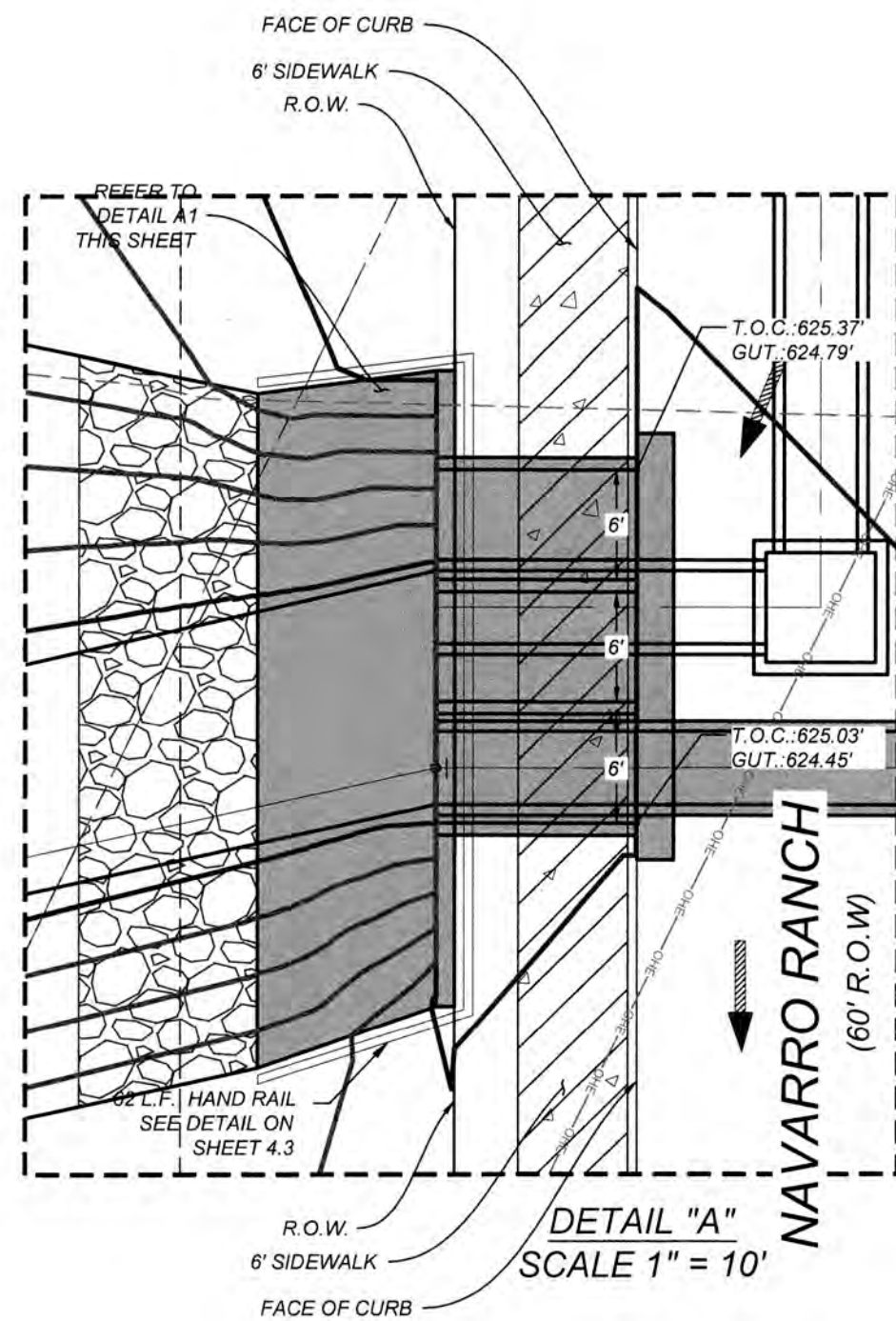
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DETAIL "A1" ISOMETRIC VIEW
N.T.S.



18" ON-GRADE CURB OPENING @ 2%
HYDRAULIC CALCULATION

USING AUTOCAD HYDRAFLOW

$Q_{(29)} = 14.51$ CFS

$Y =$ DEPTH OF FLOW IN GUTTER = 0.54'

$A =$ GUTTER DEPRESSION = 0.208'

$L =$ LENGTH OF CURB OPENING = 16.0'

$Q_{CAPTURED} = 10.59$ CFS

$Q_{BYPASS} = 3.92$ CFS

NOTE:
REFER TO DRAINAGE REPORT FOR
ON-GRADE INLET CALCULATIONS.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

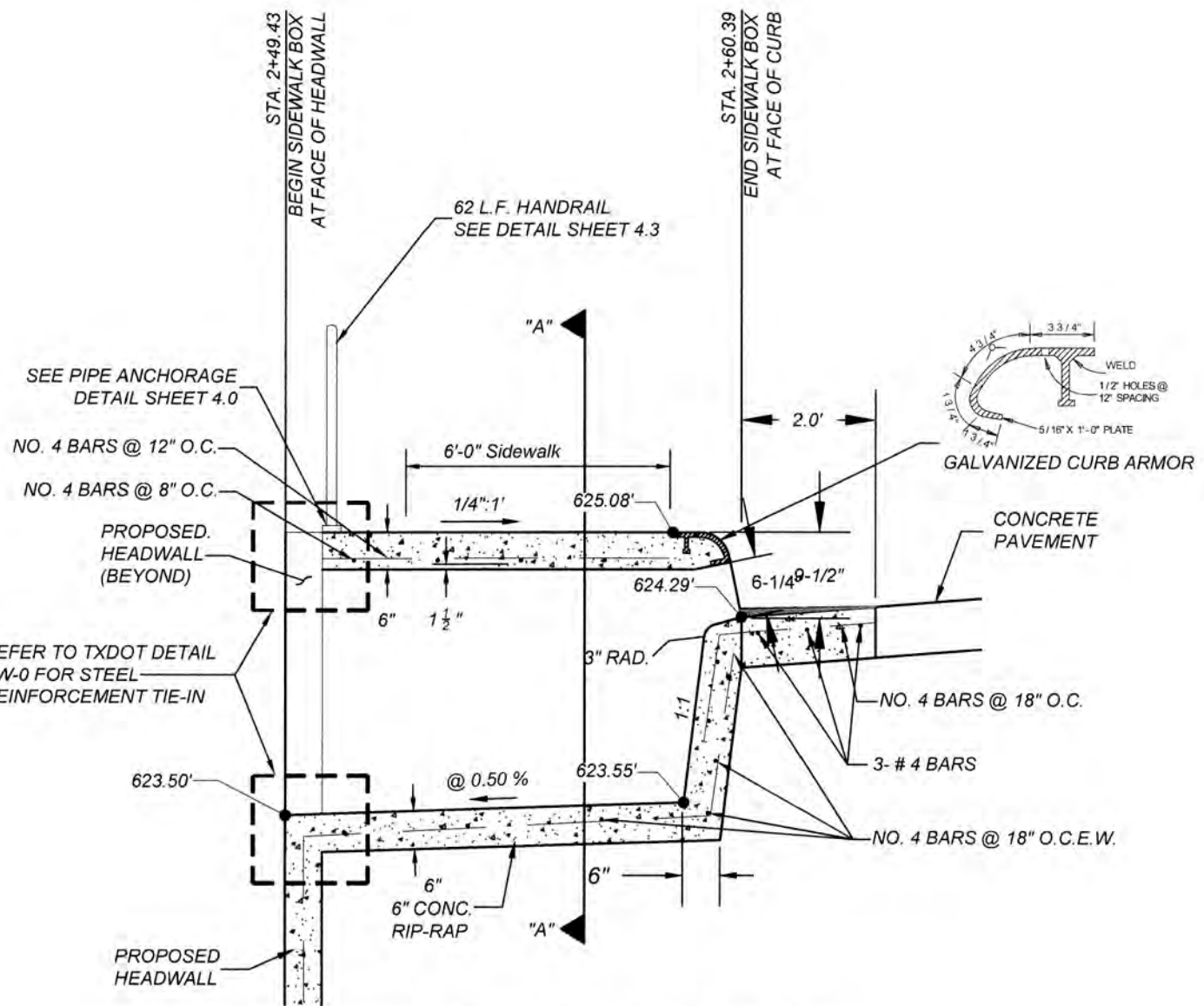
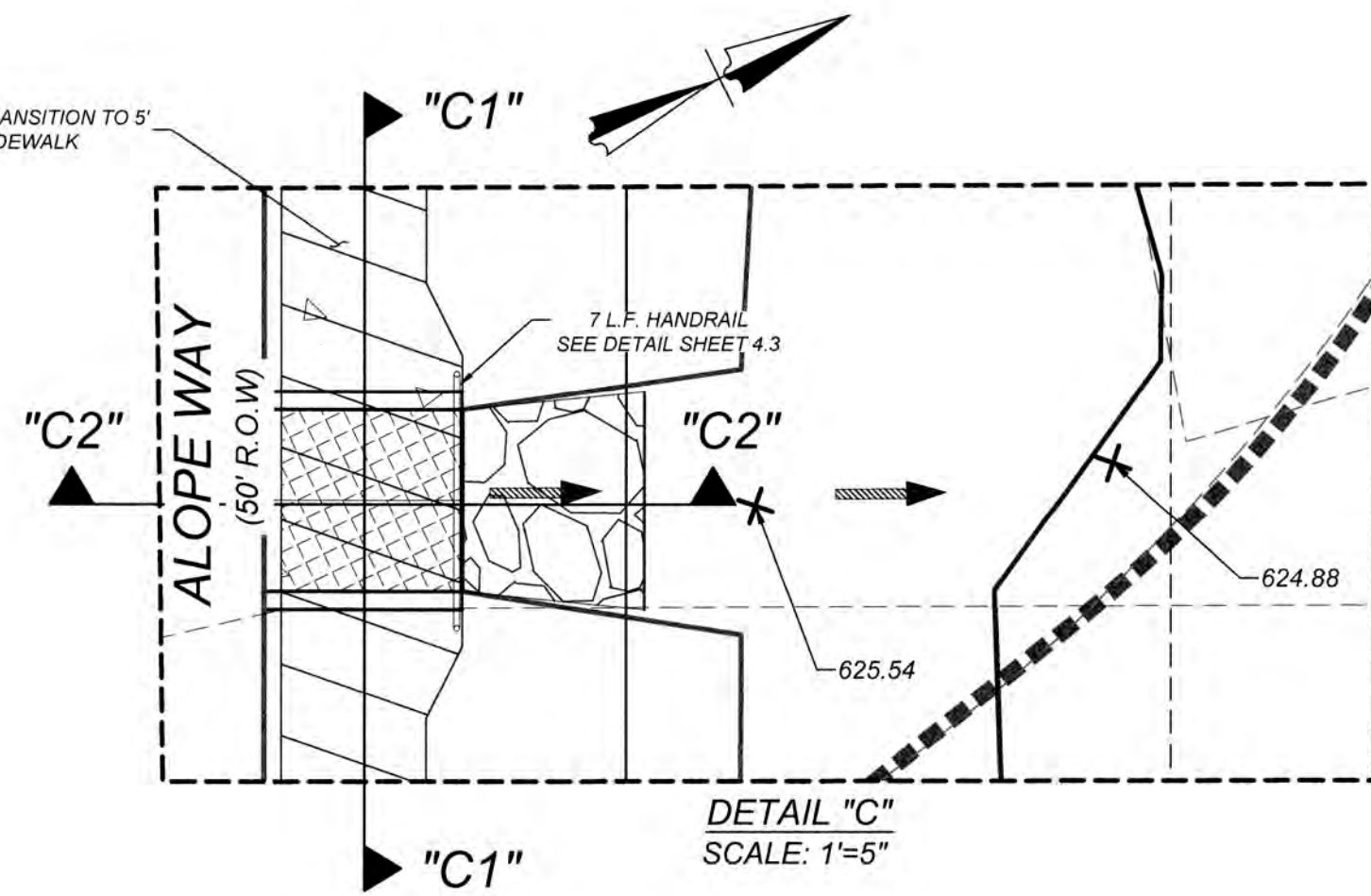
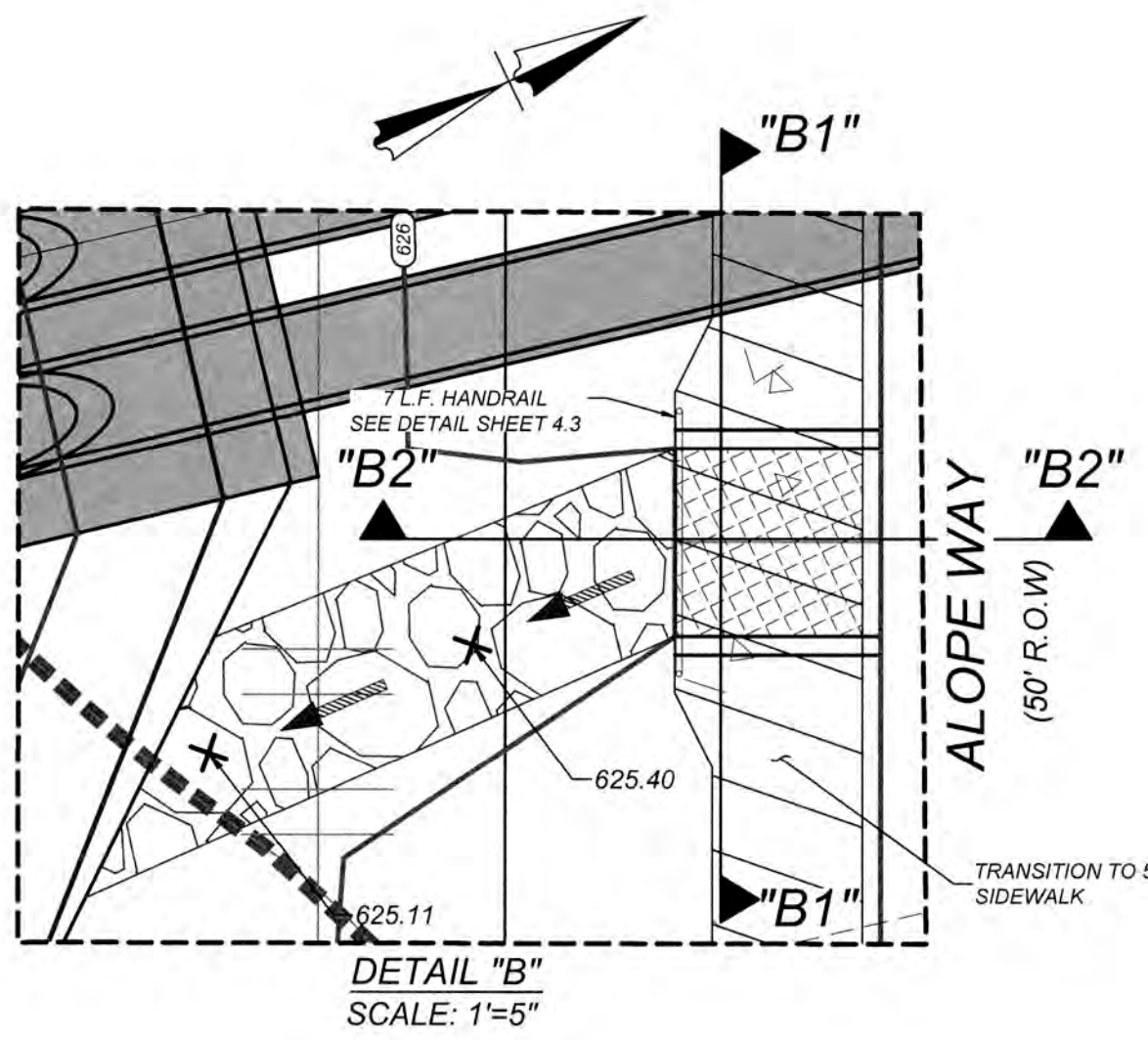
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NOTE:

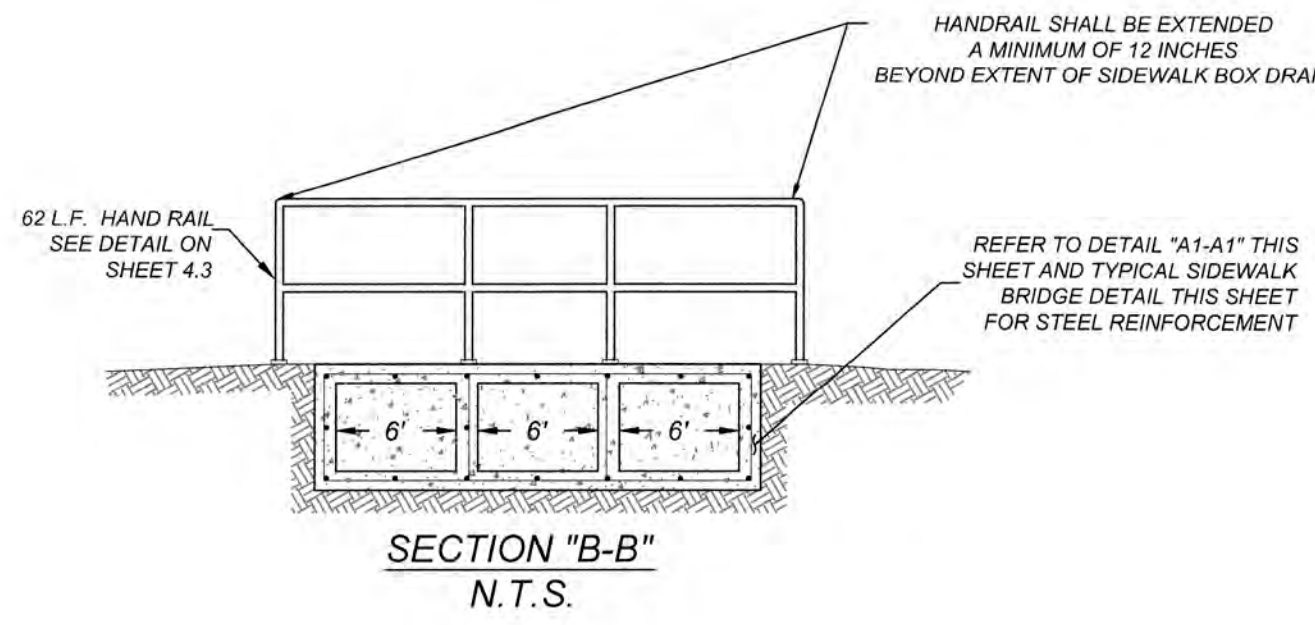
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3. ALL DRAINAGE EASEMENTS WILL BE OWNED AND MAINTAINED BY THE DEVELOPER.
4. ALL EARTHEN CHANNELS MUST NOT EXCEED 3:1 SIDE SLOPES (MAX).

LEGEND

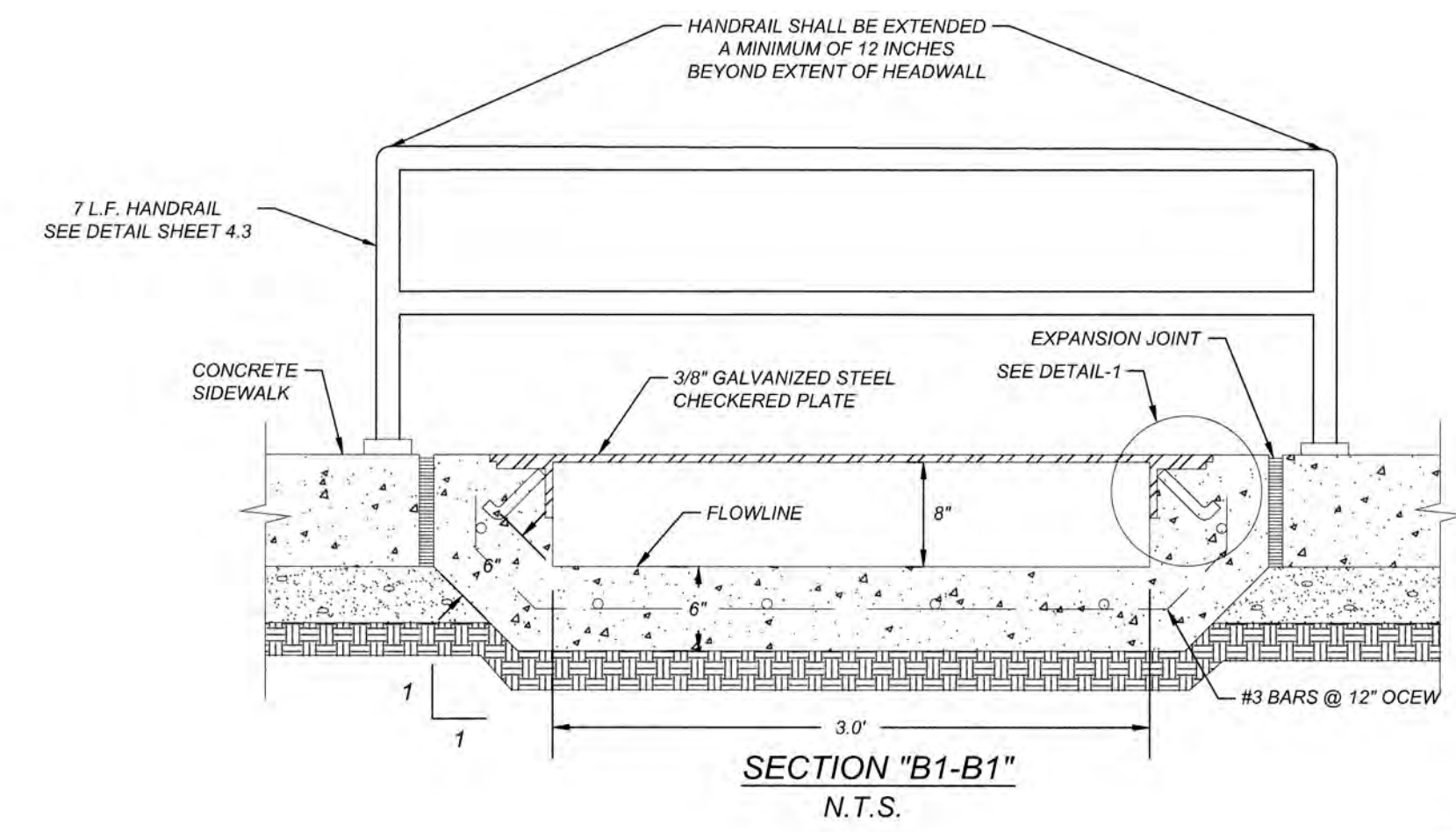
- = FLOW ARROW
- = EXISTING CONTOUR
- = PROPOSED CONTOUR
- = ADJACENT UNIT CONTOUR
- = CONCRETE



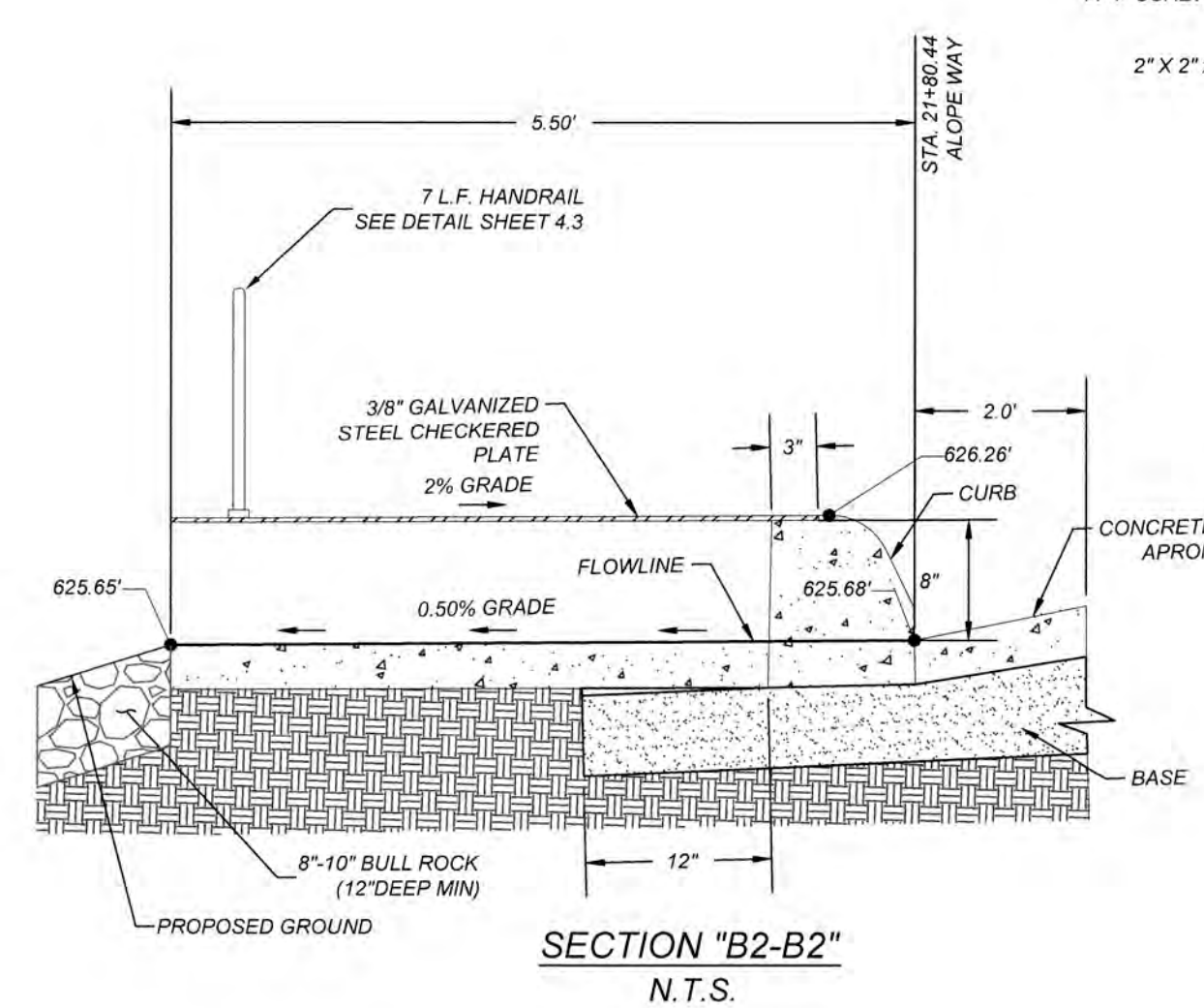
SIDEWALK BOX DRAIN DETAIL "A"
N.T.S.



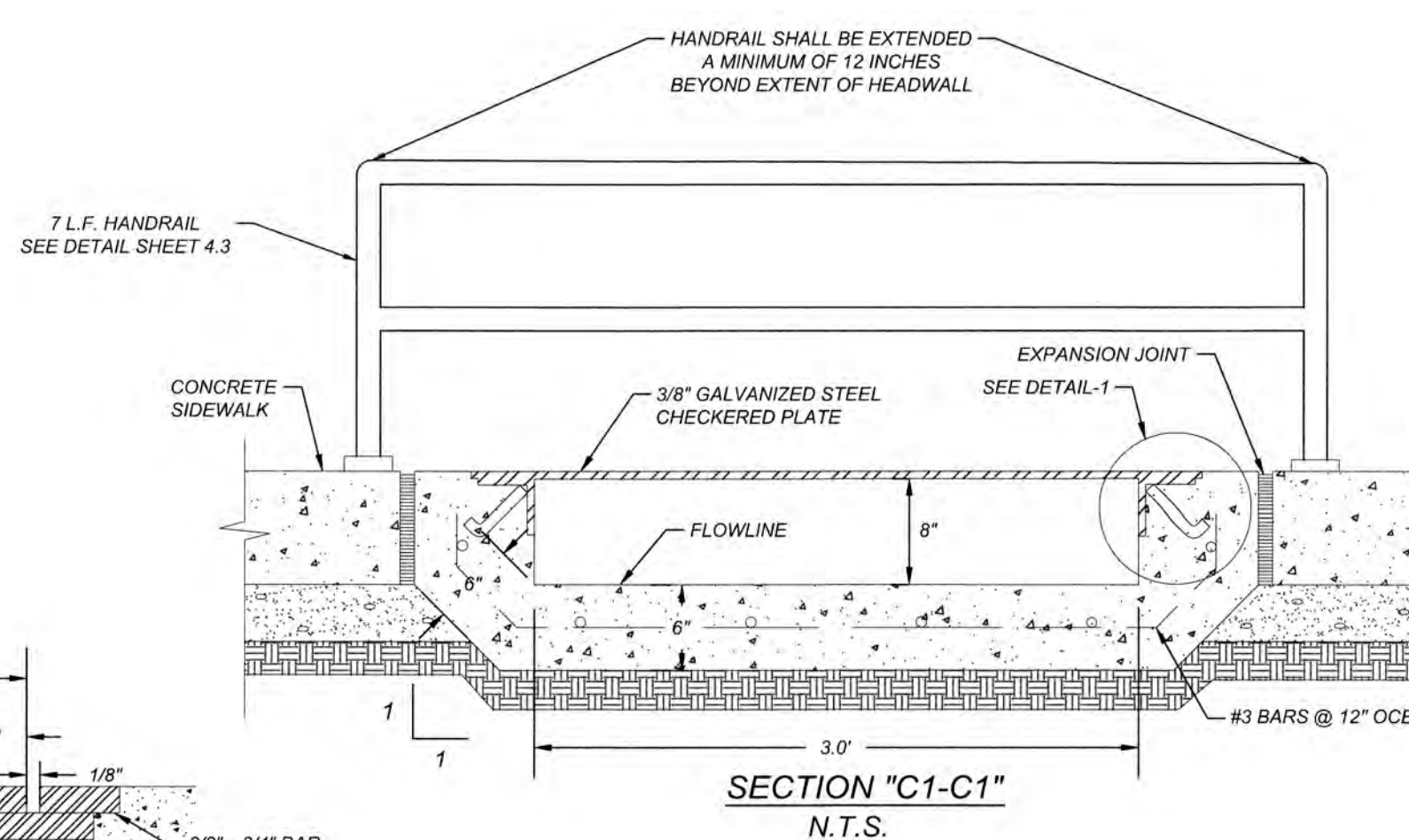
SECTION "B-B"
N.T.S.



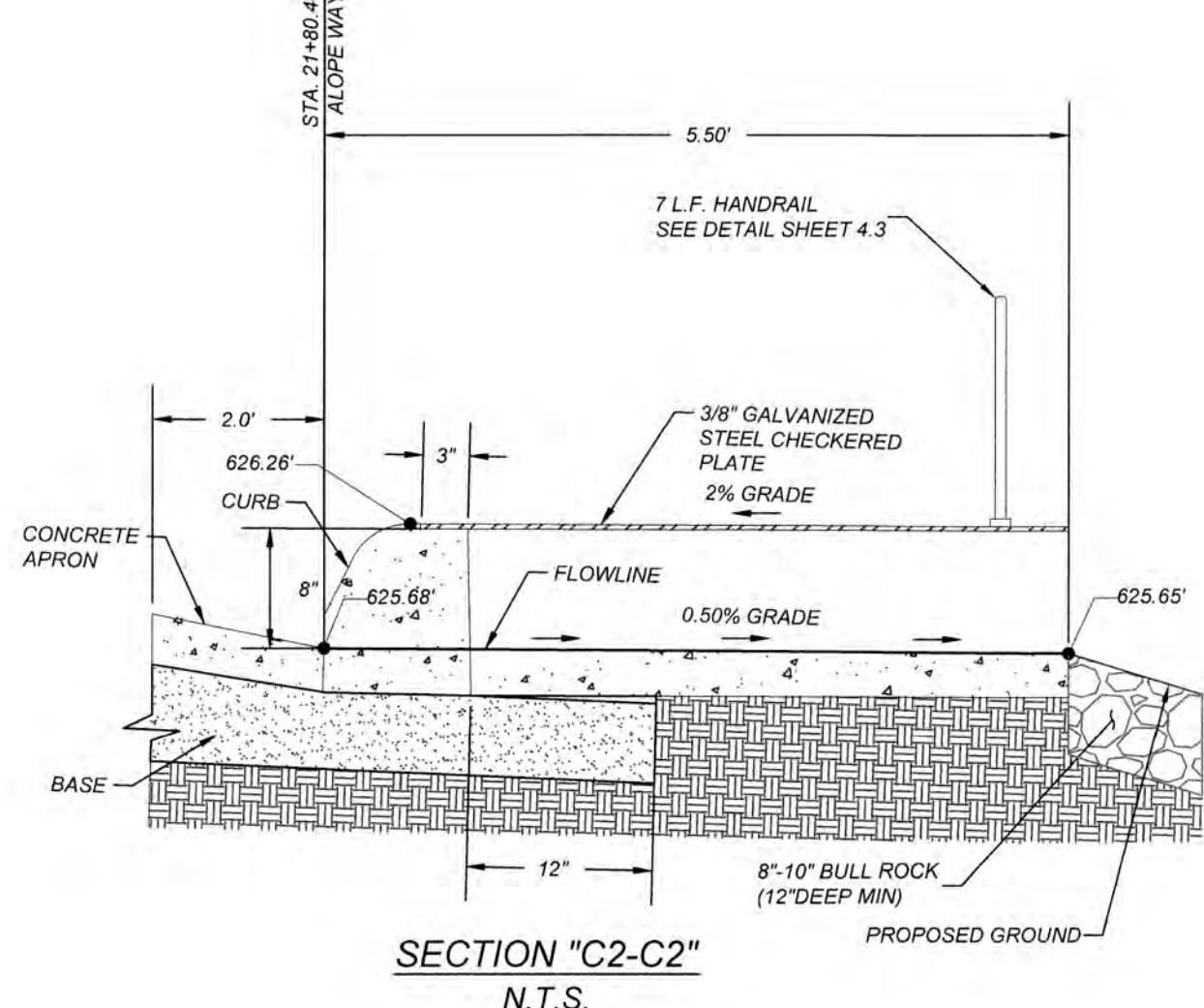
SECTION "B1-B1"
N.T.S.



SECTION "B2-B2"
N.T.S.



SECTION "C1-C1"
N.T.S.



SECTION "C2-C2"
N.T.S.

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
DRAIN C DETAIL SHEET

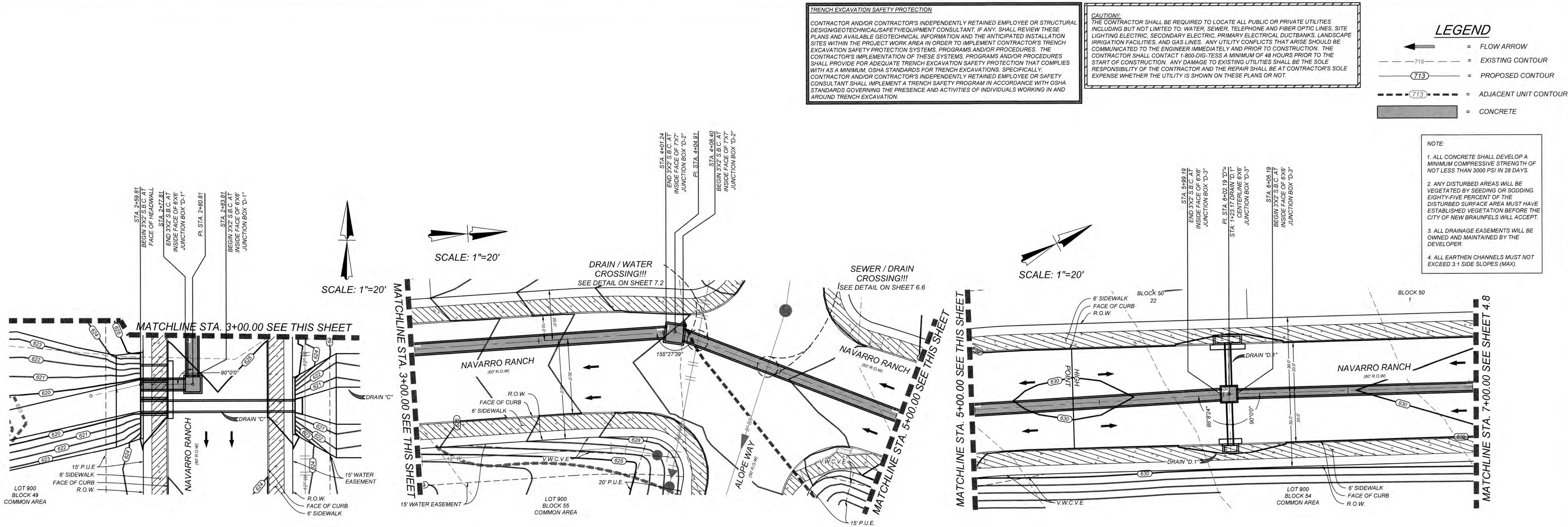
JOB NO. 314-28-19

DATE: JUL 2022

DRAWN: AC CHECKED: DA

SHEET NUMBER:

4.6



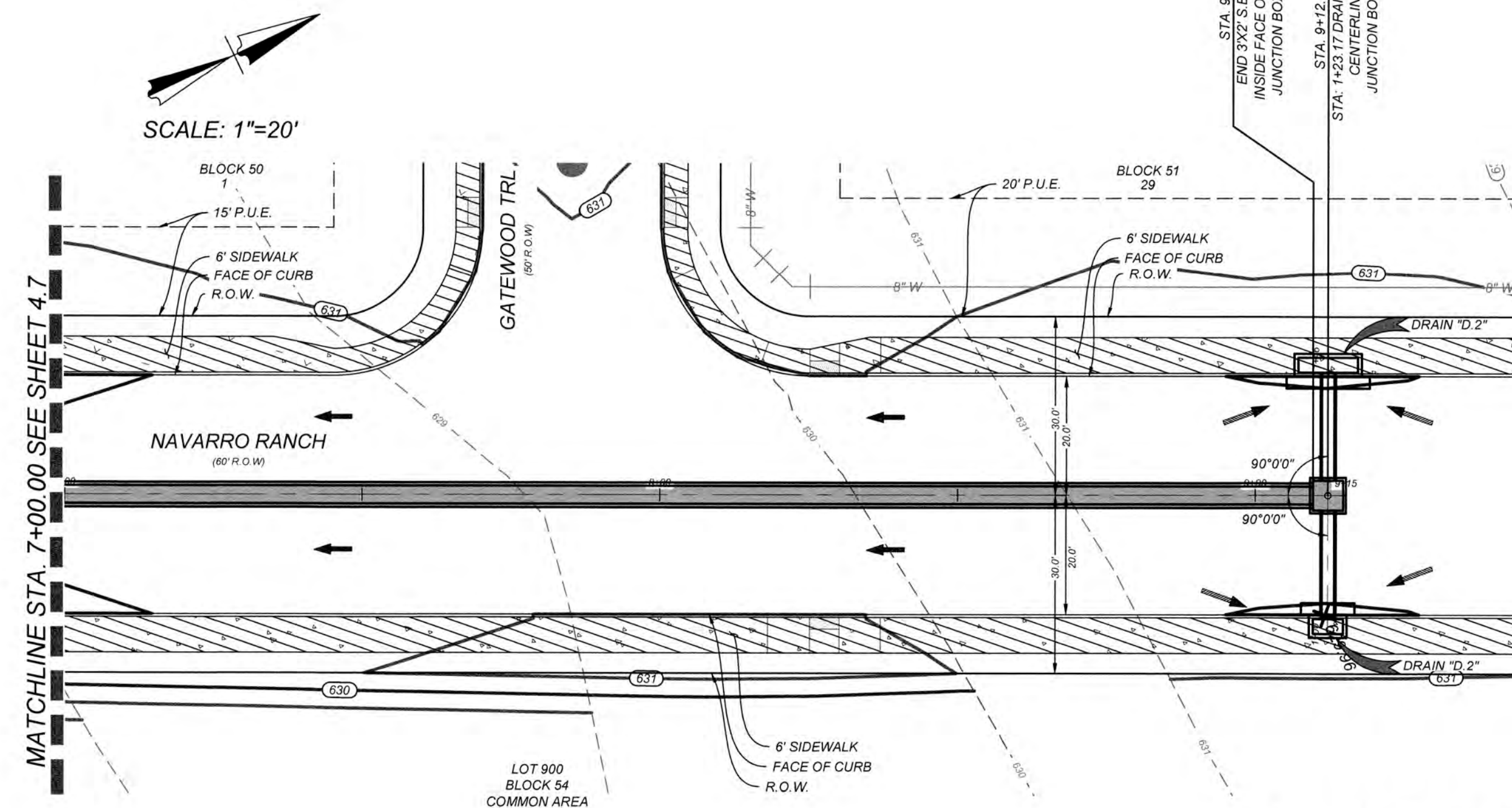
Date: Jul 12, 2023, 10:43am User ID: iferguson

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INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

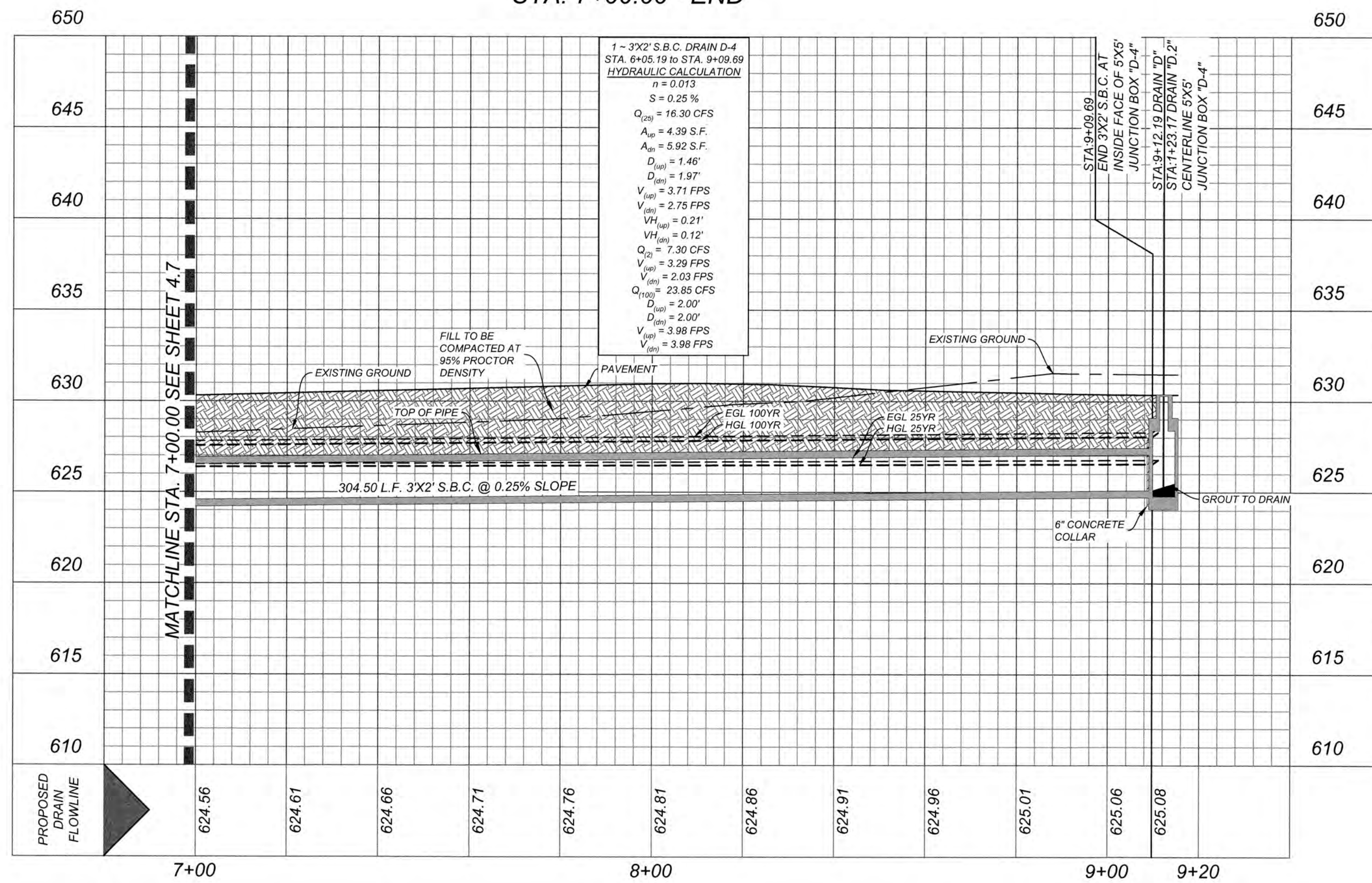
	=	FLOW ARROW
	=	EXISTING CONTOUR
	=	PROPOSED CONTOUR
	=	ADJACENT UNIT CONTOUR
	=	CONCRETE

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3. ALL DRAINAGE EASEMENTS WILL BE OWNED AND MAINTAINED BY THE DEVELOPER.
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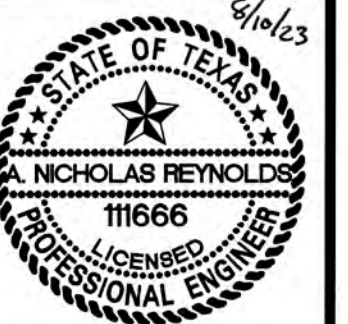


DRAIN "D"
STA: 7+00.00 - END

HORZ SCALE: 1" = 20'
VERT SCALE: 1" = 5'



KIEWIT
ENGINEERS + SURVEYING
162 W Mill St., New Braunfels, Tx. 78130
Phone #: (830) 220-6042 • Fax #: (830) 627-0097
TBPE Firm #: 9513 • TBPLS Firm #: 10122300



Vincent G. Smith, Jr.

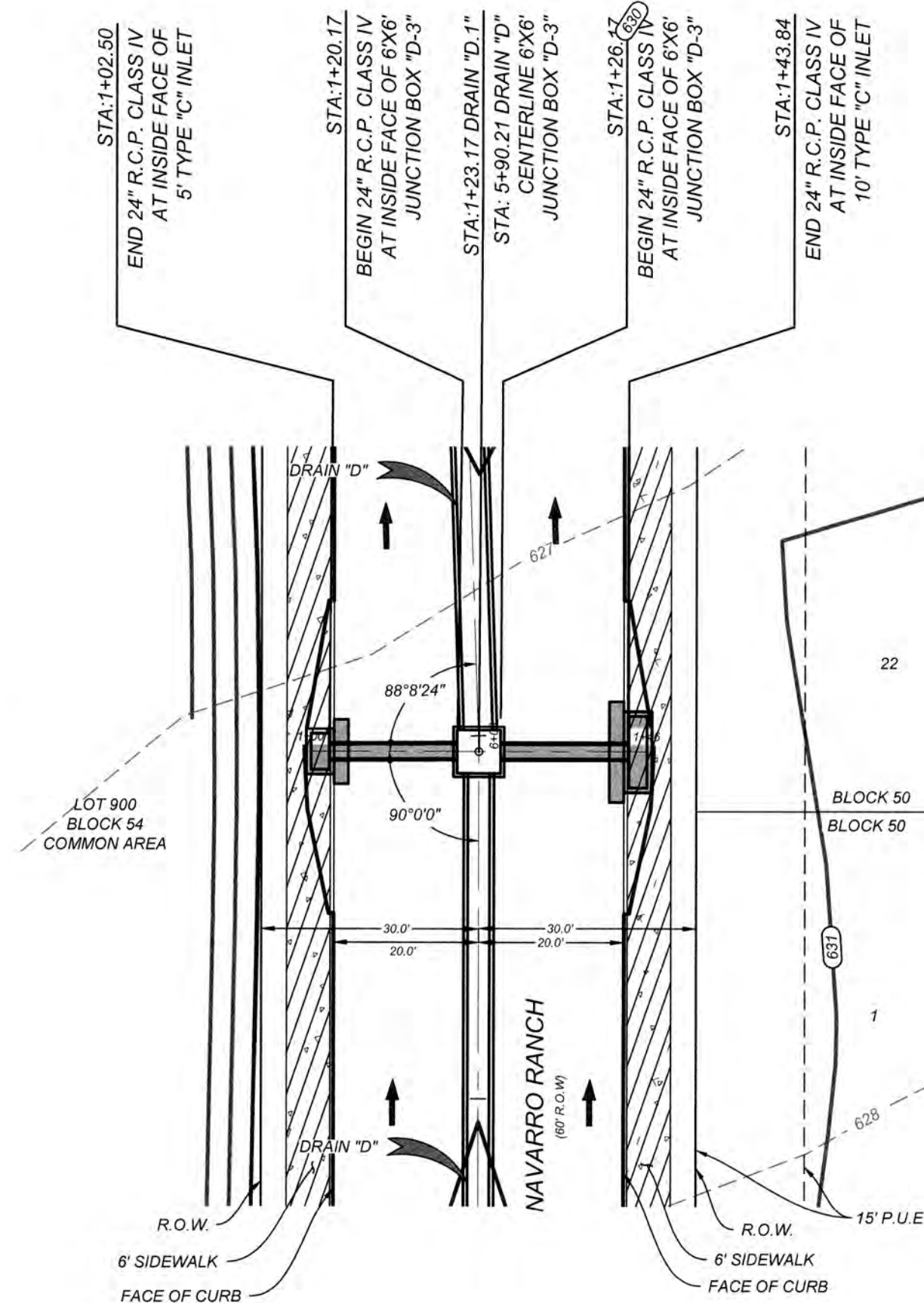
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
NAVARRO SUBDIVISION - UNIT 8
DRAIN D STA. 7+00.00 TO END

3 NO. 314-28-19
TE: JUL 2022
AWN: AC CHECKED: DA
SHEET NUMBER:

4.8

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

CURB OPENING
HYDRAULIC CALCULATION
 $L = \frac{Q_{25}}{C_h^{3/2}}$
 $L = \frac{1.34 \text{ cfs}}{(3.087) (0.79)^{3/2}}$
 $L = 0.62 \text{ L.F.}$
USE 5 L.F. CURB OPENING



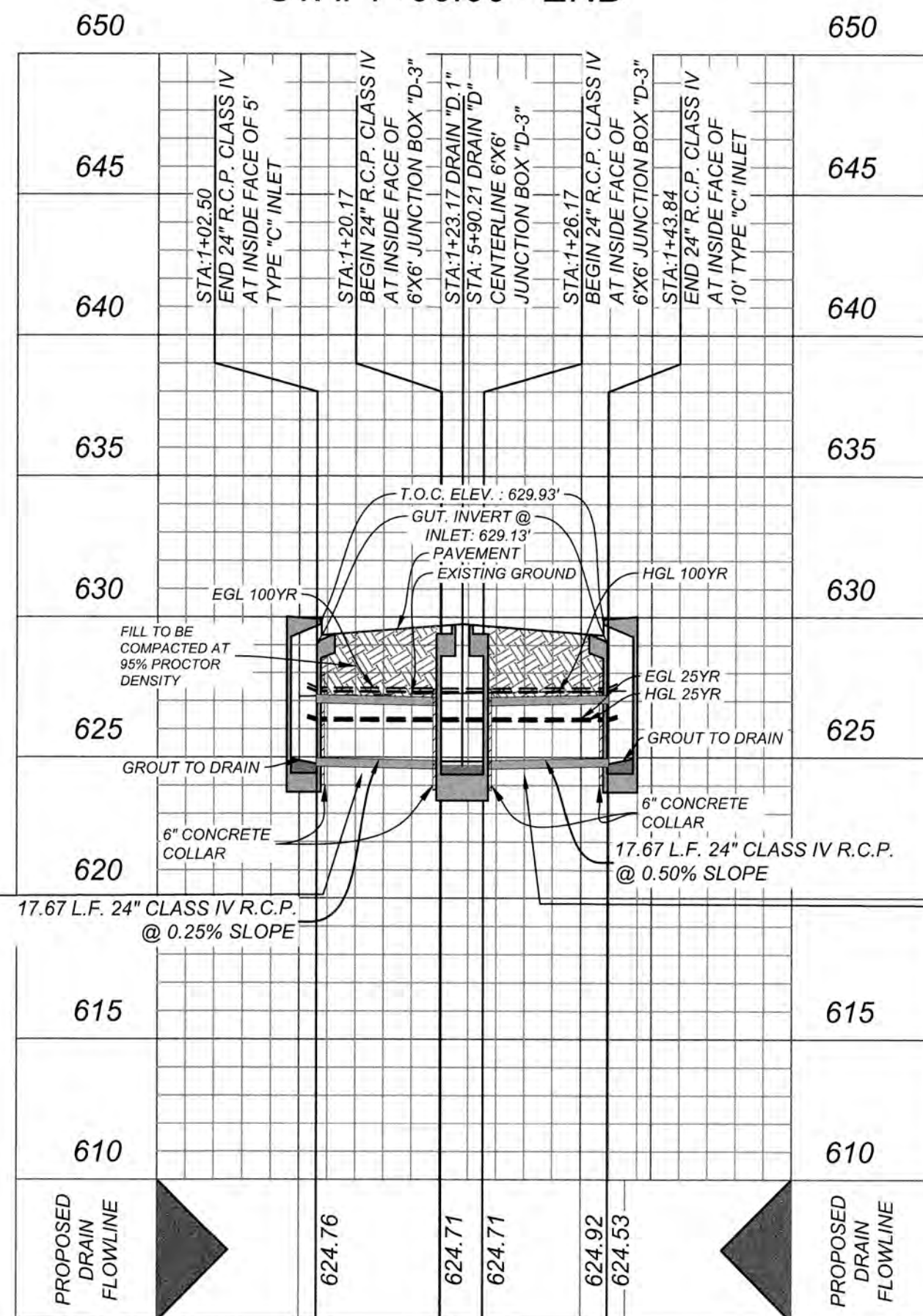
SCALE: 1"=20'

CURB OPENING
HYDRAULIC CALCULATION
 $L = \frac{Q_{25}}{C_h^{3/2}}$
 $L = \frac{8.15 \text{ cfs}}{(3.087) (0.79)^{3/2}}$
 $L = 3.76 \text{ L.F.}$
USE 10 L.F. CURB OPENING

DRAIN "D.1"
STA: 1+00.00 - END

HORZ SCALE: 1" = 20'
VERT SCALE: 1" = 5'

1 - 24" R.C.P. CLASS IV
DRAIN D.1-1
STA. 1+02.50 to STA. 1+20.17
HYDRAULIC CALCULATION
 $n = 0.013$
 $S = 0.25\%$
 $Q_{25} = 1.34 \text{ CFS}$
 $A_{25} = 0.45 \text{ S.F.}$
 $A_{25} = 0.45 \text{ S.F.}$
 $D_{25} = 0.40'$
 $D_{25} = 1.44'$
 $V_{25} = 3.00 \text{ FPS}$
 $V_{25} = 0.55 \text{ FPS}$
 $V_{25} = 0.14'$
 $V_{25} = 0.14'$
 $Q_{25} = 0.61 \text{ CFS}$
 $V_{25} = 2.44 \text{ FPS}$
 $V_{25} = 0.66 \text{ FPS}$
 $Q_{25} = 1.93 \text{ CFS}$
 $D_{25} = 2.00'$
 $D_{25} = 2.00'$
 $V_{25} = 0.61 \text{ FPS}$
 $V_{25} = 0.61 \text{ FPS}$



1 - 24" R.C.P. CLASS IV
DRAIN D.1-2
STA. 1+25.17 to STA. 1+43.84
HYDRAULIC CALCULATION
 $n = 0.013$
 $S = 0.50\%$
 $Q_{25} = 6.17 \text{ CFS}$
 $A_{25} = 1.34 \text{ S.F.}$
 $A_{25} = 1.34 \text{ S.F.}$
 $D_{25} = 0.89'$
 $D_{25} = 1.44'$
 $V_{25} = 4.67 \text{ FPS}$
 $V_{25} = 2.58 \text{ FPS}$
 $V_{25} = 0.34'$
 $V_{25} = 0.34'$
 $Q_{25} = 2.91 \text{ CFS}$
 $V_{25} = 3.68 \text{ FPS}$
 $V_{25} = 3.06 \text{ FPS}$
 $Q_{100} = 9.32 \text{ CFS}$
 $D_{100} = 2.00'$
 $D_{100} = 2.00'$
 $V_{100} = 2.97 \text{ FPS}$
 $V_{100} = 2.97 \text{ FPS}$

TRENCH EXCAVATION SAFETY PROTECTION
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LEGEND

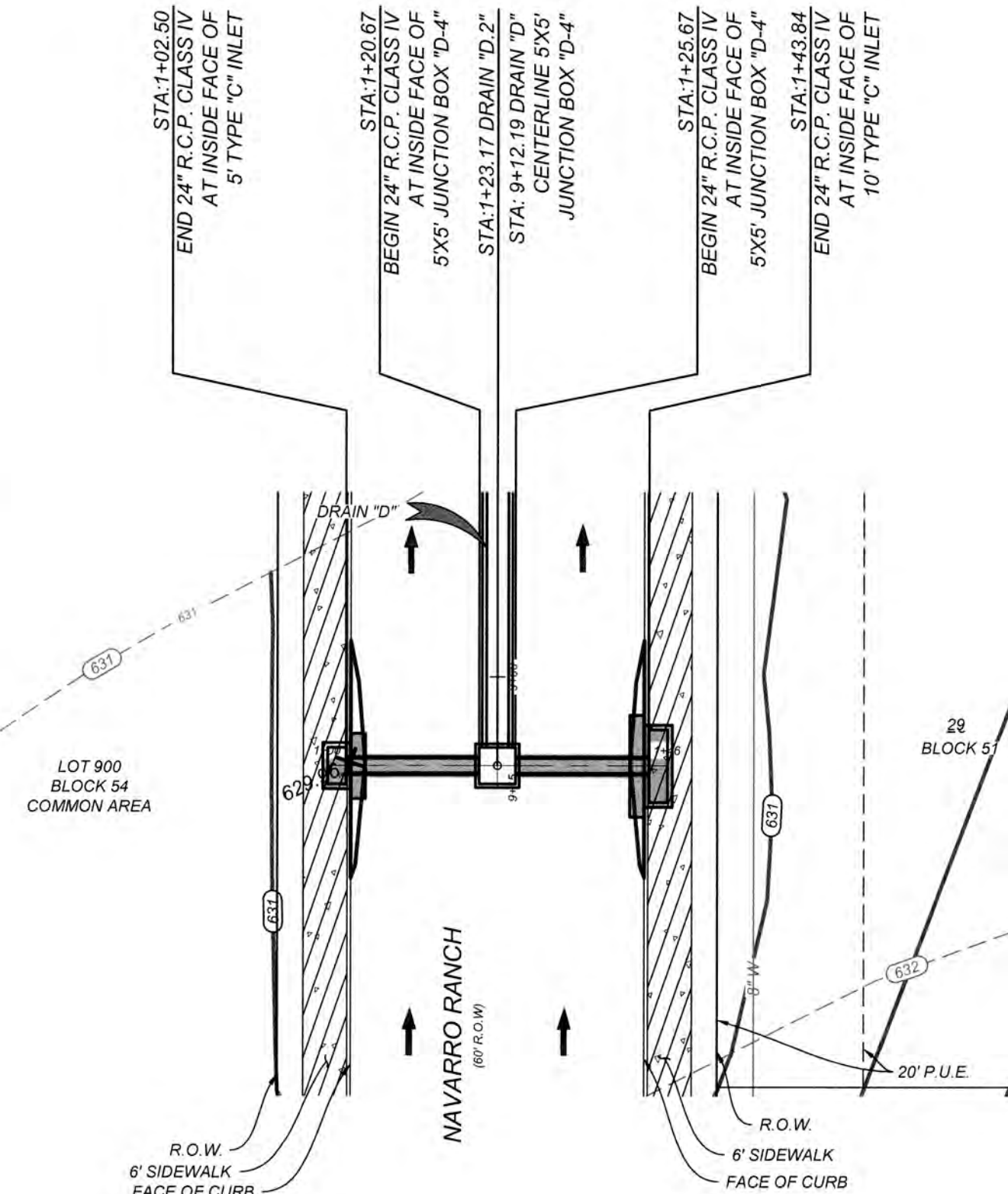
- = FLOW ARROW
- = EXISTING CONTOUR
- = PROPOSED CONTOUR
- = ADJACENT UNIT CONTOUR
- = CONCRETE

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SCALE: 1"=20'

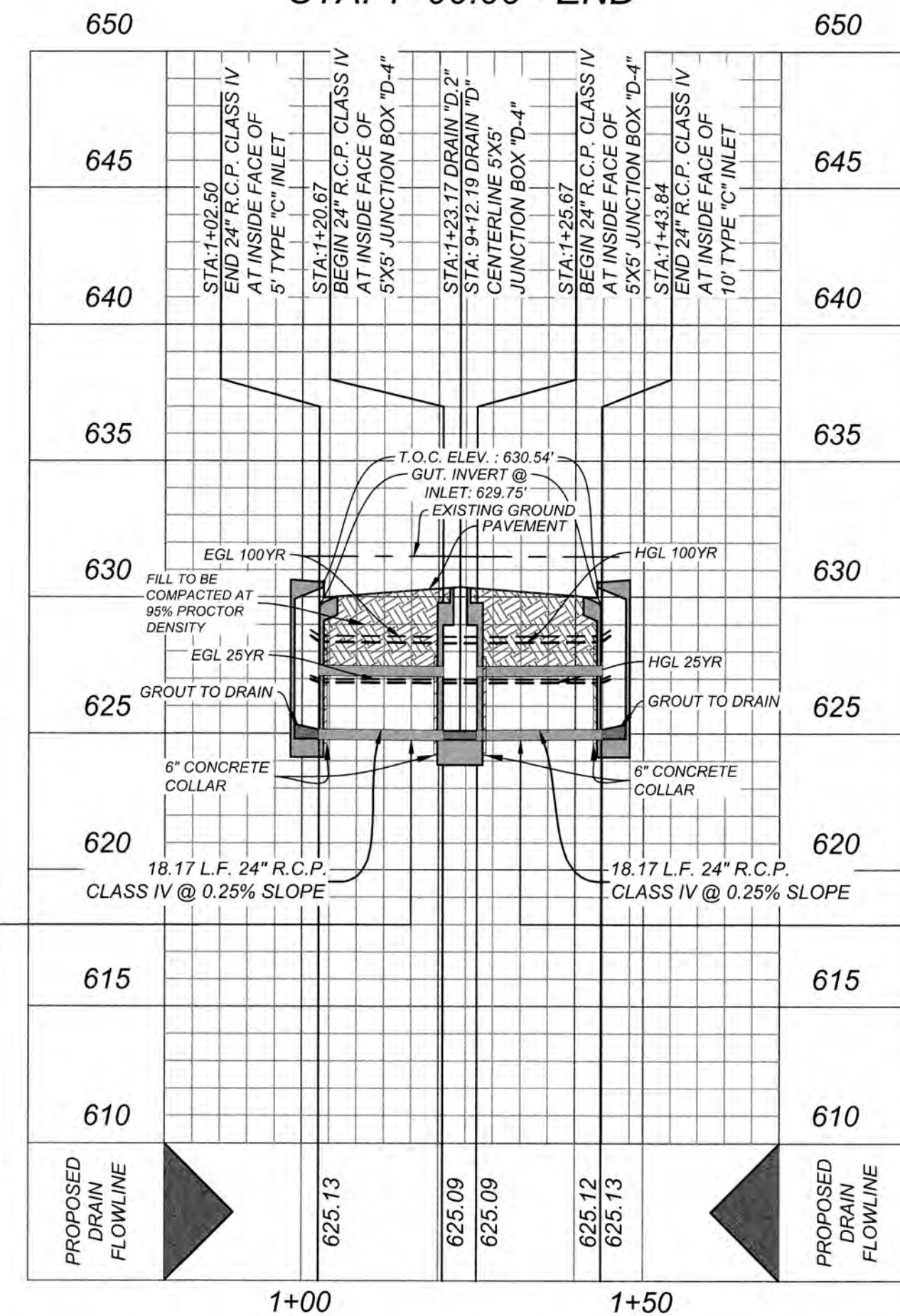
CURB OPENING
HYDRAULIC CALCULATION
 $L = \frac{Q_{25}}{C_h^{3/2}}$
 $L = \frac{8.15 \text{ cfs}}{(3.087) (0.79)^{3/2}}$
 $L = 3.76 \text{ L.F.}$
USE 5 L.F. CURB OPENING



HORZ SCALE: 1" = 20'
VERT SCALE: 1" = 5'

DRAIN "D.2"
STA: 1+00.00 - END

1 - 24" R.C.P. CLASS IV
DRAIN D.2-1
STA. 1+02.50 to STA. 1+20.67
HYDRAULIC CALCULATION
 $n = 0.013$
 $S = 0.25\%$
 $Q_{25} = 8.15 \text{ CFS}$
 $A_{25} = 2.89 \text{ S.F.}$
 $A_{25} = 2.91 \text{ S.F.}$
 $D_{25} = 1.73'$
 $D_{25} = 1.75'$
 $V_{25} = 2.82 \text{ FPS}$
 $V_{25} = 2.80 \text{ FPS}$
 $V_{25} = 0.12'$
 $V_{25} = 0.12'$
 $Q_{25} = 3.65 \text{ CFS}$
 $V_{25} = 3.07 \text{ FPS}$
 $V_{25} = 3.06 \text{ FPS}$
 $Q_{100} = 11.93 \text{ CFS}$
 $D_{100} = 2.00'$
 $D_{100} = 2.00'$
 $V_{100} = 3.80 \text{ FPS}$
 $V_{100} = 3.80 \text{ FPS}$

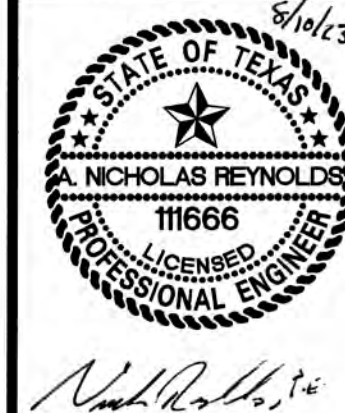


1 - 24" R.C.P. CLASS IV
DRAIN D.2-1
STA. 1+25.67 to STA. 1+43.84
HYDRAULIC CALCULATION
 $n = 0.013$
 $S = 0.25\%$
 $Q_{25} = 8.15 \text{ CFS}$
 $A_{25} = 2.89 \text{ S.F.}$
 $A_{25} = 2.91 \text{ S.F.}$
 $D_{25} = 1.73'$
 $D_{25} = 1.75'$
 $V_{25} = 2.82 \text{ FPS}$
 $V_{25} = 2.80 \text{ FPS}$
 $V_{25} = 0.12'$
 $V_{25} = 0.12'$
 $Q_{25} = 3.65 \text{ CFS}$
 $V_{25} = 3.07 \text{ FPS}$
 $V_{25} = 3.06 \text{ FPS}$
 $Q_{100} = 11.93 \text{ CFS}$
 $D_{100} = 2.00'$
 $D_{100} = 2.00'$
 $V_{100} = 3.80 \text{ FPS}$
 $V_{100} = 3.80 \text{ FPS}$

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
DRAIN D.1 & D.2 STA. 1+00.00 - END

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

4.9

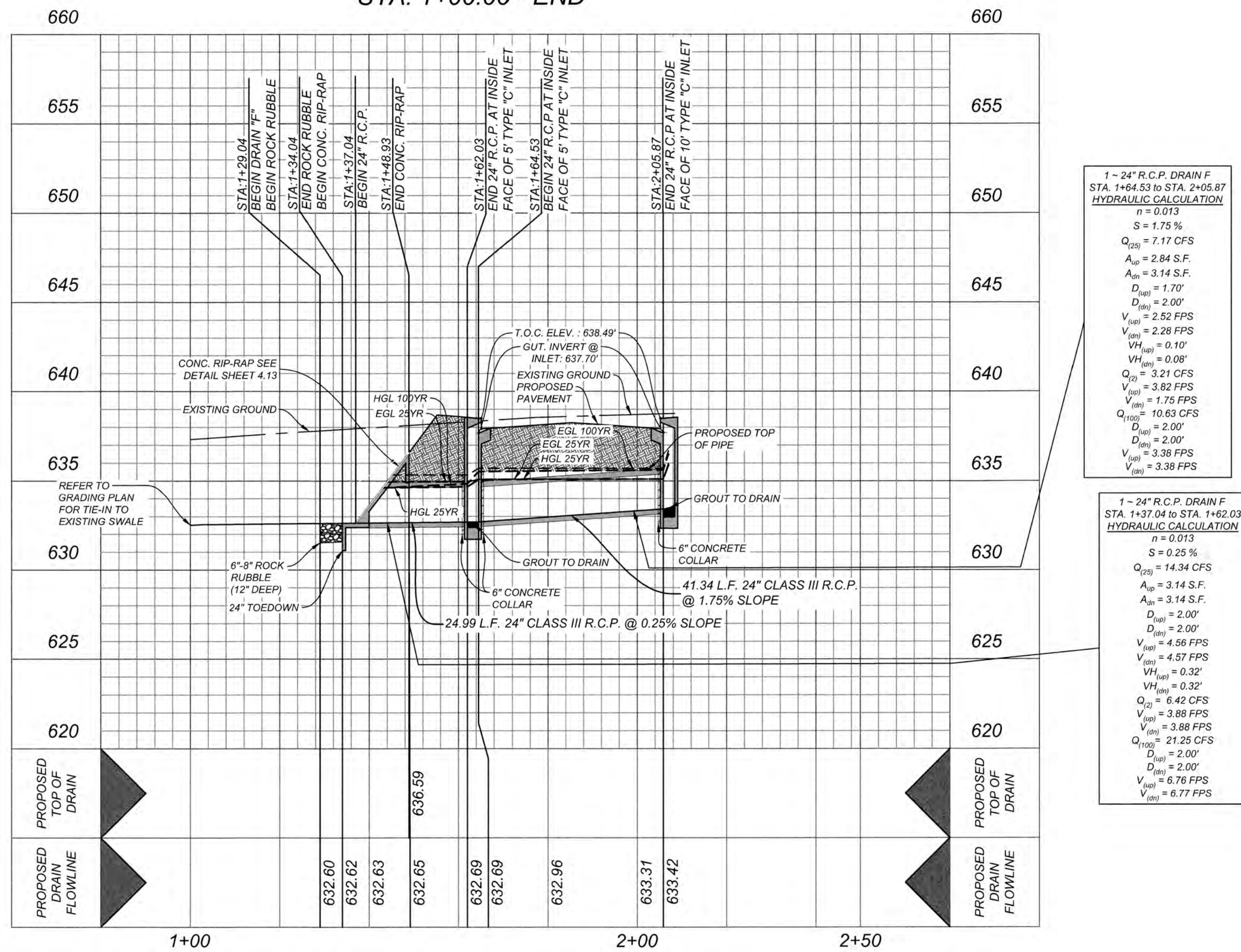
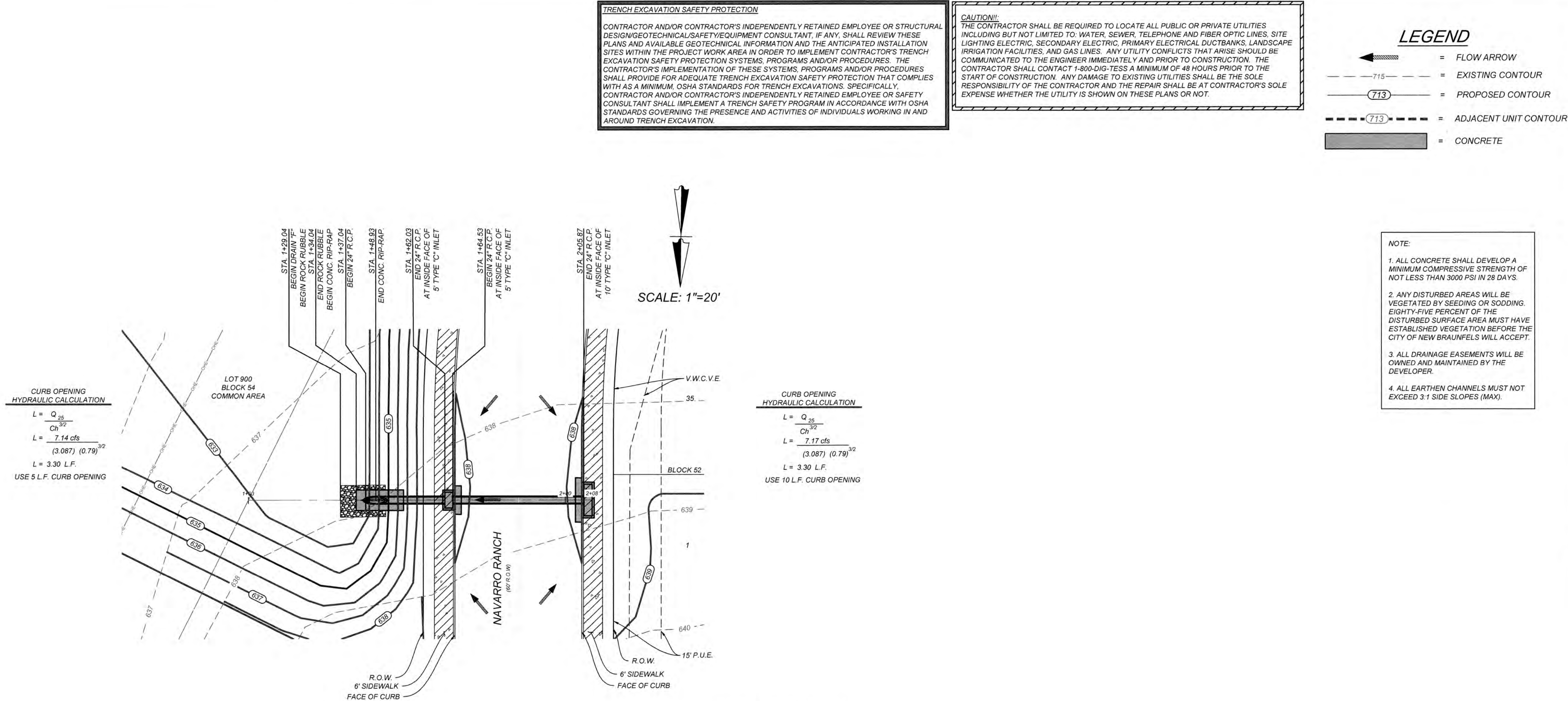


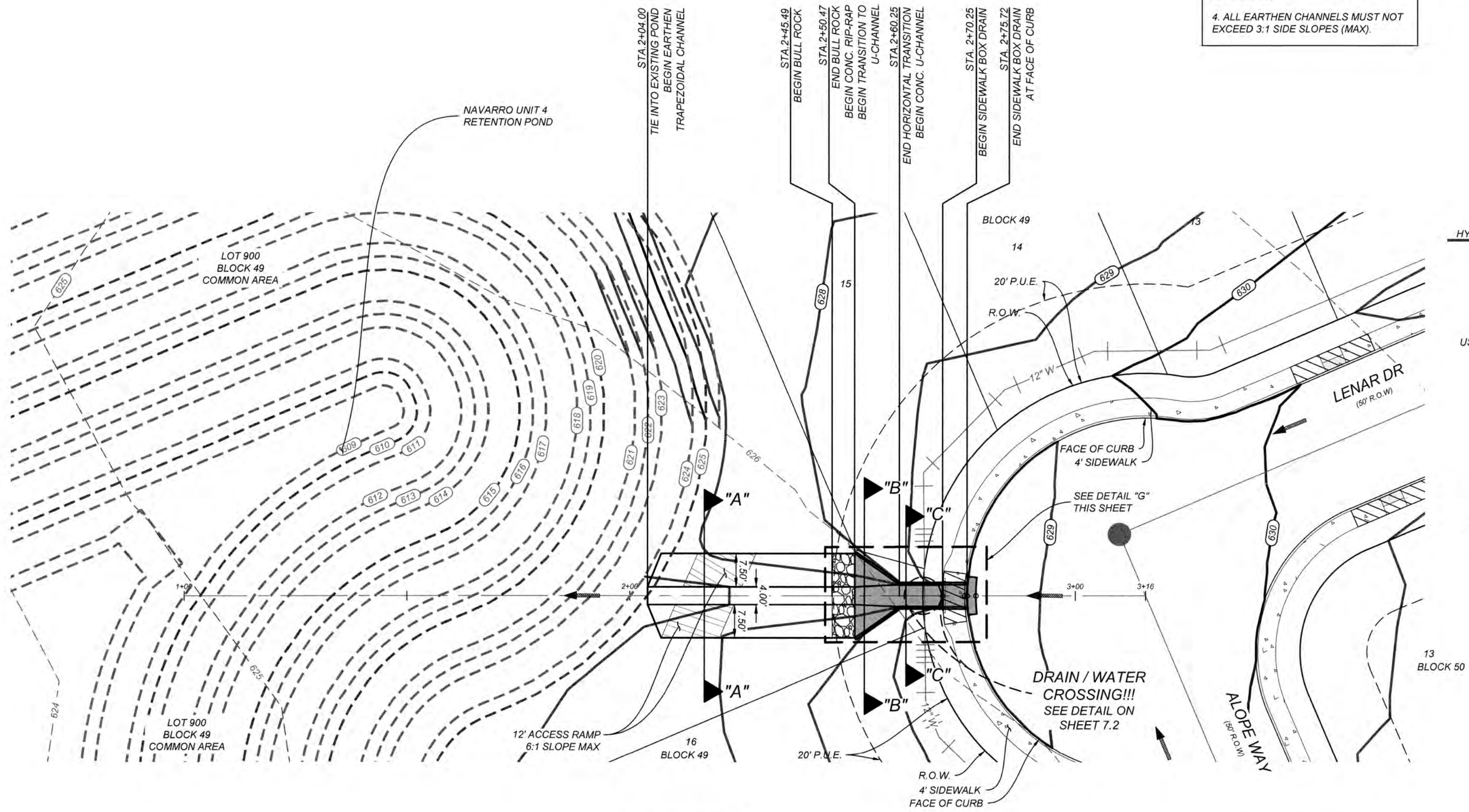
Nicholas Reynolds

ISSUE DATE

REVISIONS

K&W
ENGINEERS & SURVEYING
1623 N. 14th St., Suite 100
Phon: # (830) 220-5045 • Fax: # (830) 627-5097
TPE Firm # 5613 • TPLS Firm # 1012300





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TRENCH EXCAVATION SAFETY PROTECTION

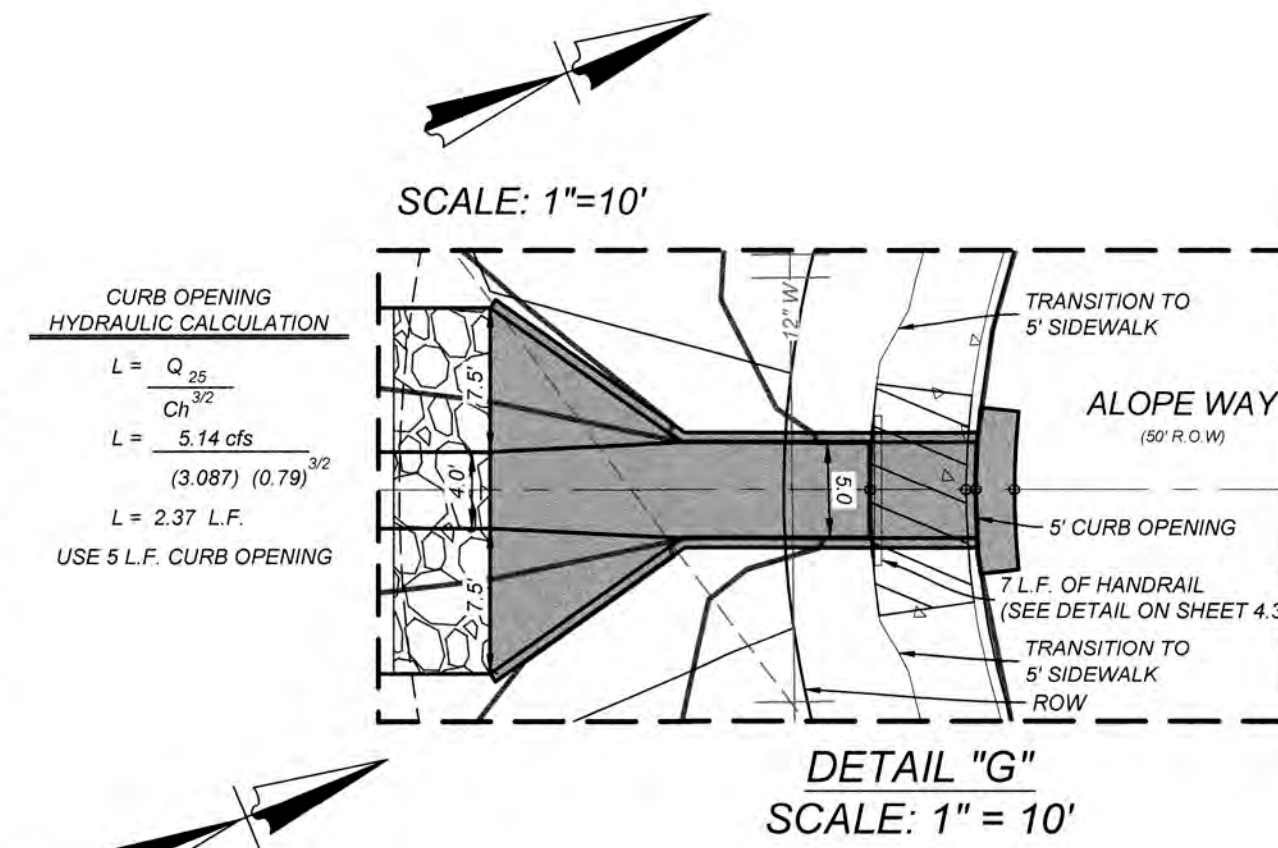
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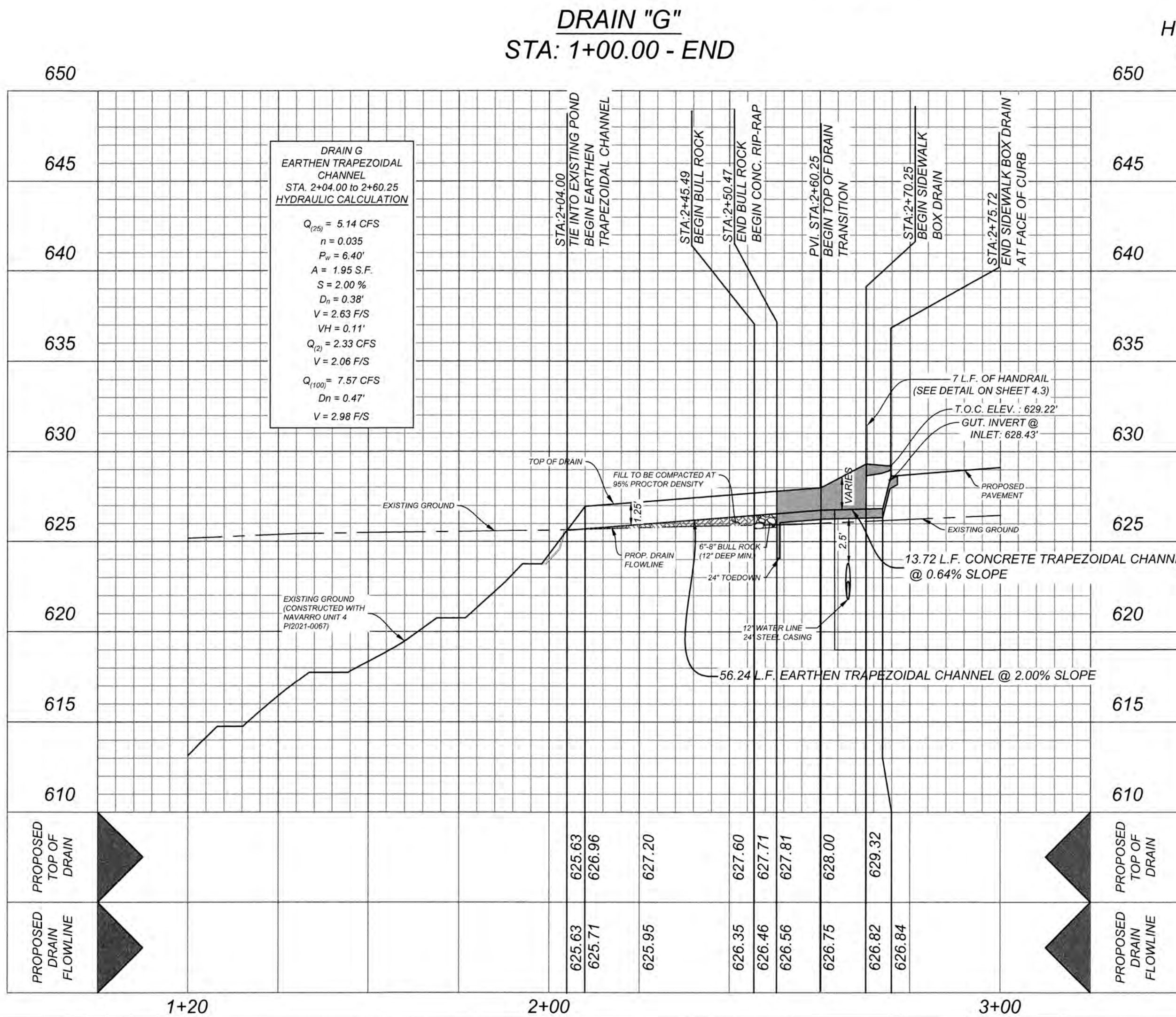
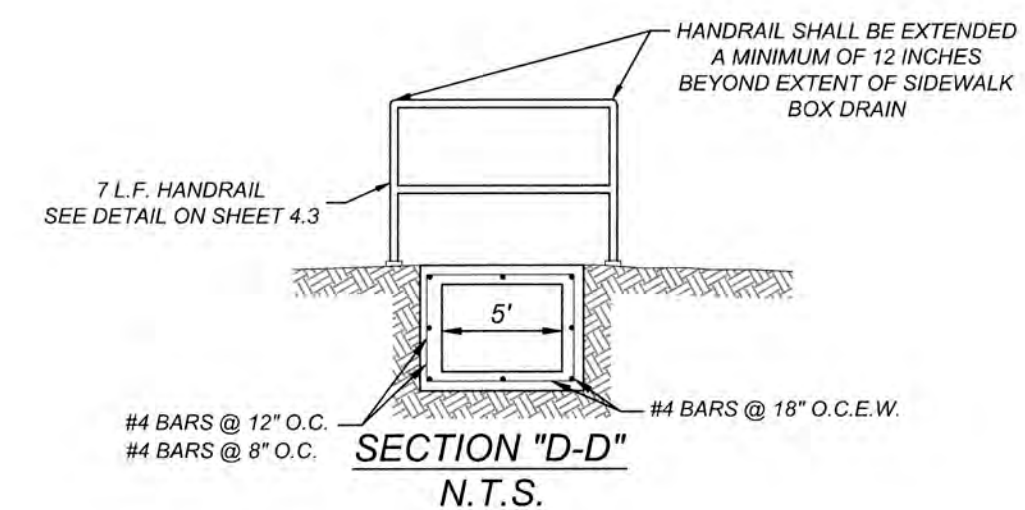
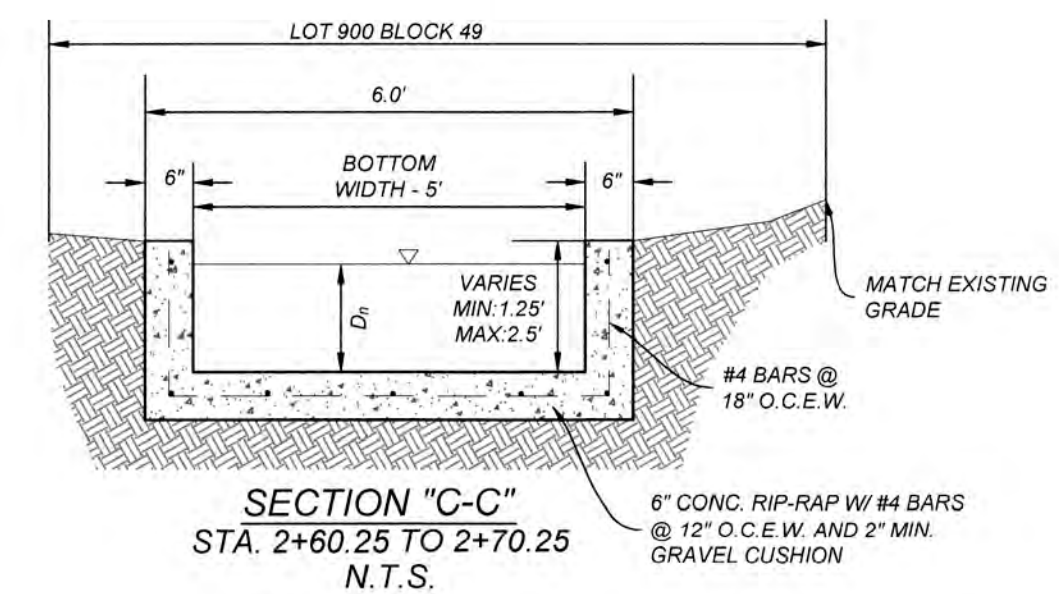
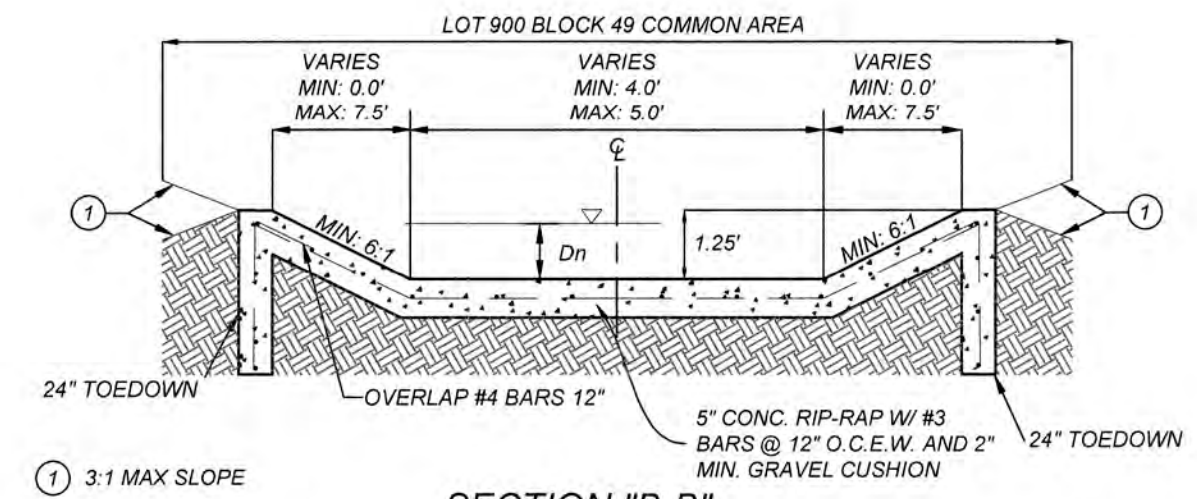
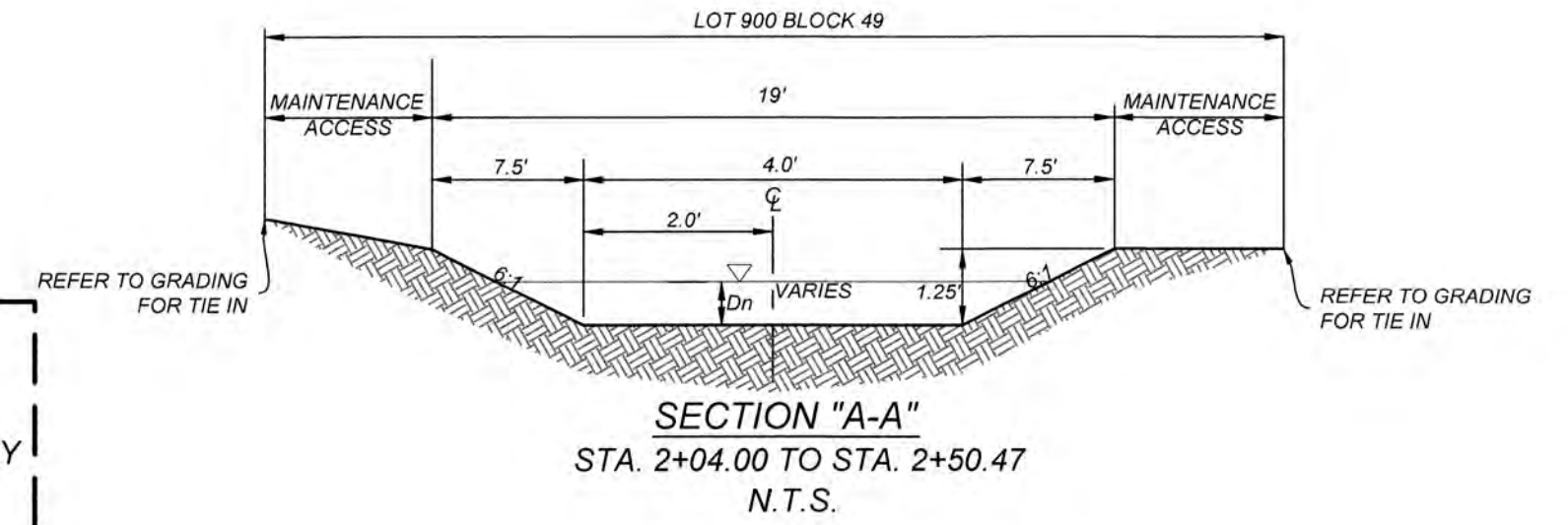
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LEGEND

- ← = FLOW ARROW
--- 715 --- = EXISTING CONTOUR
--- 713 --- = PROPOSED CONTOUR
--- 713 --- = ADJACENT UNIT PROPOSED CONTOUR



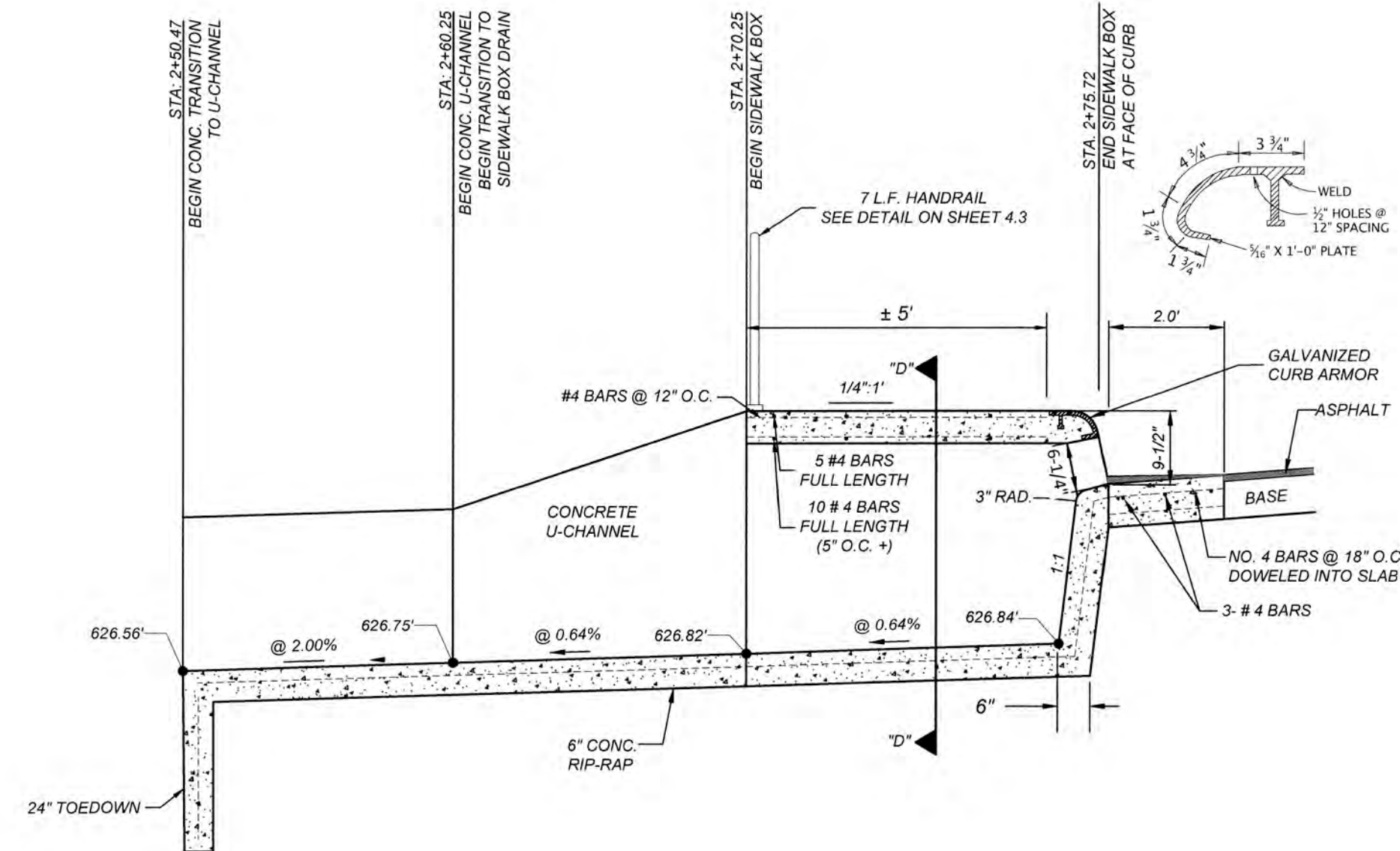
SCALE: 1"=20'



HORZ SCALE: 1" = 20'
VERT SCALE: 1" = 5'

DRAIN G
CONCRETE U-CHANNEL
STA. 2+60.25 TO END
HYDRAULIC CALCULATION

$Q_{(25)} = 5.14$ CFS
 $n = 0.015$
 $P_u = 5.62'$
 $A = 1.55$ S.F.
 $S = 0.64\%$
 $D_u = 0.31'$
 $V = 3.32$ F/S
 $VH = 0.17'$
 $Q_{(75)} = 2.33$ CFS
 $V = 2.45$ F/S
 $Q_{(100)} = 7.57$ CFS
 $D_n = 0.40'$
 $V = 3.79$ F/S



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
DRAIN G STA. 1+00 - END

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

4.12

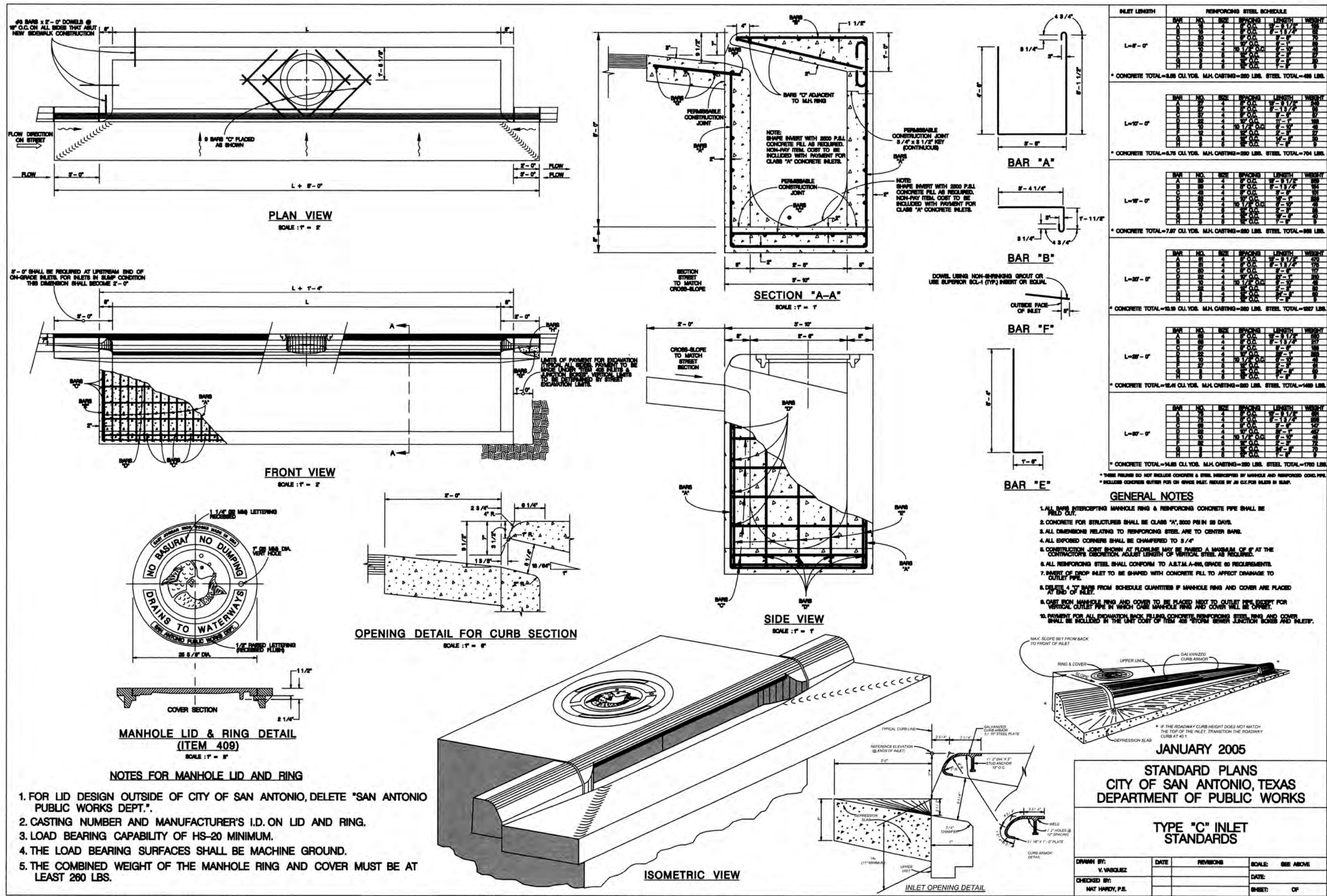


TABLE OF DIMENSIONS AND REINFORCING STEEL (Wings for one structure end)

Dimensions					Variable Reinforcing		Estimated Quantities per ft of Wing (2-wings)	Estimated Quantities per ft of Toe wall (1-toewall)
Maximum Height Hw	W	X	Y	Z	Bars J1	Bars J2	Reinft (Lb/ft) Conc (CY/ft)	Reinft (Lb/ft) Conc (CY/ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4 1'-0"	48.64 0.406
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4 1'-0"	49.31 0.424
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4 1'-0"	49.98 0.444
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4 1'-0"	53.32 0.462
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4 1'-0"	53.98 0.480
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4 1'-0"	55.77 0.532
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4 1'-0"	59.77 0.568
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4 1'-0"	63.45 0.632
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4 1'-0"	67.46 0.668
6'-0"	4'-4"	2'-0"	1'-10"	8"	#5	1'-0"	#5 1'-0"	80.67 0.748
6'-6"	4'-4"	2'-0"	1'-10"	8"	#5	1'-0"	#5 1'-0"	85.05 0.768
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5 1'-0"	92.15 0.864
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5 1'-0"	96.54 0.902
8'-0"	5'-6"	2'-6"	1'-10"	8"	#5	1'-0"	#5 1'-0"	139.04 0.962
8'-6"	5'-6"	2'-6"	1'-10"	8"	#5	1'-0"	#5 1'-0"	144.47 1.000
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	1'-0"	#5 1'-0"	156.93 1.136
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	1'-0"	#5 6"	196.27 1.234
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	1'-0"	#6 6"	230.13 1.438
12'-6"	7'-8"	3'-9"	2'-11"	11"	#6	1'-0"	#6 6"	263.41 1.592
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#6	1'-0"	#6 6"	340.72 1.804
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#6	1'-0"	#6 6"	432.94 2.046
15'-6"	9'-4"	4'-10"	3'-8"	1'-6"	#6	1'-0"	#6 7"	489.52 2.302
16'-0"	9'-11"	5'-0"	3'-11"	1'-9"	#6	1'-0"	#6 7"	505.72 2.448

TABLE OF WINGWALL REINFORCING (2-wings)

Bar	Size	No.	Spa
D1	#6	1	1'-0"
D2	#6	1	1'-0"
E1	#4	1	1'-0"
F	#4	1	1'-0"
G	#4	1	8"
M1	#4	4	8"
P	#4	1	1'-0"
V	#4	1	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	1	1'-0"
M2	#4	2	—
E2	#4	1	1'-0"

WING DIMENSION FORMULAS:

(All values are in feet.)

$Hw = H + T + C$
 $Lw = (Hw) (SL) + \cosine (R)$ for Type PW-1
 $= (Hw - 1') (SL) + \cosine (R)$ for Type PW-2 and $Hw \geq 4'$
 $= (Hw - 0.7') (SL) + \cosine (R)$ for Type PW-2 and $Hw < 4'$

For cast-in-place curbs:
 $Lw = (N) (S) + (N - 1) (U) + \cosine (R)$

For precast curbs:
 $Lw = [(N) (2 U + S) + (N - 1) (0.5 U)] + \cosine (R)$
 Total Wingwall Area (sq ft) = $S (Lw)$
 $= (2Hw)(Lw)$ for Type PW-1
 $= (2Hw)(Lw) - 1.5 S (F)$ for Type PW-2 and $Hw \geq 4'$
 $= (2Hw)(Lw) - 1.5 S (F)$ for Type PW-2 and $Hw < 4'$

Hw = Height of wingwall
 Lw = Length of wingwall
 L = Culvert barrel length
 N = Number of culvert spans
 SL = Channel slope ratio (horizontal:vertical, usual value is 2:1)
 S = Culvert skew

See applicable box culvert standard sheet for S, H, T, and C values.

DESIGNER NOTES:

- 1' Skew = 0°
- 2' At discharge end, chamfer may be 3/4" minimum.
- 3' For 15' skew = 1"
- 4' For 30' skew = 1"
- 5' For 45' skew = 3"
- 6' 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.
- 7' Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
- 8' Extend Bars E2 1'-6" minimum into the wingwall footing.
- 9' Lap Bars M1 1'-6" minimum with Bars M2.
- 10' Place Bars G as shown, equally spaced at 8" maximum. Provide at least two bars of Bars G per wing.
- 11' 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than +0, refer to the Extended Curb Details (ECD) standard sheet. For structures with 7633 or 7631SL bridge rail, refer to the Mounting Details. For 7631 or 7631SL Bars RAC3-CR standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than 7631 or 7631SL.
- 12' For vehicle safety, the following requirements must be met:
 - For structures with bridge rail, construct curbs no more than 3" above finished grade.
 - For structures with bridge rail, construct curbs flush with finished grade.
- 13' 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 the wingwall.
- 14' 1'-0" typical, 2'-3" when Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
- 15' 3'-0" for Hw < 4'.
- 16' 6" for Hw < 4'.

DESIGNER NOTES:

Type PW-1 can be used for all applications and must be used if calling it is to be mounted to the wingwall. Type PW-2 can only be used for applications without a railing mounted to the wingwall.

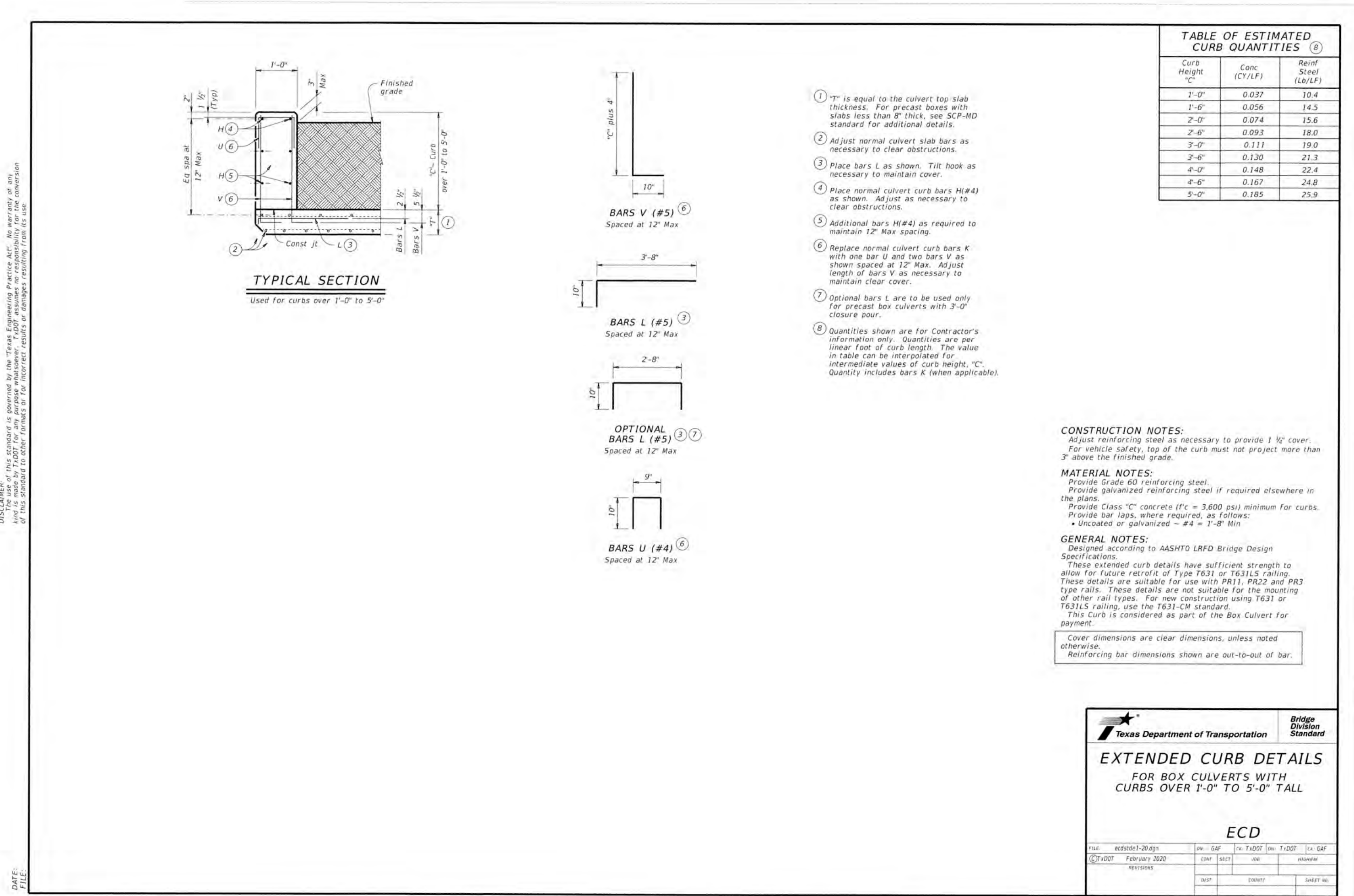
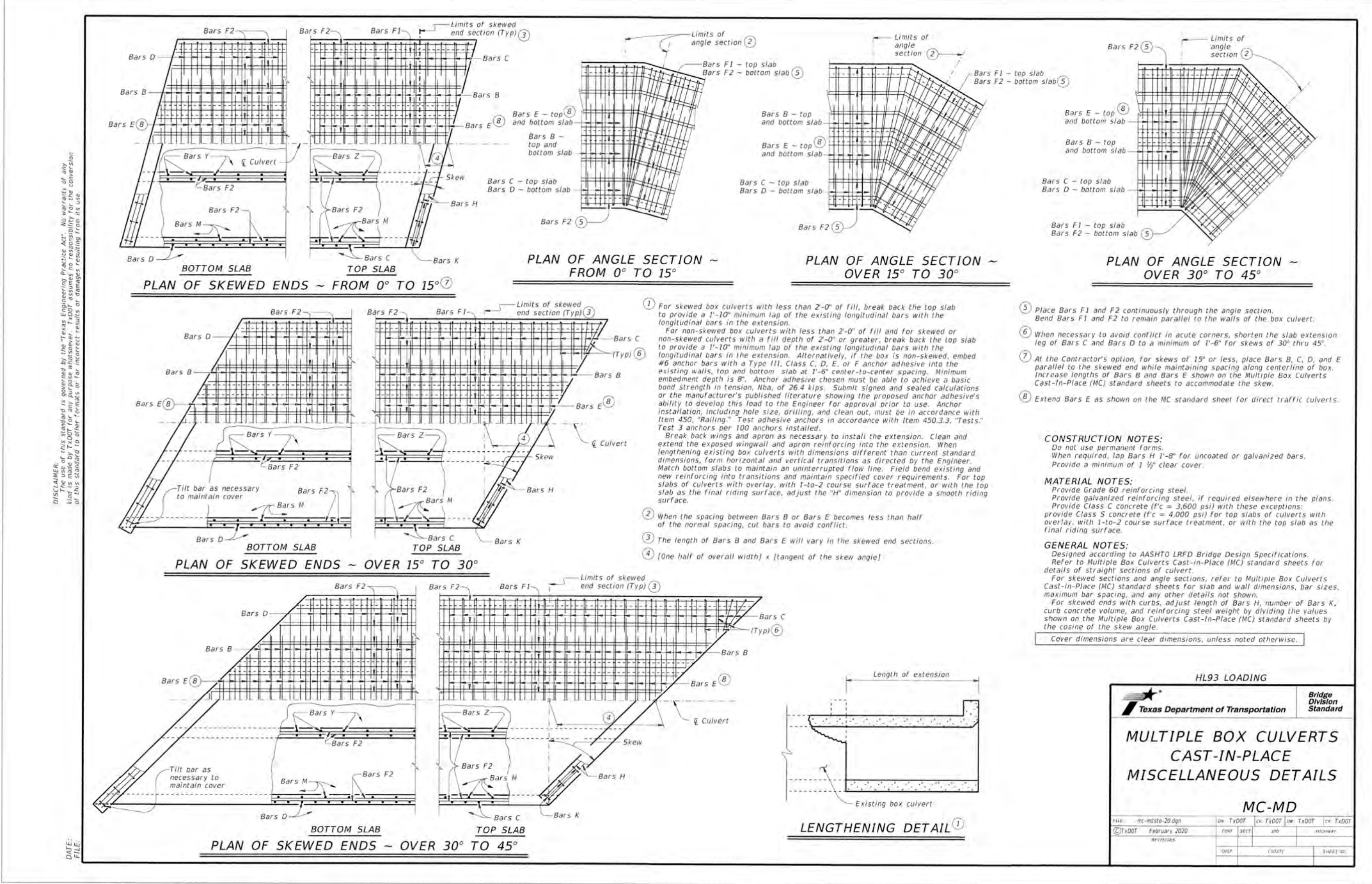
MATERIAL NOTES:

Provide Class C Concrete (fc=3,600 psi).
 Provide Grade 60 reinforcing steel. If required elsewhere in the plans.

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications.
 Depth of toe walls 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.

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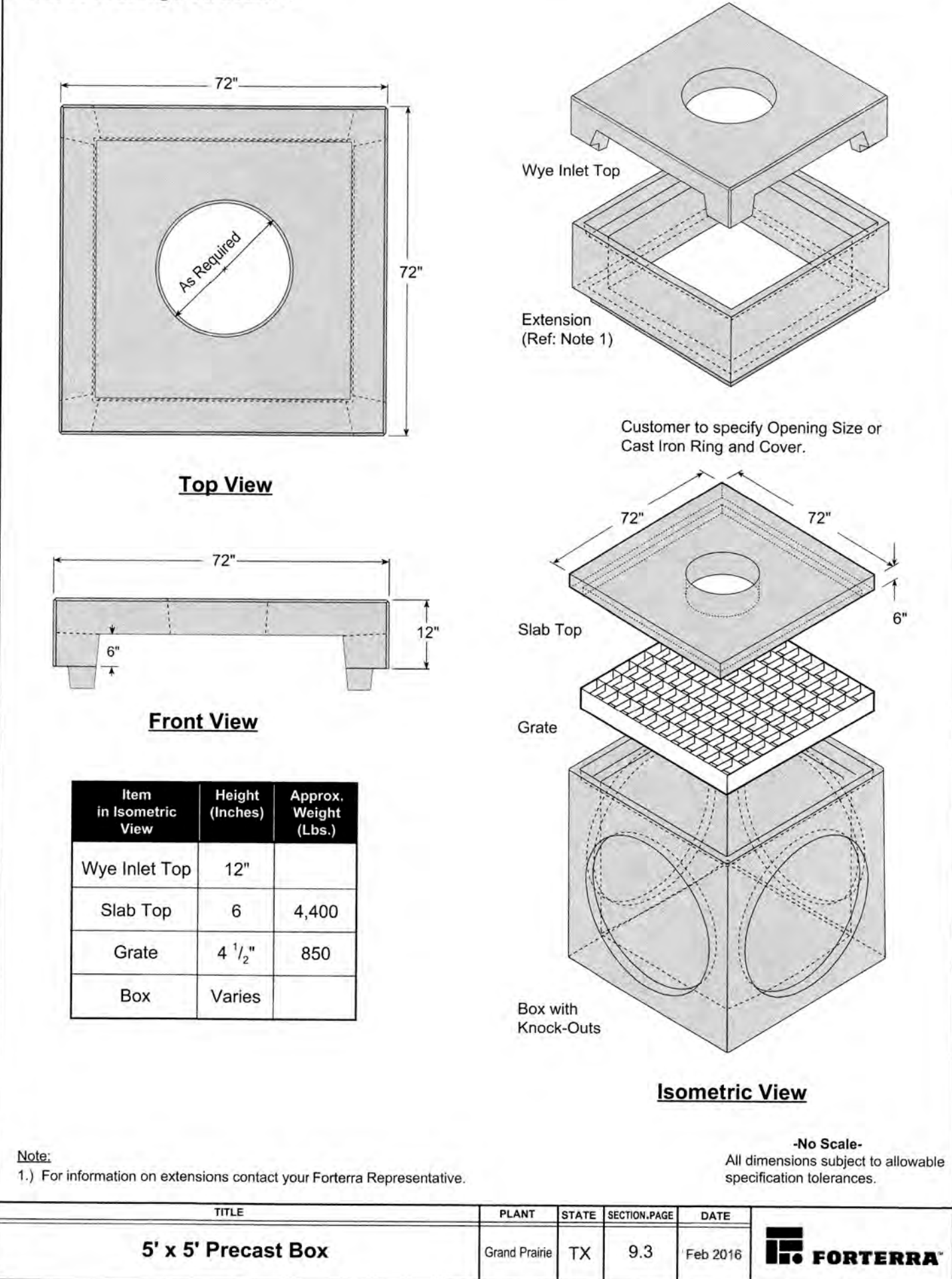
DATE: 07/12/2023

DISCLAIMER: This drawing is prepared by the Engineer and is intended to be used in accordance with the specifications and standards of the State of Texas. The Engineer is not responsible for any errors or omissions in this drawing or for any consequences arising from its use. The user of this drawing is advised to verify all dimensions and quantities before construction.

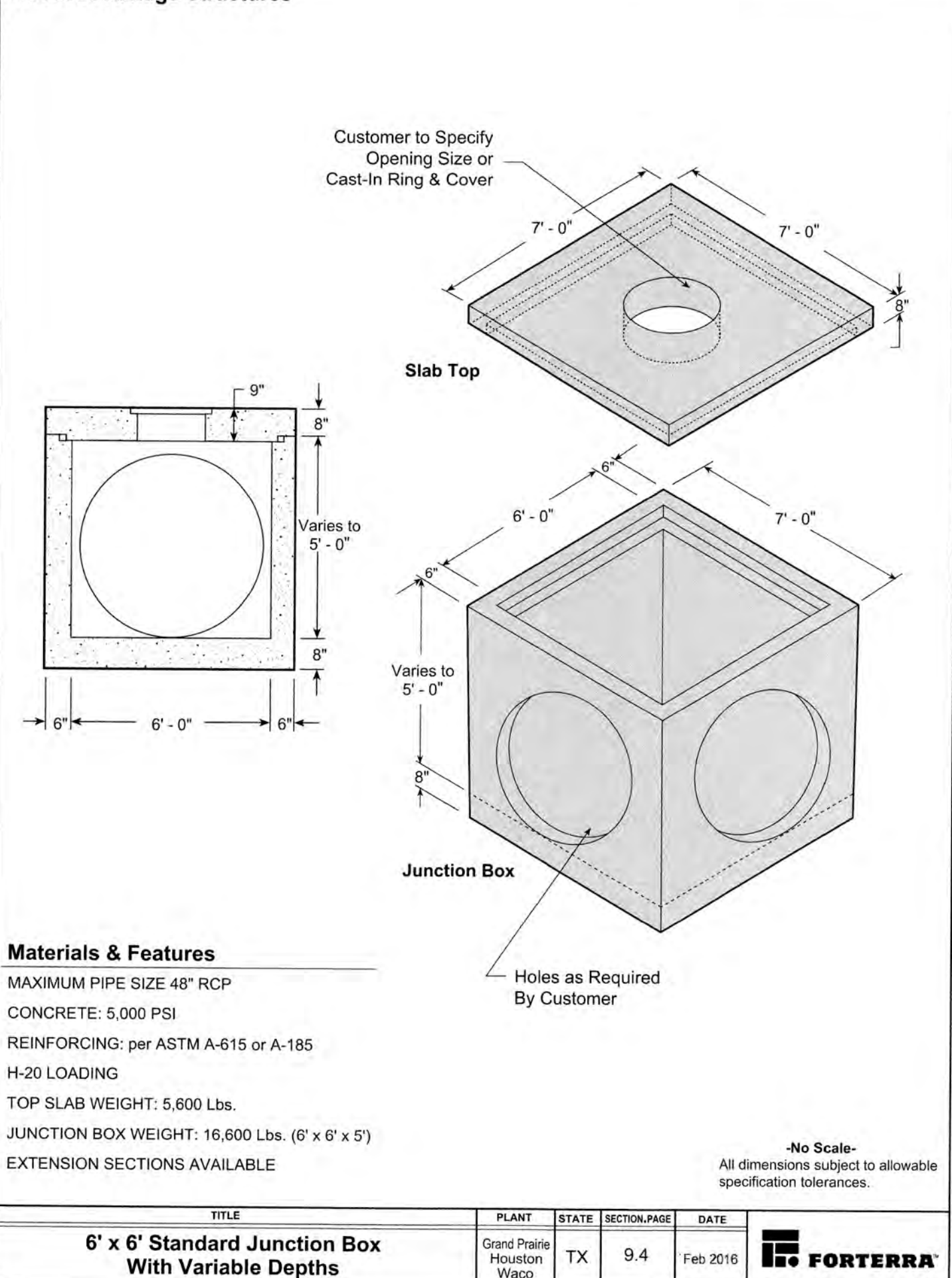
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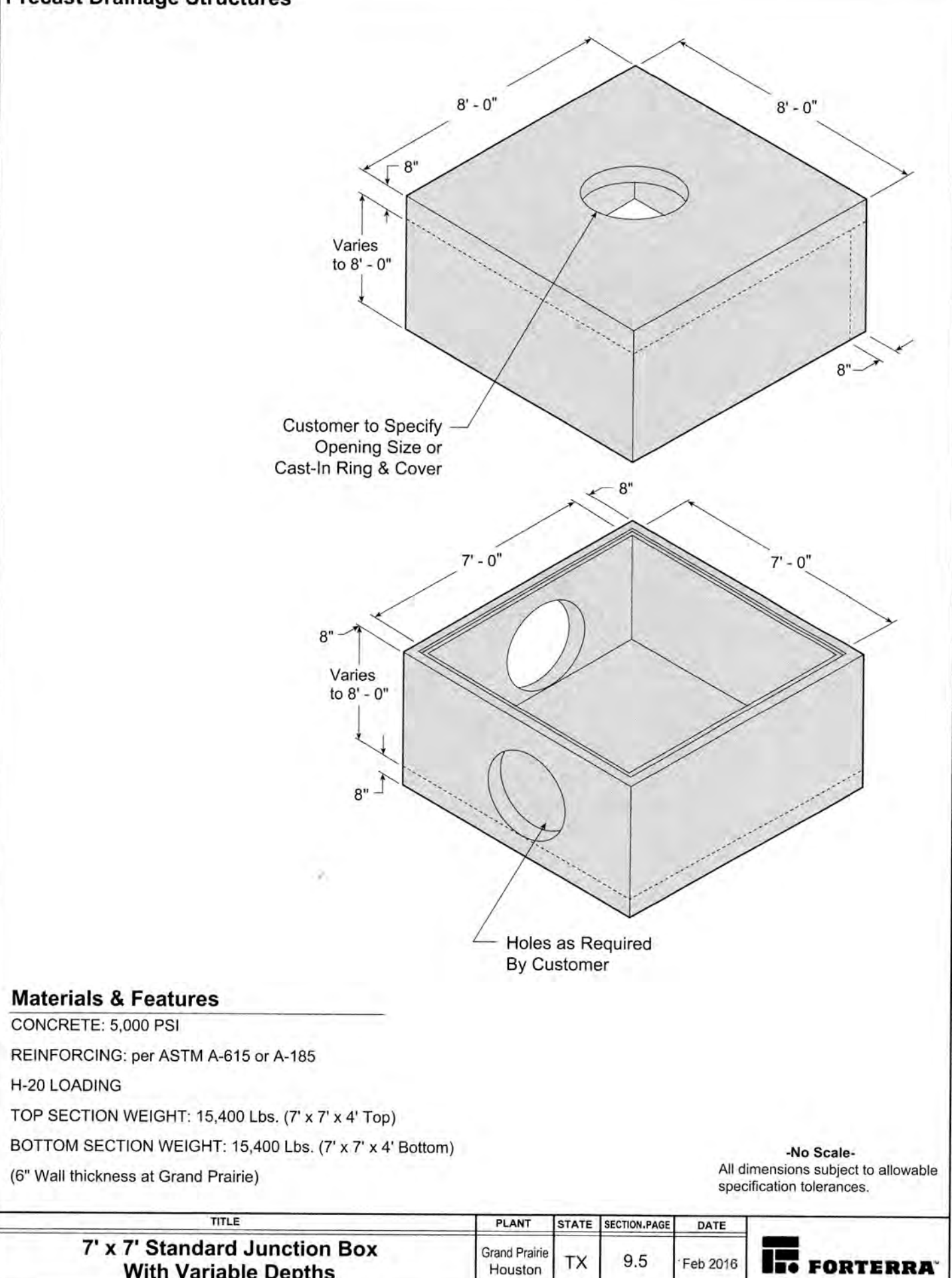
Precast Drainage Structures



Precast Drainage Structures



Precast Drainage Structures



Product Data
PYRAMAT® 25 TRM

PYRAMAT® 25 turf reinforcement mat (TRM) is a three-dimensional, lofty, woven polypropylene geotextile that is available in green which is specially designed for erosion control applications on steep slopes and vegetated waterways. The matrix is composed of polypropylene monofilament yarns featuring X3® technology woven into a uniform configuration of resilient pyramid-like projections. The material exhibits very high interlock and reinforcement capacity with both soil and root systems, demonstrates superior UV resistance, and enhances seedling emergence.

PYRAMAT® 25 conforms to the property values listed below¹ and is manufactured at a Propex facility having achieved ISO 9001:2008 certification. Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP).

PROPERTY	TEST METHOD	ENGLISH	METRIC
ORIGIN OF MATERIALS			
% U.S. Manufactured Inputs		100%	100%
% U.S. Manufactured		100%	100%
PHYSICAL			
Mass/Unit Area ²	ASTM D-6566	7.5 oz/yd ²	254 g/m ²
Thickness ²	ASTM D-6525	0.25 in	6.4 mm
Light Penetration (% Passing) ³	ASTM D-6567	35%	35%
Color	Visual	Green or Tan	
MECHANICAL			
Tensile Strength ²	ASTM D-6818	2000 x 1800 lbs/ft	29.2 x 26.3 kN/m
Elongation ²	ASTM D-6818	20 x 20 %	20 x 20 %
Resiliency ²	ASTM D-6524	70%	70%
Flexibility ⁴	ASTM D-6575	0.195 in-lb	225.00 mg-cm
ENDURANCE			
UV Resistance % Retained at 1,000 hrs ⁴	ASTM D-4355	90%	90%
UV Resistance % Retained at 3,000 hrs ⁴	ASTM D-4355	90%	90%
PERFORMANCE			
Velocity (Vegetated) ^{4,5}	Large Scale	20 ft/sec	6.1 m/sec
Shear Stress (Vegetated) ^{4,5}	Large Scale	12 lb/ft ²	575 Pa
Manning's n (Unvegetated) ^{4,6}	Calculated	0.028	0.028
Seedling Emergence ⁴	ASTM D-7322	255%	255%
ROLL SIZES			
		8.5 ft x 120 ft	2.6 m x 36.6 m
		15.0 ft x 120 ft	4.6 m x 36.6 m

NOTES:
1. The property values listed above are effective 02/04/2017 and are subject to change without notice.
2. Minimum average test values (MAV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
3. Maximum Average Roll Value (MaxRV), calculated as the typical plus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any sample taken during quality assurance testing will meet to the value reported.
4. Typical Value.
5. Maximum permeable velocity and shear stress has been obtained through vegetated testing programs featuring specific soil types, vegetation classes, flow conditions, and failure criteria. These conditions may not be relevant to every project nor are they replicated by other manufacturers. Please contact Propex for further information.
6. Calculated as typical values from large-scale flexible channel lining test programs with a flow depth of 6 to 12 inches.

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GEOSOLUTIONS

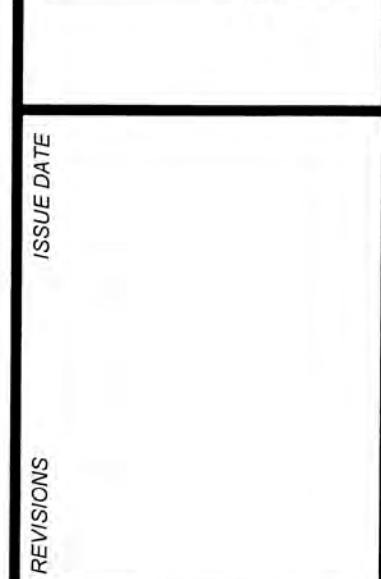
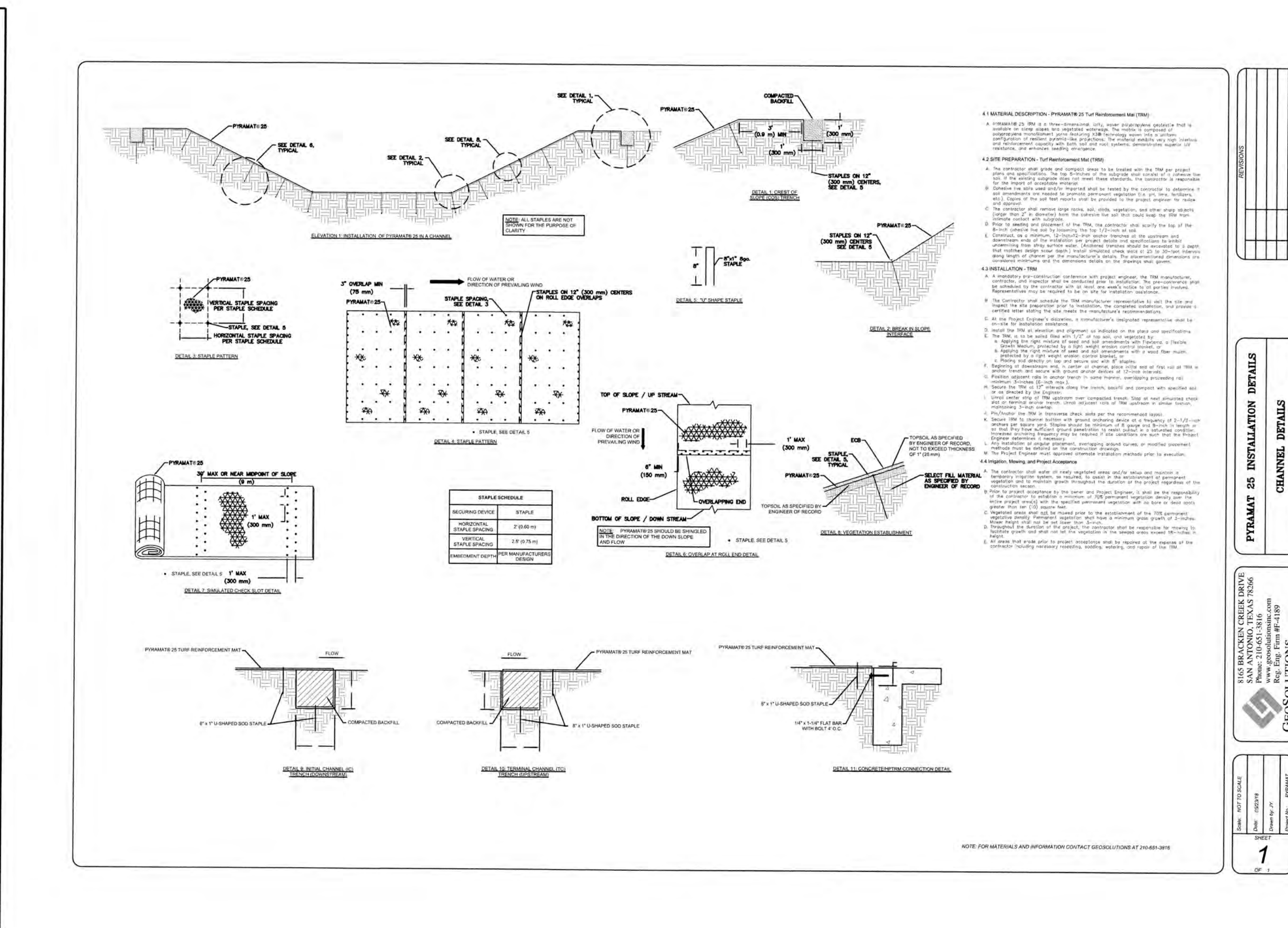
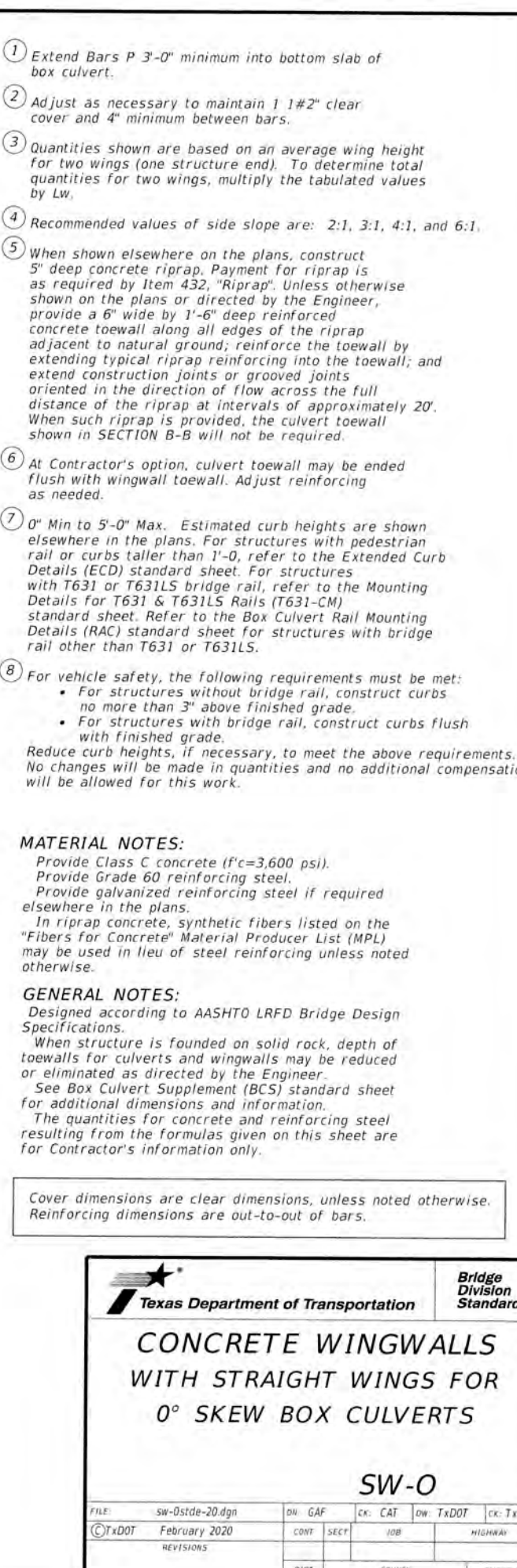
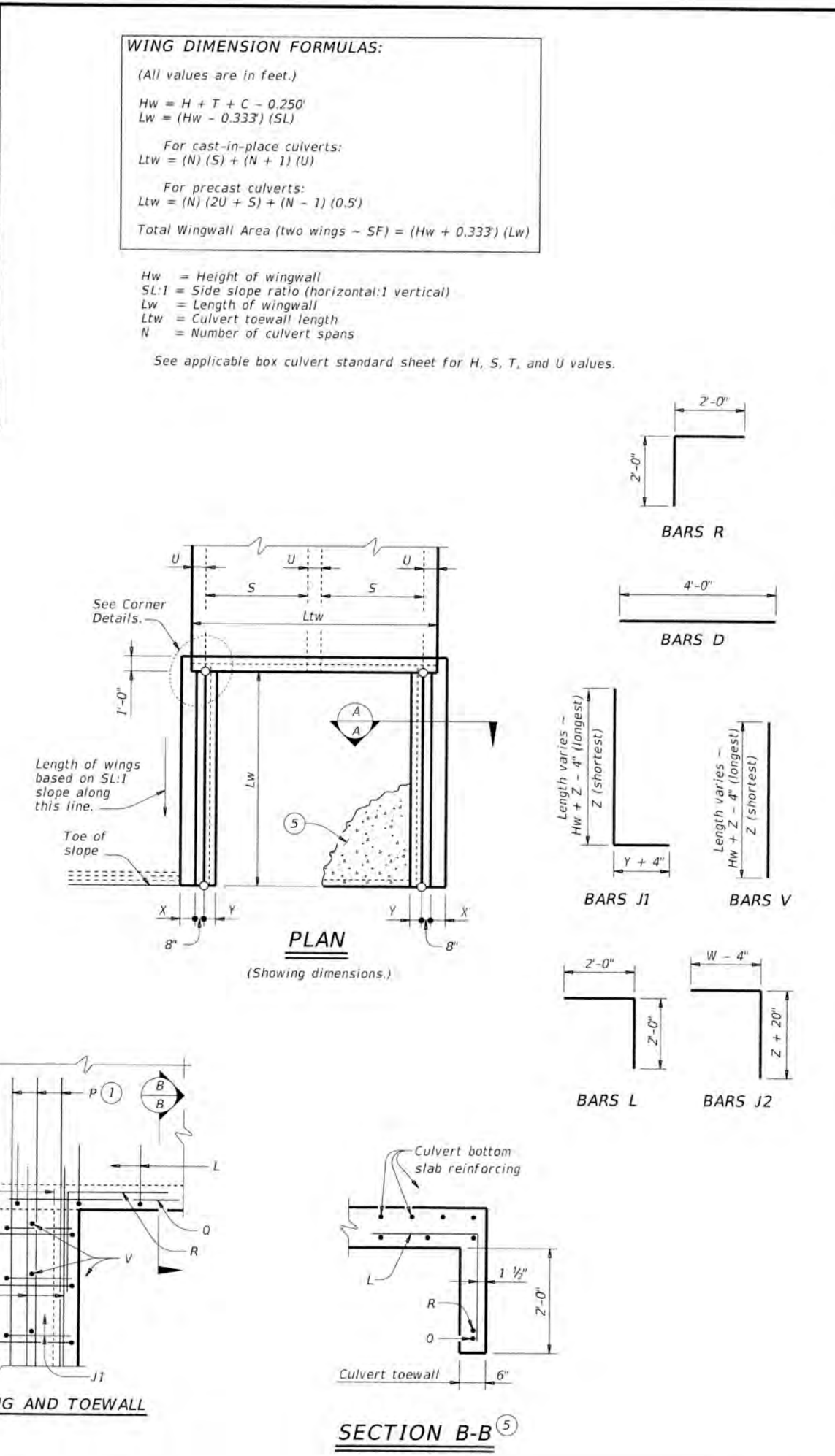
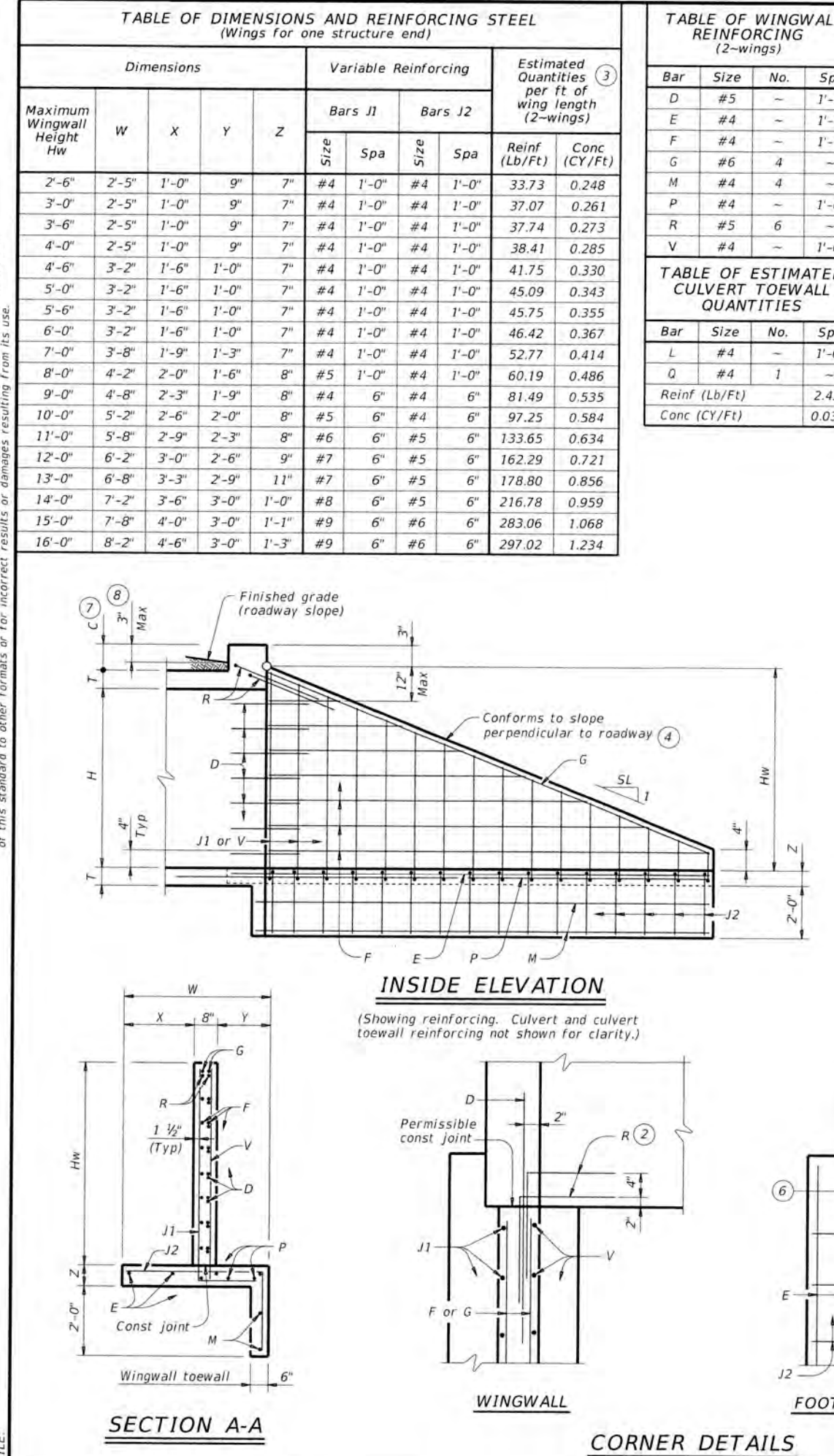
ENGINEERED EARTH ARMORING SOLUTIONS™
www.propexglobal.com

Propex Operating Company, LLC - 4019 Industry Drive - Chattanooga, TN 37416 - ph 800 621 1273 - ph 423 855 1466

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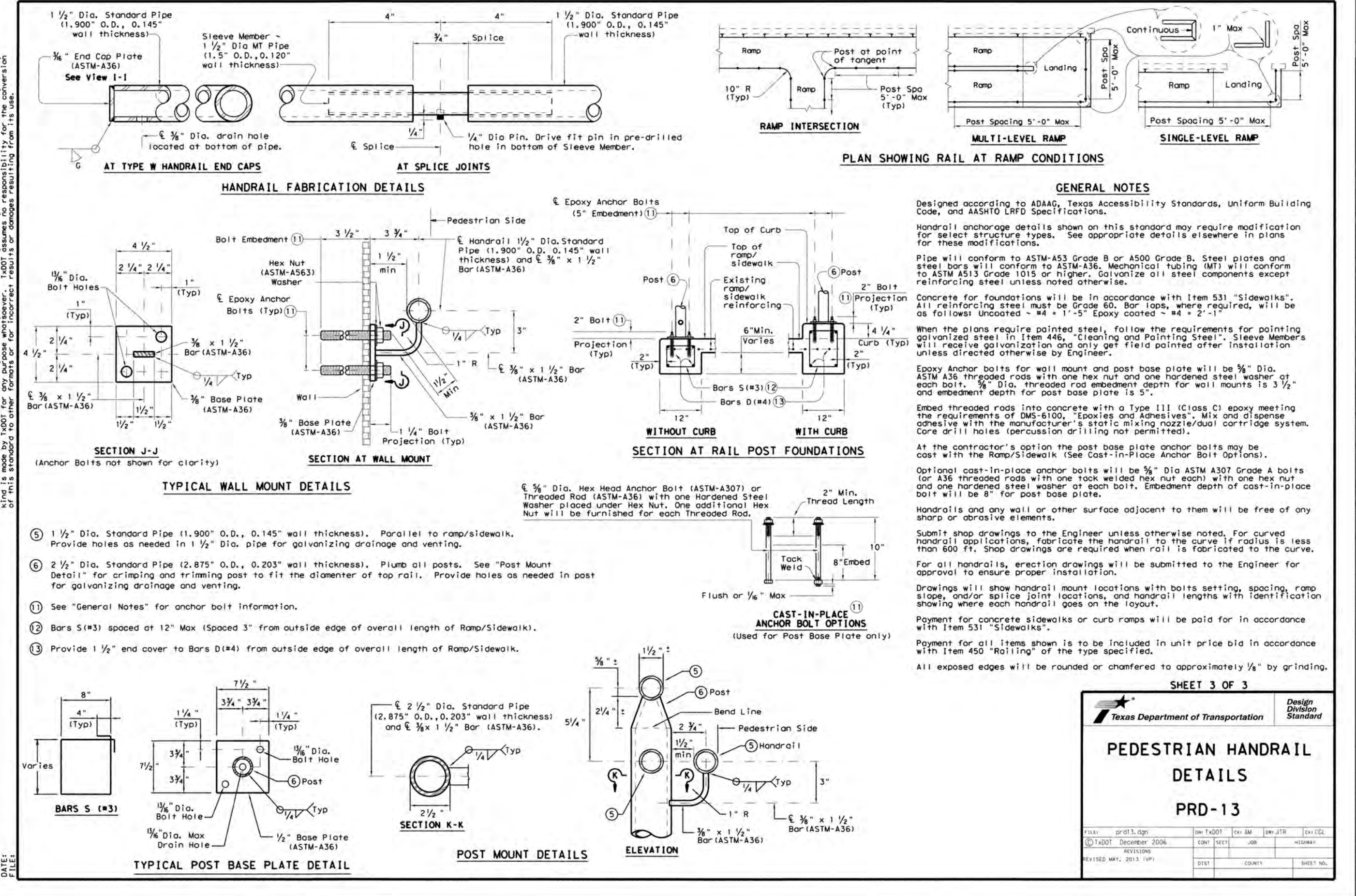
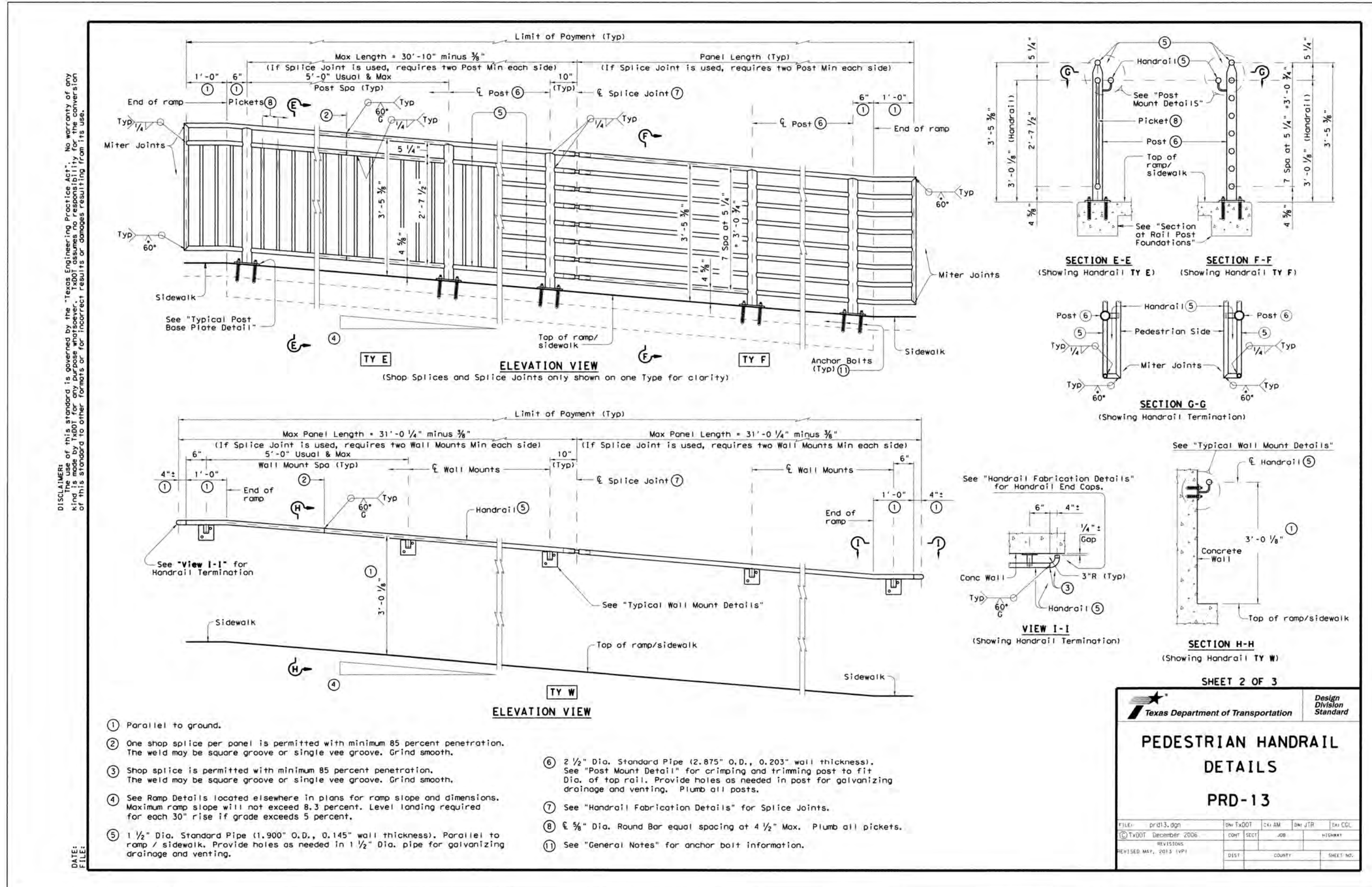
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NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
DRAIN DETAIL SHEET

JOB NO: 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER: 4.16



Date: Jan 30, 2024, 7:55am User: ID: nceapp
File: U:\Projects\314 228\19\Design\Civil\Drawings\4.17 CHANNEL MAINTENANCE PLAN.dwg

- NOTE:
1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
 2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
 3. ALL DRAINAGE EASEMENTS WILL BE OWNED AND MAINTAINED BY THE DEVELOPER.
 4. ALL EARTHEN CHANNELS MUST NOT EXCEED 3:1 SIDE SLOPES (MAX).

TRENCH EXCAVATION SAFETY PROTECTION

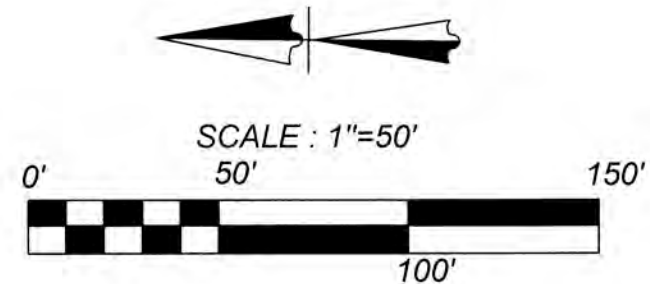
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL, DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND

-  = MAINTENANCE ACCESS RAMP (PERMEABLE)
-  = MAINTENANCE ACCESS (PERMEABLE)
-  = EXISTING MAINTENANCE ACCESS (PERMEABLE)



DRAINAGE INFRASTRUCTURE AND CHANNEL MAINTENANCE PLAN

PROJECT: NAVARRO SUBDIVISION - UNIT 8

LOCATION: APPROXIMATELY 4,000'-FT SOUTH ALONG SH 123 FROM ITS INTERSECTION WITH FM 758

THE FOLLOWING GUIDELINES ARE ESTABLISHED FOR THE MAINTENANCE AND INSPECTION OF THE DRAINAGE INFRASTRUCTURE AND CHANNELS CONSTRUCTED FOR THE ABOVE REFERENCED PROJECT.

INSPECTIONS: THE DRAINAGE INFRASTRUCTURE AND CHANNELS WITHIN THE ABOVE REFERENCED SUBDIVISION SHOULD BE INSPECTED AT LEAST ONCE A QUARTER TO EVALUATE THAT IT IS FUNCTIONING PROPERLY. ONE OF THESE INSPECTIONS SHOULD OCCUR DURING OR IMMEDIATELY FOLLOWING A RAINFALL EVENT.

SEDIMENT REMOVAL: ALL SEDIMENT ACCUMULATION SHALL BE REMOVED FROM OUTLET STRUCTURES AND DRAINAGE PATHWAYS IMMEDIATELY DOWNSTREAM OF DRAINAGE STRUCTURES AT LEAST ONCE BI-ANNUALLY OR ANYTIME SEDIMENT ACCUMULATION IS GREATER THAN 3 INCHES OF DEPTH. WHEN SEDIMENT ACCUMULATES WITHIN THE BASIN TO WITHIN 10% OF THE TOTAL BASIN VOLUME, THE SEDIMENT IS TO BE REMOVED AND DISPOSED OF PROPERLY. AFTER SEDIMENT REMOVAL, THE BASIN IS TO BE RE-GRADED TO ENSURE IT IS FUNCTIONING PROPERLY.

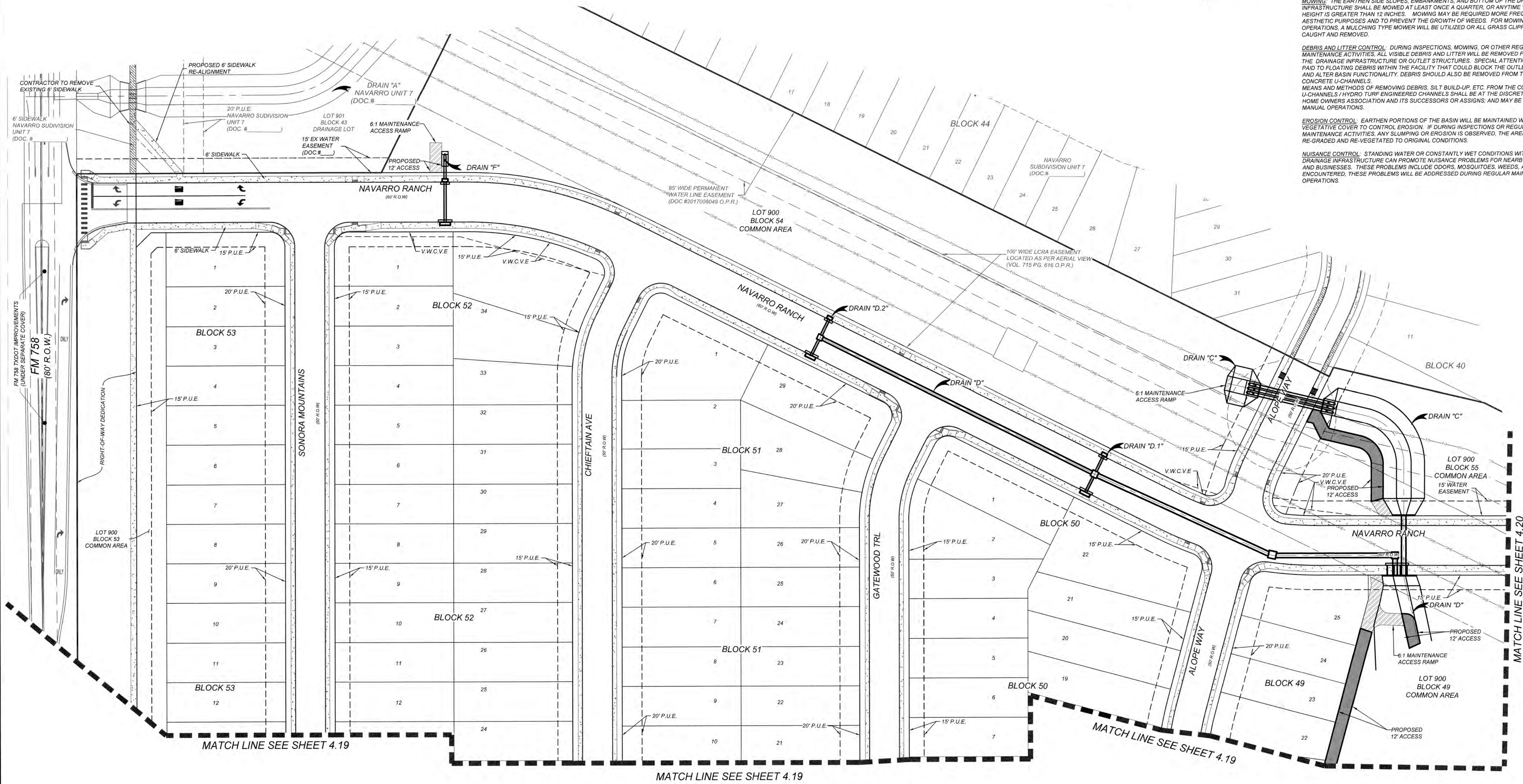
MOWING: THE EARTHEN SIDE SLOPES, EMBANKMENTS, AND BOTTOM OF THE DRAINAGE INFRASTRUCTURE SHALL BE MOWED AT LEAST ONCE A QUARTER, OR ANYTIME VEGETATION HEIGHT IS GREATER THAN 12 INCHES. MOWING MAY BE REQUIRED MORE FREQUENTLY FOR AESTHETIC PURPOSES AND TO PREVENT THE GROWTH OF WEEDS. FOR MOWING OPERATIONS: A MULCHING TYPE MOWER WILL BE UTILIZED OR ALL GRASS CLIPPINGS WILL BE CAUGHT AND REMOVED.

DEBRIS AND LITTER CONTROL: DURING INSPECTIONS, MOWING, OR OTHER REGULAR MAINTENANCE ACTIVITIES, ALL VISIBLE DEBRIS AND LITTER WILL BE REMOVED FROM WITHIN THE DRAINAGE INFRASTRUCTURE OR OUTLET STRUCTURES. SPECIAL ATTENTION WILL BE PAID TO FLOATING DEBRIS WITHIN THE FACILITY THAT COULD BLOCK THE OUTLET STRUCTURE AND ALTER BASIN FUNCTIONALITY. DEBRIS SHOULD ALSO BE REMOVED FROM THE INSIDE OF CONCRETE U-CHANNELS.

MEANS AND METHODS OF REMOVING DEBRIS, SILT BUILD-UP, ETC. FROM THE CONCRETE U-CHANNELS / HYDRO TURF ENGINEERED CHANNELS SHALL BE AT THE DISCRETION OF THE HOME OWNERS ASSOCIATION AND ITS SUCCESSORS OR ASSIGNS, AND MAY BE LIMITED TO MANUAL OPERATIONS.

EROSION CONTROL: EARTHEN PORTIONS OF THE BASIN WILL BE MAINTAINED WITH VEGETATIVE COVER TO CONTROL EROSION. IF DURING INSPECTIONS OR REGULAR MAINTENANCE ACTIVITIES, ANY SLUMPING OR EROSION IS OBSERVED, THE AREA WILL BE RE-GRADED AND RE-VEGETATED TO ORIGINAL CONDITIONS.

NUISANCE CONTROL: STANDING WATER OR CONSTANTLY WET CONDITIONS WITHIN THE DRAINAGE INFRASTRUCTURE CAN PROMOTE NUISANCE PROBLEMS FOR NEARBY RESIDENTS AND BUSINESSES. THESE PROBLEMS INCLUDE ODORS, MOSQUITOES, WEEDS, AND LITTER. IF ENCOUNTERED, THESE PROBLEMS WILL BE ADDRESSED DURING REGULAR MAINTENANCE OPERATIONS.



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

CHANNEL MAINTENANCE PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA

SHEET NUMBER:

4.18

NOTE

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TRENCH EXCAVATION SAFETY PROTECTION

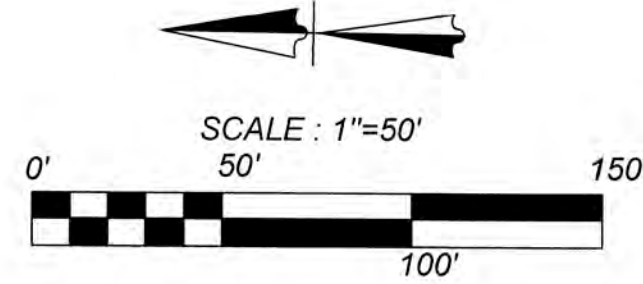
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DRAINAGE INFRASTRUCTURE AND CHANNEL MAINTENANCE PLAN

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LOCATION: APPROXIMATELY 4,000' FT SOUTH ALONG SH 123 FROM ITS INTERSECTION WITH FM 758

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INSPECTIONS: THE DRAINAGE INFRASTRUCTURE AND CHANNELS WITHIN THE ABOVE REFERENCED SUBDIVISION SHOULD BE INSPECTED AT LEAST ONCE A QUARTER TO EVALUATE THAT IT IS FUNCTIONING PROPERLY. ONE OF THESE INSPECTIONS SHOULD OCCUR DURING OR IMMEDIATELY FOLLOWING A RAINFALL EVENT.

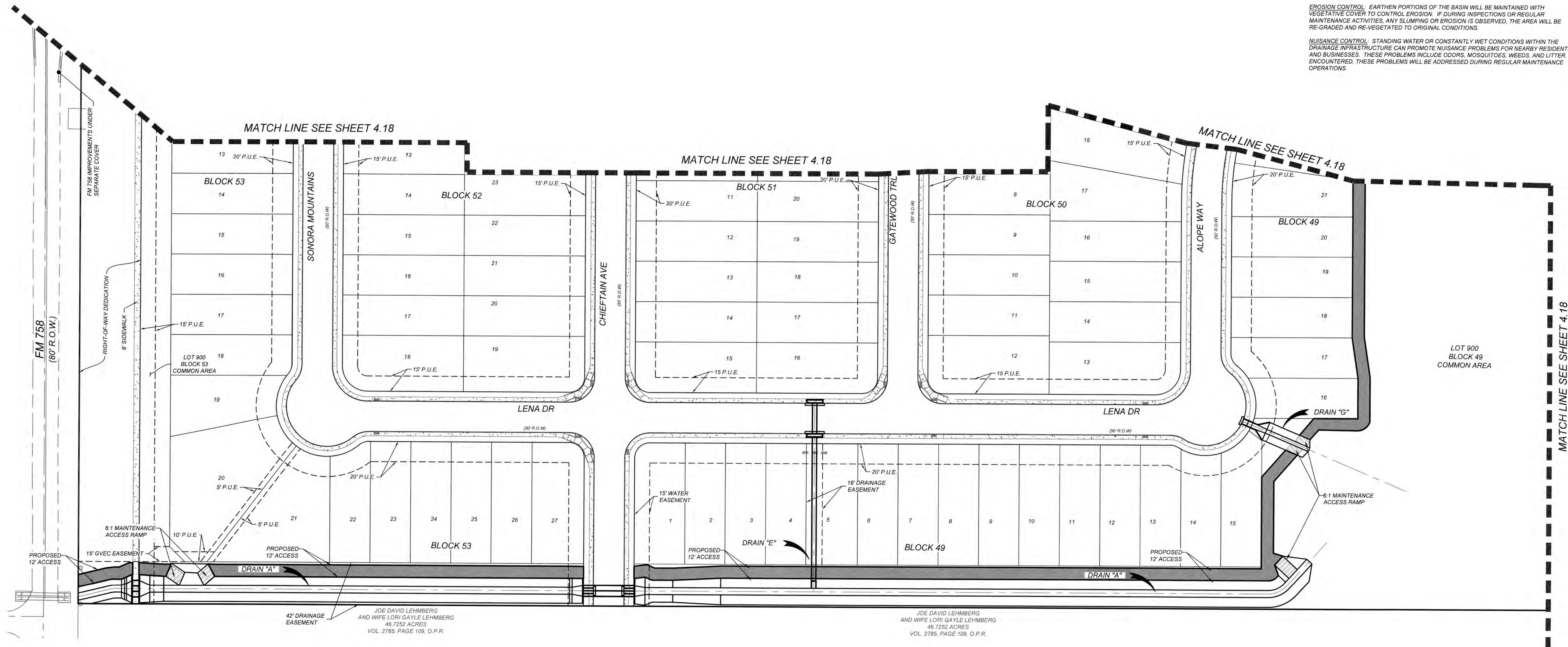
SEDIMENT REMOVAL: ALL SEDIMENT ACCUMULATION SHALL BE REMOVED FROM OUTLET STRUCTURES AND DRAINAGE PATHWAYS IMMEDIATELY DOWNSTREAM OF DRAINAGE STRUCTURES AT LEAST ONCE BI-ANNUALLY OR ANYTIME SEDIMENT ACCUMULATION IS GREATER THAN 3 INCHES OF DEPTH. WHEN SEDIMENT ACCUMULATES WITHIN THE BASIN TO WITHIN 10% OF THE TOTAL BASIN VOLUME, THE SEDIMENT IS TO BE REMOVED AND DISPOSED OF PROPERLY. AFTER SEDIMENT REMOVAL, THE BASIN IS TO BE RE-GRADED TO ENSURE IT IS FUNCTIONING PROPERLY.

MOWING: THE EARTHEN SIDE SLOPES, EMBANKMENTS, AND BOTTOM OF THE DRAINAGE INFRASTRUCTURE SHALL BE MOWED AT LEAST ONCE A QUARTER, OR ANYTIME VEGETATION HEIGHT IS GREATER THAN 12 INCHES. MOWING MAY BE REQUIRED MORE FREQUENTLY FOR AESTHETIC PURPOSES AND TO PREVENT THE GROWTH OF WEEDS. FOR MOWING OPERATIONS, A MULCHING TYPE MOWER WILL BE UTILIZED OR ALL GRASS CLIPPINGS WILL BE CAUGHT AND REMOVED.

DEBRIS AND LITTER CONTROL: DURING INSPECTIONS, MOWING, OR OTHER REGULAR MAINTENANCE ACTIVITIES, ALL VISIBLE DEBRIS AND LITTER WILL BE REMOVED FROM WITHIN THE DRAINAGE INFRASTRUCTURE OR OUTLET STRUCTURES. SPECIAL ATTENTION WILL BE PAID TO FLOATING DEBRIS WITHIN THE FACILITY THAT COULD BLOCK THE OUTLET STRUCTURE AND ALTER BASIN FUNCTIONALITY. DEBRIS SHOULD ALSO BE REMOVED FROM THE INSIDE OF CONCRETE U-CHANNELS. MEANS AND METHODS OF REMOVING DEBRIS, SILT BUILD-UP, ETC. FROM THE CONCRETE U-CHANNELS/ HYDRO TURF ENGINEERED CHANNELS SHALL BE AT THE DISCRETION OF THE HOME OWNERS ASSOCIATION AND ITS SUCCESSORS OR ASSIGNS, AND MAY BE LIMITED TO MANUAL OPERATIONS.

EROSION CONTROL: EARTHEN PORTIONS OF THE BASIN WILL BE MAINTAINED WITH VEGETATIVE COVER TO CONTROL EROSION. IF DURING INSPECTIONS OR REGULAR MAINTENANCE ACTIVITIES, ANY SLUMPING OR EROSION IS OBSERVED, THE AREA WILL BE RE-GRADED AND RE-VEGETATED TO ORIGINAL CONDITIONS.

NUISANCE CONTROL: STANDING WATER OR CONSTANTLY WET CONDITIONS WITHIN THE DRAINAGE INFRASTRUCTURE CAN PROMOTE NUISANCE PROBLEMS FOR NEARBY RESIDENTS AND BUSINESSES. THESE PROBLEMS INCLUDE ODORS, MOSQUITOES, WEEDS, AND LITTER. IF ENCOUNTERED, THESE PROBLEMS WILL BE ADDRESSED DURING REGULAR MAINTENANCE OPERATIONS.



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
CHANNEL MAINTENANCE PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

4.19

Date: Jan 30, 2024, 8:01am User ID: nsego
File: U:\Projects\314\28\19\Design\Civil\Drains\4.17 CHANNEL MAINTENANCE PLAN.dwg

NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SOODING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
3. ALL DRAINAGE EASEMENTS WILL BE OWNED AND MAINTAINED BY THE DEVELOPER.
4. ALL EARTHEN CHANNELS MUST NOT EXCEED 3:1 SIDE SLOPES (MAX).

TRENCH EXCAVATION SAFETY PROTECTION

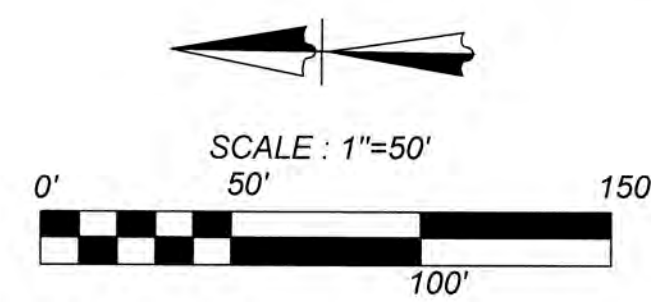
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CAUTION!!

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND

-  = MAINTENANCE ACCESS RAMP (PERMEABLE)
-  = MAINTENANCE ACCESS (PERMEABLE)
-  = EXISTING MAINTENANCE ACCESS (PERMEABLE)



DRAINAGE INFRASTRUCTURE AND CHANNEL MAINTENANCE PLAN

PROJECT: NAVARRO SUBDIVISION - UNIT 8

LOCATION: APPROXIMATELY 4,000 - FT SOUTH ALONG SH 123 FROM ITS INTERSECTION WITH FM 758

THE FOLLOWING GUIDELINES ARE ESTABLISHED FOR THE MAINTENANCE AND INSPECTION OF THE DRAINAGE INFRASTRUCTURE AND CHANNELS CONSTRUCTED FOR THE ABOVE REFERENCED PROJECT.

INSPECTIONS: THE DRAINAGE INFRASTRUCTURE AND CHANNELS WITHIN THE ABOVE REFERENCED SUBDIVISION SHOULD BE INSPECTED AT LEAST ONCE A QUARTER TO EVALUATE THAT IT IS FUNCTIONING PROPERLY. ONE OF THESE INSPECTIONS SHOULD OCCUR DURING OR IMMEDIATELY FOLLOWING A RAINFALL EVENT.

SEDIMENT REMOVAL: ALL SEDIMENT ACCUMULATION SHALL BE REMOVED FROM OUTLET STRUCTURES AND DRAINAGE PATHWAYS IMMEDIATELY DOWNSTREAM OF DRAINAGE STRUCTURES AT LEAST ONCE BI-ANNUALLY OR ANYTIME SEDIMENT ACCUMULATION IS GREATER THAN 3 INCHES OF DEPTH. WHEN SEDIMENT ACCUMULATES WITHIN THE BASIN TO WITHIN 10% OF THE TOTAL BASIN VOLUME, THE SEDIMENT IS TO BE REMOVED AND DISPOSED OF PROPERLY. AFTER SEDIMENT REMOVAL, THE BASIN IS TO BE RE-GRADED TO ENSURE IT IS FUNCTIONING PROPERLY.

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DEBRIS AND LITTER CONTROL: DURING INSPECTIONS, MOWING, OR OTHER REGULAR MAINTENANCE ACTIVITIES, ALL VISIBLE DEBRIS AND LITTER WILL BE REMOVED FROM WITHIN THE DRAINAGE INFRASTRUCTURE OR OUTLET STRUCTURES. SPECIAL ATTENTION WILL BE PAID TO FLOATING DEBRIS WITHIN THE FACILITY THAT COULD BLOCK THE OUTLET STRUCTURE AND ALTER BASIN FUNCTIONALITY. DEBRIS SHOULD ALSO BE REMOVED FROM THE INSIDE OF CONCRETE U-CHANNELS.

MEANS AND METHODS OF REMOVING DEBRIS, SILT BUILD-UP, ETC. FROM THE CONCRETE U-CHANNELS / HYDRO TUBE ENGINEERED CHANNELS SHALL BE AT THE DISCRETION OF THE HOME OWNERS ASSOCIATION AND ITS SUCCESSORS OR ASSIGNS, AND MAY BE LIMITED TO MANUAL OPERATIONS.

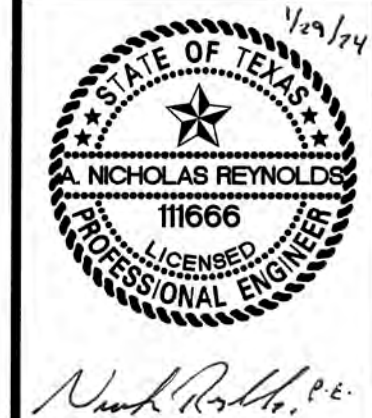
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NUISANCE CONTROL: STANDING WATER OR CONSTANTLY WET CONDITIONS WITHIN THE DRAINAGE INFRASTRUCTURE CAN PROMOTE NUISANCE PROBLEMS FOR NEARBY RESIDENTS AND BUSINESSES. THESE PROBLEMS INCLUDE ODORS, MOSQUITOES, WEEDS, AND LITTER. IF ENCOUNTERED, THESE PROBLEMS WILL BE ADDRESSED DURING REGULAR MAINTENANCE OPERATIONS.



ISSUE DATE

REVISIONS



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
CHANNEL MAINTENANCE PLAN

JOB NO. 314-28-19

DATE: JUL 2022

DRAWN: AC CHECKED: DA

SHEET NUMBER:

4.20

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!!

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NOTE:

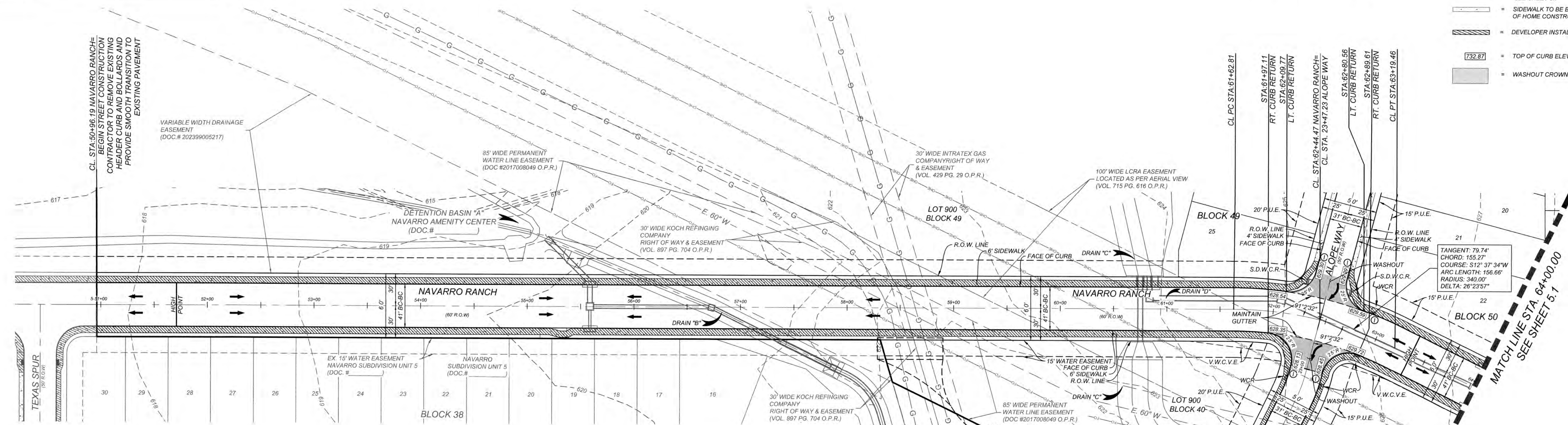
ALL RAMP AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH THE STREET CONSTRUCTION.

REFERENCE: SPECIAL NOTES FOR CONSTRUCTION OF UTILITIES CROSSING THE V.R. EASEMENT SEE SHEET 0.1

LEGEND

- = FLOW ARROW
- W.C.R. = WHEELCHAIR RAMPS, SEE SHEET 5.7
- S.D.W.C.R. = SINGLE DIRECTIONAL WHEELCHAIR RAMPS, SEE SHEET 5.7
- D.D.W.C.R. = DOUBLE DIRECTIONAL WHEELCHAIR RAMPS, SEE SHEET 5.6
- ① = WHEELCHAIR RAMP TYPE I SEE SHEET 5.7
- ② = WHEELCHAIR RAMP TYPE II SEE SHEET 5.7
- = SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION
- ▨ = DEVELOPER INSTALLED SIDEWALK
- 732.87 = TOP OF CURB ELEVATIONS
- = WASHOUT CROWN

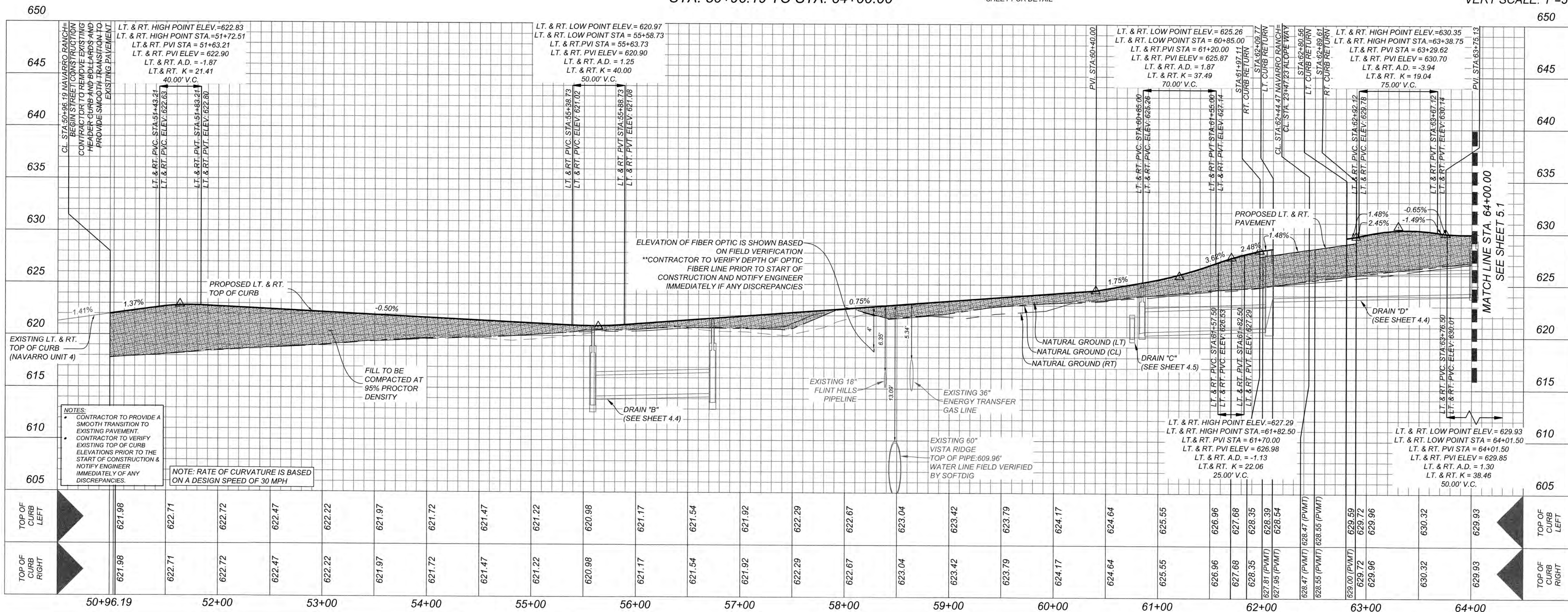
SCALE: 1"=50'
0' 50' 100' 150'



NAVARRO RANCH
STA. 50+96.19 TO STA. 64+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

WARNING!!!
EX. STREET/ GAS
CROSSING!!!
REFERENCE THIS
SHEET FOR DETAIL



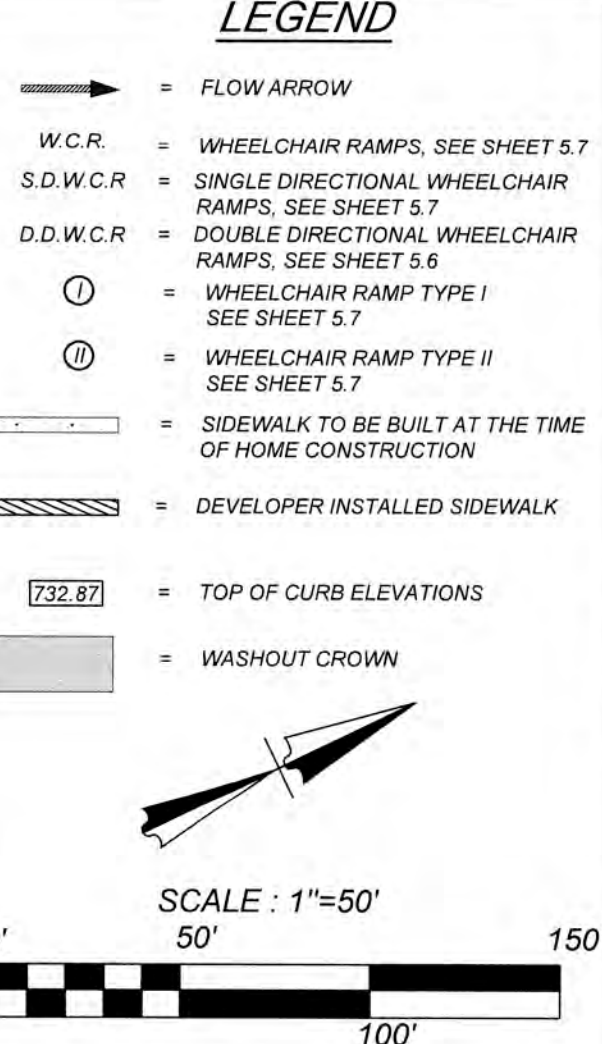
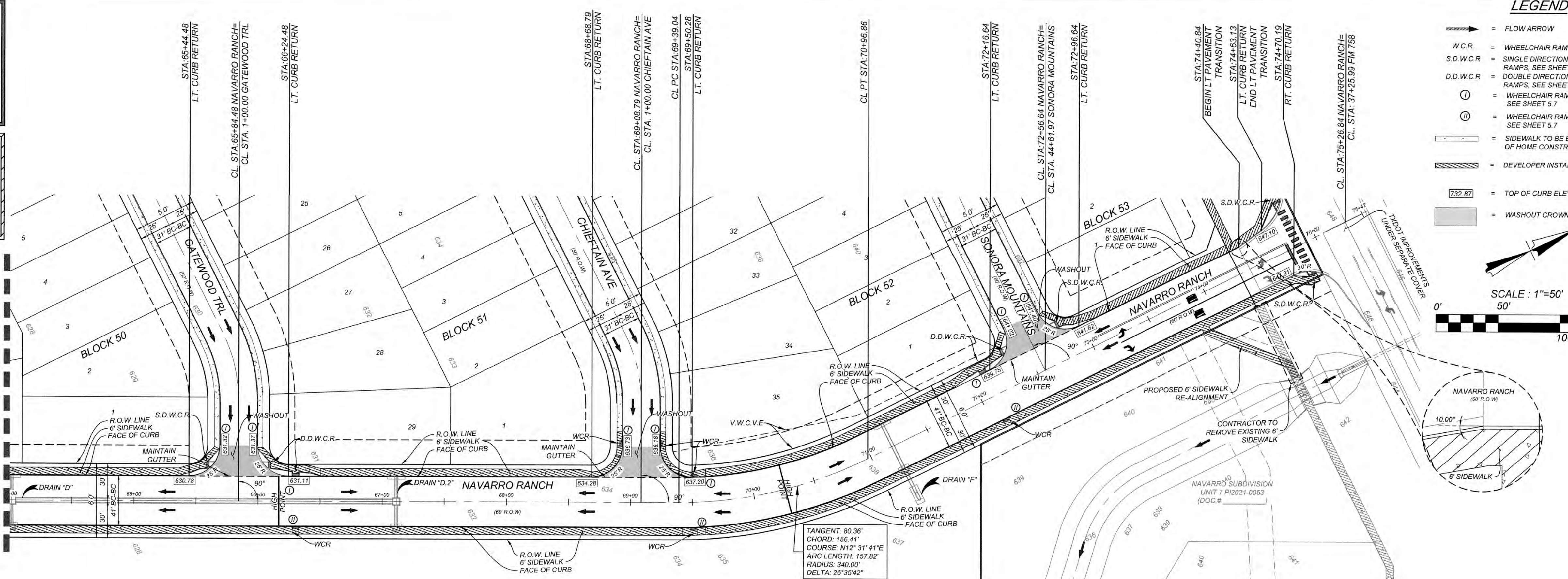
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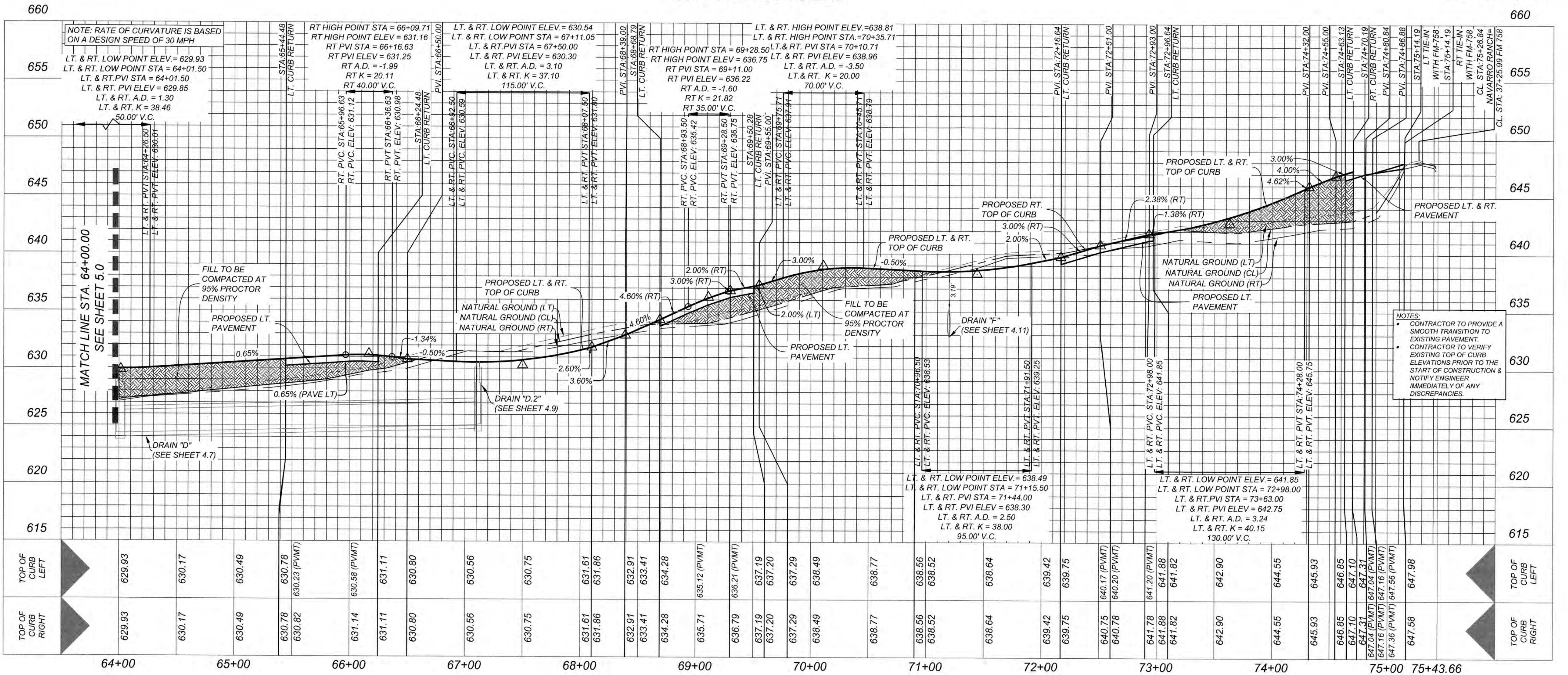
NOTE:
ALL RAMPS AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH THE STREET CONSTRUCTION.

MATCH LINE STA. 64+00.00
SEE SHEET 5.0



NAVARRO RANCH STA. 64+00.00 TO END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



NOTES:
• CONTRACTOR TO PROVIDE A SMOOTH TRANSITION TO EXISTING PAVEMENT.
• CONTRACTOR TO VERIFY EXISTING TOP OF CURB ELEVATIONS PRIOR TO THE START OF CONSTRUCTION & NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

NAVARRO SUBDIVISION - UNIT 8 NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY NAVARRO RANCH 64+00.00 - END

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

5.1

Date: Jan 29, 2024, 2:01pm User ID: logan.haney
File: U:\Projects\314\28\19\Design\Civil\STREET\5.2 ALOPE WAY - LENA DR - SONORA MOUNTAINS 21+00.00 - 35+00.00.dwg

TRENCH EXCAVATION SAFETY PROTECTION

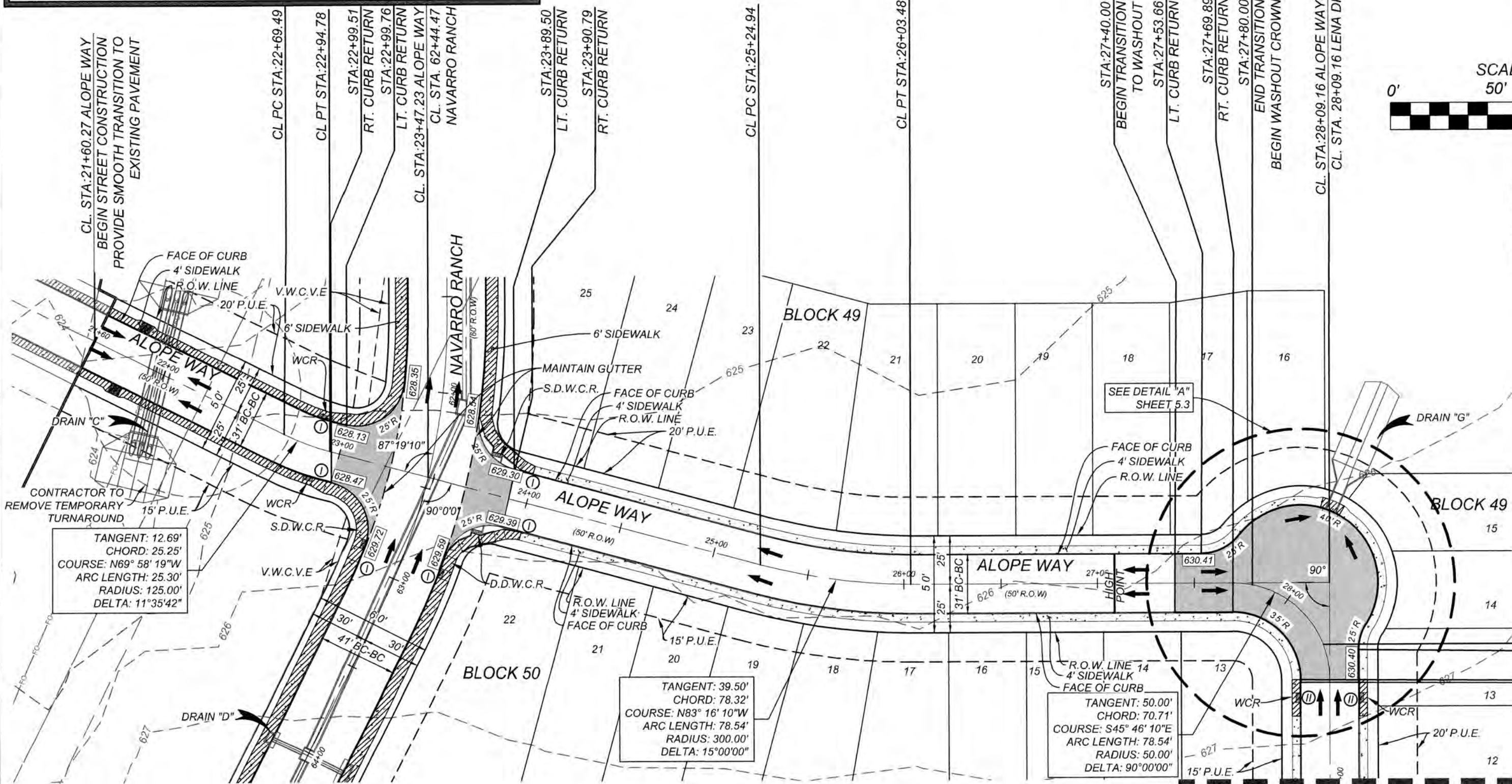
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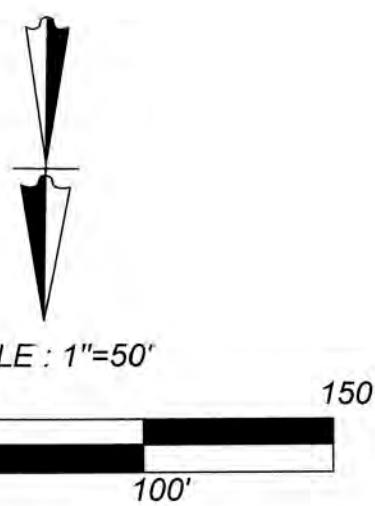
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NOTE:

ALL TRAMPS AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH THE STREET CONSTRUCTION.
REFERENCE: SPECIAL NOTES FOR CONSTRUCTION OF UTILITIES CROSSING THE VR EASEMENT SEE SHEET 0.1

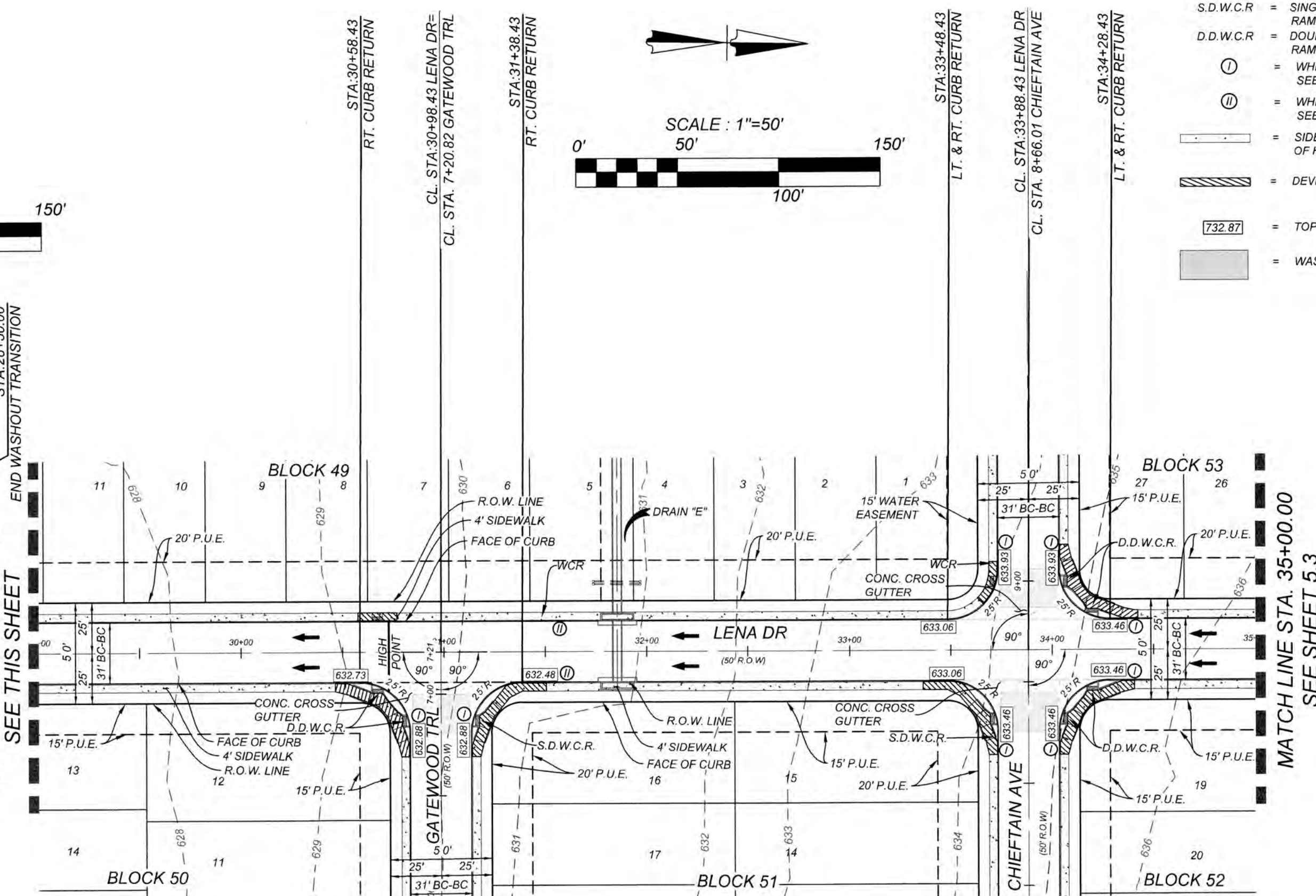


ALOPE WAY
STA. 21+60.27 - 28+09.16



MATCH LINE STA. 29+00.00
SEE THIS SHEET

LENA DR
STA. 28+09.16 - 35+00.00

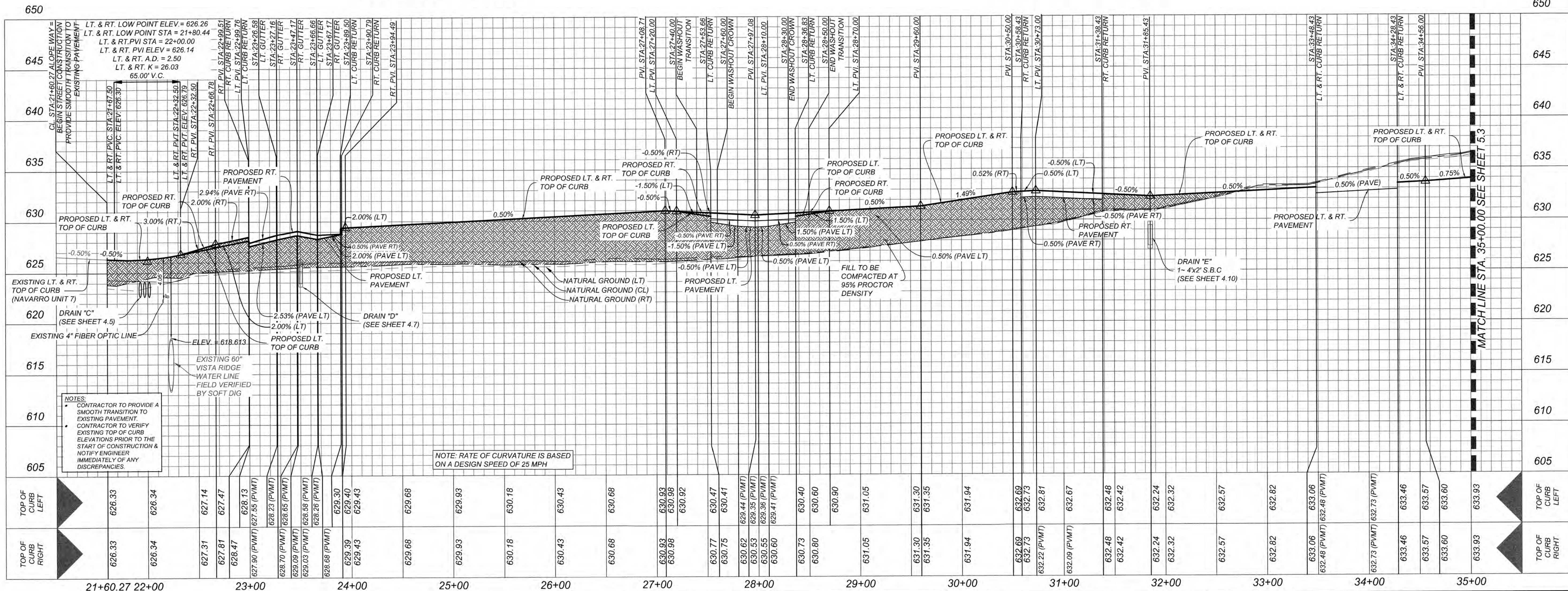


HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

MATCH LINE STA. 35+00.00
SEE SHEET 5.3

LEGEND

- = FLOW ARROW
- W.C.R. = WHEELCHAIR RAMPS, SEE SHEET 5.7
- S.D.W.C.R. = SINGLE DIRECTIONAL WHEELCHAIR RAMPS, SEE SHEET 5.7
- D.D.W.C.R. = DOUBLE DIRECTIONAL WHEELCHAIR RAMPS, SEE SHEET 5.8
- ① = WHEELCHAIR RAMP TYPE I SEE SHEET 5.7
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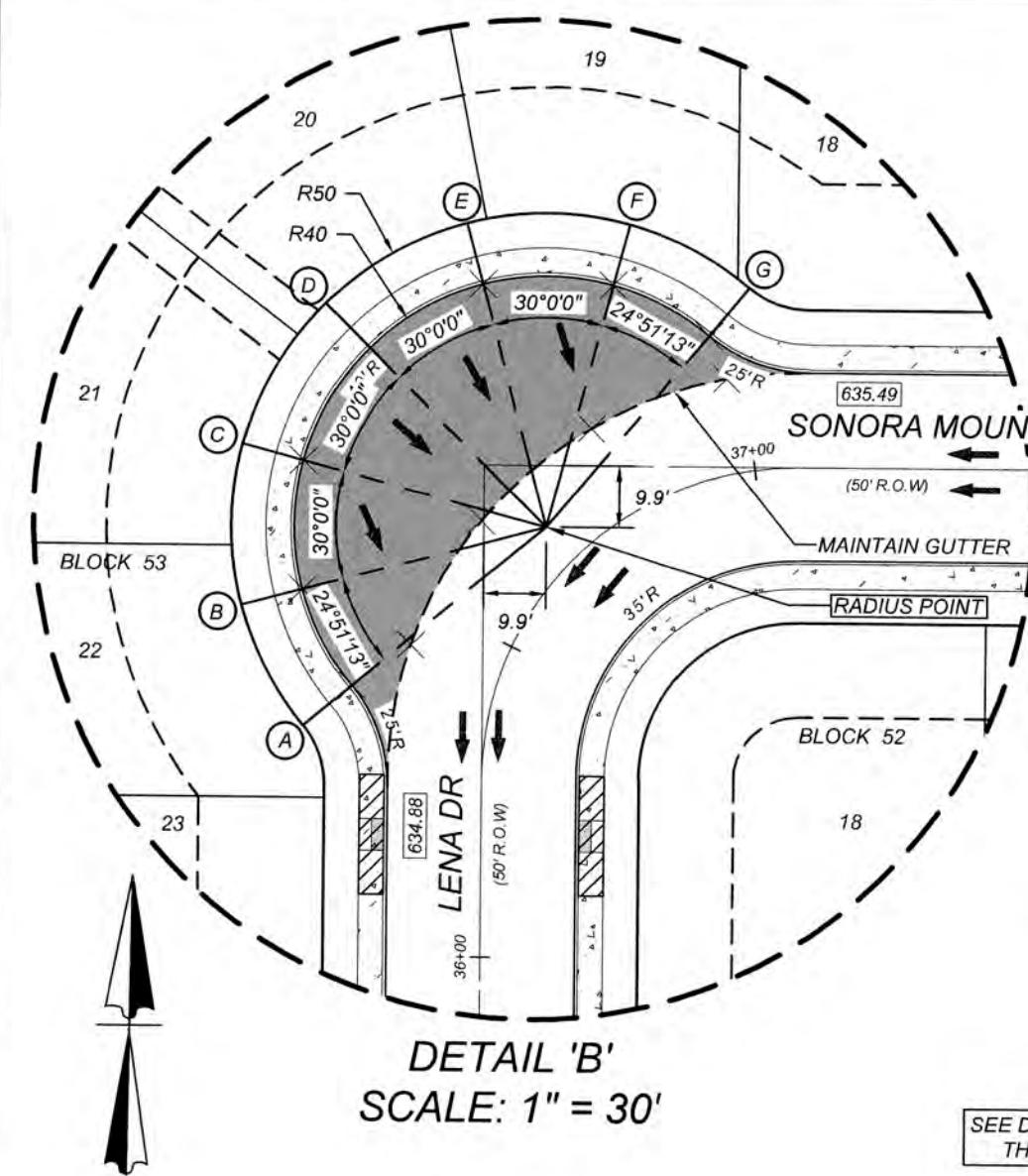
NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

ALOPE WAY - LENA DR 21+60.27 - 35+00.00

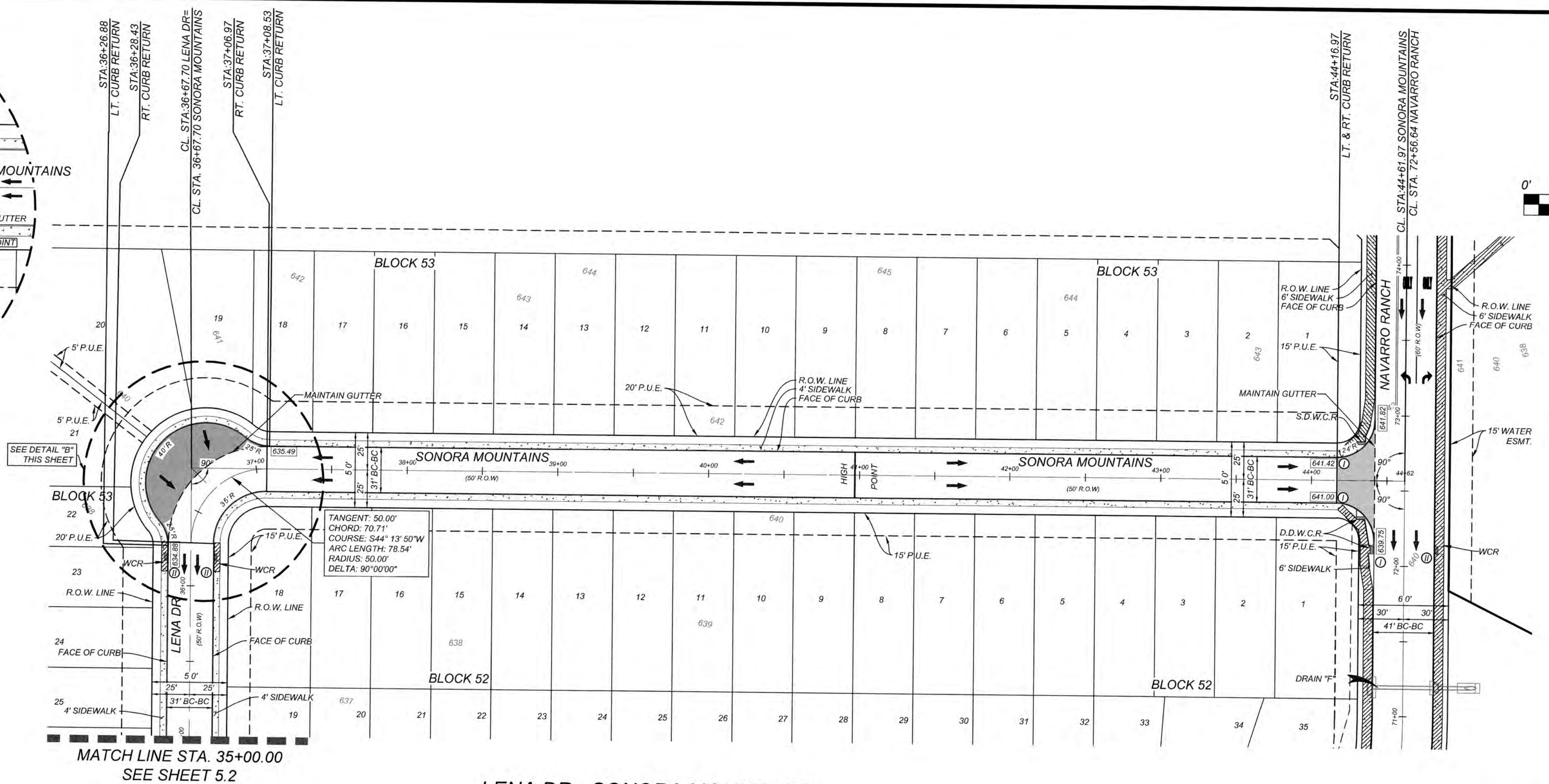
JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA

SHEET NUMBER:
5.2

Date: Jun 29, 2024, 4:47pm User: D:\logon\hrcw\ File: U:\Projects\314\28\19\Design\Civil\STREET\5.3 LENA DR - SONORA MOUNTAINS 35+00.00 - END.dwg

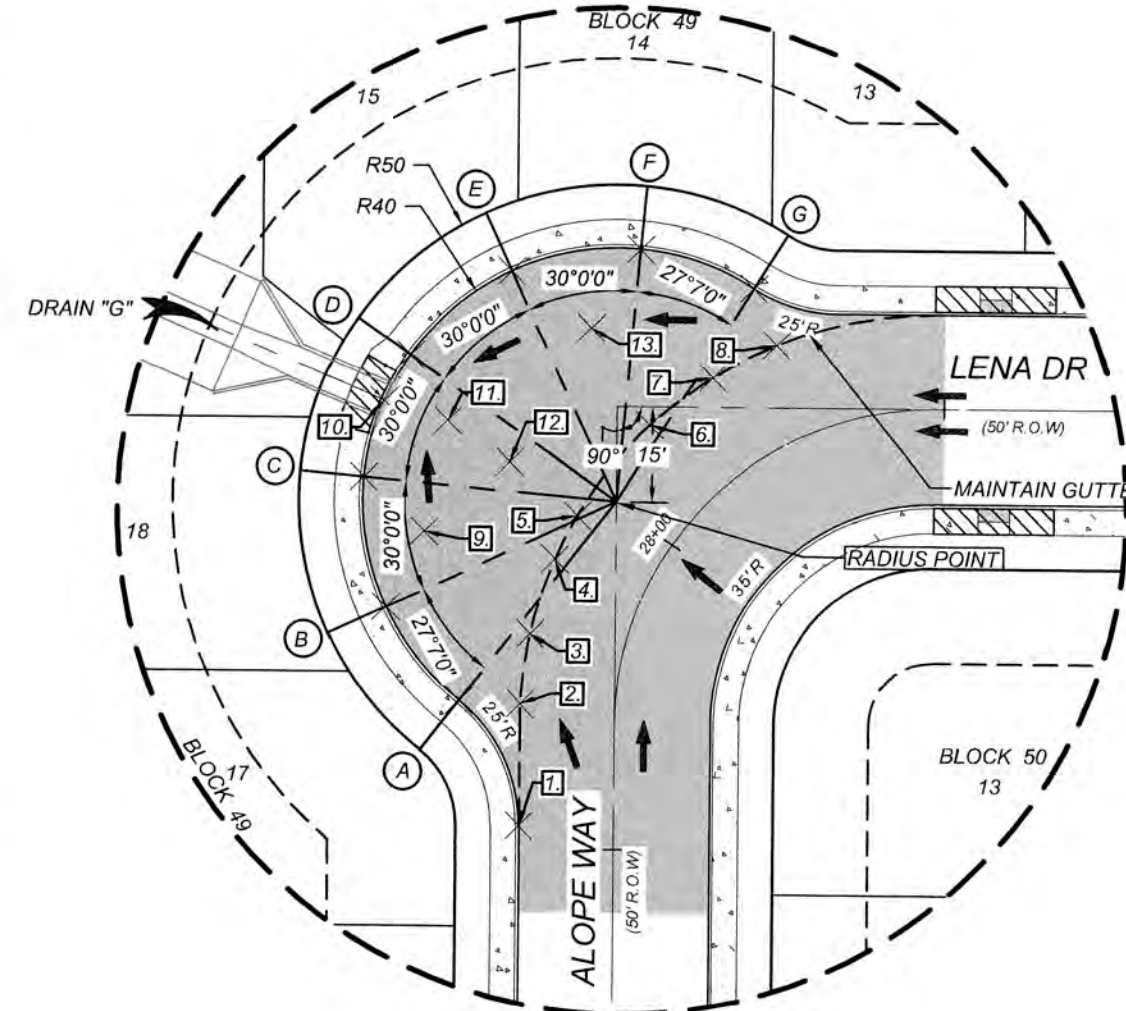
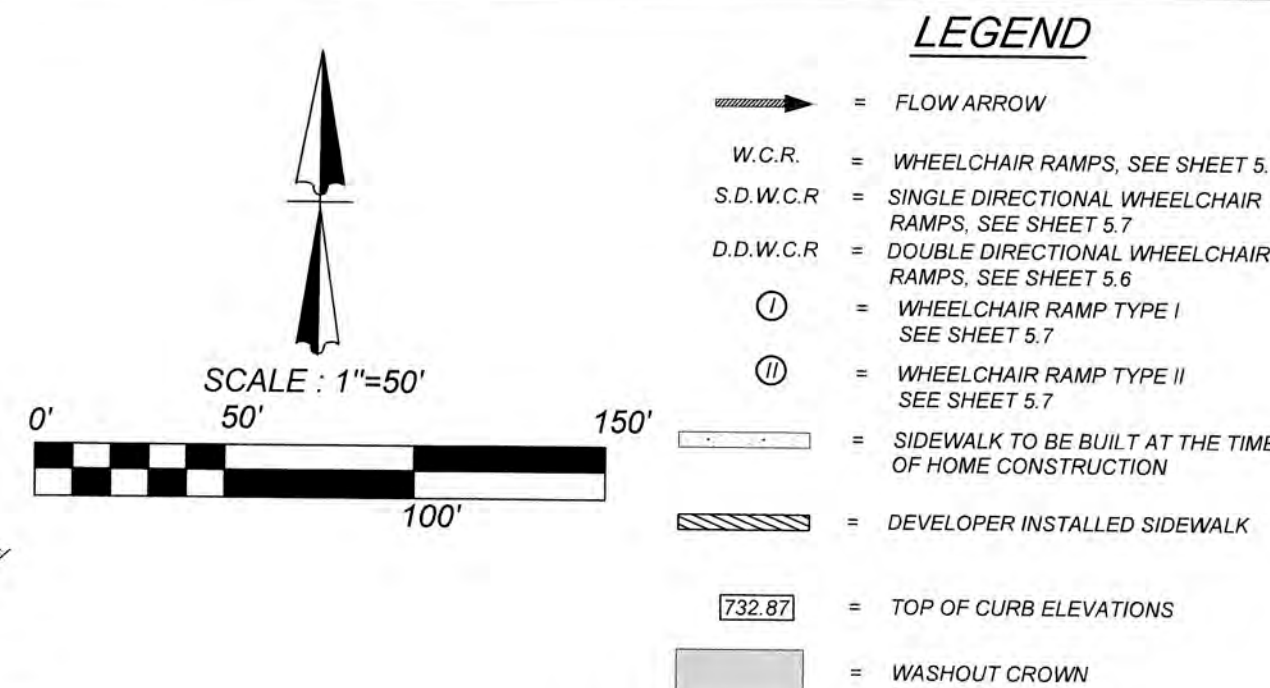
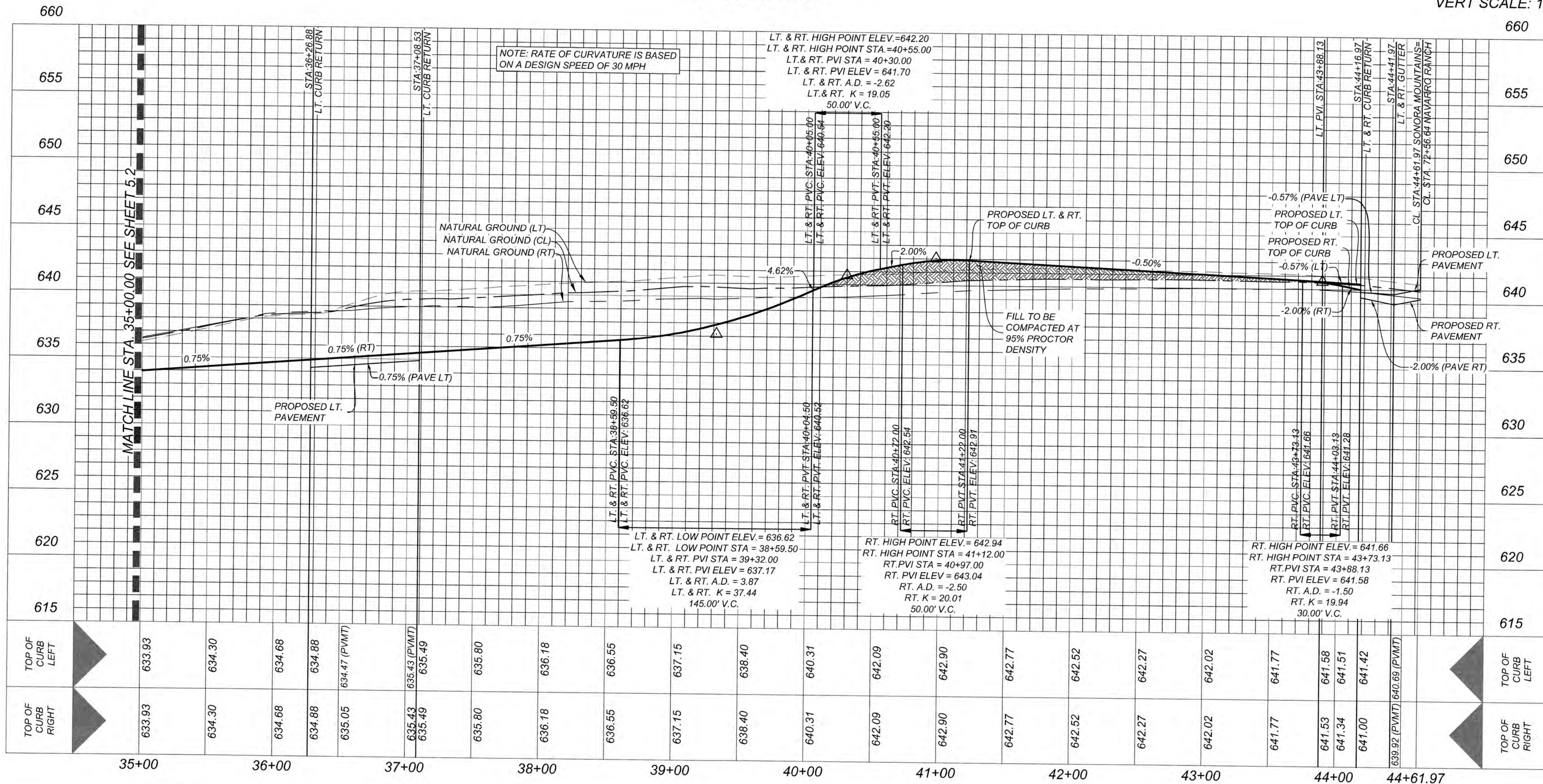


KNUCKLE SAC	
STATION	TOP OF CURB ELEVATION
A	635.19
B	635.54
C	636.03
D	636.28
E	636.19
F	635.86
G	635.63



LENA DR - SONORA MOUNTAINS
35+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



DETAIL "A"
SCALE: 1" = 30'

KNUCKLE SAC	
STATION	TOP OF CURB ELEVATION
A	629.85
B	629.47
C	629.29
D	629.26
E	629.39
F	629.70
G	630.09

POINT #	NORTHERN	EASTING	PAVEMENT ELEV.
1	13805132.00	2293225.32	629.83
2	13805131.81	2293206.07	629.55
3	13805133.15	2293194.92	629.43
4	13805136.86	2293183.03	629.38
5	13805140.21	2293176.20	629.36
6	13805151.33	2293161.74	629.42
7	13805161.03	2293153.93	629.55
8	13805170.98	2293148.55	629.69
9	13805116.04	2293179.17	628.92
10	13805109.31	2293158.70	628.64
11	13805119.38	2293161.65	628.86
12	13805129.32	2293168.06	629.09
13	13805141.78	2293146.40	629.12

NOTE:
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TRENCH EXCAVATION SAFETY PROTECTION
CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH A MINIMUM OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRICAL, SECONDARY ELECTRICAL, PRIMARY ELECTRICAL, DUCTS, BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 800-DIG-TEST A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

LENA DR - SONORA MOUNTAINS 35+00.00 - END

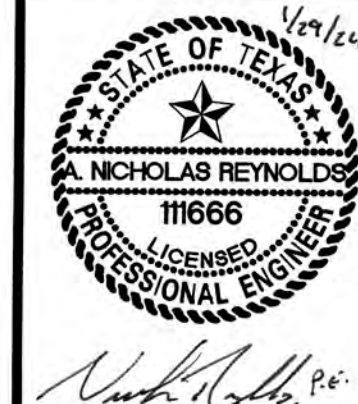
JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA

SHEET NUMBER:

5.3

ISSUE DATE

REVISIONS



K&W
ENGINEERS & SURVEYING
1800 22nd Street, Suite 100
P.O. Box 1830, 77801-1830
Phone # (832) 228-9842 Fax # (832) 827-9887
TPEL Firm # 9513 TEPPLS Firm # 1012300

TRENCH EXCAVATION SAFETY PROTECTION

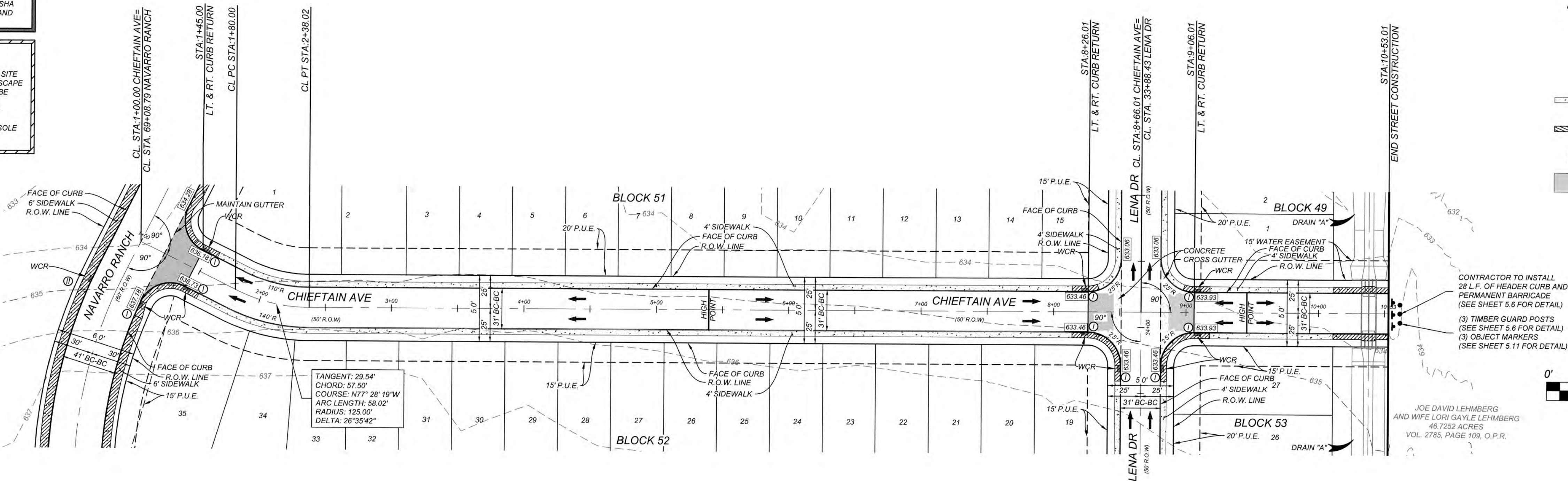
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CAUTION!!

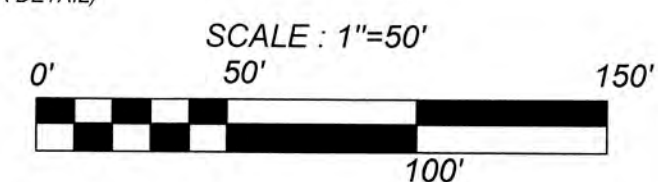
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, SECONDARY ELECTRICAL, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NOTE:

ALL RAMP AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH THE STREET CONSTRUCTION.



- ### LEGEND
- FLOW ARROW
 - W.C.R. = WHEELCHAIR RAMP, SEE SHEET 5.7
 - ⊙ = WHEELCHAIR RAMP TYPE I SEE SHEET 5.7
 - ⊙ = WHEELCHAIR RAMP TYPE II SEE SHEET 5.7
 - ▬ = SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION
 - ▨ = DEVELOPER INSTALLED SIDEWALK
 - 732.87' = TOP OF CURB ELEVATIONS
 - ▬ = WASHOUT CROWN

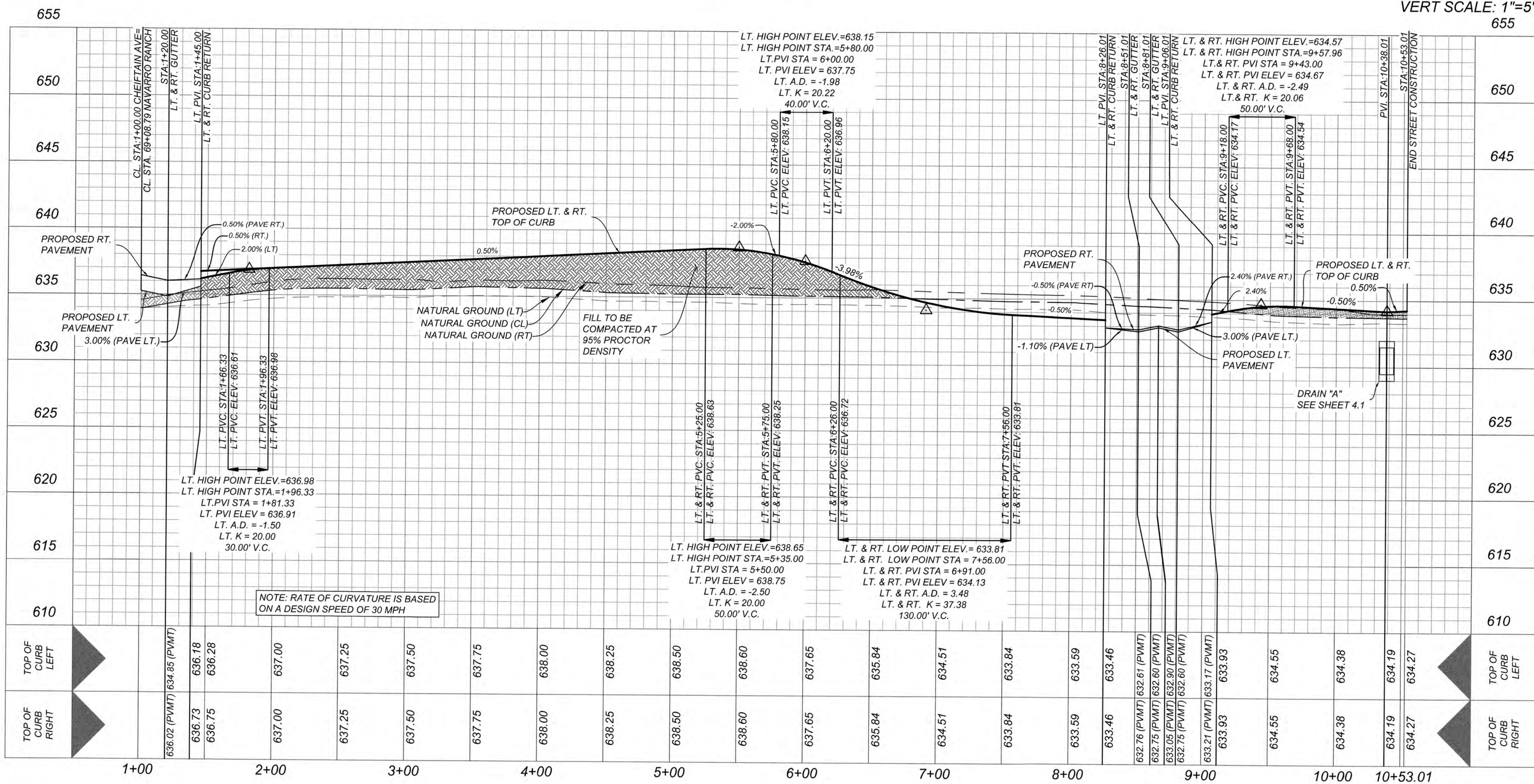


CONTRACTOR TO INSTALL 28 L.F. OF HEADER CURB AND PERMANENT BARRICADE (SEE SHEET 5.6 FOR DETAIL)
(3) TIMBER GUARD POSTS (SEE SHEET 5.6 FOR DETAIL)
(3) OBJECT MARKERS (SEE SHEET 5.11 FOR DETAIL)

JOE DAVID LEHMBERG
AND WIFE LORI GAYLE LEHMBERG
46.7252 ACRES
VOL. 2785, PAGE 109, O.P.R.

CHEIFTAIN AVE STA. 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
CHIEFTAIN AVE 1+00.00 - END

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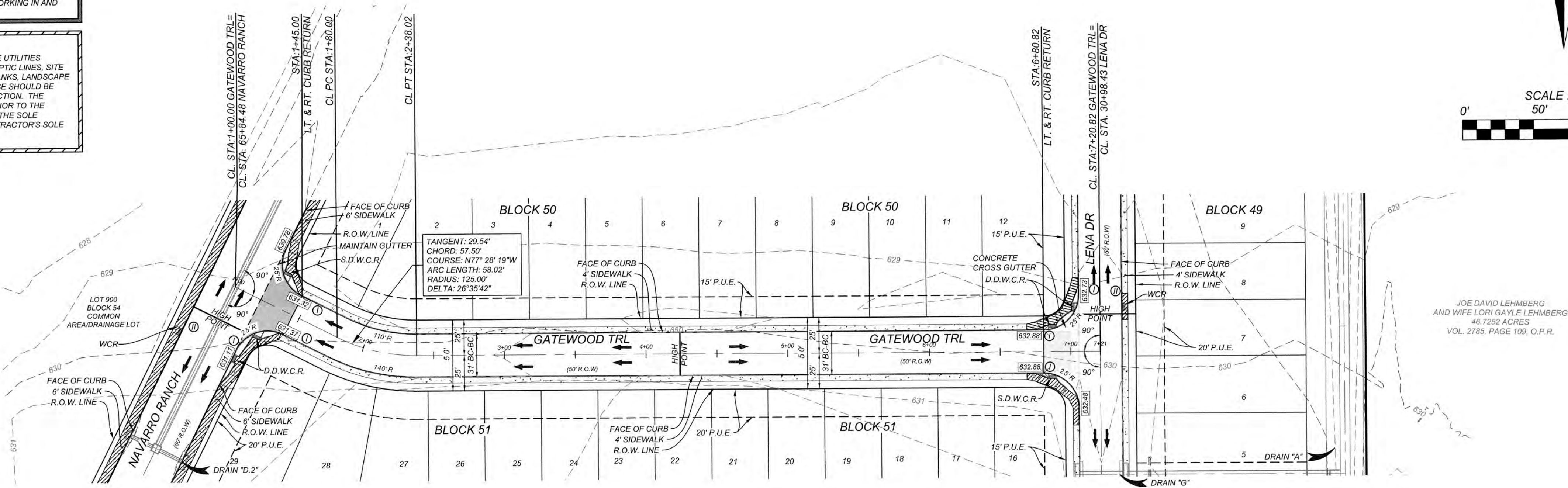
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TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

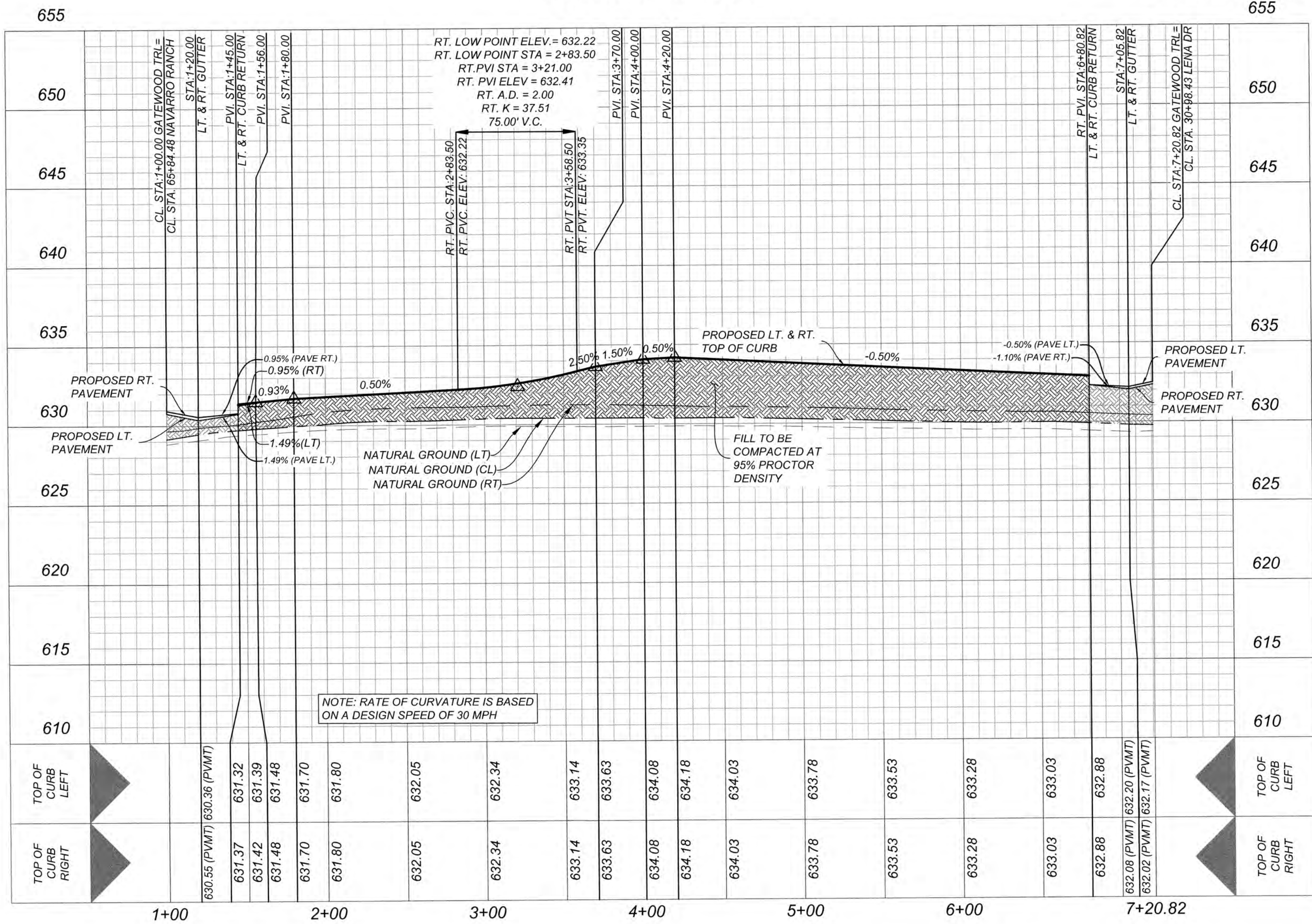
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NOTE:
ALL RAMP AND ANY PROPOSED SIDEWALKS THAT DO NOT FRONT PROPOSED RESIDENTIAL LOTS ARE REQUIRED TO BE CONSTRUCTED WITH THE STREET CONSTRUCTION.



GATEWOOD TRL
STA. 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



[illegible]

NOTES

1. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 18".
2. CURB AND GUTTER SHALL HAVE FORMED TOOLED OR SAWED CONTRACTION JOINTS AT $\pm 10'$. THE DEPTH OF THESE JOINTS SHALL BE SUFFICIENT TO ENSURE CRACKING AT THE JOINTS.
3. CURB OR CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT POINTS OF CURVATURE, AT INTERVALS NO GREATER THAN 100' AND AT ALL ADJACENT STRUCTURES.
4. UNLESS OTHERWISE SHOWN, TRANSITIONS BETWEEN CURBS OR CURBS AND GUTTER OF DIFFERING CROSS SECTION SHALL BE ACCOMPLISHED OVER A 10' LENGTH OR AS APPROVED BY THE CITY ENGINEER.
5. ALL CONCRETE TO BE CLASS "A" 3000 PSI CONCRETE.
6. ALL EXPOSED CONCRETE SURFACES TO BE BRUSHED SMOOTH AND UNIFORM.

Diagram illustrating the Radius Plan View of a sidewalk section. The diagram shows a curved sidewalk with various joints and dimensions.

Key components and dimensions:

- DRIVEWAY:** 12' MIN. - 30' MAX. THROAT AT PROPERTY LINE.
- PROPERTY LINE:** Indicated by a vertical line on the left.
- HIGH POINT:** SEE NOTE #5.
- CONCRETE:** 14% MAX. slope.
- WEAKENED PLANE JOINT:** Indicated by a dashed line.
- EXPANSION JOINT:** SEE NOTE #7.
- DUMMY JOINT:** SEE NOTE #4.
- TERMINATION OF RADIUS:** SEE NOTE #8.
- SIDEWALK SLOPE:** 1:12 MAX.
- CURB CUT:** SEE NOTE #3.
- R.O.W. LINE VARIES:** Indicated by a dashed line on the right.
- SIDEWALK (TYP.):** Indicated by a dimension line on the right.

FLARE PLAN VIEW

PROPERTY LINE

DRIVEWAY

12' MIN. - 30' MAX.
THROAT AT PROPERTY LINE

WEAKENED PLANE JOINT

HIGH POINT
SEE NOTE #5

CONCRETE

14% MAX.

2% MAX.

SIDEWALK SLOPE
1:12 MAX

R.O.W.
LINE
VARIES

SIDEWALK
(TYP.)

TERMINATION OF FLARE
SEE NOTE #8

3' WIDE
5' DEEP
FLARE

DUMMY JOINT
SEE NOTE #4

EXPANSION JOINT
SEE NOTE #7

CURB CUT
SEE NOTE #3

NOTES

1. WHERE GUTTER DOES NOT EXIST DRIVEWAY APRON SHALL EXTEND TO EDGE OF ASPHALT AND SHALL HAVE A MINIMUM 6' WIDE 1" DEEP GRADE BEAM MONOLITHIC AND REINFORCED SIMILAR TO APRON.
2. PLACEMENT OF SIDEWALK SHOWN IS TYPICAL; HOWEVER, ALTERNATIVE SIDEWALK PLACEMENT COMMON TO DRIVEWAY APRON WILL BE CONSIDERED PROVIDED CROSS SLOPE OF SIDEWALK IS NO GREATER THAN 2%.
3. CURB CUT LENGTH NO GREATER THAN AS REQUIRED TO MATCH SLOPE OF ADJACENT SIDEWALK.
4. DUMBY CUTS TO BE PROVIDED AT MINIMUM 4'-FT. INTERVALS PERPENDICULAR TO THE CURB LINE WITHIN THE SIDEWALK AREA AND PARALLEL TO THE SIDEWALK AREA.
5. PROVIDE A MINIMUM 7' HIGH POINT. HIGH POINT HEIGHT SHALL BE MEASURED FROM THE GUTTER FLOW LINE TO THE DRIVEWAY APRON. NOTE HIGH POINT MAY OCCUR OUTSIDE OF ROW.
6. DRIVEWAY THROAT TRANSITION MAY OCCUR OUTSIDE OF ROW.
7. PROVIDE EXPANSION JOINTS AT ALL SIDEWALK AND DRIVEWAY THROAT JOINTS. EXPANSION JOINTS SHALL BE PLACED USING 1/2" ASPHALTIC MATERIAL WITH 1/2" DOWELS 16" O.C.
8. THE TANGENT POINT OF THE DRIVEWAY CURB RETURN AT THE PUBLIC ROADWAY LINE OR FLARE SHALL BE A MINIMUM DISTANCE OF 1' OFF THE PROPERTY LINE PERPENDICULAR TO THE STREET CENTERLINE. EXCEPT SINGLE FAMILY OR ZERO LOT LOT LINE LOTS. EXCEPT SINGLE FAMILY OR ZERO LOT LOT LINE LOTS WHERE THE DRIVE IS ON THE ZERO LOT LINE, THE TANGENT POINT OR FLARE SHALL BE NO GREATER THAN 3' BEYOND THE ADJOINING PROPERTY LINE PROJECTED PERPENDICULAR TO THE STREET CENTERLINE.

2'-6" MIN. TO 4'-0" MAX.

3'-0"

TIMBER POST SHALL BE SOUTHERN YELLOW PINE OR EQUAL. A MINIMUM OF 7" INCHES IN DIAMETER. POST SHALL BE TREATED WITH 0.4 LB/SCU FT. DRY PENTACHLOROPHENOL.

3 - OM 4-3 INDEPENDENTLY HOUSED MARKERS PER DETAIL ON SHEET 5 11

50' R.O.W.

10' PARKWAY

30' PAVEMENT

10' PARKWAY

MAX. 1:4 SLOPE BEHIND WALK

2" SLOPE

CURB & GUTTER

2" SLOPE

2" SLOPE

2" HMAc PAVEMENT

CURB & GUTTER

2" SLOPE

MAX. 1:4 SLOPE BEHIND WALK

4" CONC. SIDEWALK

1'0"

6" LIME TREATED SUBGRADE
COMPACTED 95% MAXIMUM DRY DENSITY

12" FLEX BASE COMPACTED
95% MAXIMUM DRY DENSITY

1'0"

4" CONC. SIDEWALK

TYPICAL STREET SECTION - 50' R.O.W.

SCALE : NOT TO SCALE

60' R.O.W.

10' PARKWAY

40' PAVEMENT

10' PARKWAY

MAX. 1:4 SLOPE BEHIND WALK

2% SLOPE

CURB & GUTTER

3.0" HMAc PAVEMENT

24" FLEX BASE COMPACTED 98% MAXIMUM DRY DENSITY

6" LIME TREATED SUBGRADE COMPACTED 95% MAXIMUM DRY DENSITY

GEOGRID SHOULD BE PLACED AT MID-SECTION OF THE COMPACTED BASE MATERIAL

6' CONC. SIDEWALK

1.0'

2% SLOPE

MAX. 1:4 SLOPE BEHIND WALK

2% SLOPE

6' CONC. SIDEWALK

1.0'

TYPICAL STREET SECTION - 60' R.O.W.

SCALE : NOT TO SCALE

NAVARRO RANCH

ALOPE WAY
LENA DR
SONORA MOUNTAINS
CHIEFTAIN AVE
GATEWOOD TRL

* CONTRACTOR TO REFER TO
GEOTECH REPORT FOR LIME
TREATMENT SPECIFICATIONS

ASPHALT PAVEMENT DETAIL - 50 FT R.O.W.
NOT-TO-SCALE

NOTES

1. PAYMENT DEDUCTION THICKNESS BASED ON GEOTECHNICAL REPORT BY TTL, INC., REPORT NO. 000180902333.01, DATED 04/25/2019.
2. REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.
4. CONTRACTOR MAY LEAVE VERTICAL CUT BANKS AT R.O.W. LINE AND MEDIANS PROVIDED PROJECT GEOTECHNICAL ENGINEER DETERMINES ROCK IS COMPETENT TO STAND ON ITS OWN.
5. CONTRACTOR SHALL HAVE SUBGRADE SOILS TESTED FOR SOLUBLE SULFATE PRIOR TO LIME TREATMENT. TESTING TO BE PAID BY OWNER.
6. THE OPTIMUM HYDRATED LIME CONTENT SHOULD RESULT IN A SOIL - LIME MIXTURE WITH A PH OF AT LEAST 12.4

* CONTRACTOR TO REFER TO
GEOTECH REPORT FOR LIME
TREATMENT SPECIFICATIONS

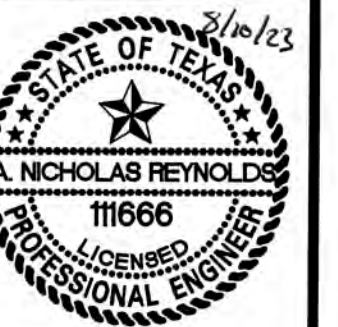
ASPHALT PAVEMENT DETAIL - 60 FT R.O.W.
NOT-TO-SCALE

NOTES

- NOTES:
1. LIME TREATMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT BY TTL, INC., REPORT NO. 1080902323 01, DATED 04/25/2019.
2. REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.
4. CONTRACTOR MAY LEAVE VERTICAL CUT BANKS AT R.O.W. LINE AND MEDIANS PROVIDED PROJECT GEOTECHNICAL ENGINEER DETERMINES ROCK IS COMPETENT TO STAND ON ITS OWN.
5. GEORGRID SHOULD BE PLACED AT THE MID-SECTION OF THE COMPACTED BASE MATERIAL LAYER.
6. CONTRACTOR SHALL HAVE SUBGRADE SOILS TESTED FOR SOLUBLE SULFATE PRIOR TO LIME TREATMENT. TESTING TO BE PAID BY OWNER.
7. THE OPTIMUM HYDRATED LIME CONTENT SHOULD RESULT IN A SOIL - LIME MIXTURE WITH A PH OF AT LEAST 12.4.

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

1

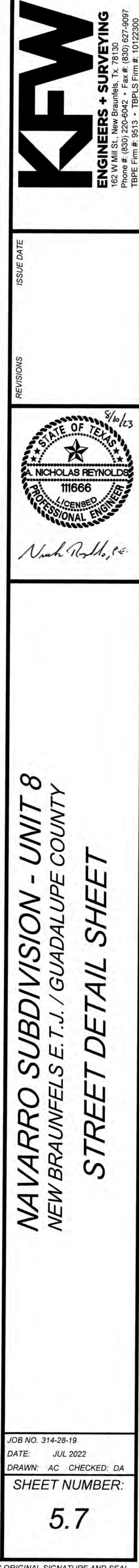
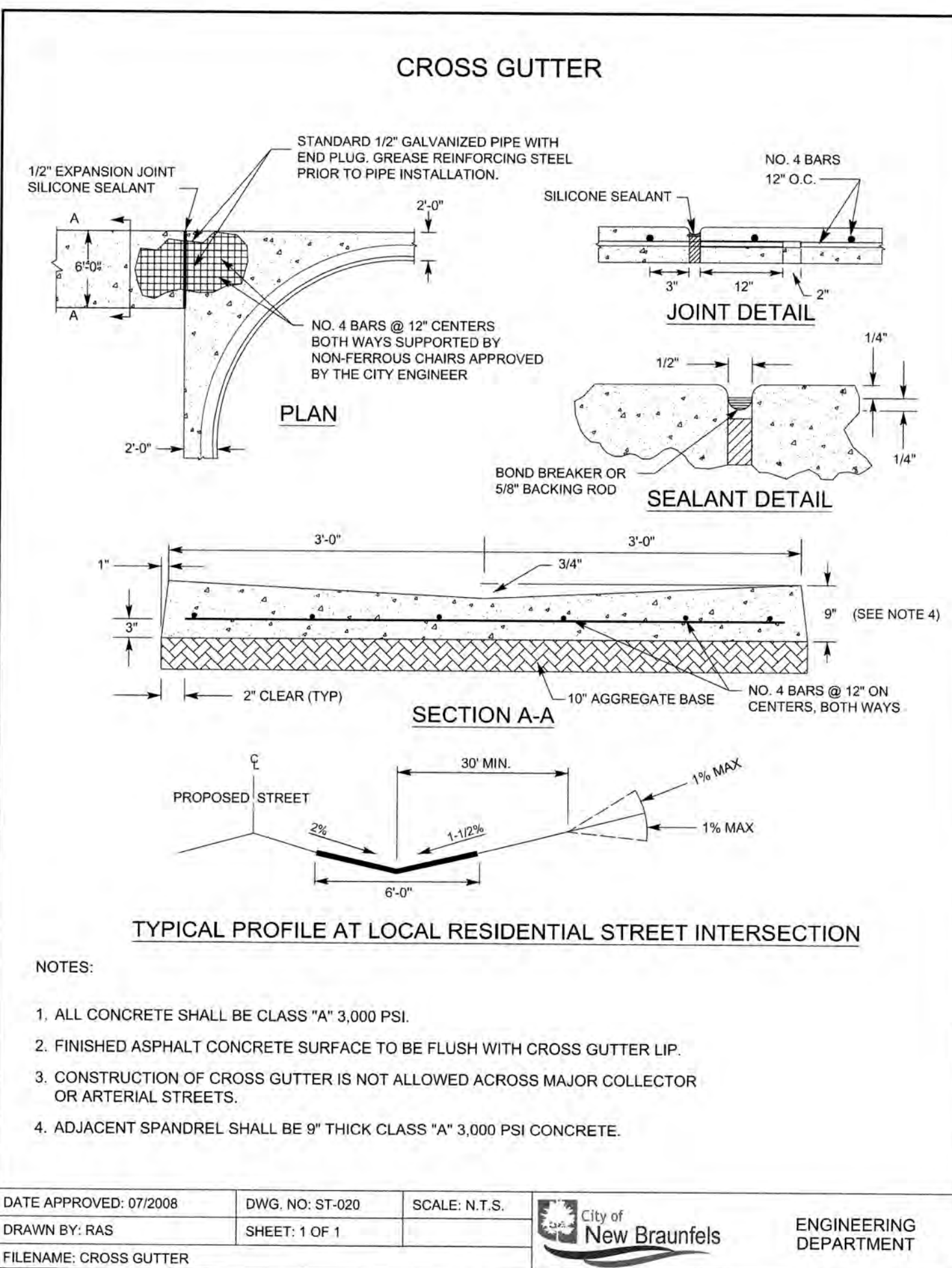
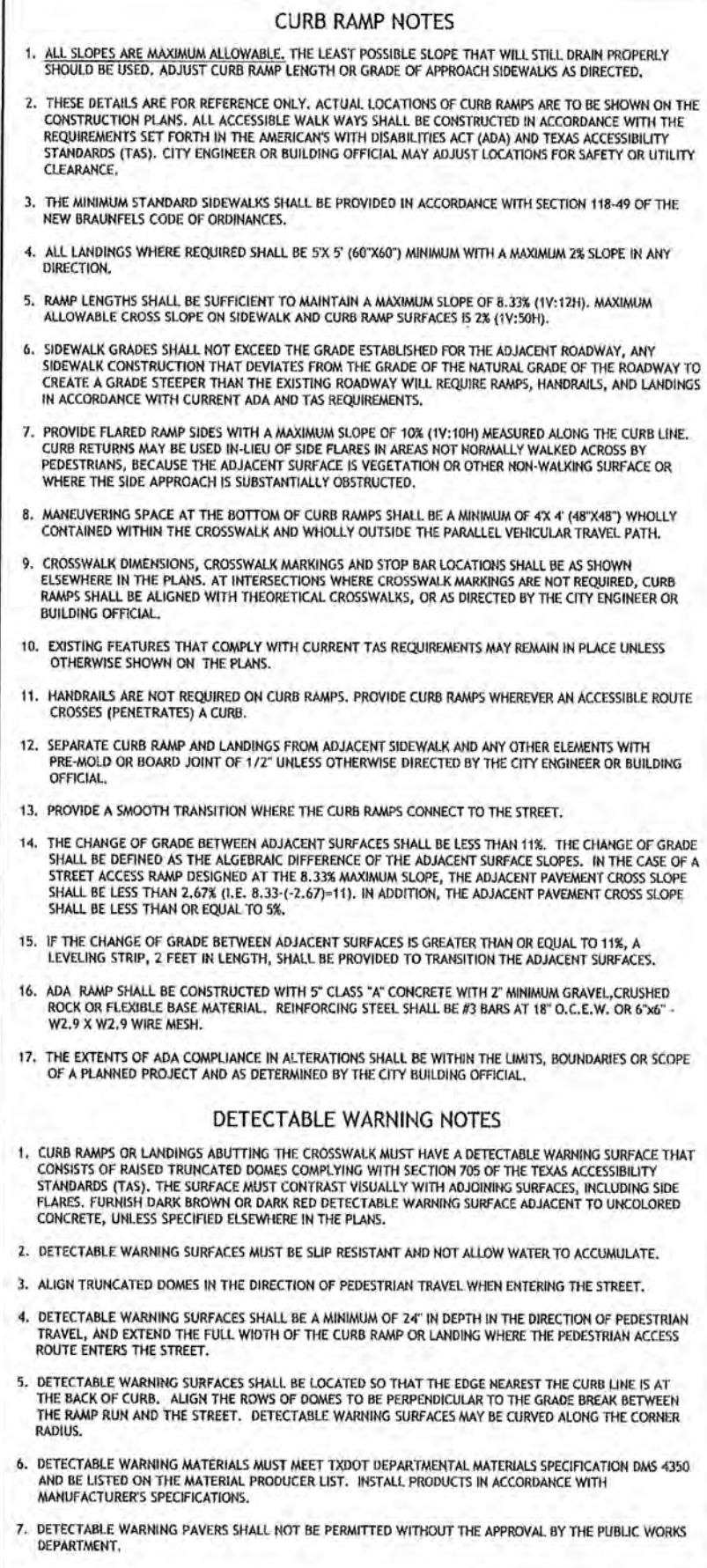
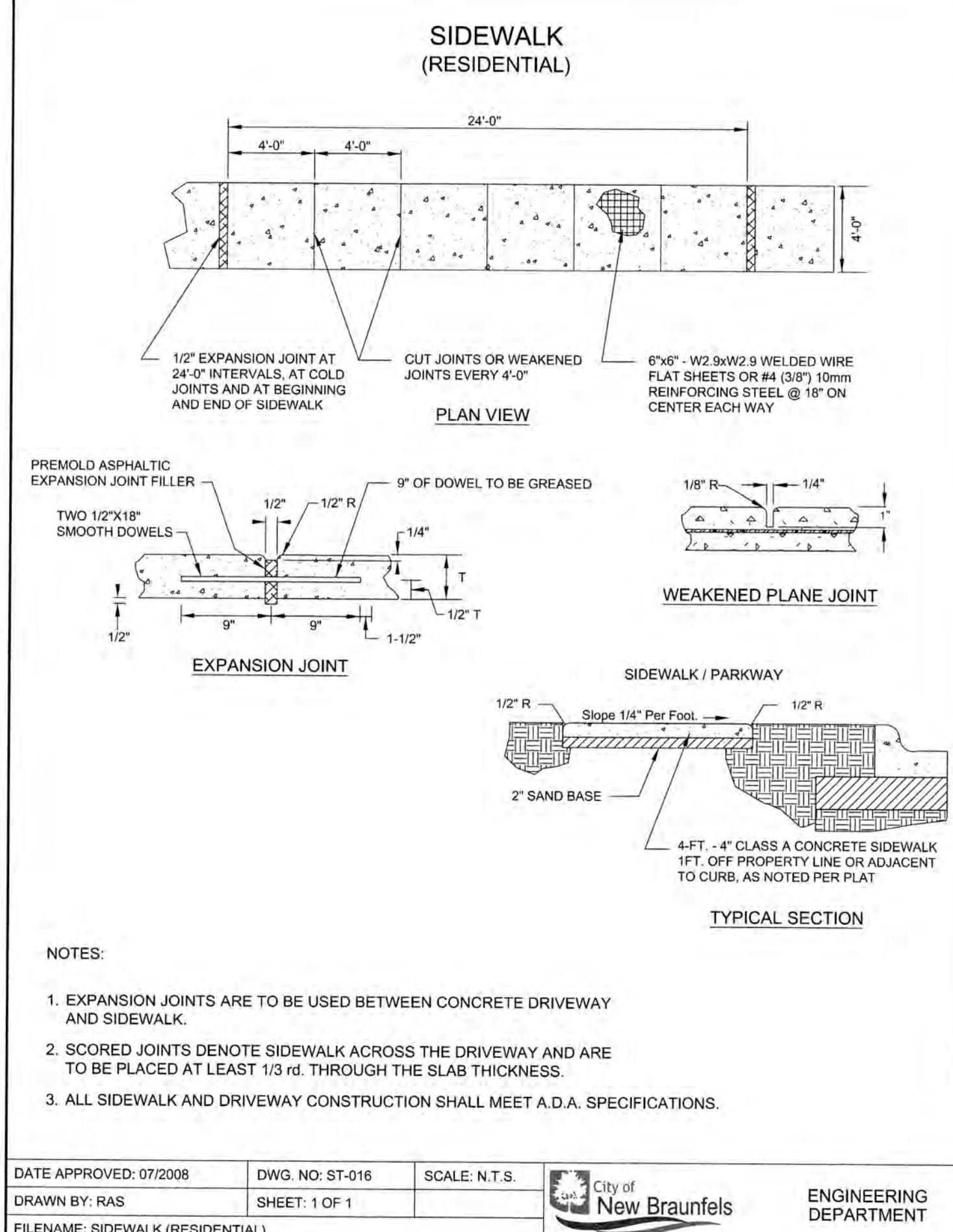


Wm. R. B. 2^d

NEW BRAUNFELS E. T. J. / GUADALUPE COUNTY
STREET DETAIL SHEET

NO. 314-28-19
DATE: JUL 2022
BY: AC CHECKED: DA
SHEET NUMBER:

5.6



GENERAL NOTES:

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREETS NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CITY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
2. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

SIGN REQUIREMENTS
TRAFFIC SIGNS SHALL BE USED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND WHERE JUSTIFIED BY ENGINEERING JUDGMENT OR STUDY. TRAFFIC SIGNS INCLUDE REGULATORY SIGNS, WARNING SIGNS, STREET NAME SIGNS AND OBJECT MARKERS.

ALL SIGNS SHALL BE SHOWN IN THE ENGINEERING PLANS FOR REVIEW AND APPROVAL AS PART OF THE PLAN & PROFILE SHEET OR SEPARATE SIGNING & PAVEMENT MARKING LAYOUT SHEET. THE ENGINEERING PLANS SHALL INCLUDE SIGN LOCATION, NAME, DESIGNATION AND SIZE. SIGN STANDARDS SHALL BE INCLUDED IN THE ENGINEERING PLANS.

INSTALLATION
THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY, WARNING AND STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.

MOUNTING
THE WEDGE ANCHOR STEEL SYSTEM AND THIN-WALLED TUBING POST SHALL BE USED FOR SIGNS WITH UP TO 10 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) TRAFFIC STANDARDS SMD (GEN) - 08 AND SMD (TWT) - 08.

THE TRIANGULAR SLIP BASE SYSTEM AND 10 BWG TUBING POST SHALL BE USED FOR SIGNS THAT HAVE 10 TO 16 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS SMD (GEN) - 08 AND SMD (SLIP-1 - 3) - 08.

OBJECT MARKERS MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS D & OM (1 - 5) - 10.

MATERIALS
SIGN MATERIALS INCLUDING ALUMINUM SIGN BLANKS AND SIGN FACE MATERIALS SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS TSR (1 - 5) - 08 AND DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-7110 AND DMS- 8300.

THE CITY OF NEW BRAUNFELS WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

PAVEMENT MARKING REQUIREMENTS
PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND WHERE JUSTIFIED BY ENGINEERING JUDGMENT OR STUDY.

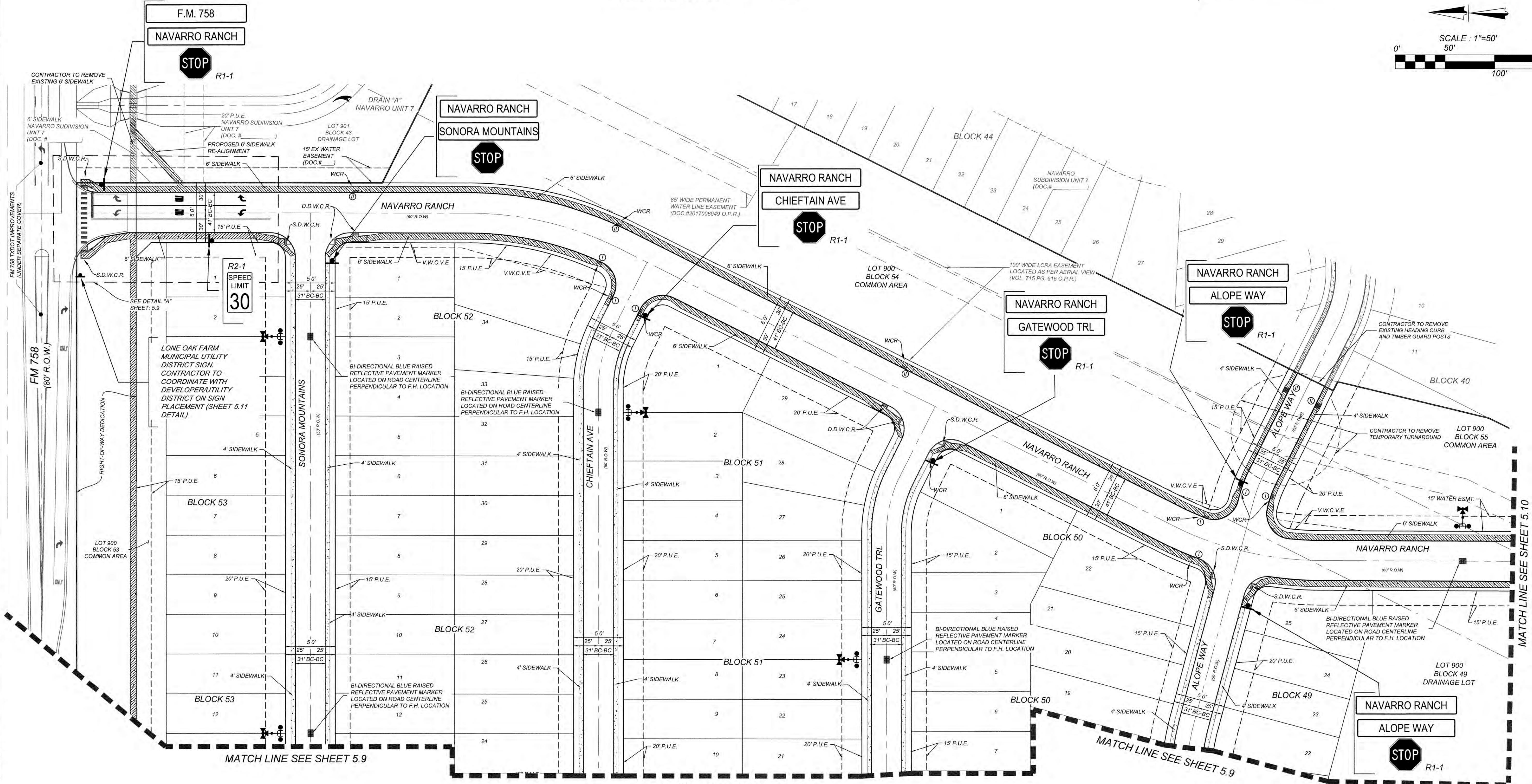
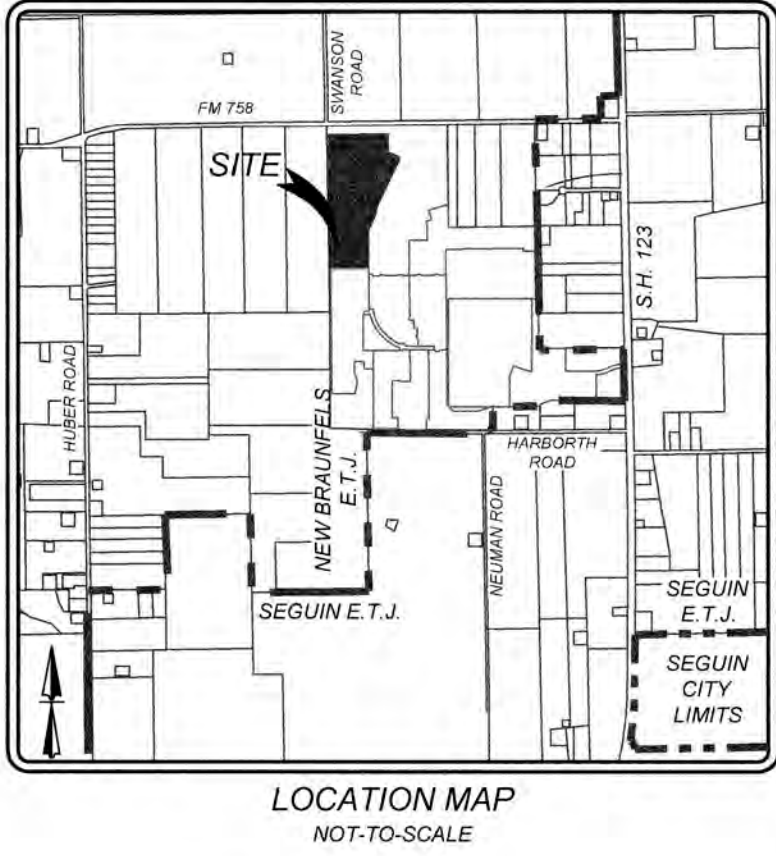
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ALL PAVEMENT MARKINGS SHALL BE TYPE I HOT APPLIED THERMOPLASTIC AND MEET TXDOT DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-8220. TYPE II TRAFFIC PAINT MARKINGS SHALL ONLY BE USED AS SEALER AND MEET TXDOT DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-8200.

THE CONTRACTOR SHALL NOTIFY THE CITY OF NEW BRAUNFELS AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CONTRACTOR MAY BE RESPONSIBLE FOR PLACING SPOT TABS BEFORE MARKING APPLICATION. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

NOTE:
ALL WHEELCHAIR RAMPS ARE TO BE CONSTRUCTED AT THE TIME OF STREET CONSTRUCTION

- LEGEND**
- W.C.R. = WHEELCHAIR RAMPS
SEE SHEET 5.7
- ① = WHEELCHAIR RAMP TYPE I
SEE SHEET 5.7
- ② = WHEELCHAIR RAMP TYPE II
SEE SHEET 5.7
- ||||| = DEVELOPER INSTALLED SIDEWALK
- = SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION
- ▨ = PROPOSED DRIVEWAY LOCATION
- = BLUE RAISED REFLECTIVE PAVEMENT MARKER
- ⬮ = PROPOSED FIRE HYDRANT



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
TRAFFIC SIGNAGE & PEDESTRIAN ACCESSIBILITY PLAN

K&W
ENGINEERS + SURVEYING
111666
NICHOLAS REYNOLDS
PROFESSIONAL ENGINEER
Phone # (830) 226-6642 • Fax # (830) 627-6097
TBPE Firm # 1012300



JOB NO. 314-28-19
DATE: JUL 2022
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GENERAL NOTES:

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY AND WARNING SIGNS, STREETS NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CITY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
2. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

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ALL SIGNS SHALL BE SHOWN IN THE ENGINEERING PLANS FOR REVIEW AND APPROVAL AS PART OF THE PLAN & PROFILE SHEET OR SEPARATE SIGNING & PAVEMENT MARKING LAYOUT SHEET. THE ENGINEERING PLANS SHALL INCLUDE SIGN LOCATION, NAME, DESIGNATION AND SIZE. SIGN STANDARDS SHALL BE INCLUDED IN THE ENGINEERING PLANS.

INSTALLATION

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REGULATORY, WARNING AND STREET NAME SIGNS AND SIGN MOUNTS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS.

MOUNTING

THE WEDGE ANCHOR STEEL SYSTEM AND THIN-WALLED TUBING POST SHALL BE USED FOR SIGNS WITH UP TO 10 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) TRAFFIC STANDARDS SMD (GEN) - 08 AND SMD (TWT) - 08.

THE TRIANGULAR SLIP BASE SYSTEM AND 10 BWG TUBING POST SHALL BE USED FOR SIGNS THAT HAVE 10 TO 16 SQUARE FEET OF SIGN AREA. MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS SMD (GEN) - 08 AND SMD (SLIP-1 - 3) - 08.

OBJECT MARKERS MATERIALS AND INSTALLATION SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS D & OM (1 - 5) - 10.

MATERIALS

SIGN MATERIALS INCLUDING ALUMINUM SIGN BLANKS AND SIGN FACE MATERIALS SHOULD FOLLOW THE TXDOT TRAFFIC STANDARDS TSR (1 - 5) - 08 AND DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-7110 AND DMS- 8300.

THE CITY OF NEW BRAUNFELS WILL INSPECT ALL SIGNS AT FINAL INSPECTION.

PAVEMENT MARKING REQUIREMENTS

PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE WITH THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND WHERE JUSTIFIED BY ENGINEERING JUDGMENT OR STUDY.

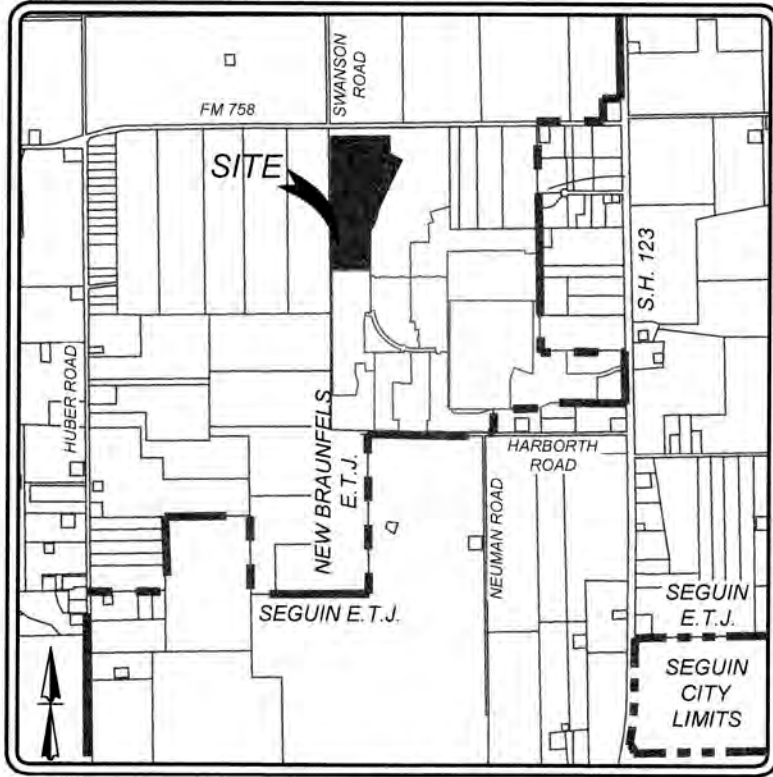
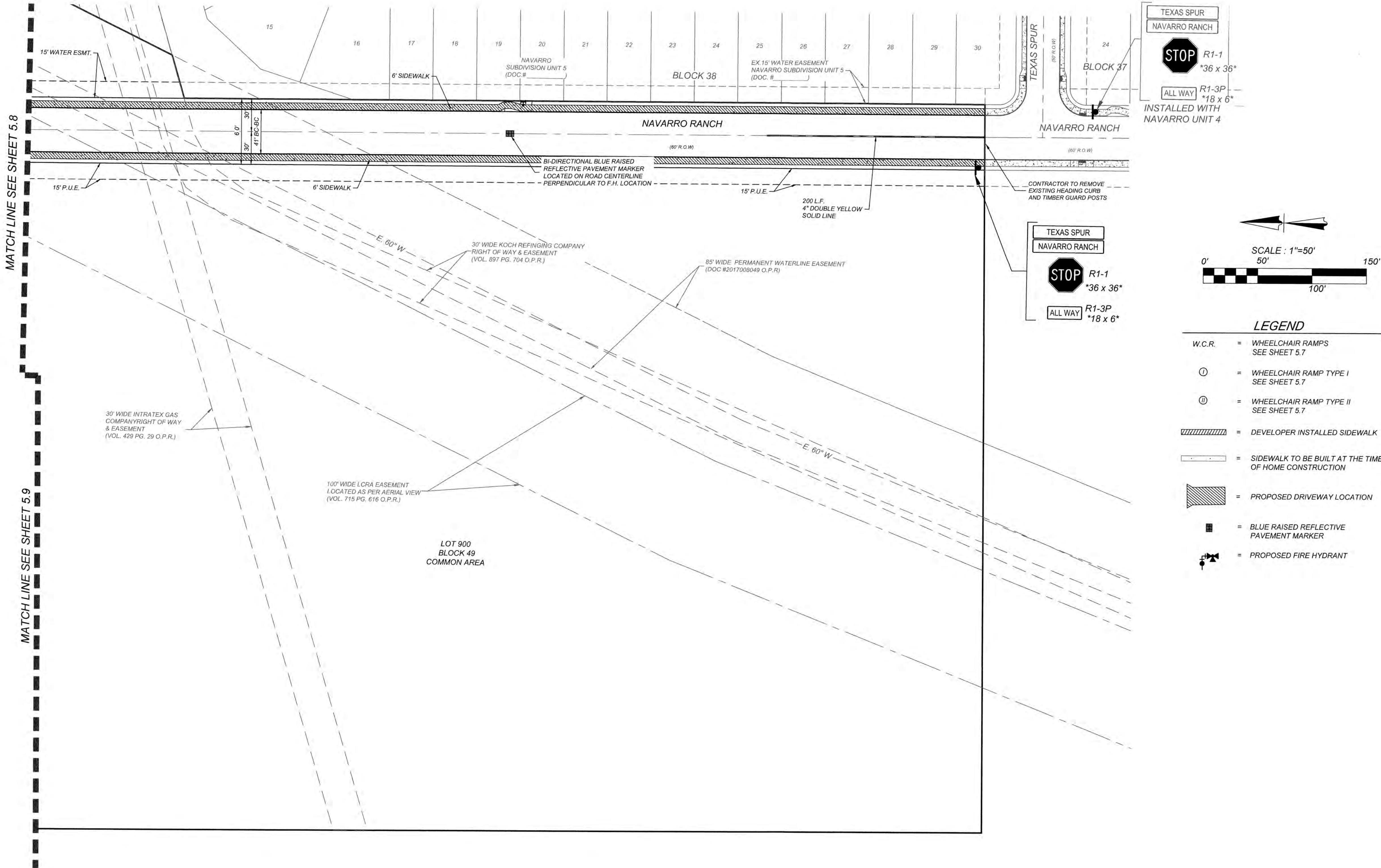
ALL PAVEMENT MARKINGS SHALL BE SHOWN IN THE ENGINEERING PLANS FOR REVIEW AND APPROVAL AS PART OF THE PLAN & PROFILE SHEET OR SEPARATE SIGNING & PAVEMENT MARKING LAYOUT SHEET. DESIGN, MATERIALS AND INSTALLATION SHOULD FOLLOW TXDOT TRAFFIC STANDARDS PM (1-4) - 12. CITY OF SAN ANTONIO TRAFFIC ENGINEERING STANDARDS FOR PAVEMENT MARKINGS DESIGNATING TRAFFIC LANES, LANE USAGE & LANE REGULATIONS AND PEDESTRIAN/BICYCLIST ACCOMMODATIONS MAY BE USED FOR ADDITIONAL STANDARD DESIGN DETAILS. MARKING STANDARDS SHALL BE INCLUDED IN THE ENGINEERING PLANS.

ALL PAVEMENT MARKINGS SHALL BE TYPE I HOT APPLIED THERMOPLASTIC AND MEET TXDOT DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-8220. TYPE II TRAFFIC PAINT MARKINGS SHALL ONLY BE USED AS SEALER AND MEET TXDOT DEPARTMENTAL MATERIAL SPECIFICATIONS DMS-8200.

THE CONTRACTOR SHALL NOTIFY THE CITY OF NEW BRAUNFELS AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE CONTRACTOR MAY BE RESPONSIBLE FOR PLACING SPOT TABS BEFORE MARKING APPLICATION. THE CITY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

NOTE:

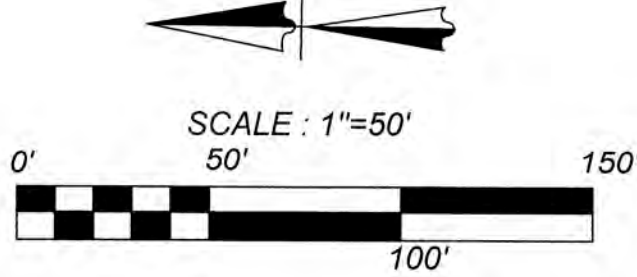
ALL WHEELCHAIR RAMPS ARE TO BE CONSTRUCTED AT THE TIME OF STREET CONSTRUCTION



LOCATION MAP
NOT TO SCALE

TEXAS SPUR
NAVARRO RANCH
STOP R1-1
36 x 36
ALL WAY R1-3P
18 x 6
INSTALLED WITH
NAVARRO UNIT 4

TEXAS SPUR
NAVARRO RANCH
STOP R1-1
36 x 36
ALL WAY R1-3P
18 x 6



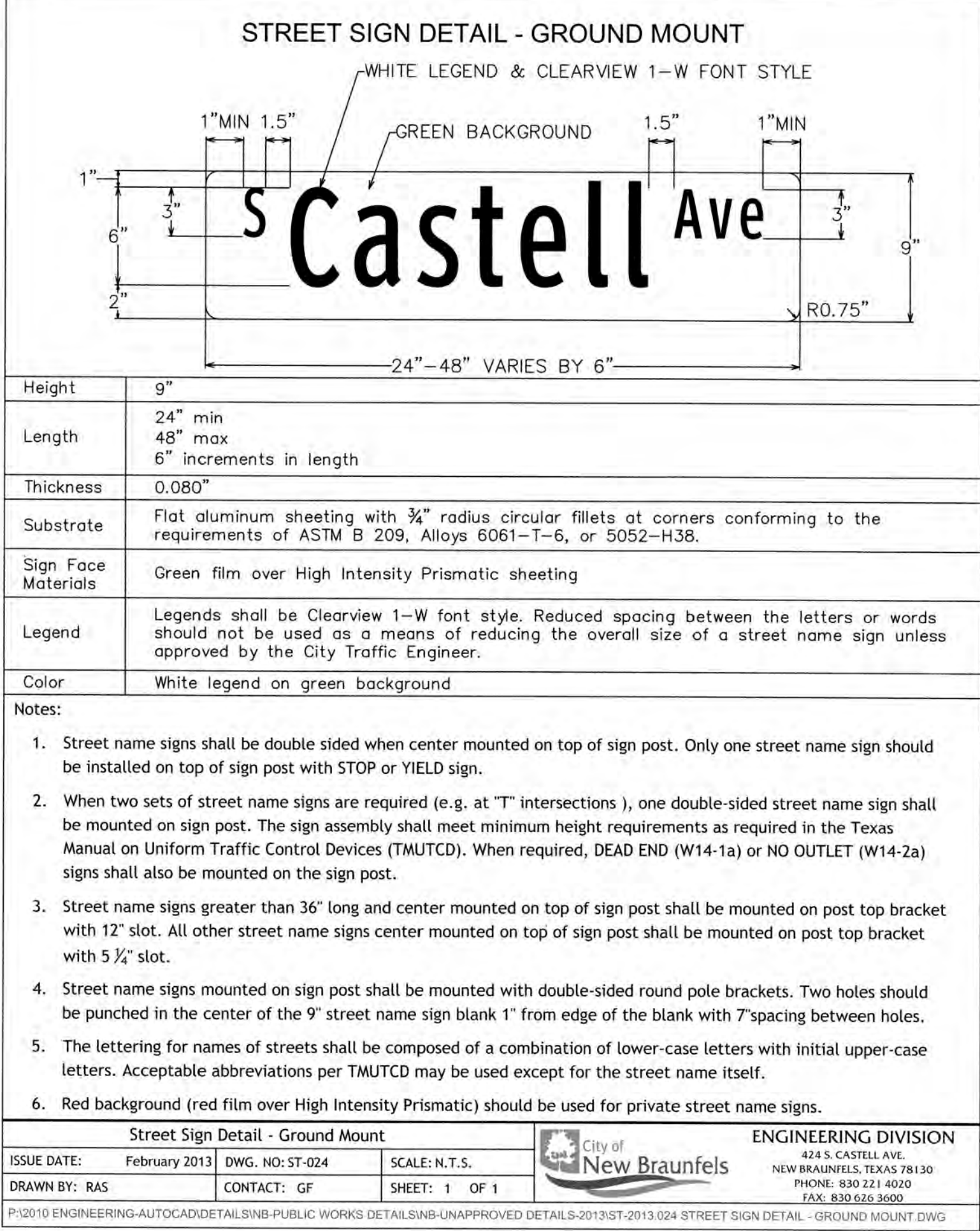
LEGEND

- W.C.R. = WHEELCHAIR RAMPS
SEE SHEET 5.7
- ① = WHEELCHAIR RAMP TYPE I
SEE SHEET 5.7
- ② = WHEELCHAIR RAMP TYPE II
SEE SHEET 5.7
- DEVELOPER INSTALLED SIDEWALK
- SIDEWALK TO BE BUILT AT THE TIME
OF HOME CONSTRUCTION
- PROPOSED DRIVEWAY LOCATION
- BLUE RAISED REFLECTIVE
PAVEMENT MARKER
- PROPOSED FIRE HYDRANT

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
TRAFFIC SIGNAGE & PEDESTRIAN ACCESSIBILITY PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

5.10



PUBLIC WORKS

Sign Requirements

Traffic signs shall be used in accordance with the latest revision of the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and where justified by engineering judgment or study. Traffic signs include regulatory signs, warning signs, street name signs and object markers.

All signs shall be shown in the engineering plans for review and approval as part of the plan & profile sheet or separate signing & pavement marking layout sheet. The engineering plans shall include sign location, name, designation and size. Sign standards shall be included in the engineering plans.

Installation

The Contractor shall furnish and install all regulatory, warning and street name signs and sign mounts in accordance with approved engineering plans.

Mounting

The Wedge Anchor Steel System and Thin-Walled Tubing Post shall be used for signs with up to 10 square feet of sign area. Materials and installation should follow the Texas Department of Transportation (TxDOT) Traffic Standards SMD (GEN) - 08 and SMD (TWT) - 08.

The Triangular Slip Base System and 10 BWG Tubing Post shall be used for signs that have 10 to 16 square feet of sign area. Materials and installation should follow the TxDOT Traffic Standards SMD (GEN) - 08 and SMD (SLIP-1-3) - 08.

Object markers materials and installation should follow the TxDOT Traffic Standards D & OM (1-5) - 10.

Materials

Sign materials including aluminum sign blanks and sign face materials should follow the TxDOT Traffic Standards TSR (1-5) - 08 and Departmental Material Specifications DMS-7110 and DMS-8300.

The City of New Braunfels will inspect all signs at final inspection.



PUBLIC WORKS

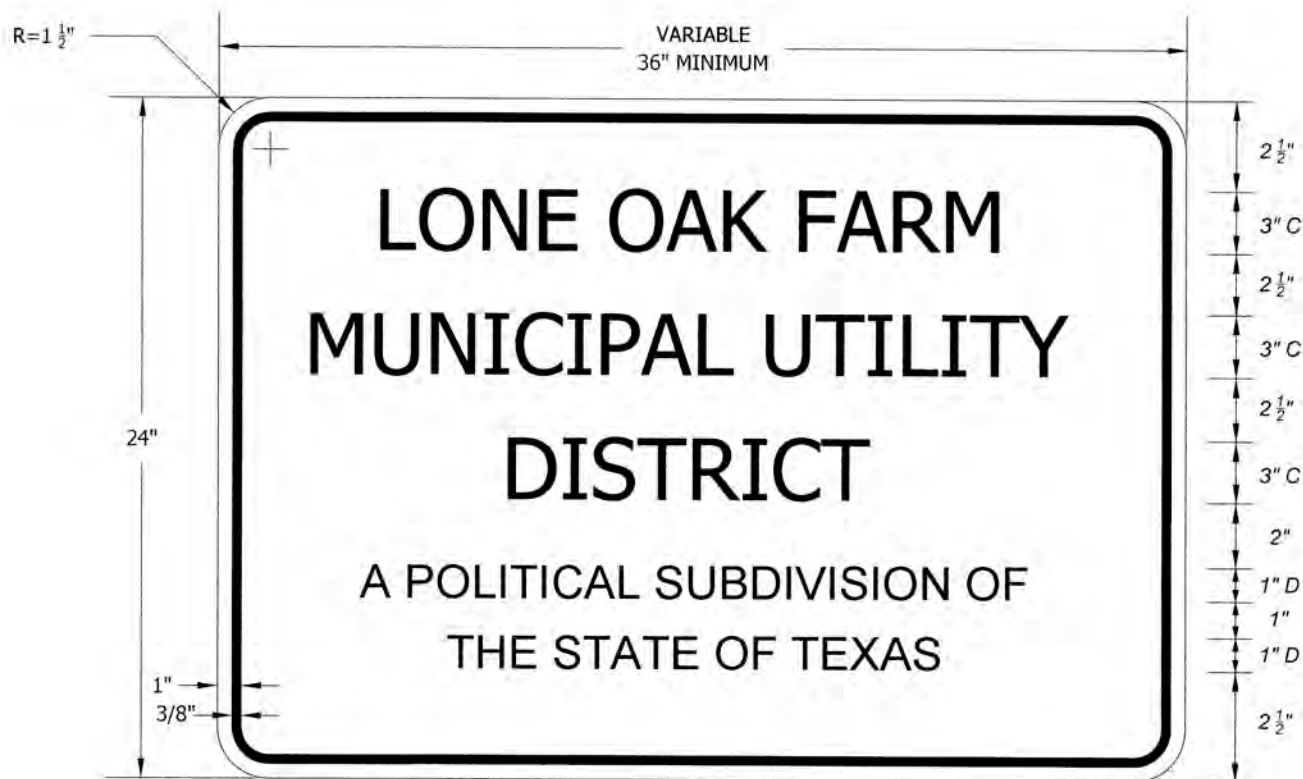
Pavement Marking Requirements

Pavement markings shall be used in accordance with the latest revision of the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and where justified by engineering judgment or study.

All pavement markings shall be shown in the engineering plans for review and approval as part of the plan & profile sheet or separate signing & pavement marking layout sheet. Design, materials and installation should follow TxDOT Traffic Standards PM (1-4) - 12. City of San Antonio Traffic Engineering Standards for pavement markings designating traffic lanes, lane usage & lane regulations and pedestrian/bicyclist accommodations may be used for additional standard design details. Marking standards shall be included in the engineering plans.

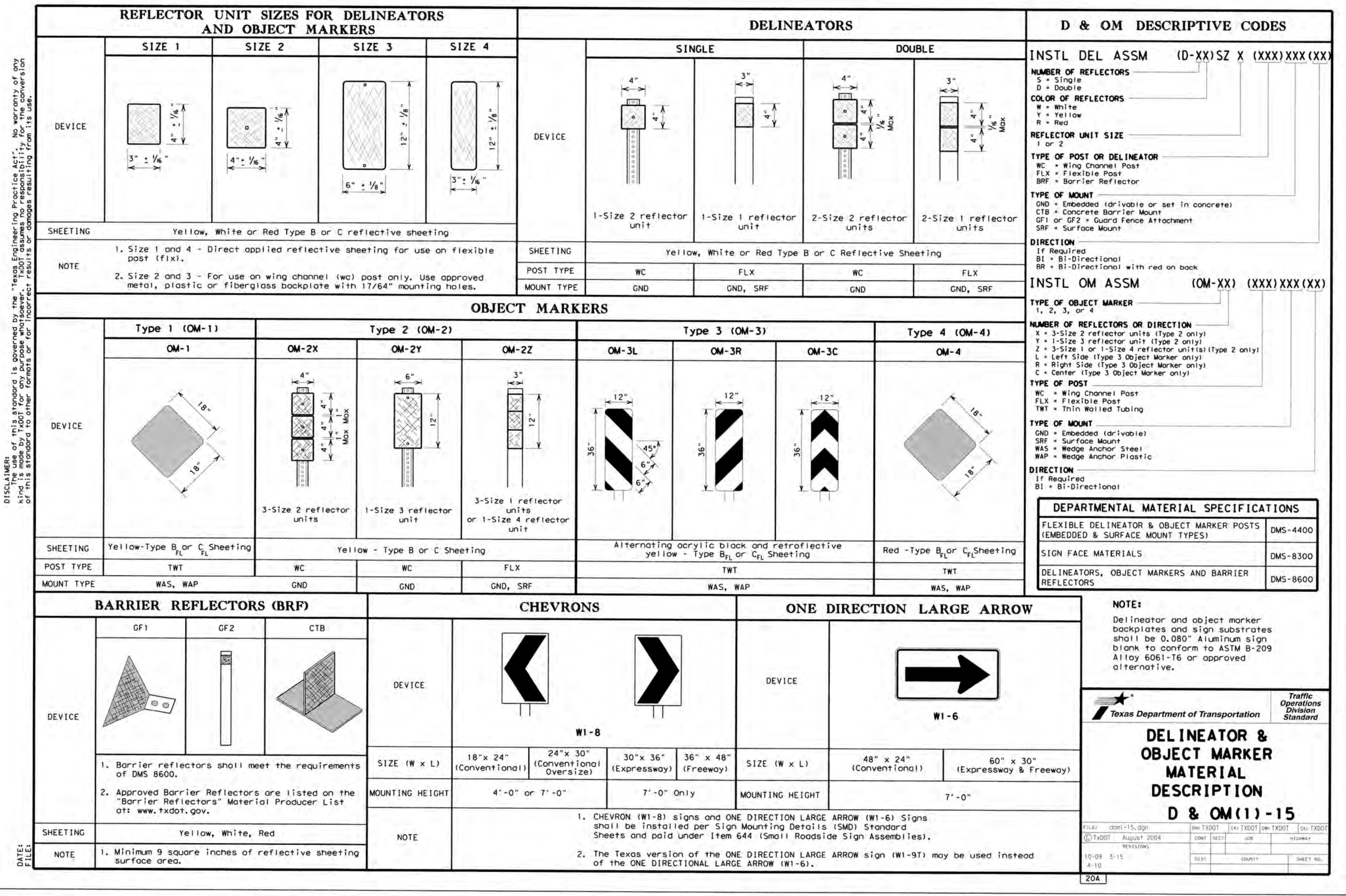
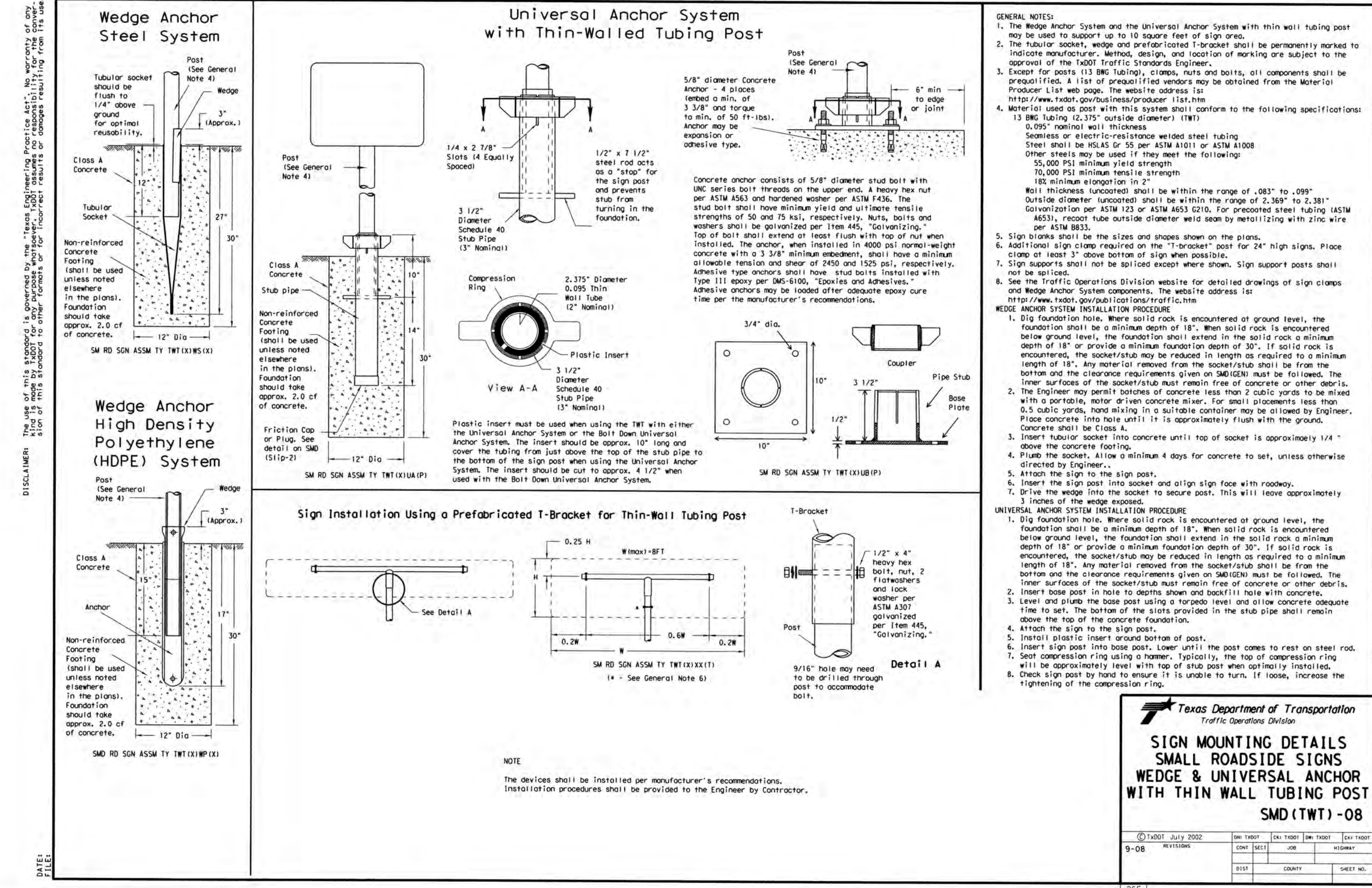
All pavement markings shall be Type I Hot Applied Thermoplastic and meet TxDOT Departmental Material Specifications DMS-8220. Type II Traffic Paint markings shall only be used as sealer and meet TxDOT Departmental Material Specifications DMS-8200.

The Contractor shall notify the City of New Braunfels at least twenty-four (24) hours prior to the installation of all sealer and final markings. The Contractor may be responsible for placing spot tabs before marking application. The City will inspect all markings at final application.



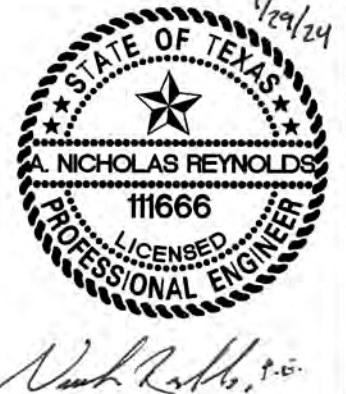
NOTE:

- SIGNS SHALL BE INSTALLED OFF THE RIGHT-OF-WAY.
- REFER TO TxDOT SIGN MOUNTING DETAILS
- COLORS: A DISTRICT'S SIGN BACKGROUND IS WHITE REFLECTIVE AND BORDER AND LEGEND ARE BLACK



ISSUE DATE

REVISIONS



Nicholas Reynolds, P.E.

NAVARRO SUBDIVISION - UNIT 8
(TYPE 3 DEVELOPMENT)
GUADALUPE COUNTY, NEW BRAUNFELS ETJ, TEXAS
SANITARY SEWER IMPROVEMENTS

INDEX

DESCRIPTION	SHEET NO.
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LONE OAK FARM MUNICIPAL UTILITY DISTRICT (MUD)

DISTRICT ENGINEER: KEN HEROY - JONES-HEROY ASSOCIATES, INC.

REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO WATER, WASTEWATER AND DRAINAGE AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

SEQUENCE OF CONSTRUCTION:

CONSTRUCTION ACTIVITY WILL INCLUDE:

1. INSTALLATION OF TEMPORARY BMP's
2. SITE CLEARING AND GRUBBING ACTIVITIES FOR STREETS.
3. ROUGH SUBGRADE PREPARATION: EARTHWORK, GRADING, STREETS, EXCAVATION AND EMBANKMENT.
4. UTILITY TRENCHING AND INSTALLATION.
5. FINAL STREET PREPARATION, CURBING, AND PAVING ACTIVITIES.
6. HOME CONSTRUCTION.
7. SITE CLEAN UP AND REMOVAL OF TEMPORARY BMP's.

PERMITS OR APPROVALS MUST BE OBTAINED FROM THE FOLLOWING REGULATORY AGENCIES LISTED BELOW:

- CITY OF NEW BRAUNFELS
- CITY OF SEGUIN UTILITIES
- CRYSTAL CLEAR SPECIAL UTILITY DISTRICT
- GUADALUPE VALLEY ELECTRIC COOPERATIVE

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.

ANY REVISIONS REQUIRED PER THE REGULATORY AGENCIES THAT CHANGE THE CIVIL SITE PLANS MUST BE SUBMITTED TO THE CITY OF NEW BRAUNFELS FOR ACCEPTANCE.

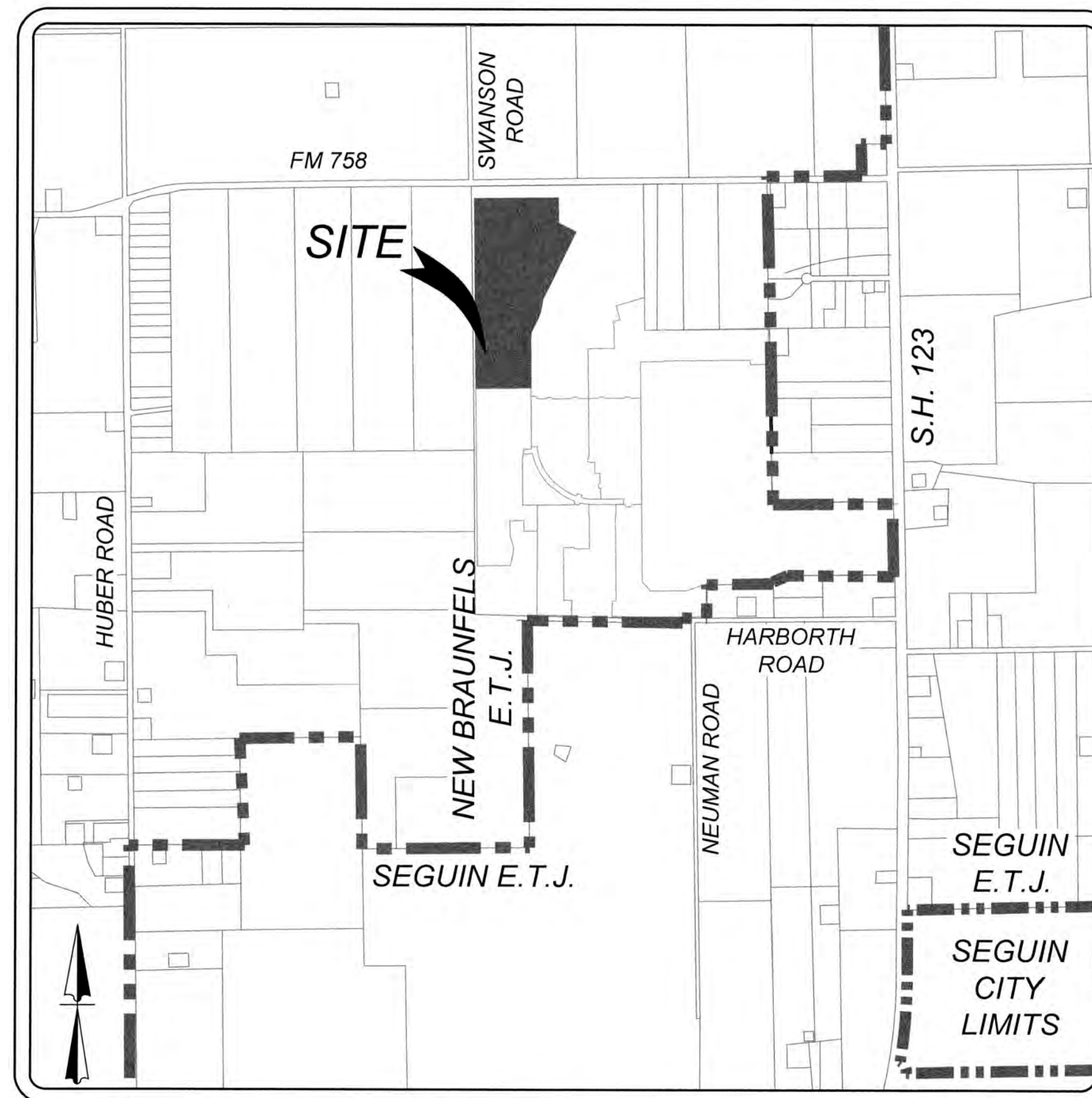
FEMA FLOODPLAIN
NO PORTION OF ANY RESIDENTIAL LOTS ON NAVARRO SUBDIVISION UNIT 8 ARE IN THE SPECIAL FLOOD HAZARD ZONE ACCORDING TO FEMA FLOOD MAP COMMUNITY PANEL NO. 48187C0130F, DATED NOVEMBER 2, 2007.

EDWARDS AQUIFER
NO PORTION OF ANY LOTS ON NAVARRO SUBDIVISION, UNIT-8 ARE LOCATED WITHIN EDWARDS AQUIFER TRANSITION ZONE, CONTRIBUTING ZONE OR RECHARGE ZONE.

GAS UTILITY
GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE CITY FOR ANY WORK WITHIN PUBLIC RIGHT-OF-WAY.

LEGAL DESCRIPTION
NAVARRO SUBDIVISION UNIT 8

BEING A 46.98 ACRE TRACT OF LAND SITUATED IN THE ANTONIO MARIA ESNAURIZAR SURVEY, ABSTRACT 20, GUADALUPE COUNTY, TEXAS, AND BEING PORTIONS OF A CALLED 94.00 ACRE TRACT OF LAND CONVEYED TO LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD RECORDED IN DOCUMENT NO. 202199023129 AND A PORTION OF A CALLED 96.41 ACRE TRACT OF LAND CONVEYED TO 325 NAVARRO FARM LP RECORDED IN DOCUMENT NO. 202199023129 OF THE OFFICIAL PUBLIC RECORDS OF GUADALUPE COUNTY, TEXAS.



LOCATION MAP
NOT-TO-SCALE

IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.

OWNER/DEVELOPER:
LENNAR HOMES OF TEXAS
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210)403-6282

KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, A. NICHOLAS REYNOLDS, A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN TO THESE PLANS AND ALL ENGINEERING ASPECTS ARE IN COMPLIANCE WITH CITY AND STATE ENGINEERING REGULATIONS AND LAWS.

REGISTERED PROFESSIONAL ENGINEER
P.E. REGISTRATION NO. 111666



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
ORGANIZED SEWAGE COLLECTION SYSTEM (SCS)
GENERAL CONSTRUCTION NOTES

- THIS ORGANIZED SEWAGE COLLECTION SYSTEM (SCS) MUST BE CONSTRUCTED IN ACCORDANCE WITH 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 17 SUBCHAPTER C AND ANY LOCAL GOVERNMENT STANDARD SPECIFICATIONS.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROPOSED REGULATED PROJECT MUST BE PROVIDED WITH COPIES OF THE SCS PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS MUST BE REQUIRED TO KEEP ON-SITE COPIES OF THE PLAN AND THE APPROVAL LETTER.
3. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE PRESIDING TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY REGULATED ACTIVITIES. THIS NOTICE MUST INCLUDE:
- THE NAME OF THE APPROVED PROJECT;
 - THE ACTIVITY START DATE, AND
 - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
4. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED SCS APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF AN SCS APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.
5. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (EAS) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
6. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TCEQ OF THE FEATURE DISCOVERED. A GEOLOGISTS ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING AND THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.
7. SEWER LINES LOCATED WITHIN OR CROSSING THE 5-YEAR FLOODPLAIN OF A DRAINAGE WAY WILL BE PROTECTED FROM FUNDAMENTAL AND STRIKE VELOCITIES WHICH COULD CAUSE EROSION AND SCOURING OF BACKFILL. THE TRENCH MUST BE CAPPED WITH CONCRETE TO PREVENT SCOURING OF BACKFILL, OR THE SEWER LINES MUST BE ENCASED IN CONCRETE. ALL CONCRETE SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES.
8. ALL MANHOLES CONSTRUCTED OR REHABILITATED ON THIS PROJECT MUST HAVE WATERTIGHT SIZE ON SIZE RESILIENT CONNECTORS ALLOWING FOR DIFFERENTIAL SETTLEMENT. IF MANHOLES ARE CONSTRUCTED WITHIN THE 100-YEAR FLOODPLAIN, THE COVER MUST HAVE A GASKET AND BE BOLTED TO THE RING. WHERE GASKETED MANHOLE COVERS ARE REQUIRED FOR MORE THAN THREE MANHOLES IN SEQUENCE OR FOR MORE THAN 1500 FEET, ALTERNATE MEANS OF VENTING WILL BE PROVIDED. BRICKS ARE NOT AN ACCEPTABLE CONSTRUCTION MATERIAL FOR ANY PORTION OF THE MANHOLE.
- THE DIAMETER OF THE MANHOLES MUST BE A MINIMUM OF FOUR FEET AND THE MANHOLE FOR ENTRY MUST HAVE A MINIMUM CLEAR OPENING DIAMETER OF 30 INCHES. THESE DIMENSIONS AND OTHER DETAILS SHOWING COMPLIANCE WITH THE COMMISSIONS RULES CONCERNING MANHOLES AND SEWER LINE/MANHOLE INVERTS DESCRIBED IN 30 TAC §217.55 ARE INCLUDED ON PLAN SHEET 6.7.
- IT IS SUGGESTED THAT ENTRANCE INTO MANHOLES IN EXCESS OF FOUR FEET DEEP BE ACCOMPLISHED BY MEANS OF A PORTABLE LADDER. THE INCLUSION OF STEPS IN A MANHOLE IS PROHIBITED.
9. WHERE WATER LINES AND NEW SEWER LINE ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).
10. WHERE SEWERS LINES DEViate FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER: **NOT ALLOWED**
- IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: **NOT ALLOWED**
- SPECIFIC CARE MUST BE TAKEN TO ENSURE THAT THE JOINT IS PLACED IN THE CENTER OF THE TRENCH AND PROPERLY BEDDED IN ACCORDANCE WITH 30 TAC §217.54.
11. NEW SEWAGE COLLECTION SYSTEM LINES MUST BE CONSTRUCTED WITH STUB OUTS FOR THE CONNECTION OF ANTICIPATED EXTENSIONS. THE LOCATION OF SUCH STUB OUTS MUST BE MARKED ON THE GROUND SUCH THAT THEIR LOCATION CAN BE EASILY DETERMINED AT THE TIME OF CONNECTION OF THE EXTENSIONS. SUCH STUB OUTS MUST BE MANUFACTURED WYES OR TEES THAT ARE COMPATIBLE IN SIZE AND MATERIAL WITH BOTH THE SEWER LINE AND THE EXTENSION. AT THE TIME OF ORIGINAL CONSTRUCTION, NEW STUB-OUTS MUST BE CONSTRUCTED SUFFICIENTLY TO EXTEND BEYOND THE END OF THE STREET PAVEMENT. ALL STUB-OUTS MUST BE SEALED WITH A MANUFACTURED CAP TO PREVENT LEAKAGE. EXTENSIONS THAT WERE NOT ANTICIPATED AT THE TIME OF ORIGINAL CONSTRUCTION OR THAT ARE TO BE CONNECTED TO AN EXISTING SEWER LINE ARE FURNISHED WITH STUB OUTS MUST BE CONNECTED USING A MANUFACTURED SADDLE AND IN ACCORDANCE WITH ACCEPTED PLUMBING TECHNIQUES.
- IF NO STUB-OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET **N1A**. (FOR POTENTIAL FUTURE LATERALS).
- THE PRIVATE SERVICE LATERAL STUB-OUTS MUST BE INSTALLED AS SHOWN ON THE PLAN AND PROFILE SHEETS ON PLAN SHEET **N1A** AND MARKED AFTER BACKFILLING AS SHOWN IN THE DETAIL ON PLAN SHEET **N1A**.
12. TRENCHING, BEDDING AND BACKFILL MUST CONFORM WITH 30 TAC §217.54. THE BEDDING AND BACKFILL FOR FLEXIBLE PIPE MUST COMPLY WITH THE STANDARDS OF ASTM D-2321, CLASSES II, III, IV OR V. RIGID PIPE BEDDING MUST COMPLY WITH THE REQUIREMENTS OF ASTM C 12 (ANSI A 106.2) CLASSES A, B OR C.
13. SEWER LINES MUST BE TESTED FROM MANHOLE TO MANHOLE. WHEN A NEW SEWER LINE IS CONNECTED TO AN EXISTING STUB OR CLEAN-OUT, IT MUST BE TESTED FROM EXISTING MANHOLE TO NEW MANHOLE. IF A STUB OR CLEAN-OUT IS USED AT THE END OF THE PROPOSED SEWER LINE, NO PRIVATE SERVICE ATTACHMENTS MAY BE CONNECTED BETWEEN THE LAST MANHOLE AND THE CLEANOUT UNLESS IT CAN BE CERTIFIED AS CONFORMING WITH THE PROVISIONS OF 30 TAC §213.5(C)(3)(E).

EQUATION C.3 $T = \frac{0.085 \times D \times K}{Q}$

WHERE:

T = TIME FOR PRESSURE TO DROP 1.0 POUND PER SQUARE INCH GAUGE IN SECONDS
K = 0.000419 X D X L, BUT NOT LESS THAN 1.0
D = AVERAGE INSIDE PIPE DIAMETER IN INCHES
L = LENGTH OF LINE OF SAME SIZE BEING TESTED, IN FEET
Q = RATE OF LOSS, 0.0015 CUBIC FEET PER MINUTE PER SQUARE FOOT INTERNAL SURFACE

(C) SINCE A K VALUE OF LESS THAN 1.0 MAY NOT BE USED, THE MINIMUM TESTING TIME FOR EACH PIPE DIAMETER IS SHOWN IN THE FOLLOWING TABLE C.3:

PIPE DIAMETER (INCHES)	MINIMUM TIME (SECONDS)	LENGTH FOR MINIMUM (FEET)	TIME FOR LONGER LENGTH (SECONDS/FOOT)
6	340	398	0.855
8	454	298	1.520
10	567	239	2.374
12	680	199	3.419
15	850	159	5.342
18	1020	133	7.693
21	1190	114	10.471
24	1360	100	13.676
27	1530	88	17.309
30	1700	80	21.369
33	1870	72	25.856

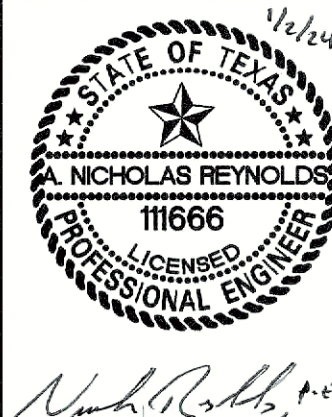
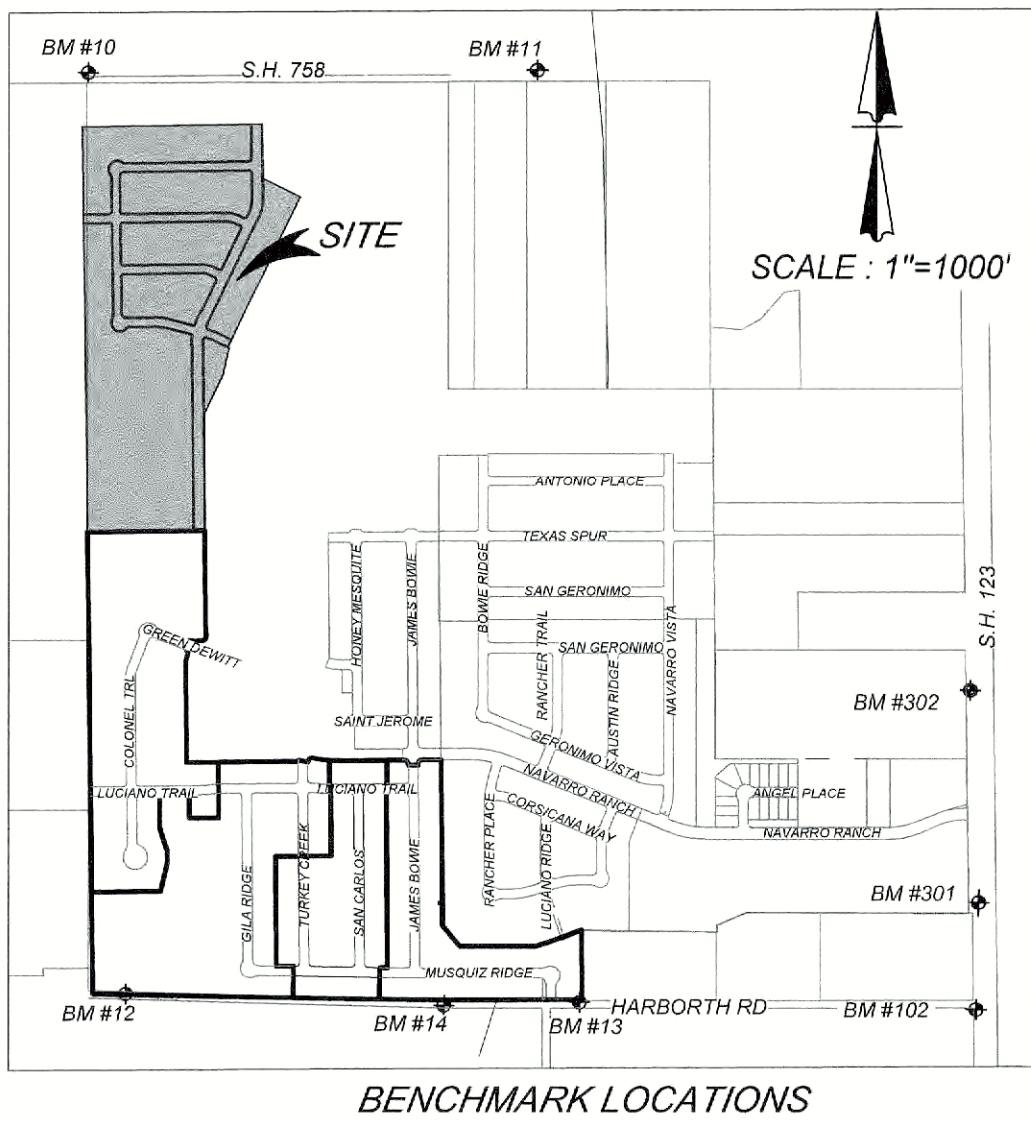
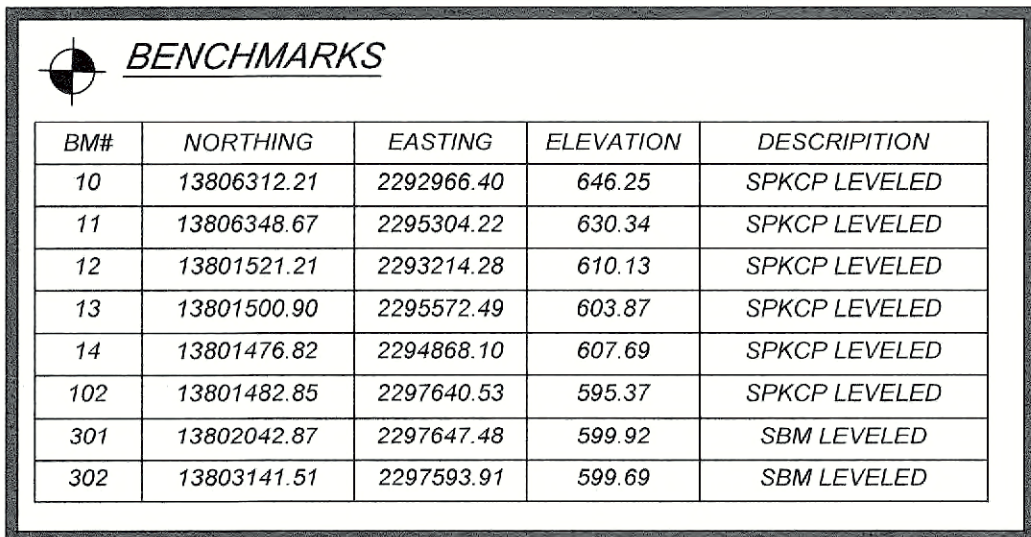
- (1) AN OWNER MAY STOP TEST IF NO PRESSURE LOSS HAS OCCURRED DURING THE FIRST 25% OF THE CALCULATED TESTING TIME.
- (E) IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.
- (F) WASTEWATER COLLECTION SYSTEM PIPES WITH A 27 INCH OR LARGER AVERAGE INSIDE DIAMETER MAY BE AIR TESTED AT EACH JOINT INSTEAD OF FOLLOWING THE PROCEDURE OUTLINED IN THIS SECTION.
- (G) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33 INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.
- (2) INFILTRATION/EXFILTRATION TEST.
- (A) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF 2.0 FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE.
- (B) AN OWNER SHALL USE AN INFILTRATION TEST IN LIEU OF AN EXFILTRATION TEST WHEN PIPES ARE INSTALLED BELOW THE GROUNDWATER LEVEL.
- (C) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE. OR AT LEAST TWO FEET ABOVE EXISTING GROUNDWATER LEVEL, WHICHEVER IS GREATER.
- (D) FOR CONSTRUCTION WITHIN A 25-YEAR FLOOD PLAIN, THE INFILTRATION OR EXFILTRATION MUST NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT THE SAME MINIMUM TEST HEAD AS IN SUBPARAGRAPH (C) OF THIS PARAGRAPH.
- (E) IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, AN OWNER SHALL UNDERTAKE REMEDIAL ACTION IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED. AN OWNER SHALL RETEST A PIPE FOLLOWING A REMEDIATION ACTION.
- (b) IF A GRAVITY COLLECTION PIPE IS COMPOSED OF FLEXIBLE PIPE, DEFLECTION TESTING IS ALSO REQUIRED. THE FOLLOWING PROCEDURES MUST BE FOLLOWED:
- (1) FOR A COLLECTION PIPE WITH INSIDE DIAMETER LESS THAN 27 INCHES, DEFLECTION MEASUREMENT REQUIRES A RIGID MANDREL.
- (A) MANDREL SIZING.
- (I) A RIGID MANDREL MUST HAVE AN OUTSIDE DIAMETER (OD) NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER (ID) OR AVERAGE ID OF A PIPE, AS SPECIFIED IN THE APPROPRIATE STANDARD BY THE ASTM, AMERICAN WATER WORKS ASSOCIATION, UNI-BELL, OR AMERICAN NATIONAL STANDARDS INSTITUTE, OR ANY RELATED APPENDIX.
- (II) IF A MANDREL SIZING DIAMETER IS NOT SPECIFIED IN THE APPROPRIATE STANDARD, THE MANDREL MUST HAVE AN OD EQUAL TO 95% OF THE ID OF A PIPE. IN THIS CASE, THE ID OF THE PIPE, FOR THE PURPOSE OF DETERMINING THE OD OF THE MANDREL, MUST EQUAL BE THE AVERAGE OUTSIDE DIAMETER MINUS TWO MINIMUM WALL THICKNESSES FOR OD CONTROLLED PIPE AND THE AVERAGE INSIDE DIAMETER FOR ID CONTROLLED PIPE.
- (III) ALL DIMENSIONS MUST MEET THE APPROPRIATE STANDARD.
- (B) MANDREL DESIGN.
- (I) A RIGID MANDREL MUST BE CONSTRUCTED OF A METAL OR A RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
- (II) A MANDREL MUST HAVE NINE OR MORE ODD NUMBER OF RUNNERS OR LEGS.
- (III) A BARREL SECTION LENGTH MUST EQUAL AT LEAST 75% OF THE INSIDE DIAMETER OF A PIPE.
- (IV) EACH SIZE MANDREL MUST USE A SEPARATE PROVING RING.
- (C) METHOD OPTIONS.
- (I) AN ADJUSTABLE OR FLEXIBLE MANDREL IS PROHIBITED.
- (II) A TEST MAY NOT USE TELEVISION INSPECTION AS A SUBSTITUTE FOR A DEFLECTION TEST.
- (III) IF REQUESTED, THE EXECUTIVE DIRECTOR MAY APPROVE THE USE OF A DEFLECTION MANDREL WITH A MANDREL WITH REMOVABLE LEGS OR RUNNERS ON A CASE-BY-CASE BASIS.
- (2) FOR A GRAVITY COLLECTION SYSTEM PIPE WITH AN INSIDE DIAMETER 27 INCHES AND GREATER, OTHER TEST METHODS MAY BE USED TO DETERMINE VERTICAL DEFLECTION.
- (3) A DEFLECTION TEST METHOD MUST BE ACCURATE TO WITHIN PLUS OR MINUS 0.2% DEFLECTION.
- (4) AN OWNER SHALL NOT CONDUCT A DEFLECTION TEST UNTIL AT LEAST 30 DAYS AFTER THE FINAL BACKFILL.
- (5) GRAVITY COLLECTION SYSTEM PIPE DEFLECTION MUST NOT EXCEED FIVE PERCENT (5%).
- (6) IF A PIPE SECTION FAILS A DEFLECTION TEST, AN OWNER SHALL CORRECT THE PROBLEM AND CONDUCT A SECOND TEST AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
15. ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC §217.58.
- (a) ALL MANHOLES MUST PASS A LEAKAGE TEST.
- (b) AN OWNER SHALL TEST EACH MANHOLE (AFTER ASSEMBLY AND BACKFILLING) FOR LEAKAGE SEPARATE AND INDEPENDENT OF THE COLLECTION SYSTEM PIPES, BY HYDROSTATIC EXFILTRATION TESTING, VACUUM TESTING, OR OTHER METHOD APPROVED BY THE EXECUTIVE DIRECTOR.
- (1) HYDROSTATIC TESTING.
- (A) THE MAXIMUM LEAKAGE FOR HYDROSTATIC TESTING OR ANY ALTERNATIVE TEST METHODS IS 0.025 GALLONS PER FOOT DIAMETER PER FOOT OF MANHOLE DEPTH PER HOUR.
- (B) TO PERFORM A HYDROSTATIC EXFILTRATION TEST, AN OWNER SHALL SEAL ALL WASTEWATER PIPES COMING INTO A MANHOLE WITH AN INTERNAL PIPE PLUG, FILL THE MANHOLE WITH WATER, AND MAINTAIN THE TEST FOR AT LEAST ONE HOUR.
- (C) A TEST FOR CONCRETE MANHOLES MAY USE A 24-HOUR WETTING PERIOD BEFORE TESTING TO ALLOW SATURATION OF THE CONCRETE.
- (2) VACUUM TESTING.
- (A) TO PERFORM A VACUUM TEST, AN OWNER SHALL SEAL ALL LIFT HOLES AND EXTERIOR JOINTS WITH A NON-SHRINK GROUT AND PLUG ALL PLUGS ENTERING A MANHOLE.
- (B) NO GROUT MUST BE PLACED IN HORIZONTAL JOINTS BEFORE TESTING.
- (C) STUB-OUTS, MANHOLE BOOTS, AND PIPE PLUGS MUST BE SECURED TO PREVENT MOVEMENT WHILE A VACUUM IS DRAWN.
- (D) AN OWNER SHALL USE A MINIMUM 60 INCH LB TORQUE WRENCH TO TIGHTEN THE EXTERNAL CLAMPS THAT SECURE A TEST COVER TO THE TOP OF A MANHOLE.
- (E) A TEST HEAD MUST BE PLACED AT THE INSIDE OF THE TOP OF A CONE SECTION, AND THE SEAL INFILATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- (F) THERE MUST BE A VACUUM OF 10 INCHES OF MERCURY INSIDE A MANHOLE TO PERFORM A VALID TEST.
- (G) A TEST DOES NOT BEGIN UNTIL AFTER THE VACUUM PUMP IS OFF.
- (H) A MANHOLE PASSES THE TEST IF AFTER 2.0 MINUTES AND WITH ALL VALVES CLOSED, THE VACUUM IS AT LEAST 9.0 INCHES OF MERCURY.

17. ALL PRIVATE SEWAGE TREATMENT LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC
§23.15(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SEWAGE
LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL
ENGINEER, TEXTILE ENGINEER, OR APPROPRIATELY TRAINED PERSON MUST VISUALLY INSPECT
THE PRIVATE SEWAGE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND
CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION.
THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND
PROVIDE TO THE COWPC A COPY OF THE CERTIFICATION UPON REQUEST. CONNECTIONS MAY ONLY BE
MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.
18. PIPE MATERIAL FOR THE WASTEWATER LINE SHALL BE SDR 26 PVC.

CITY OF SEGUIN WASTEWATER SYSTEM NOTE

SANITARY SEWER LATERALS / SERVICE LINES SHALL BE DESIGNED AND INSTALLED TO ENSURE THAT CLEANOUTS WILL NOT BE LOCATED WITHIN THE RESIDENTIAL DRIVEWAY, DRIVEWAY APRON, SIDEWALK, CURB AND / OR PUBLIC STREETS. THE BUILDER AND / OR DEVELOPER WILL BE RESPONSIBLE FOR REPAIR TO ROADWAY AND UTILITY INFRASTRUCTURE IF PUBLIC UTILITIES ARE INSTALLED INCORRECTLY.

RECONSTRUCTION OF MANHOLE STRUCTURE AND CONE MAY REQUIRE RE-COATING OF WASTEWATER MANHOLE IN ACCORDANCE WITH CITY REQUIREMENTS. CONFIRM WITH FIELD INSPECTOR AND WATER / WASTEWATER MAINTENANCE MANAGER.



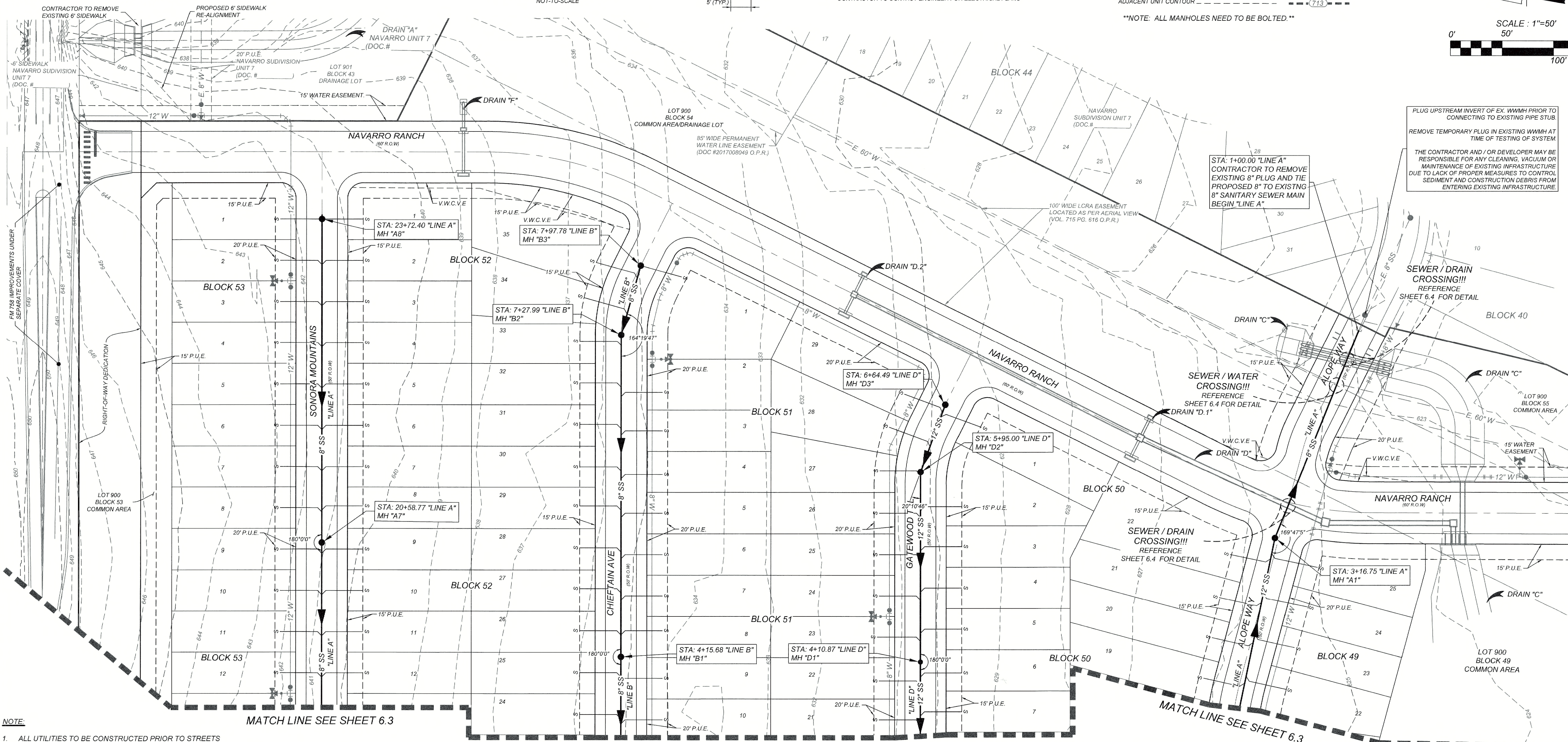
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- NOTE:
1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS
 2. NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS. THE BUILDER AND/OR DEVELOPER WILL BE RESPONSIBLE FOR REPAIR TO ROADWAY AND UTILITY INFRASTRUCTURE IF PUBLIC UTILITIES ARE INSTALLED INCORRECTLY.
 3. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
 4. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.

- NOTE:
1. SEWER PIPE WHERE WATER LINE CROSSES SHALL MEET THE REQUIREMENTS OF ASTM D2241. CONTRACTOR SHALL CENTER A 20 FOOT JOINT OF 160 P.S.I. PRESSURE RATED P.V.C. AT THE PROPOSED WATER CROSSING (NO SEPARATE PAY ITEM).
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 3. REFERENCE SHEET 6.1, SANITARY SEWER GENERAL NOTES, CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS.
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 5. SEE THIS SHEET FOR TYPICAL SANITARY SEWER / WATER CROSSING DETAIL.
 6. ALL MANHOLES SHALL HAVE CONCRETE RING ENCASUREMENT AND A WATER TIGHT RING AND COVER. SEE SHEET 6.8 FOR DETAILS.
 7. ALL SANITARY SEWER LATERALS SHALL BE INSTALLED AT 2% UNLESS OTHERWISE SPECIFIED.

UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK):
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

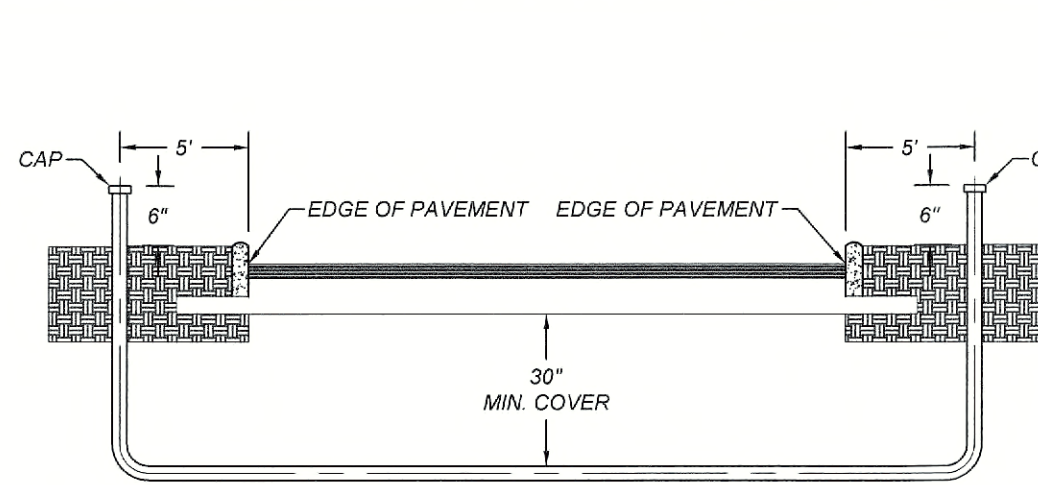
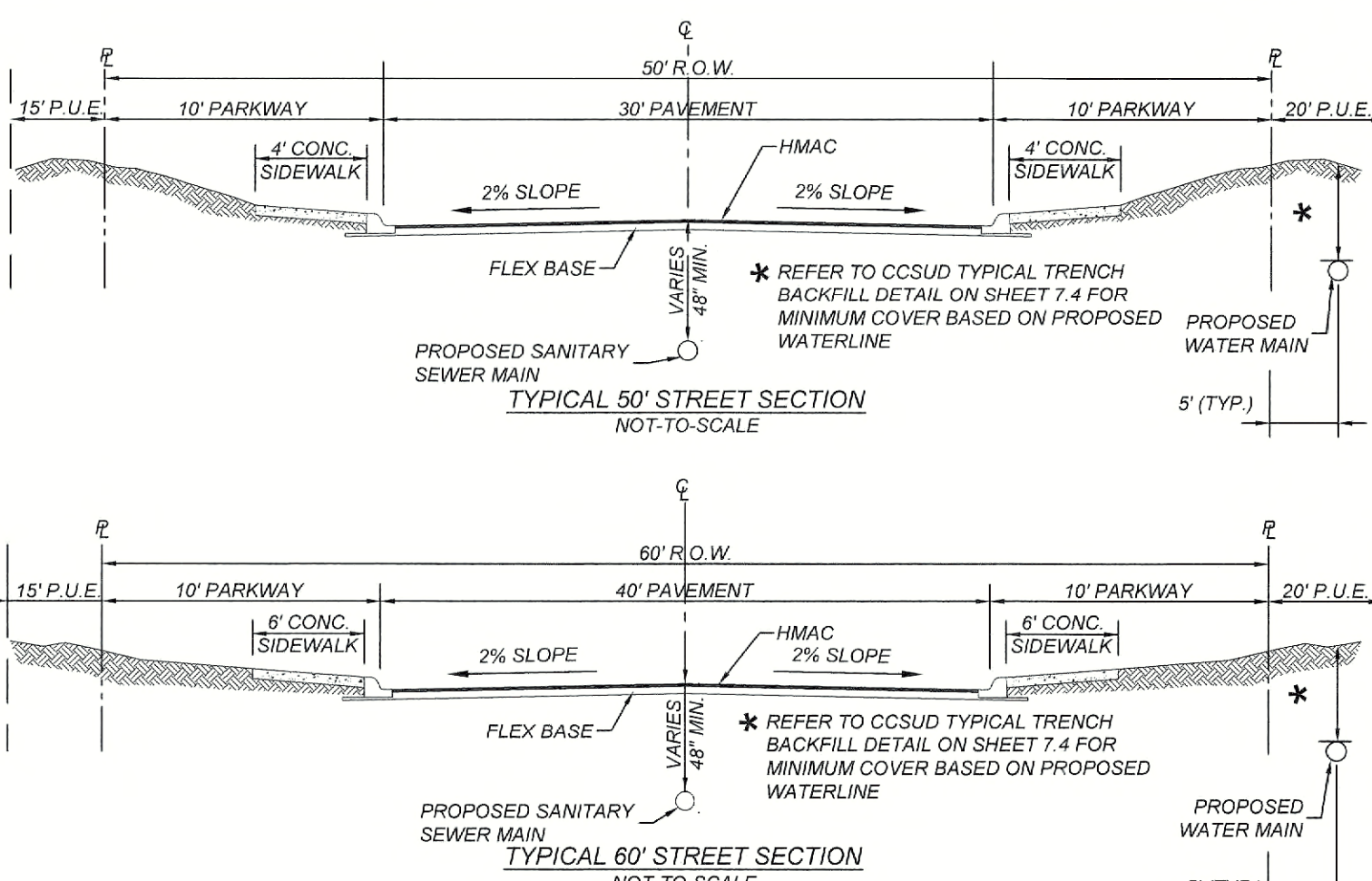
MATCH LINE SEE SHEET 6.3



TRENCH EXCAVATION SAFETY PROTECTION:
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CAUTION!!!
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CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.



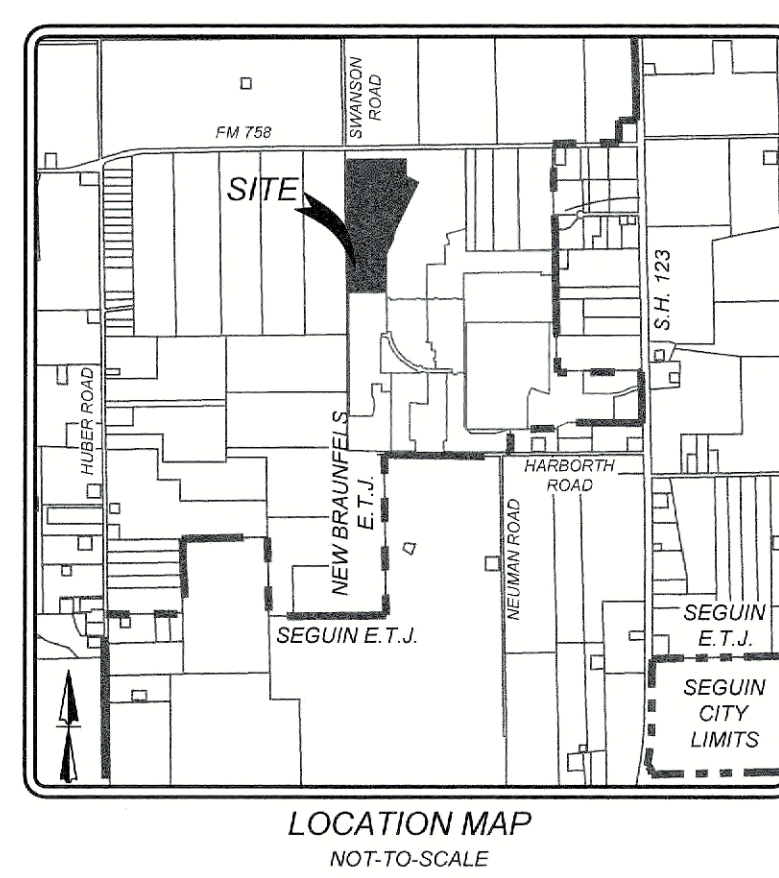
PRIVATE CONDUIT DETAIL
NOT TO SCALE
*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

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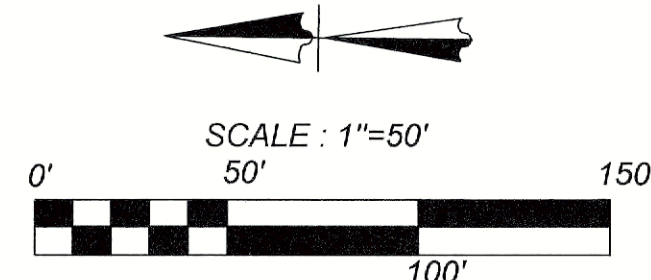
LEGEND

PROPOSED WATER MAIN	8" W
PROPOSED WATER SERVICE & METER BOX	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & W 3/4" WATER METER & METER BOX	W 3/4"
PROPOSED FIRE HYDRANT	FH
PUBLIC UTILITY EASEMENT	P.U.E.
VEHICULAR NON-ACCESS EASEMENT	V.N.A.E.
RIGHT OF WAY	R.O.W.
PROPOSED 8" SANITARY SEWER MAIN	8" SS
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PROPOSED TEE & WATER VALVE	TV
PROPOSED SANITARY SEWER LATERAL	SL
EXISTING WATER MAIN	E 8" W
EXISTING SANITARY SEWER MAIN	E 8" SS
EXISTING SANITARY SEWER MANHOLE	E 8" MH
EXISTING NATURAL GAS LINE	G
EXISTING OVERHEAD UTILITY LINE	OHE
EXISTING POWER POLE	PP
EXISTING CONTOUR	715
ADJACENT UNIT CONTOUR	713

NOTE: ALL MANHOLES NEED TO BE BOLTED.



LOCATION MAP
NOT TO SCALE



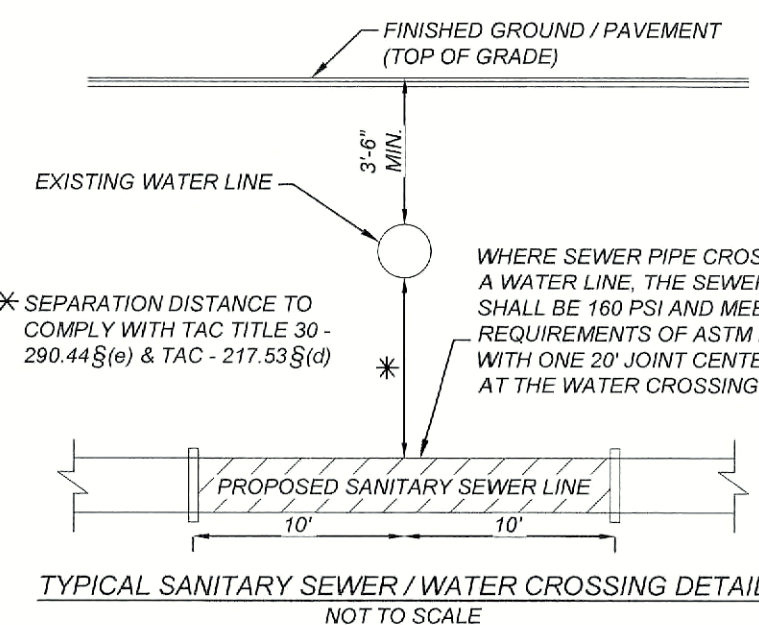
STA: 1+00.00 "LINE A"
CONTRACTOR TO REMOVE EXISTING 8" PLUG AND THE PROPOSED 8" TO EXISTING 8" SANITARY SEWER MAIN BEGIN "LINE A"

PLUG UPSTREAM INVERT OF EX. WMMH PRIOR TO CONNECTING TO EXISTING PIPE STUB.
REMOVE TEMPORARY PLUG IN EXISTING WMMH AT TIME OF TESTING OF SYSTEM.
THE CONTRACTOR AND / OR DEVELOPER MAY BE RESPONSIBLE FOR ANY CLEANING, VACUUM OR MAINTENANCE OF EXISTING INFRASTRUCTURE DUE TO LACK OF PROPER MEASURES TO CONTROL SEDIMENT AND CONSTRUCTION DEBRIS FROM ENTERING EXISTING INFRASTRUCTURE.

SEWER / DRAIN CROSSING!!!
REFERENCE SHEET 6.4 FOR DETAIL

SEWER / WATER CROSSING!!!
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NAVARRO SUBDIVISION - UNIT 8 NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY OVERALL SANITARY SEWER PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

6.2



1/6/24
N. Reynolds, P.E.

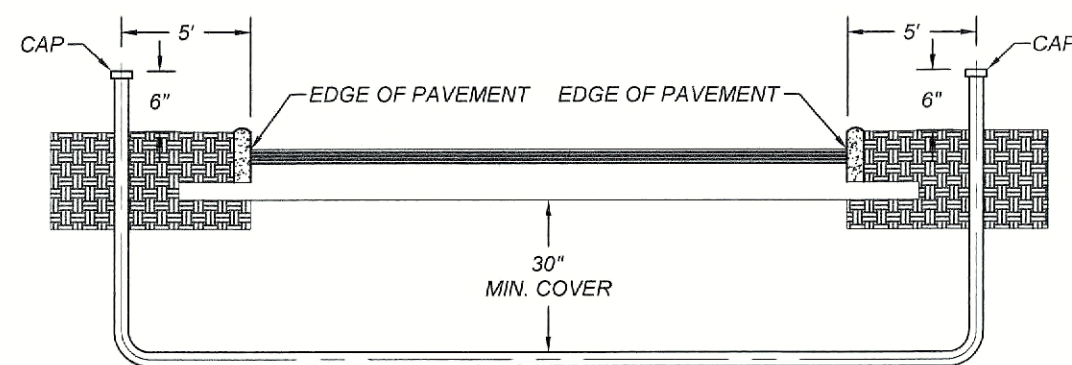
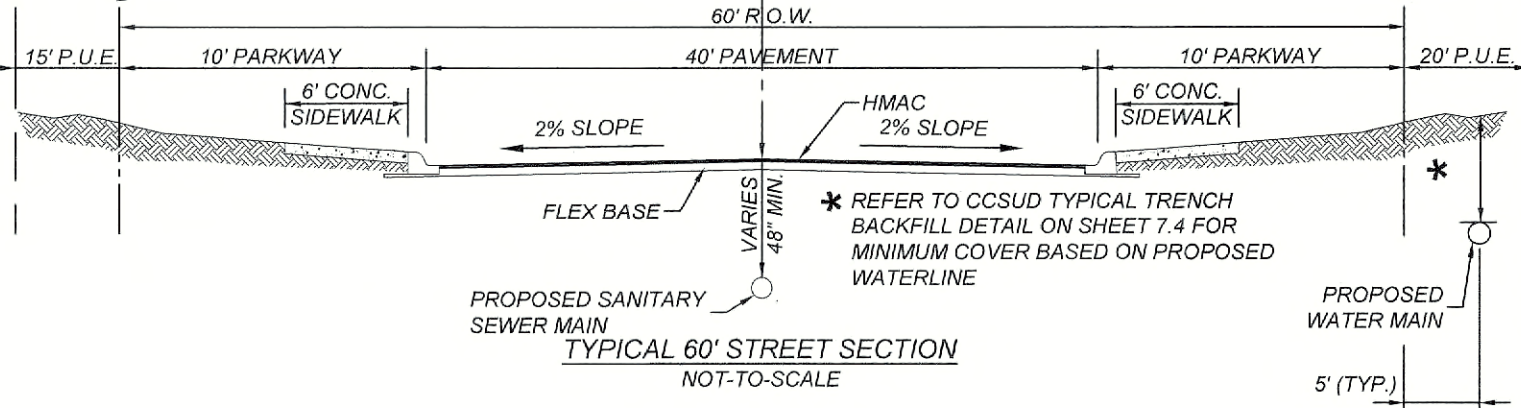
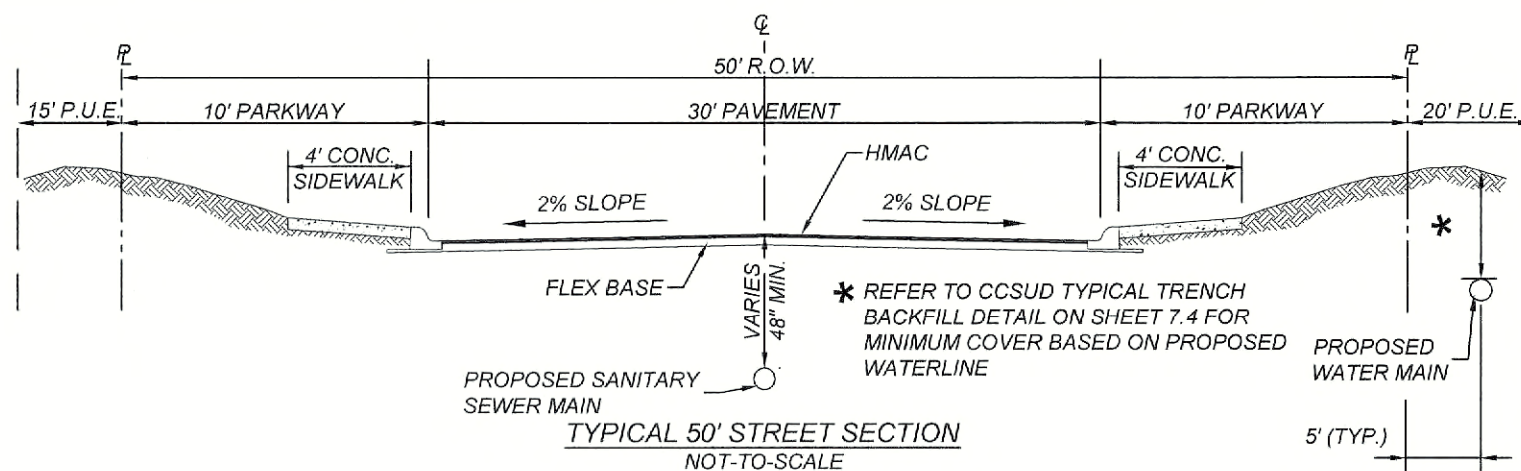
NEW
ENGINEERS + SURVEYING
Phone # (830) 220-5042 • Fax # (830) 627-5997
TBPE Firm # 9513 • TBPLS Firm # 1012300

ISSUE DATE
REVISIONS

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PRIVATE CONDUIT DETAIL
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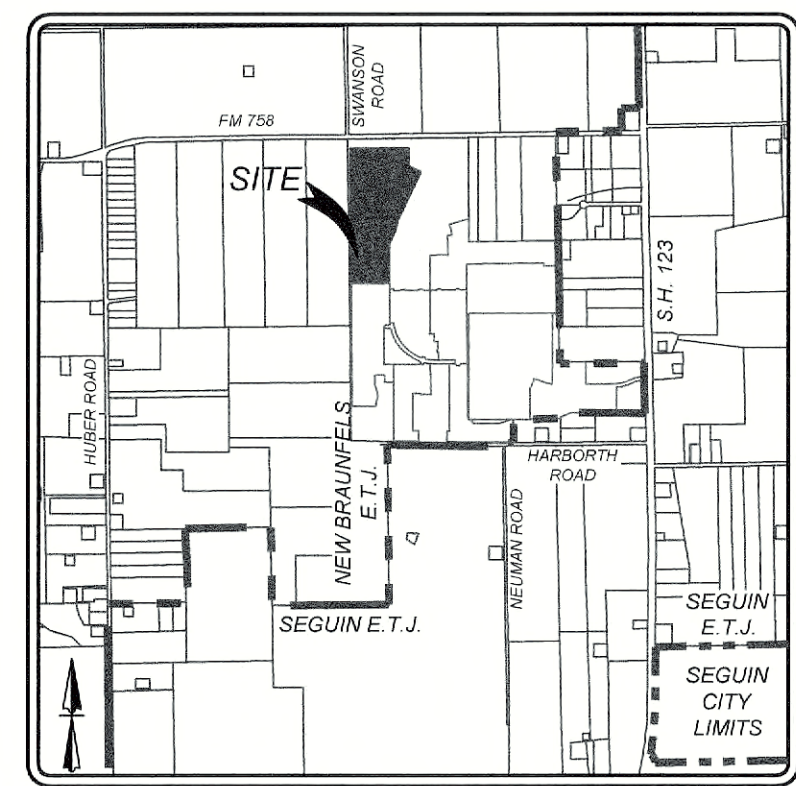
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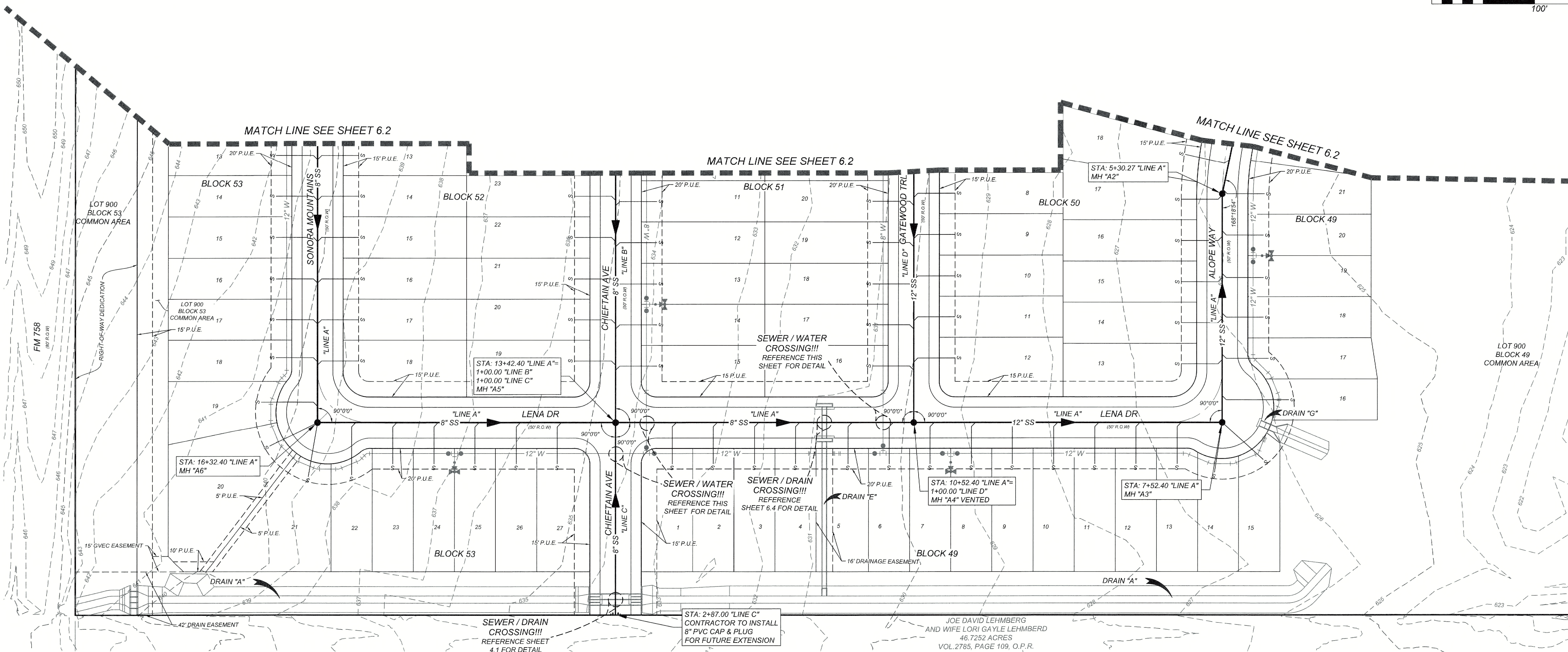
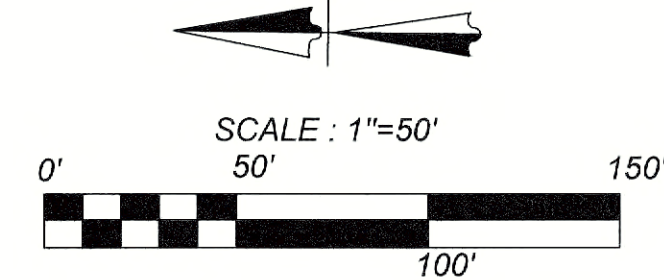
LEGEND

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LOCATION MAP
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NOTE:

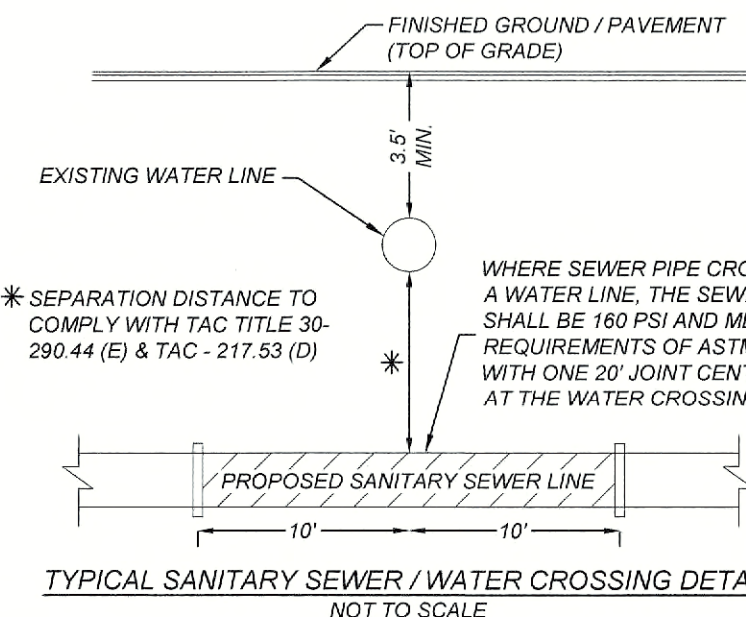
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OVERALL SANITARY SEWER PLAN

JOB NO. 314-28-19
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ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

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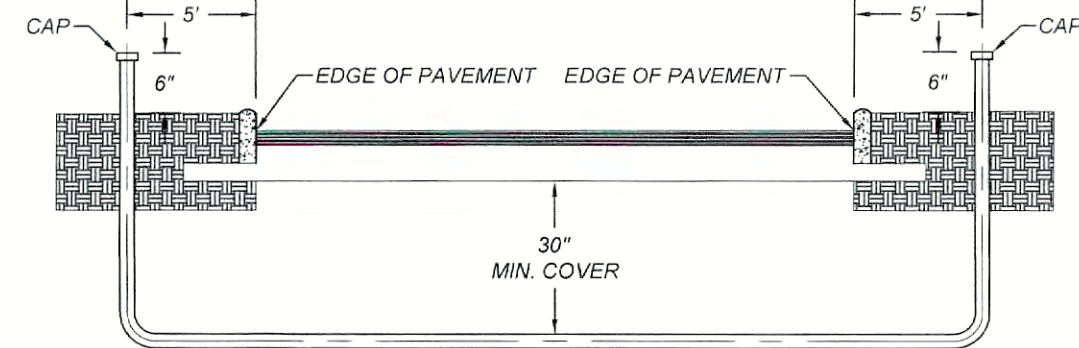
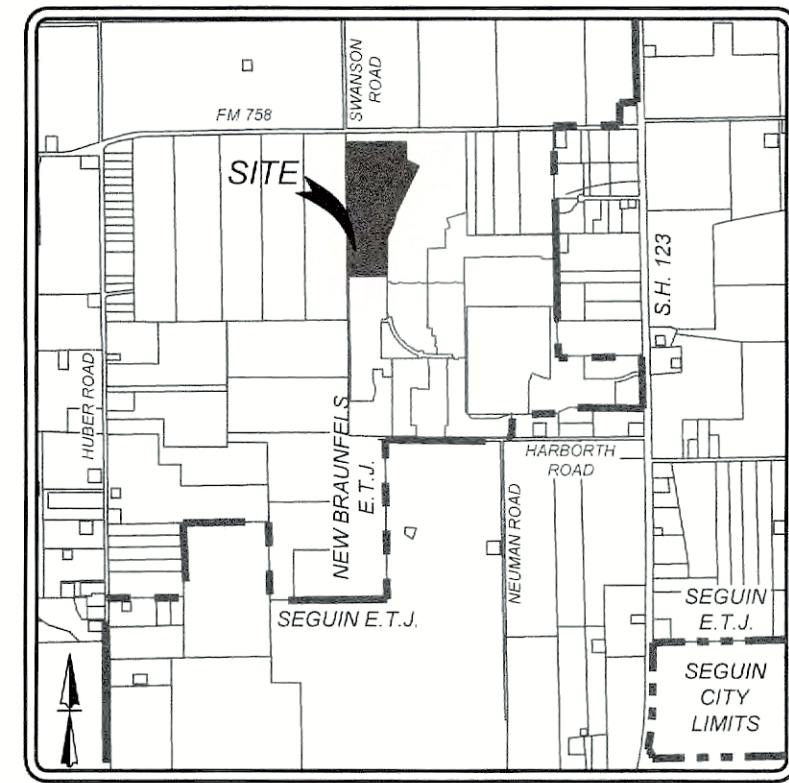
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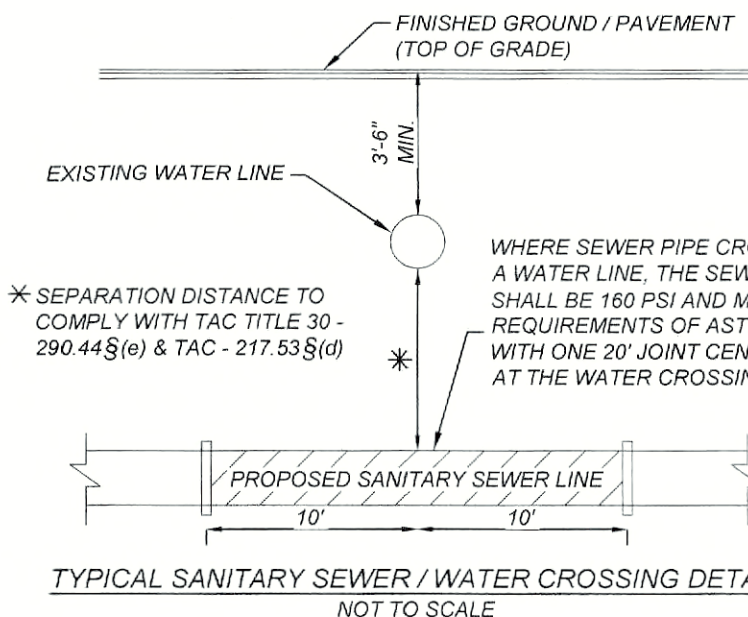
LEGEND

PROPOSED WATER MAIN
PROPOSED WATER SERVICE & METER BOX
PROPOSED WATER 3/4" IRRIGATION SERVICE & W 3/4" WATER METER & METER BOX
PROPOSED FIRE HYDRANT
PUBLIC UTILITY EASEMENT
VEHICULAR NON-ACCESS EASEMENT
RIGHT OF WAY
PROPOSED 8" SANITARY SEWER MAIN
PROPOSED 8" SANITARY SEWER MANHOLE
PROPOSED SANITARY SEWER FORCE MAIN
PROPOSED TEE & WATER VALVE
PROPOSED SANITARY SEWER LATERAL
EXISTING SANITARY SEWER LATERAL
EXISTING WATER VALVE
EXISTING FIRE HYDRANT
EXISTING WATER MAIN
EXISTING SANITARY SEWER MAIN
EXISTING SANITARY SEWER MANHOLE
EXISTING NATURAL GAS LINE
EXISTING OVERHEAD UTILITY LINE
EXISTING POWER POLE



PRIVATE CONDUIT DETAIL
NOT TO SCALE
*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

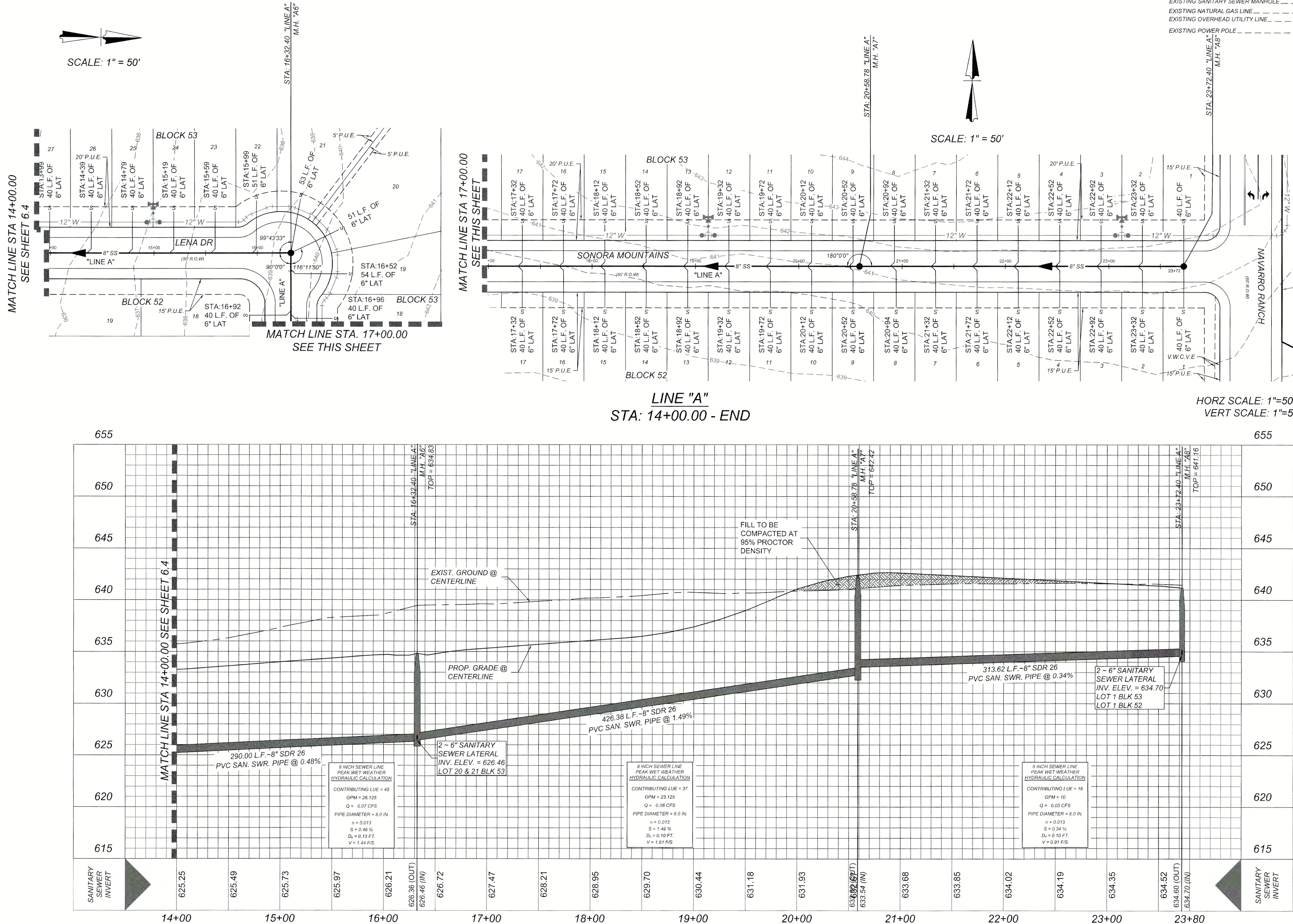
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LINE "A"
STA: 14+00.00 - END

HORZ SCALE: 1"=50'
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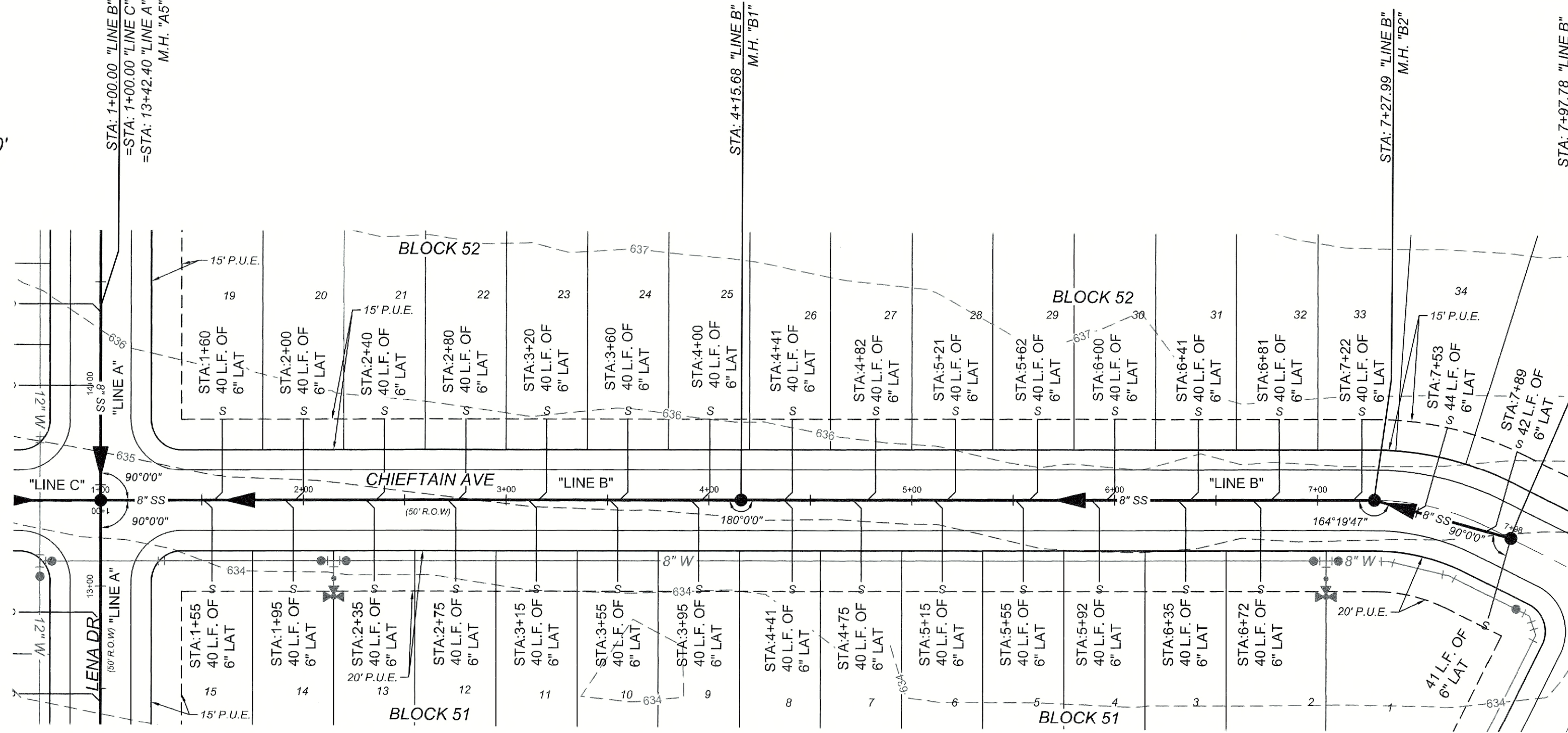
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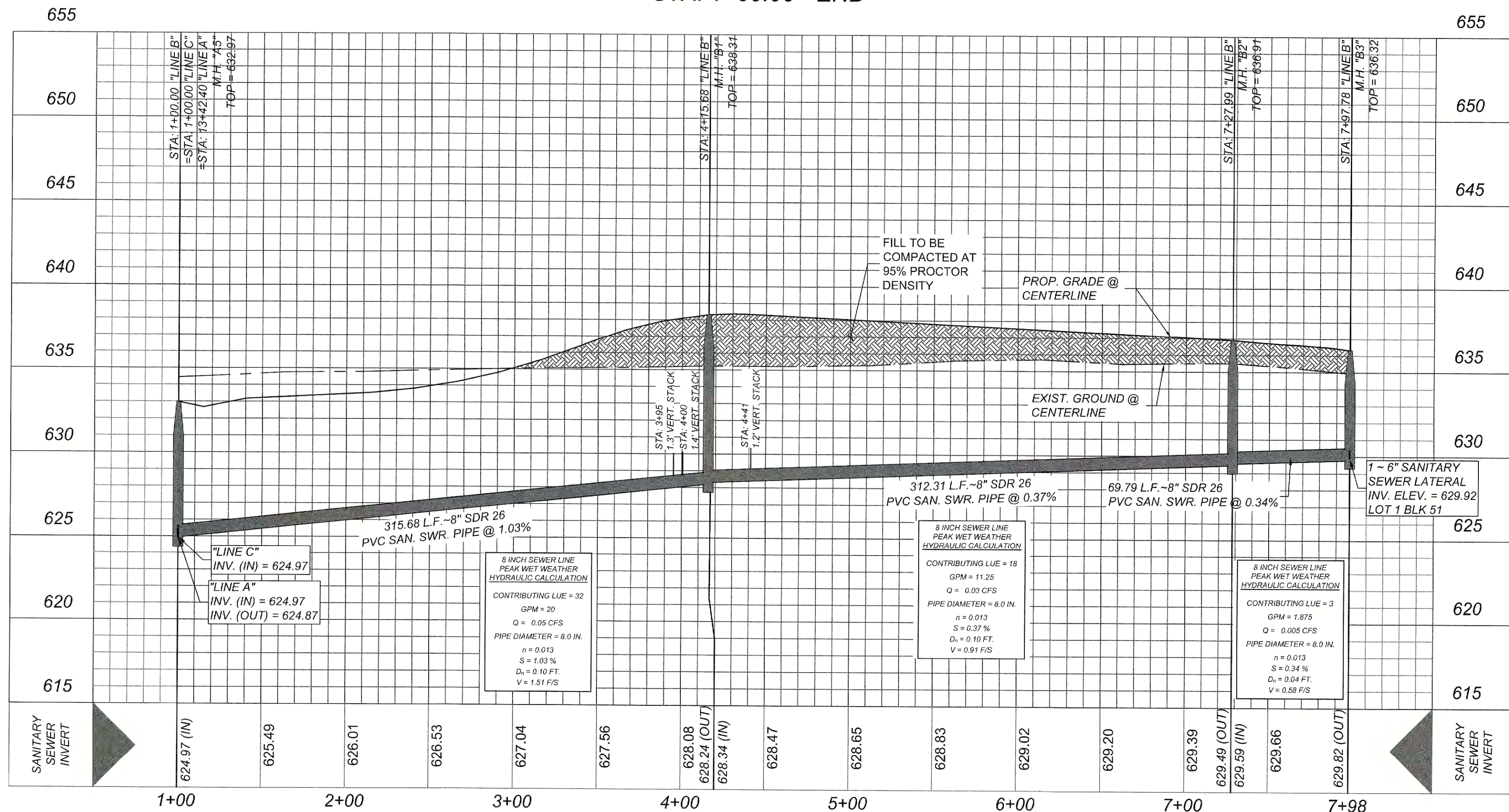
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SCALE: 1" = 50'



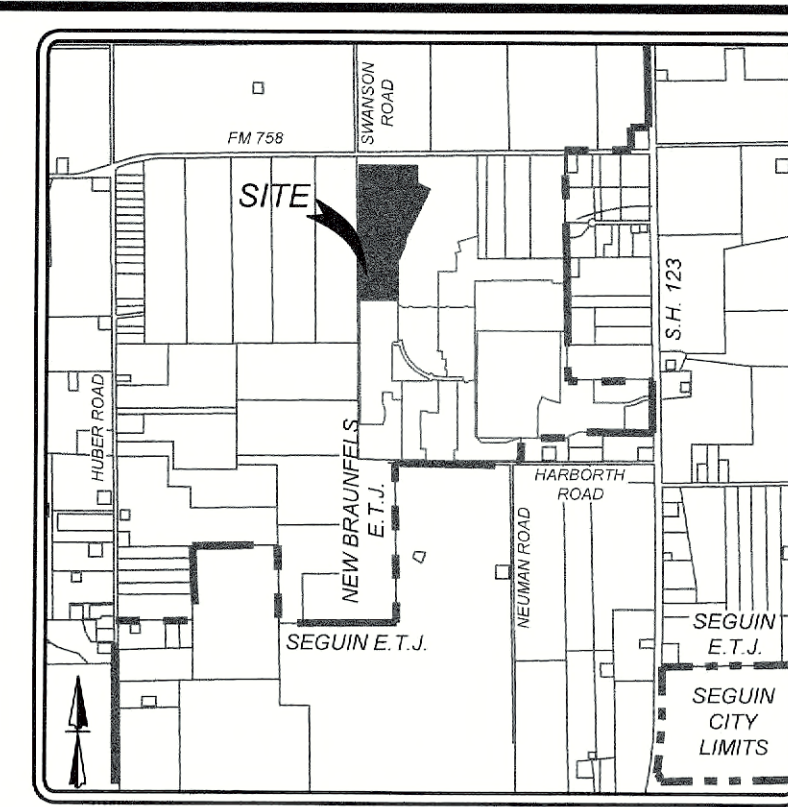
LINE "B"
STA: 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

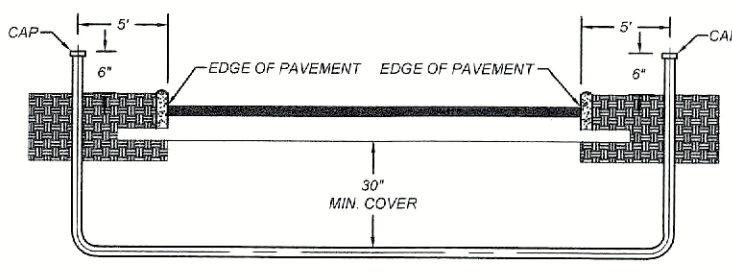


LEGEND

- PROPOSED WATER MAIN ——— 8" W
PROPOSED WATER SERVICE & METER BOX ——— W
PROPOSED WATER 3/4" IRRIGATION SERVICE & W 3/4" WATER METER & METER BOX ——— W
PROPOSED FIRE HYDRANT ——— H
PUBLIC UTILITY EASEMENT ——— P.U.E.
VEHICULAR NON-ACCESS EASEMENT ——— V.N.A.E.
RIGHT OF WAY ——— R.O.W.
PROPOSED 8" SANITARY SEWER MAIN ——— FM
PROPOSED 8" SANITARY SEWER MANHOLE ——— M
PROPOSED TEE & WATER VALVE ——— T
PROPOSED SANITARY SEWER LATERAL ——— L
EXISTING SANITARY SEWER LATERAL ——— L
EXISTING WATER VALVE ——— V
EXISTING FIRE HYDRANT ——— H
EXISTING WATER MAIN ——— E 8" W
EXISTING SANITARY SEWER MAIN ——— E 8" SS
EXISTING SANITARY SEWER MANHOLE ——— M
EXISTING NATURAL GAS LINE ——— G
EXISTING OVERHEAD UTILITY LINE ——— OHE
EXISTING POWER POLE ——— PP
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LOCATION MAP
NOT-TO-SCALE



TYPICAL SANITARY SEWER / WATER CROSSING DETAIL
NOT TO SCALE

PRIVATE CONDUIT DETAIL
NOT TO SCALE
NOTE:
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CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS.
CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS.

SEWER / WATER CROSSING!!!
SEE DETAIL ON THIS SHEET

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SEE DETAIL ON THIS SHEET

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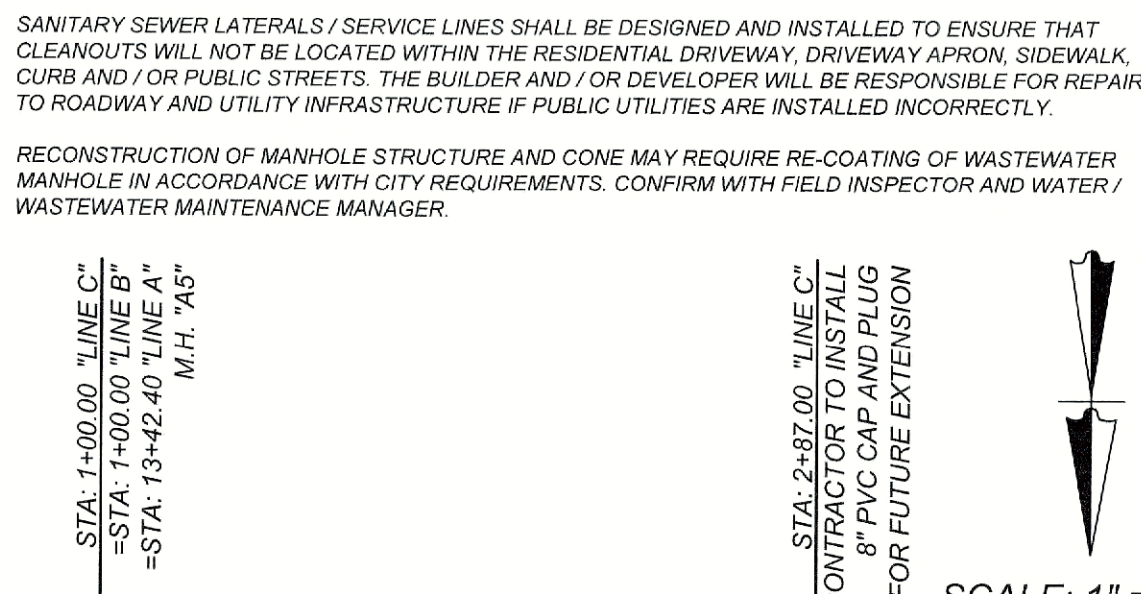
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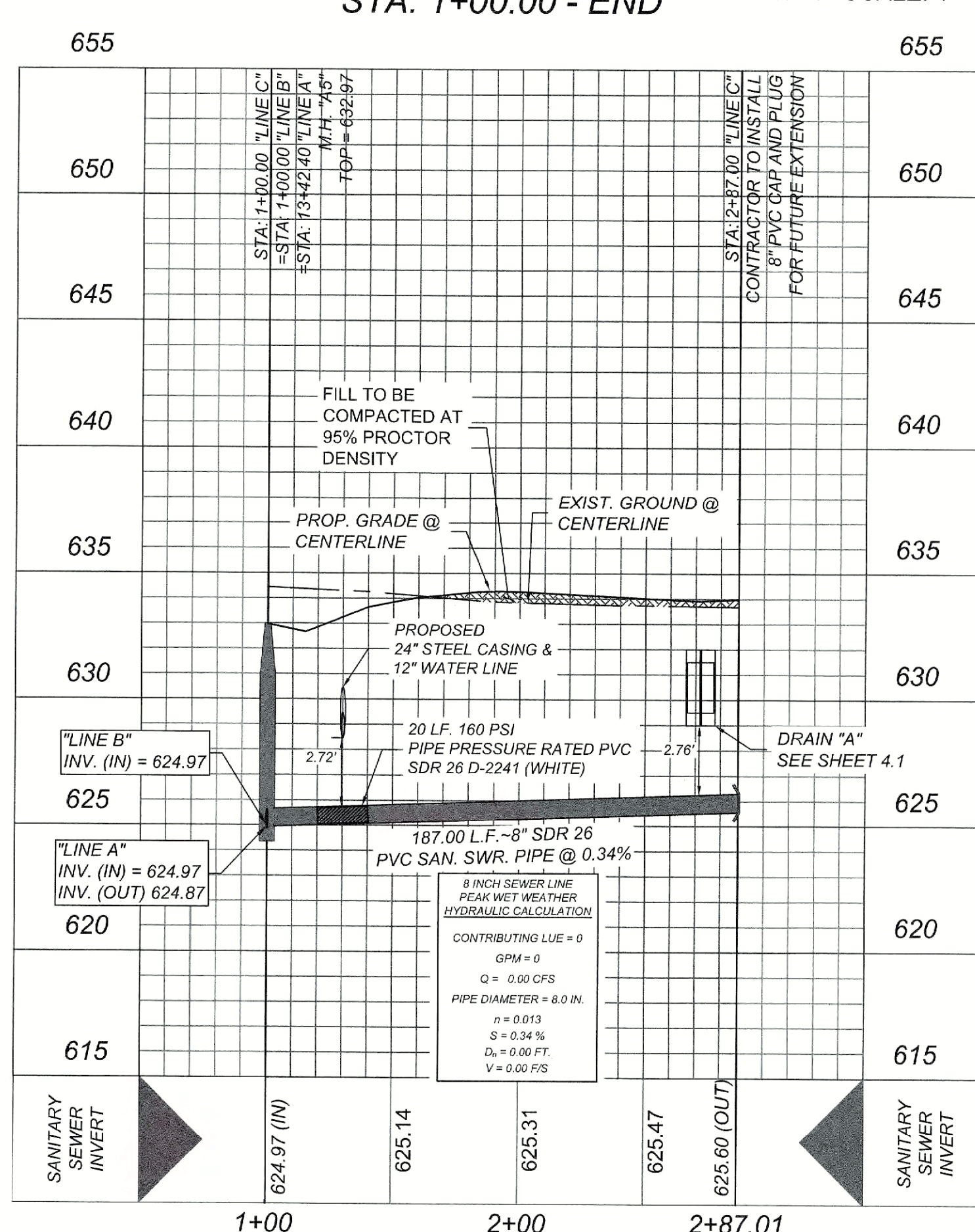
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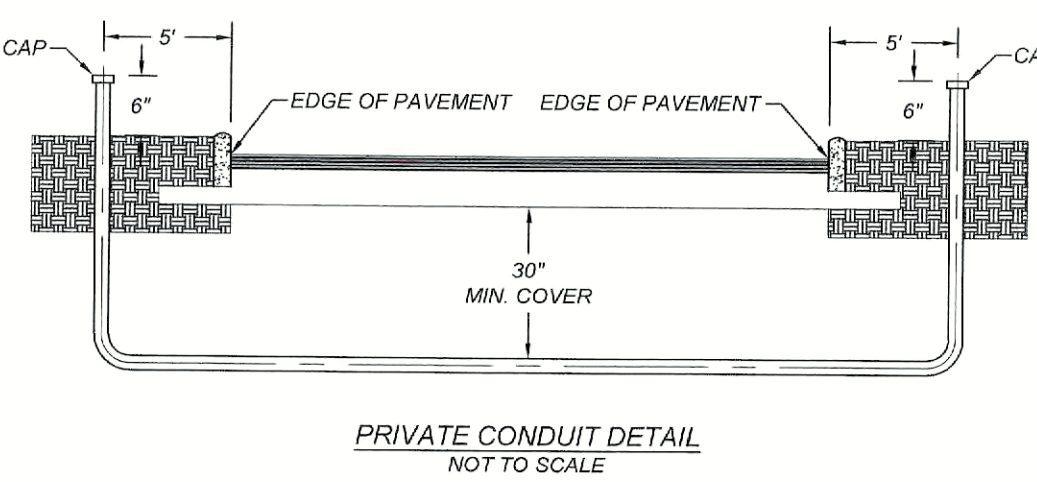
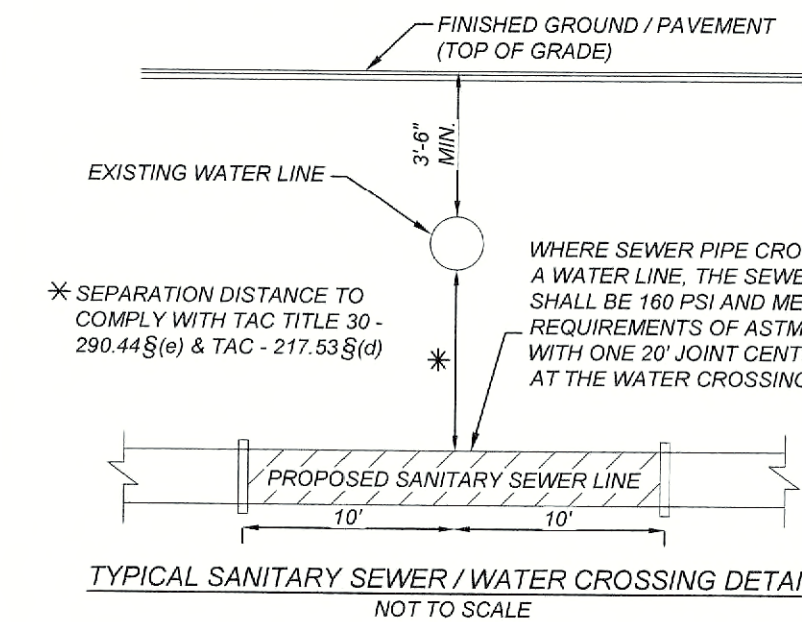


LINE "C"
STA: 1+00.00 - END

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*PVC SCHEDULE 80 CONDUIT
SEE PLAN SHEETS FOR SIZE LOCATION AND NUMBER OF CONDUITS

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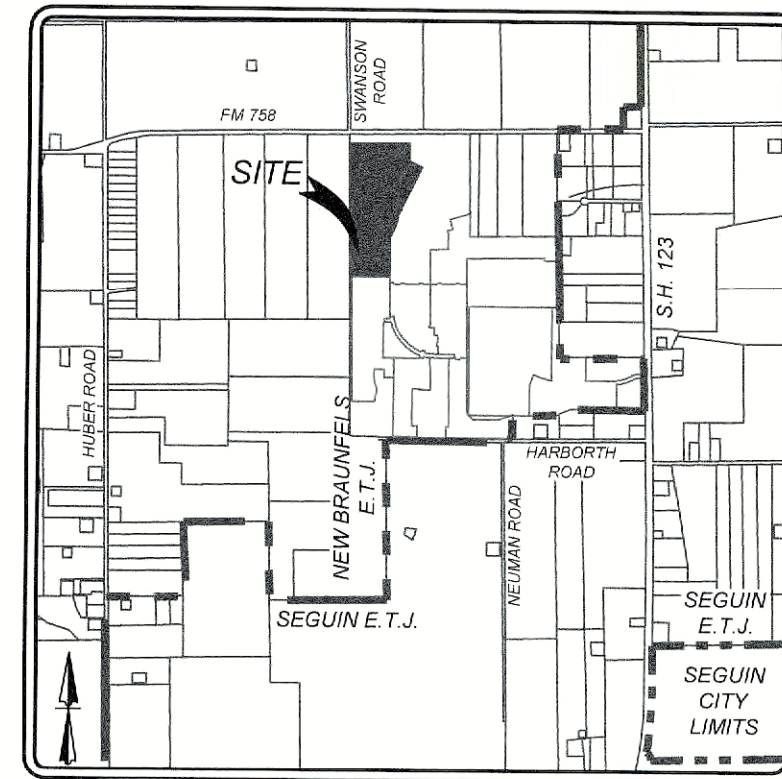
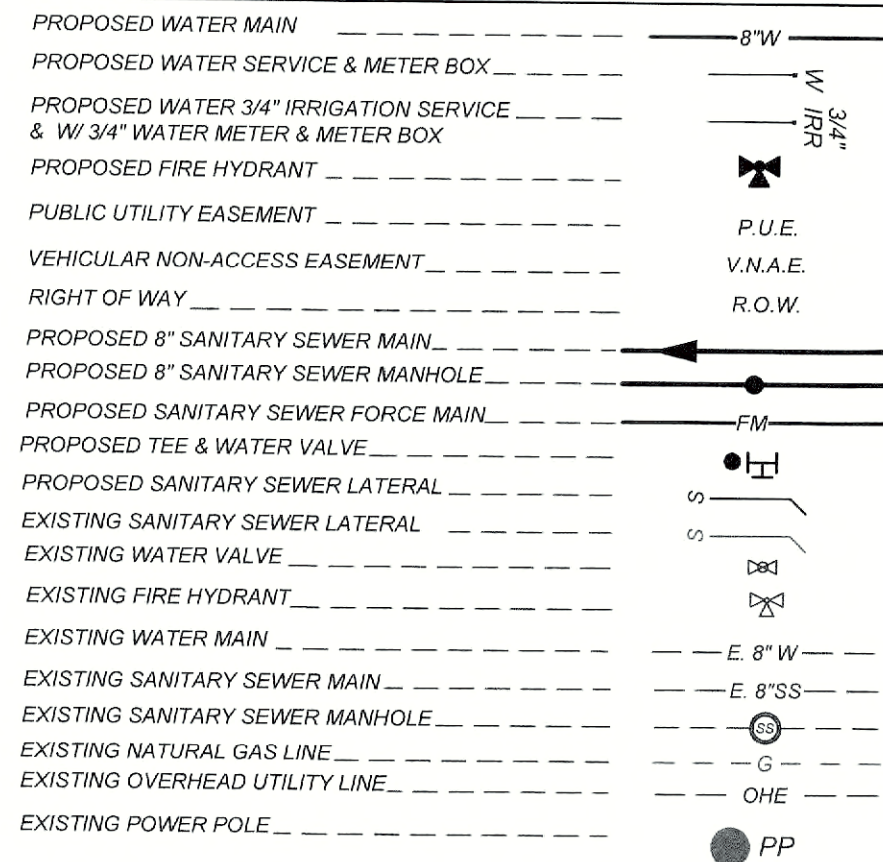
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NOTE:

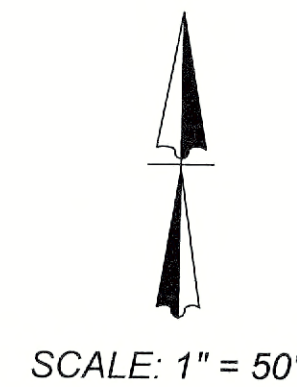
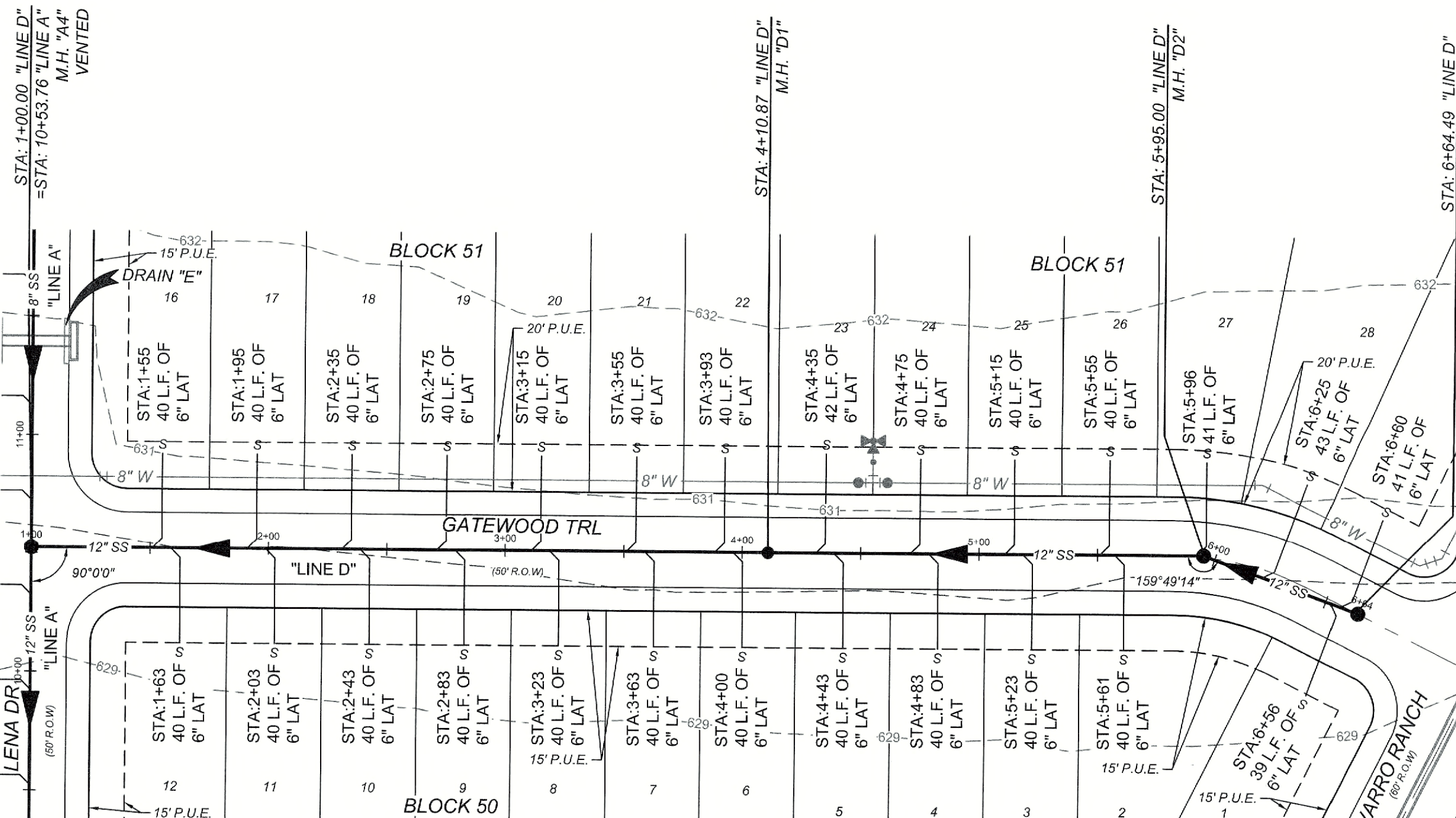
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS
- NO VALVES, HYDRANTS, CLEANOUTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.
- THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.

NOTE: ALL MANHOLES NEED TO BE BOLTED.

LEGEND

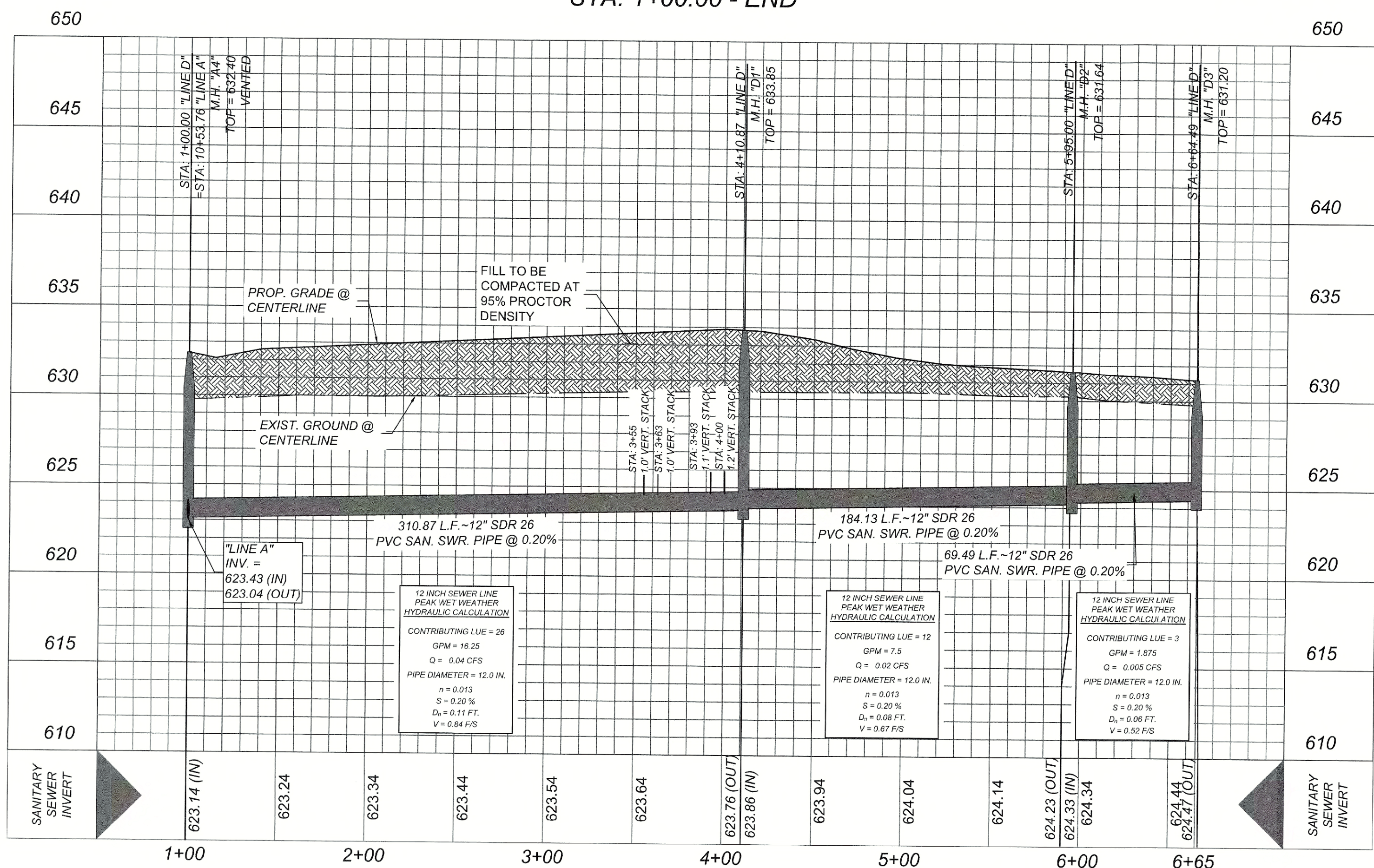


LOCATION MAP
NOT-TO-SCALE



LINE "D"
STA: 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

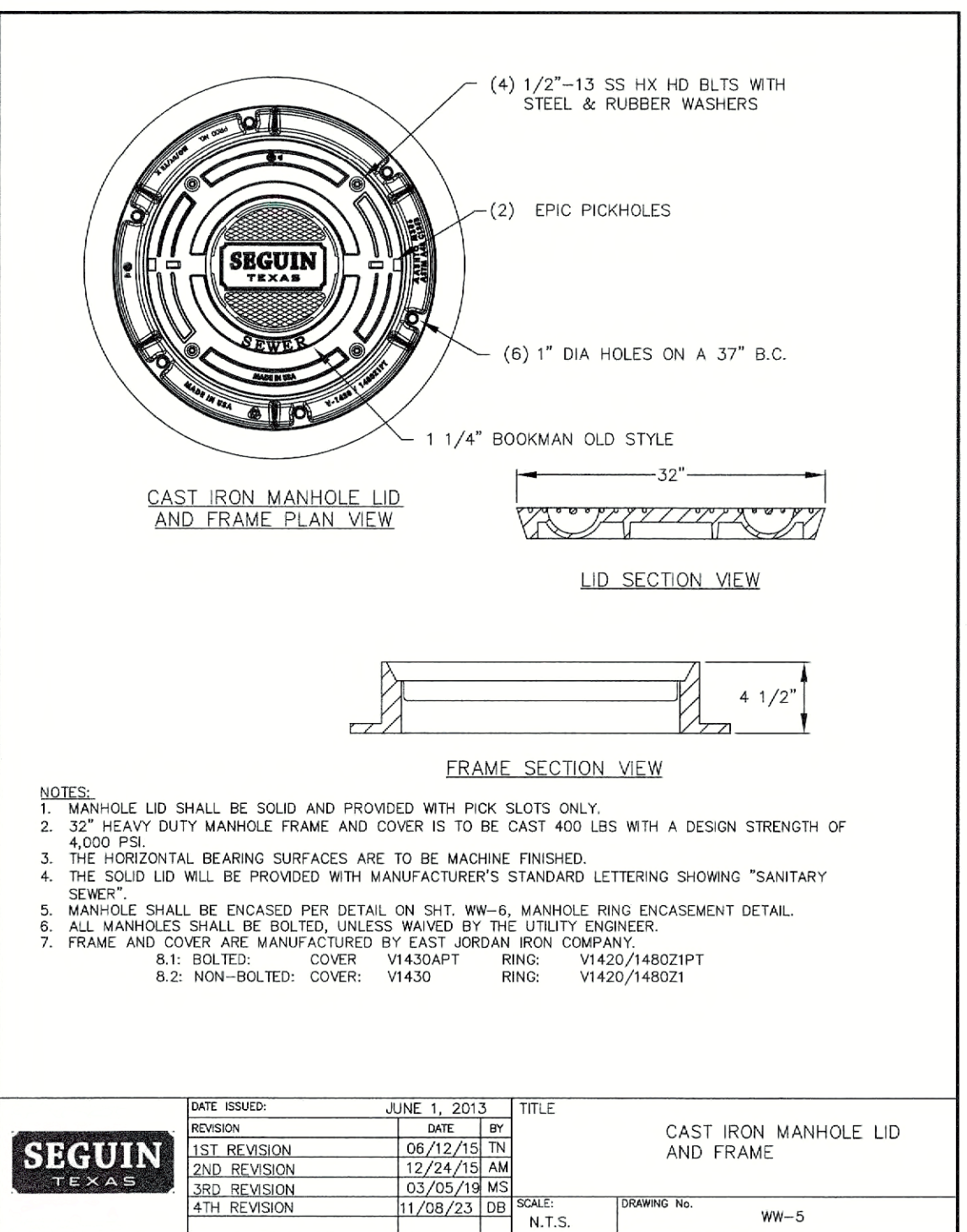
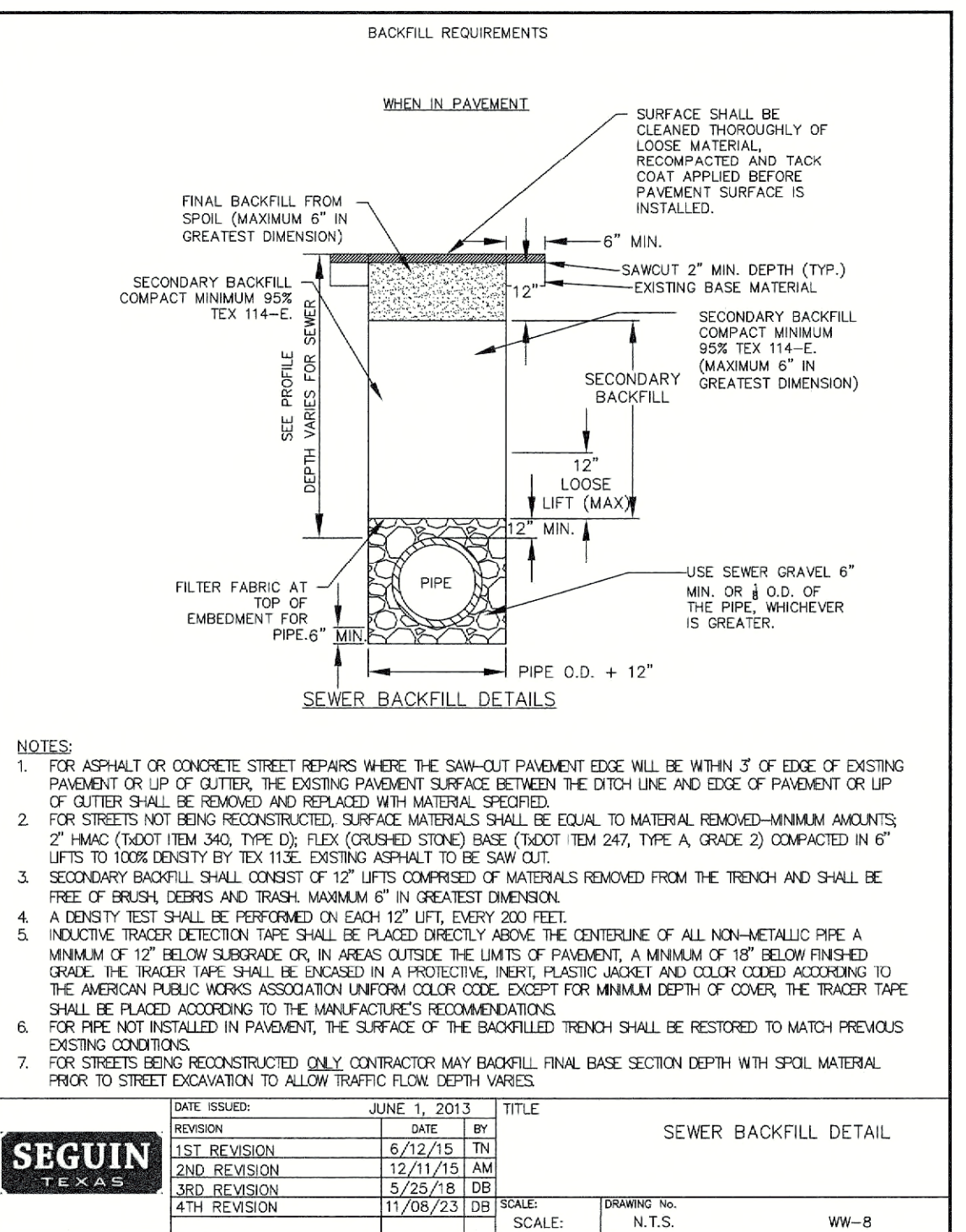
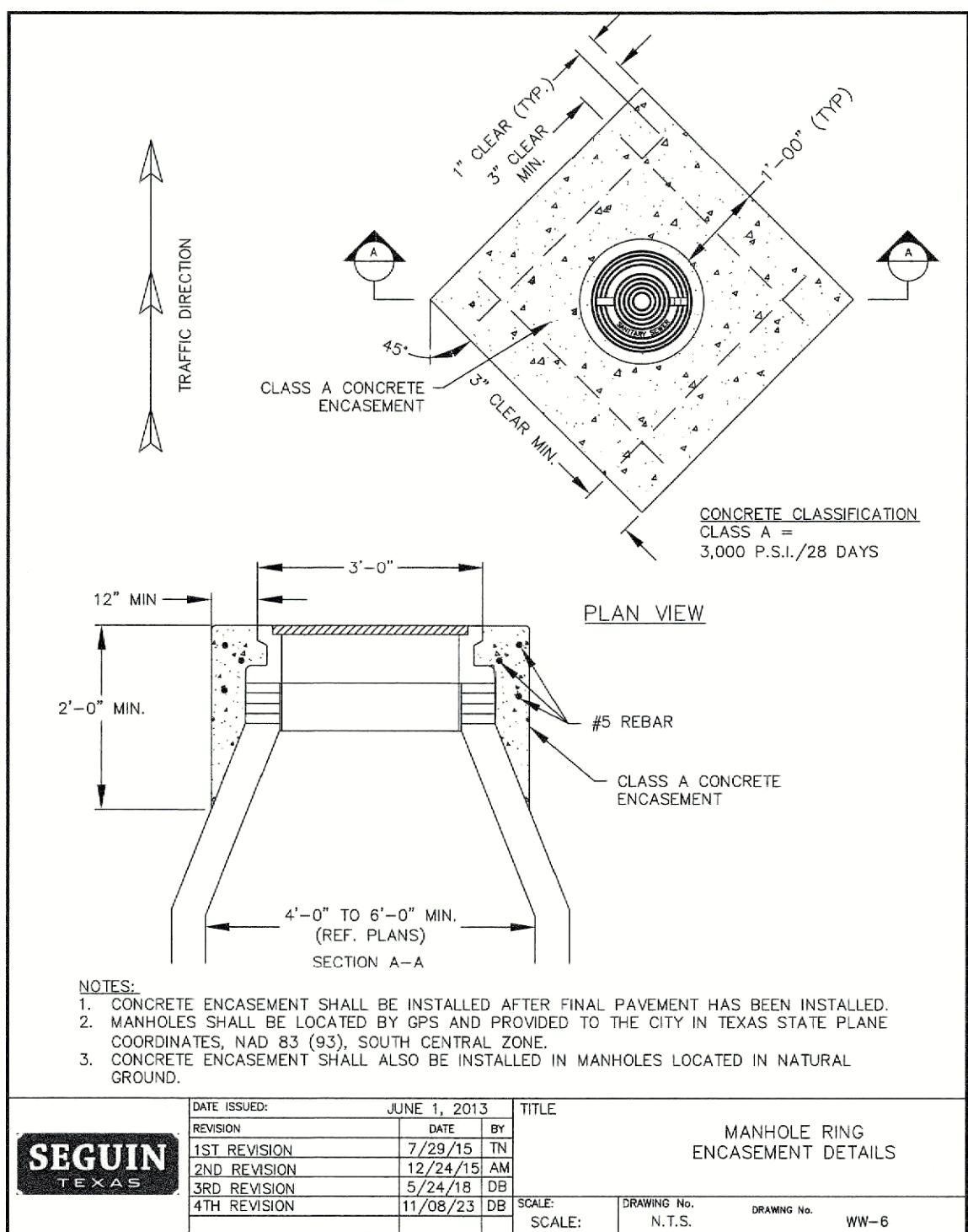
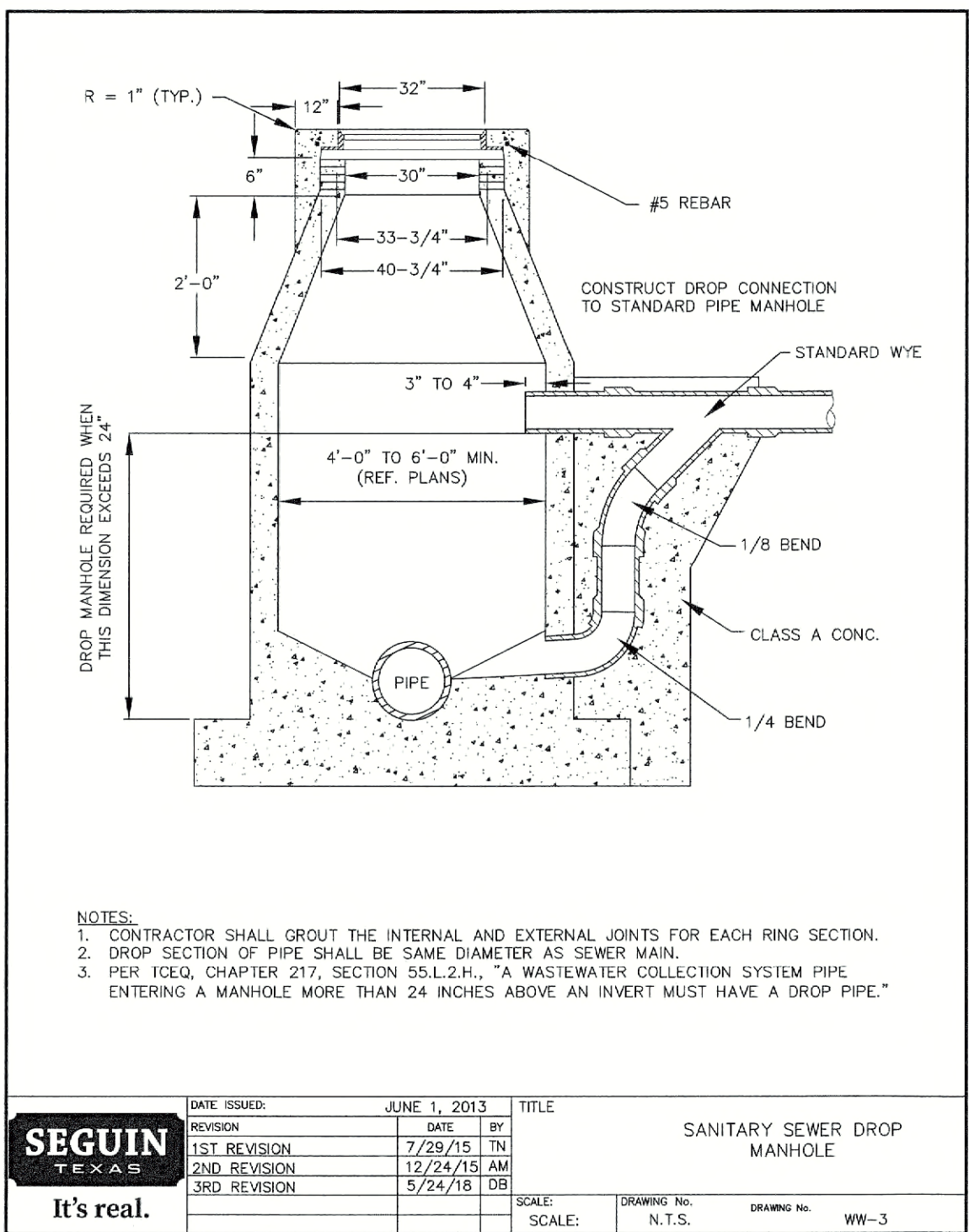
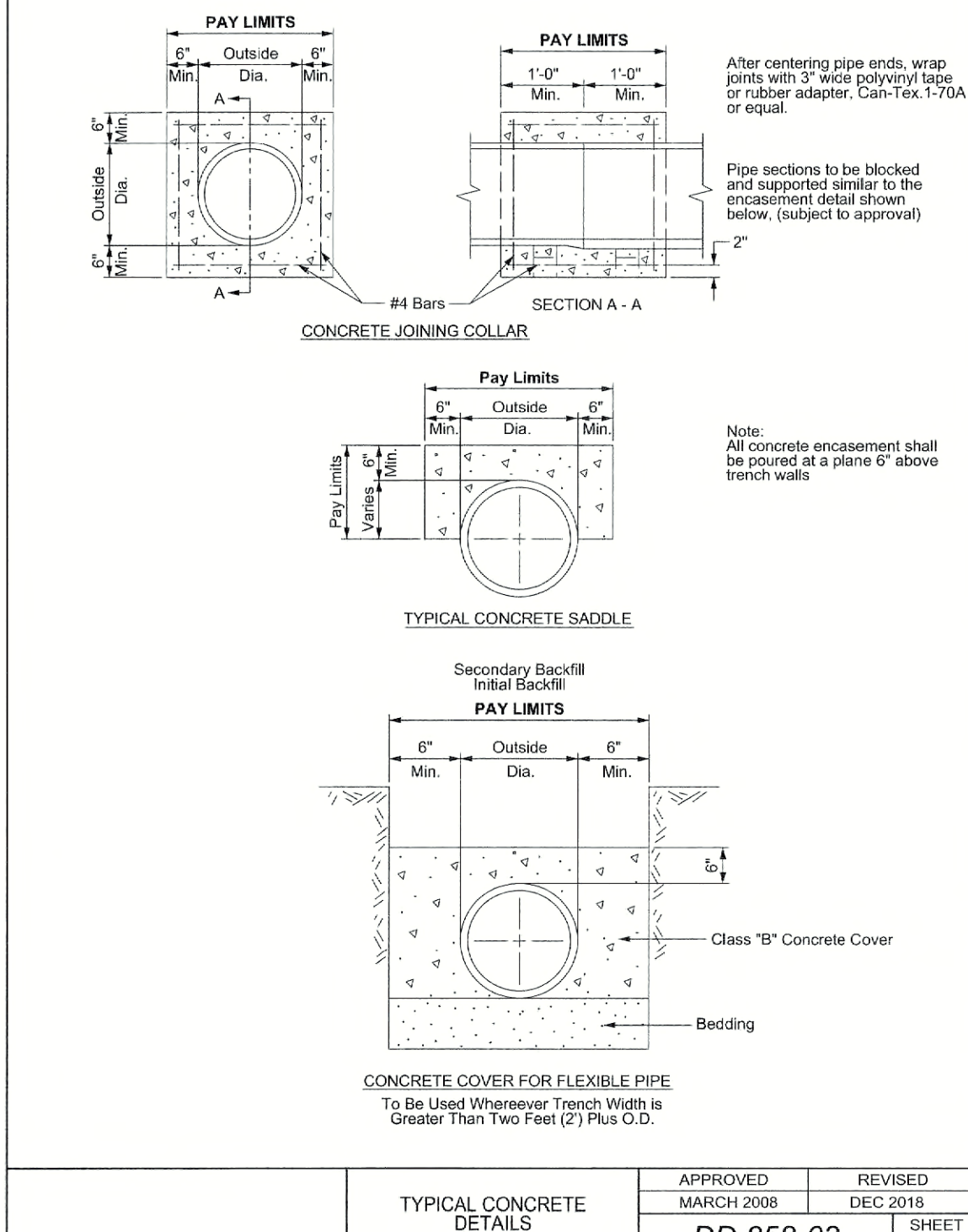
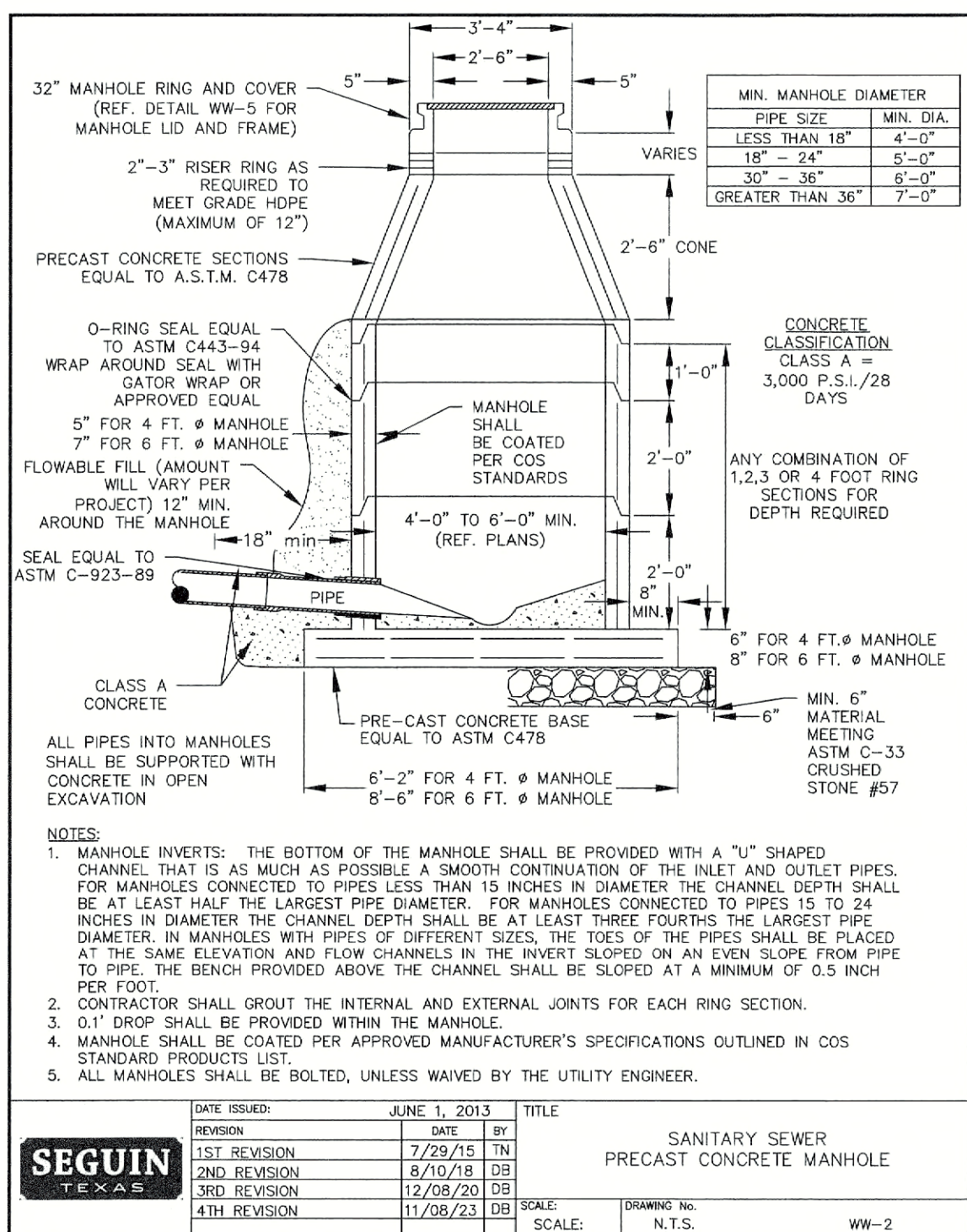
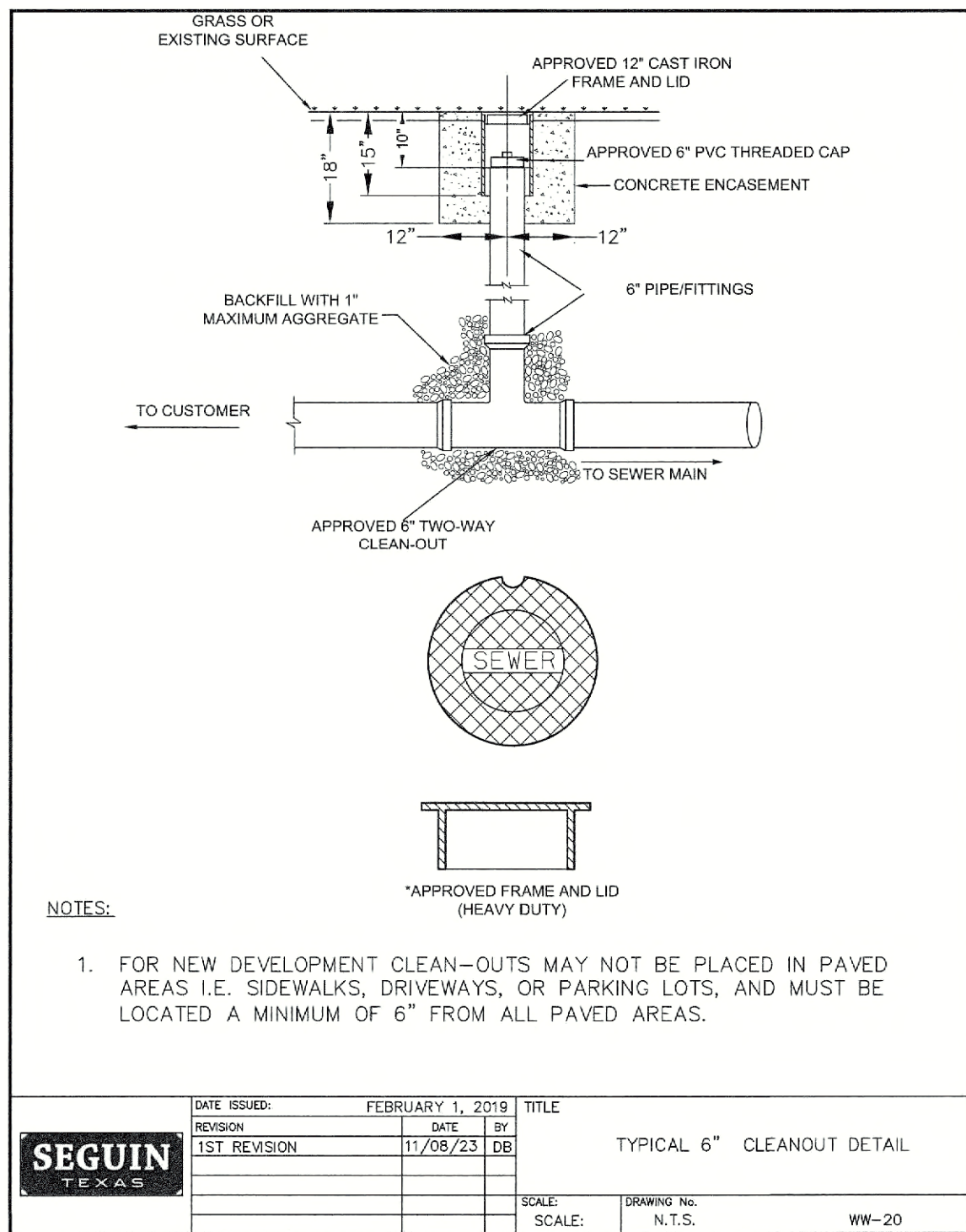
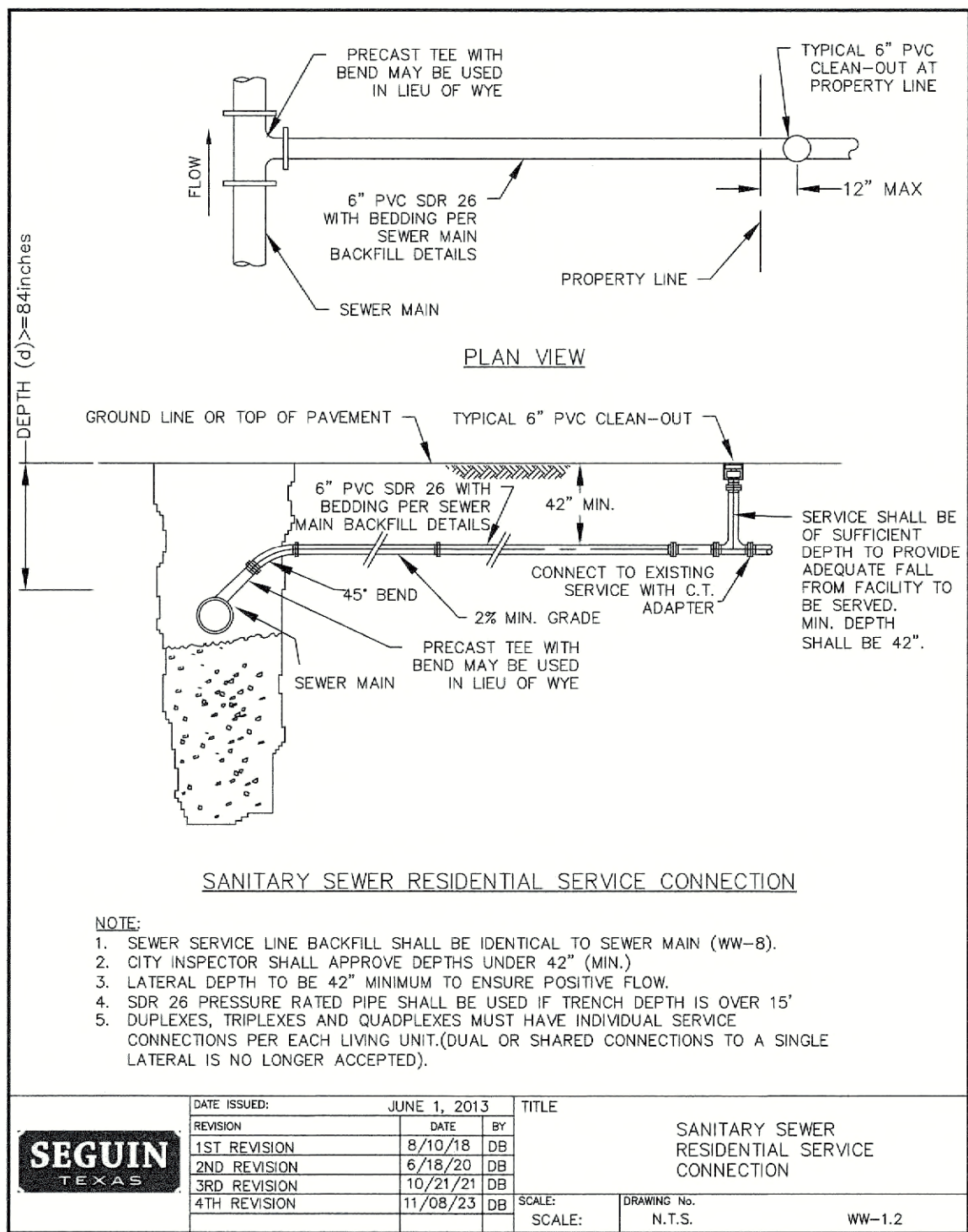
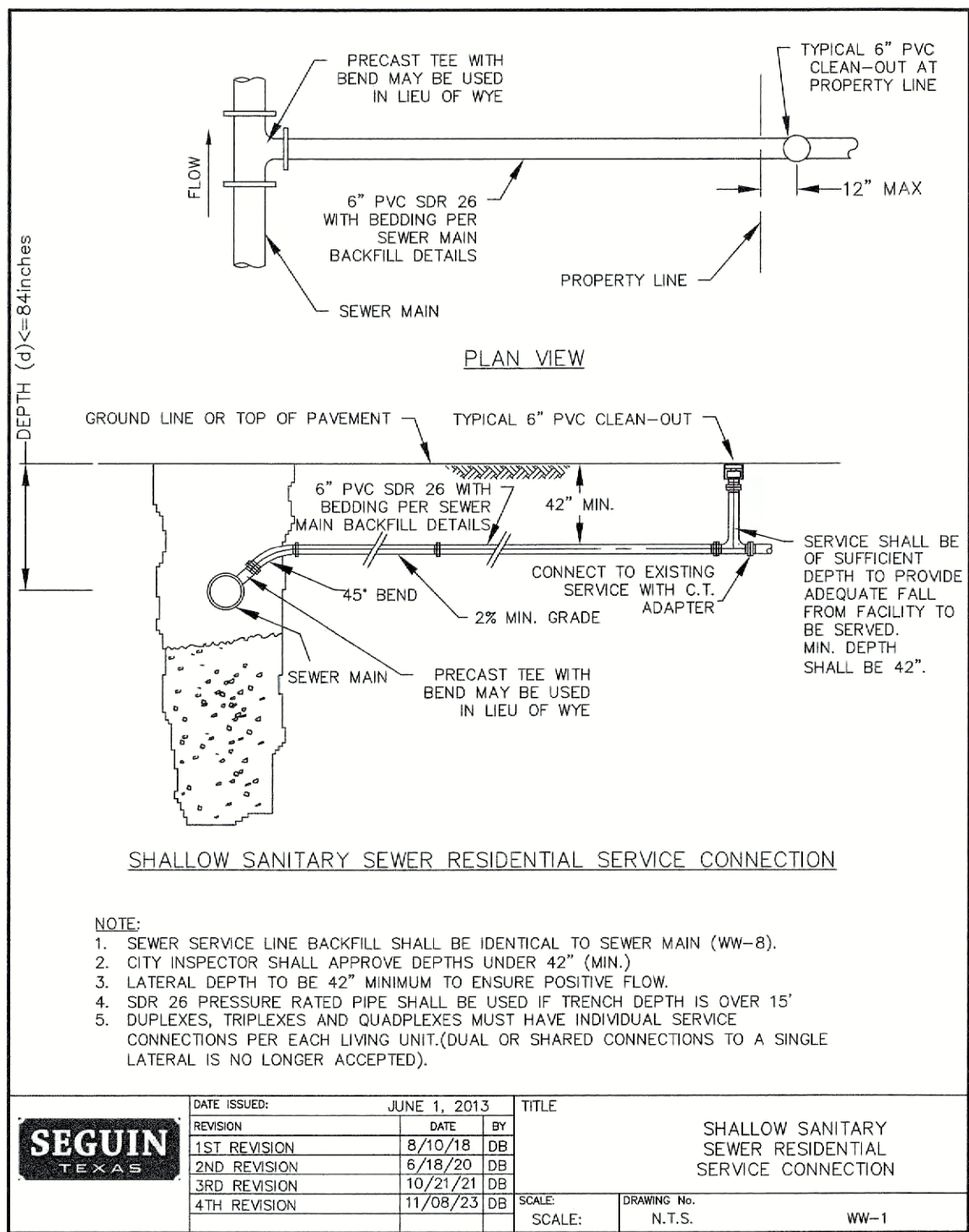


NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

LINE D STA. 1+00.00 - END

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

6.7



D:\Projects\314\28\19\Design\Civil\Water Distribution\COVER SHEET.dwg
User: J. K. Reynolds
Date: Jul 12, 2023, 11:04am
File: U:\Projects\314\28\19\Design\Civil\Water Distribution\COVER SHEET.dwg

NAVARRO SUBDIVISION - UNIT 8

(TYPE 3 DEVELOPMENT)

GUADALUPE COUNTY, NEW BRAUNFELS ETJ, TEXAS

WATER DISTRIBUTION IMPROVEMENTS

CRYSTAL CLEAR SPECIAL UTILITY DISTRICT (CCSUD) WATER MAIN NOTES

1. THE CONTRACTOR SHALL COORDINATE PRESSURE TESTING OF NEW WATER MAINS WITH OWNER AND ENGINEER AT LEAST TWO BUSINESS DAYS PRIOR. PRESSURE TESTING REQUIREMENTS ARE INCLUDED IN THE SPECIFICATIONS.
2. ALL WATER MAINS SHALL BE DISINFECTED PER AWWA AND TCEQ STANDARDS.
3. THE CONNECTION LOCATIONS LISTED IN THE PLANS ARE BASED ON BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL FIELD LOCATE EXISTING WATER MAIN LOCATIONS AT ALL TIE-IN LOCATIONS TO VERIFY SIZE, ELEVATION, AND MATERIAL PRIOR TO ORDERING MATERIALS FOR CONNECTION.
4. THE CONTRACTOR SHALL MAINTAIN MINIMUM SEPARATION BETWEEN UTILITIES PER TCEQ STANDARDS.
5. WATER MAINS SHALL BE RESTRAINED WITH RESTRAINT LENGTHS OF FITTINGS SHOWN IN PLANS.
6. UNLESS OTHERWISE SPECIFIED, ALL PVC WATER MAINS SHALL BE C900/C905 DR 18, COLORED BLUE.
7. UNLESS OTHERWISE SPECIFIED, ALL DUCTILE IRON WATER MAINS SHALL BE PRESSURE CLASS 350 CONFORMING TO AWWA C150 AND AWWA C151 AND CEMENT LINED.
8. LOCATIONS OF COMBINATION AIR VALVES SHOWN ARE APPROXIMATE. INSTALL AIR RELEASE VALVES AT THE HIGH POINT IN THE WATER MAIN FOR THE LOCATIONS GIVEN.
9. THRUST BLOCKING IS REQUIRED AT ALL FITTINGS AND BENDS IN ACCORDANCE WITH THE THRUST BLOCKING DETAIL PROVIDED AND SPECIFICATION SECTION 02890 - JOINT RESTRAINTS AND THRUST BLOCKING.
10. THE OWNER SHALL SUPPLY ALL WATER NEEDED FOR CONSTRUCTION TESTING AND DISINFECTION. THE CONTRACTOR SHALL NOT BE REQUIRED TO PAY FOR THIS WATER.
11. UNLESS NOTED OTHERWISE, ALL WATER MAIN P.I.'S SHALL BE ACHIEVED USING THE WATER MAIN MANUFACTURER'S ALLOWABLE JOINT DEFLECTION.
12. WATER MAINS AND VALVES THAT ARE ABANDONED IN PLACE SHALL BE CUT AND PLUGGED PER SPECIFICATION SECTION 02500 - ABANDONMENT OF WATER INFRASTRUCTURE.
13. REMOVE ONLY VEGETATION, TREES, STUMPS, RUBBISH, AND OTHER MATERIAL NECESSARY FOR CONSTRUCTION AND DISPOSE OFF SITE.
14. CONSTRUCTION OF ALL CCSUD WATER UTILITY INFRASTRUCTURE MUST ADHERE TO CCSUD'S TECHNICAL SPECIFICATIONS, DETAILS AND APPROVED EQUIPMENT LIST.

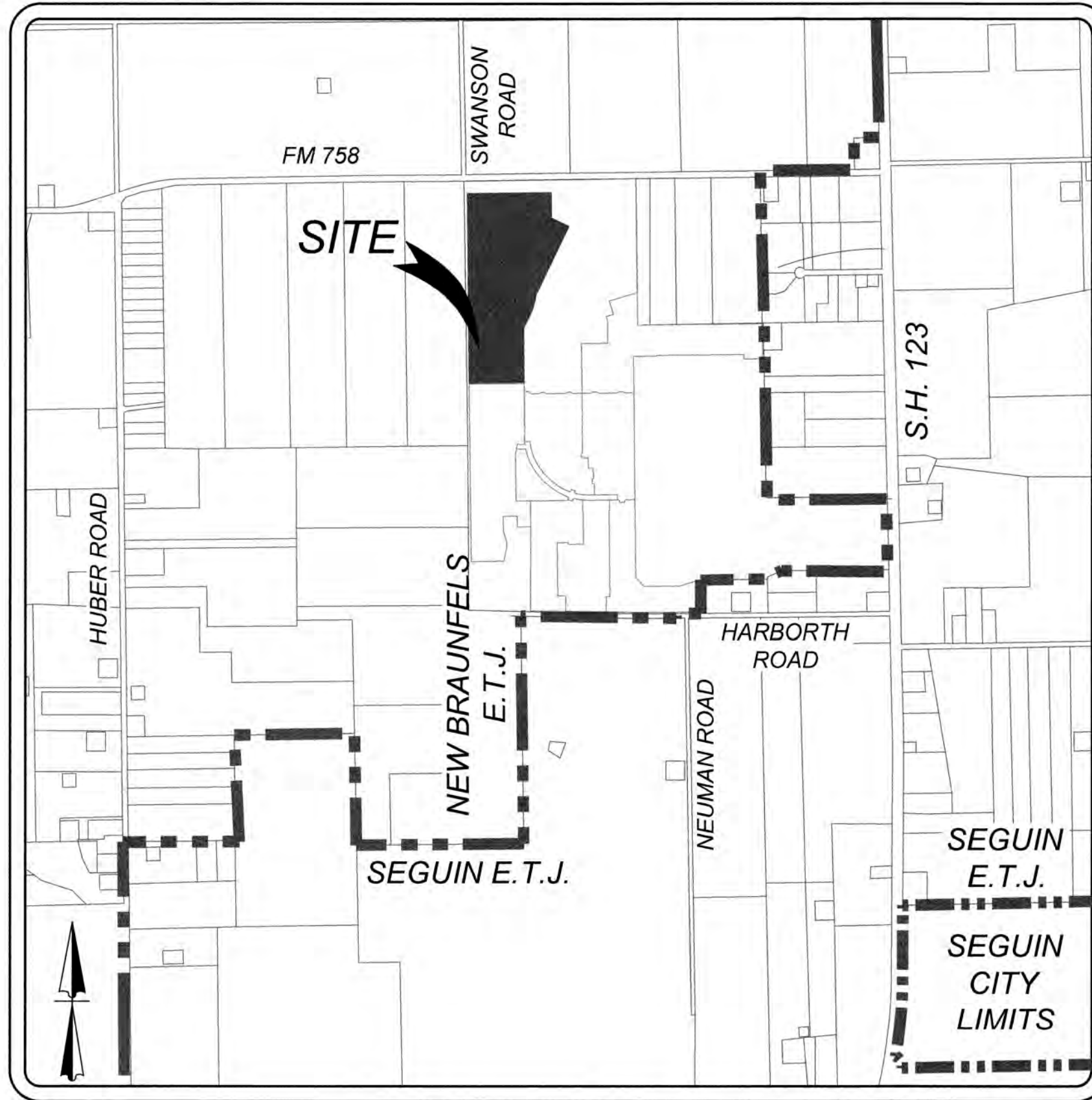
SPECIAL NOTES FOR CONSTRUCTION OF UTILITIES CROSSING THE VR EASEMENT

1. CONTRACTOR TO SUBMIT A WORK PLAN FOR CROSSING THE VISTA RIDGE PIPE AND NOTIFICATION PER ENCROACHMENT AGREEMENT BEFORE COMMENCING WORK WITHIN OR OVER VISTA RIDGE EASEMENT. WORK PLAN WILL PROVIDE DETAILS ON CONSTRUCTION METHODS, PIPE PROTECTION, RESTORATION, AND COORDINATION WITH CTRWSC. THE WORK PLAN REQUIRE WRITTEN APPROVAL BY CTRWSC 14-DAYS BEFORE WORKING WITHIN OR CROSSING THE VISTA RIDGE EASEMENT.
2. WORK PLAN MUST PROVIDE CROSSING PLAN THAT CLEARLY SHOWS DESIGNATED AREAS WHERE HEAVY EQUIPMENT WILL CROSS OVER THE VISTA RIDGE EASEMENT AND PROVIDE DETAILS FOR PIPELINE PROTECTION. CONTRACTOR WILL CLEARLY DELINEATE CROSSING LOCATIONS IN THE FIELD USING CONSTRUCTION FENCE OR SIMILAR MATERIALS.
3. NO MECHANICAL EXCAVATION WITHIN TEN FEET (10') OF THE CENTERLINE OF THE VISTA RIDGE PIPELINE UNLESS APPROVED IN WRITING BY CTRWSC. ANY AGREEMENT SHOULD BE PART OF THE WORK PLAN PROVIDED BY THE CONTRACTOR.
4. CTRWSC WILL DESIGNATE A REPRESENTATIVE FOR FIELD OBSERVATION DURING ANY CROSSING OF THE VR LINE. CONTRACTOR WILL COORDINATE WITH CTRWSC'S DESIGNATED REPRESENTATIVE 3-BUSINESS DAYS BEFORE CROSSING THE VR PIPELINE. CONTRACTOR WILL MAKE ARRANGEMENTS WITH CTRWSC TO PAY FOR OBSERVER TIME INCLUDING TRAVEL TIME TO THE SITE.
5. NO TEMPORARY STOCKPILING OR STATIONING OF MATERIALS, EQUIPMENT OR FACILITIES WITHIN EASEMENT.
6. IF CROSSING OVER THE VR PIPELINE, THE CONTRACTOR WILL HAVE FIELD VERIFIED BOTH THE FIBER OPTIC LINE AND WATER LINE.
7. CONTRACTOR TO PROVIDE PROTECTION FROM EQUIPMENT AND TRUCKS TRAVELING OVER VISTA RIDGE PIPE WHICH MEETS OR EXCEED HS-20 LOADING CRITERIA.
8. FOR CROSSING UNDER THE VR PIPELINE, THE PREFERENCE IS TO USE TRENCHLESS METHODS. TRENCHLESS METHODS STILL REQUIRE AN OBSERVER TO BE ON SITE. ADDITIONALLY, CONTRACTOR WILL USE A HYDROVAC OR SIMILAR PIECE OF EQUIPMENT TO CREATE A HOLE ALONGSIDE OF THE VR PIPELINE SO THAT THE OBSERVER AND CONTRACTOR CAN WITNESS THE AUGER OR DRILL PASSING UNDER THE BOTTOM OF THE VR PIPELINE AT THE APPROPRIATE SPACING.
9. IF CROSSING UNDER THE VR PIPELINE USING THE OPEN-CUT METHOD, THE CONTRACTOR MUST GET A WORK PLAN APPROVED IN WRITING BY CTRWSC WHICH AT A MINIMUM INCLUDES HOW THE LINE WILL BE INSTALLED UNDER THE VR PIPELINE, HOW TO MINIMIZE THE AMOUNT OF VR PIPELINE BEING EXPOSED, AND HOW TO SUPPORT THE VR PIPELINE. TRENCH BACKFILL NEEDS TO BE FLOWABLE FILL FROM THE BEDDING OF THE NEW UTILITY CROSSING UNDER THE VR PIPELINE UP TO AN ELEVATION THAT IS 70% OF THE VR PIPELINE DIAMETER. WORK WILL NEED TO BE OBSERVED BY THE CTRWSC DESIGNATED REPRESENTATIVE.
10. IF METALLIC PIPE SUCH AS DUCTILE IRON CROSSES THE VISTA RIDGE EASEMENT, ENGINEER WILL PROVIDE CATHODIC PROTECTION DEVICES THAT PROTECT THE VISTA RIDGE PIPE. DETAILS TO BE COORDINATED WITH CTRWSC.
11. CONTRACTOR SHALL TAKE NECESSARY PRECAUTION TO PROTECT VISTA RIDGE CATHODIC PROTECTION SYSTEM COMPONENTS AND PIPE PROTECTIVE COATING.
12. BACKFILL ACCORDING TO DETAIL "B" FROM EXHIBIT "A" ON SHEET 7.4.

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. AT A MINIMUM, CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS MEET TCEQ'S "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS."
 2. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NSF INTERNATIONAL STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI [§290.44(A)(1)].
 3. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NSF INTERNATIONAL SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS [§290.44(A)(2)].
 4. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY [§290.44(A)(3)].
 5. ALL WATER LINE CROSSINGS OF WASTEWATER MAINS SHALL BE PERPENDICULAR [§290.44(E)(4)(B)].
 6. WATER TRANSMISSION AND DISTRIBUTION LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE [§290.44(A)(4)].
 7. THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES IS 0.25 PERCENT [§290.44(B)].
 8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES WITH VENT OPENINGS TO THE ATMOSPHERE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT [§290.44(D)(1)].
 9. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION [§290.44(F)(1)].
 10. WHEN WATERLINES ARE LAID UNDER ANY FLOWING OR INTERMITTENT STREAM OR SEMI-PERMANENT BODY OF WATER THE WATERLINE SHALL BE INSTALLED IN A SEPARATE WATER-TIGHT PIPE ENCASEMENT. VALVES MUST BE PROVIDED ON EACH SIDE OF THE CROSSING WITH FACILITIES TO ALLOW THE UNDERWATER PORTION OF THE SYSTEM TO BE ISOLATED AND TESTED [§290.44(F)(2)].
 11. PURSUANT TO 30 TAC §290.44(A)(5), THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE. INCLUDE THE FORMULAS IN THE NOTES ON THE PLANS.
 - THE HYDROSTATIC LEAKAGE RATE FOR POLYVINYL CHLORIDE (PVC) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-600 AS REQUIRED IN 30 TAC §290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE;
 $Q = \frac{LDIP^{2.5}}{148,000}$
- WHERE:
• Q = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,
• L = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,
• D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
• P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).
- THE HYDROSTATIC LEAKAGE RATE FOR DUCTILE IRON (DI) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-600 AS REQUIRED IN 30 TAC §290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE;
 $L = \frac{SDIP^{2.5}}{148,000}$
- WHERE:
• L = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,
• S = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,
• D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
• P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

12. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS, AND MATERIALS UTILIZED MUST MEET §290.44(E)(1)-(4).
13. THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET. WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 150 PSI PRESSURE-CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT [§290.44(E)(5)].
14. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER LINE, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION [§290.44(E)(6)].
15. SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED WITHIN FIVE FEET OF ANY TILE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE [§290.44(E)(7)].
16. WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS [§290.44(E)(8)].
17. THE CONTRACTOR SHALL DISINFECT THE NEW WATERLINES IN ACCORDANCE WITH AWWA STANDARD C-651-14 OR MOST RECENT, THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATERLINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER [§290.44(F)(3)].
18. DECHLORINATION OF DISINFECTING WATER SHALL BE IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARD C-655-09 OR MOST RECENT.



LOCATION MAP
NOT-TO-SCALE

DEVELOPER INFORMATION:
LENNAR HOMES OF TEXAS
100 NE LOOP 410, SUITE 1155
SAN ANTONIO TEXAS 78216
PHONE: (210) 403-6282

LEGAL DESCRIPTION NAVARRO SUBDIVISION UNIT 8

A 46.98 ACRE TRACT OF LAND SITUATED IN THE ANTONIO MARIA ESNAURIZAR SURVEY, ABS LOT 20, GUADALUPE COUNTY, TEXAS AND BEING PORTIONS OF THAT CALLED 204.43 ACRE TRACT OF LAND CONVEYED TO 325 NAVARRO FARM LP AND RECORDED IN DOCUMENT NO. 201999017066 IN THE DEED RECORDS OF GUADALUPE COUNTY, TEXAS.

DESCRIPTION	SHEET NO.
WATER DISTRIBUTION COVER SHEET	7.0
WATER DISTRIBUTION PLAN	7.1
WATER DISTRIBUTION PLAN	7.2
WATER DISTRIBUTION PLAN	7.3
WATER DISTRIBUTION DETAIL SHEET	7.4

IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE-YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.

PERMITS OR APPROVALS MUST BE OBTAINED FROM THE FOLLOWING REGULATORY AGENCIES LISTED BELOW:

- CITY OF NEW BRAUNFELS
- CITY OF SEGUIN UTILITIES
- CRYSTAL CLEAR SPECIAL UTILITY DISTRICT
- GUADALUPE VALLEY ELECTRIC COOPERATIVE

ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, THE NEW BRAUNFELS MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.

FEMA FLOODPLAIN
NO PORTION OF ANY RESIDENTIAL LOTS ON NAVARRO SUBDIVISION, UNIT-8 ARE IN THE SPECIAL FLOOD HAZARD ZONE ACCORDING TO FEMA FLOOD MAP COMMUNITY PANEL NO. 48187C0130F, DATED NOVEMBER 2, 2007.

EDWARDS AQUIFER
NO PORTION OF ANY LOTS ON NAVARRO SUBDIVISION, UNIT-8 ARE LOCATED WITHIN EDWARDS AQUIFER TRANSITION ZONE, CONTRIBUTING ZONE OR RECHARGE ZONE.
GAS UTILITY
GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE CITY FOR ANY WORK WITHIN PUBLIC RIGHT-OF-WAY.



KNOW ALL MEN BY THESE PRESENTS:

I, THE UNDERSIGNED, A. NICHOLAS REYNOLDS, A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN TO THESE PLANS AND ALL ENGINEERING ASPECTS ARE IN COMPLIANCE WITH CITY AND STATE ENGINEERING REGULATIONS AND LAWS.

REGISTERED PROFESSIONAL ENGINEER
P.E. REGISTRATION NO. 111666

KFW
ENGINEERS + SURVEYING
162 West Mill St., New Braunfels, TX 78130
Phone #: (830) 220-6042 • Fax #: (830) 627-9097
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

TRENCH EXCAVATION SAFETY PROTECTION:
CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!!
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL, DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOWN ON PLANS ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

CONTRACTOR TO REMOVE EXISTING 2" FLUSH VALVE AND TIE NEW 12"x8" TEE TO EXISTING 8" PVC PIPE AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY CRYSTAL CLEAR SUD
1 - 12"x8" TEE, M.J. ANCHOR
1 - 12" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE

DRAIN "A"
NAVARRO UNIT 7
(DOC.#)

80 L.F. ~ 12" C-900 PVC
1 - 12" 1/8 BEND, M.J.

10 L.F. ~ 12" C-900 PVC
1 - 12" 1/8 BEND, M.J.

63 L.F. ~ 12" D.I. PIPE
1 - 12" SOLID SLEEVE, M.J.

90 L.F. ~ 12" C-900 PVC
1 - 12" 1/8 BEND, M.J.

15' P.U.E.
20' P.U.E.

1 - 12" X 6" TEE, M.J. ANCHOR
1 - 6" GATE VALVE, M.J.
1 - 6" VALVE BOX COMPLETE
1 - 1/4 ANCHOR BEND, M.J.
6" D.I. PIPE, CUT AS REQUIRED
1 - STANDARD FIRE HYDRANT
(SEE DETAILS ON SHEET 7.4)
2 - 12" GATE VALVE, M.J.
2 - 6" VALVE BOX COMPLETE

15' P.U.E.
20' P.U.E.

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1 - 6" GATE VALVE, M.J.
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1 - 6" GATE VALVE, M.J.
1 - 6" VALVE BOX COMPLETE
1 - 1/4 ANCHOR BEND, M.J.
6" D.I. PIPE, CUT AS REQUIRED
1 - STANDARD FIRE HYDRANT
(SEE DETAILS ON SHEET 7.4)
2 - 12" GATE VALVE, M.J.
2 - 6" VALVE BOX COMPLETE

15' P.U.E.
20' P.U.E.

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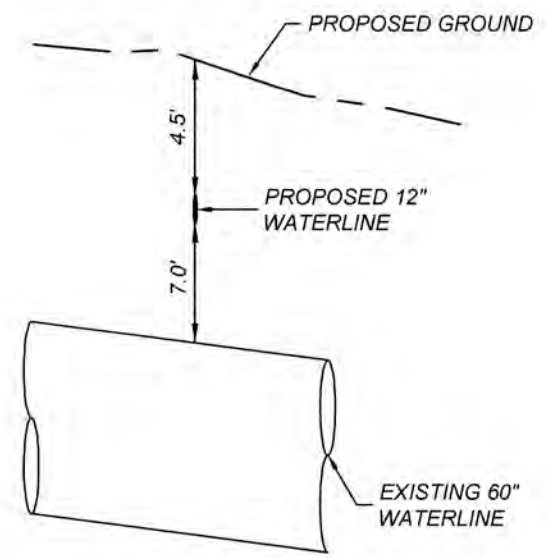
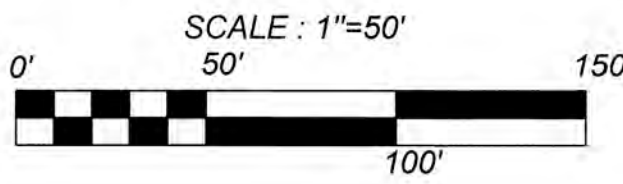
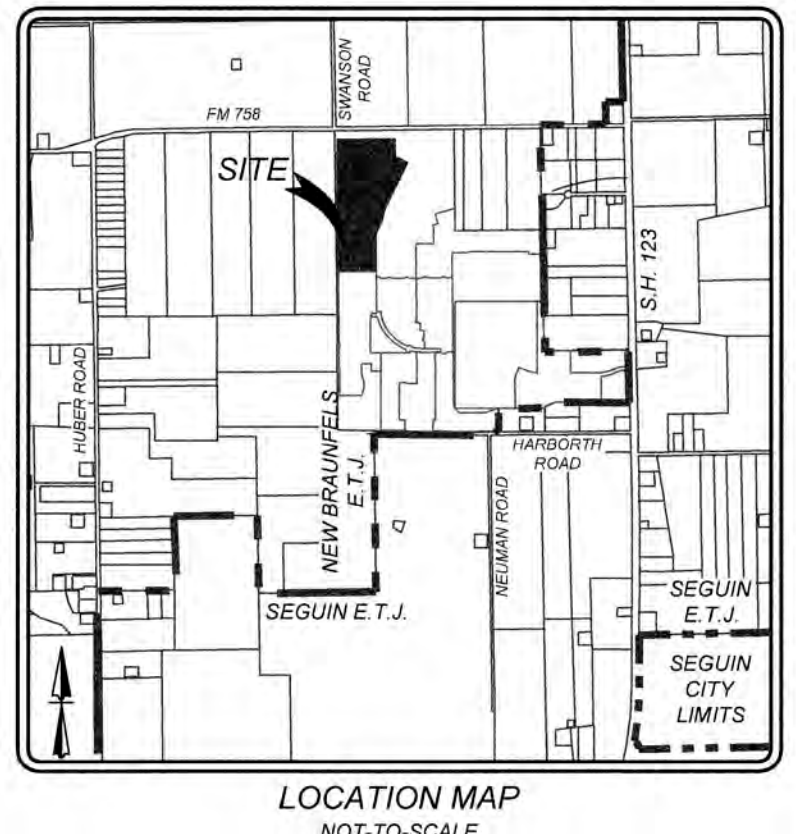
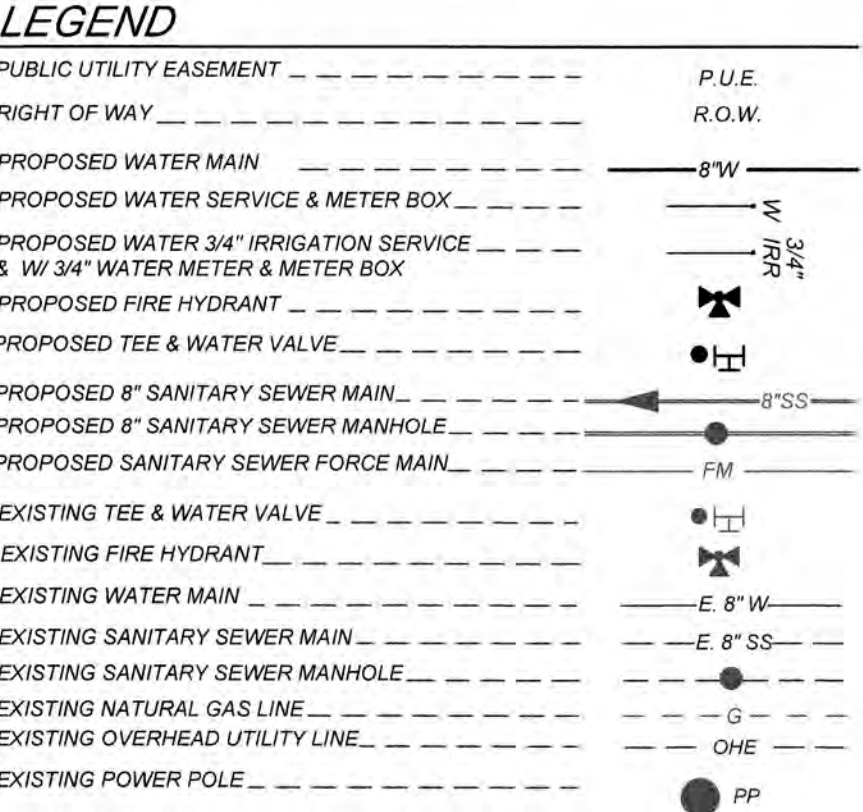
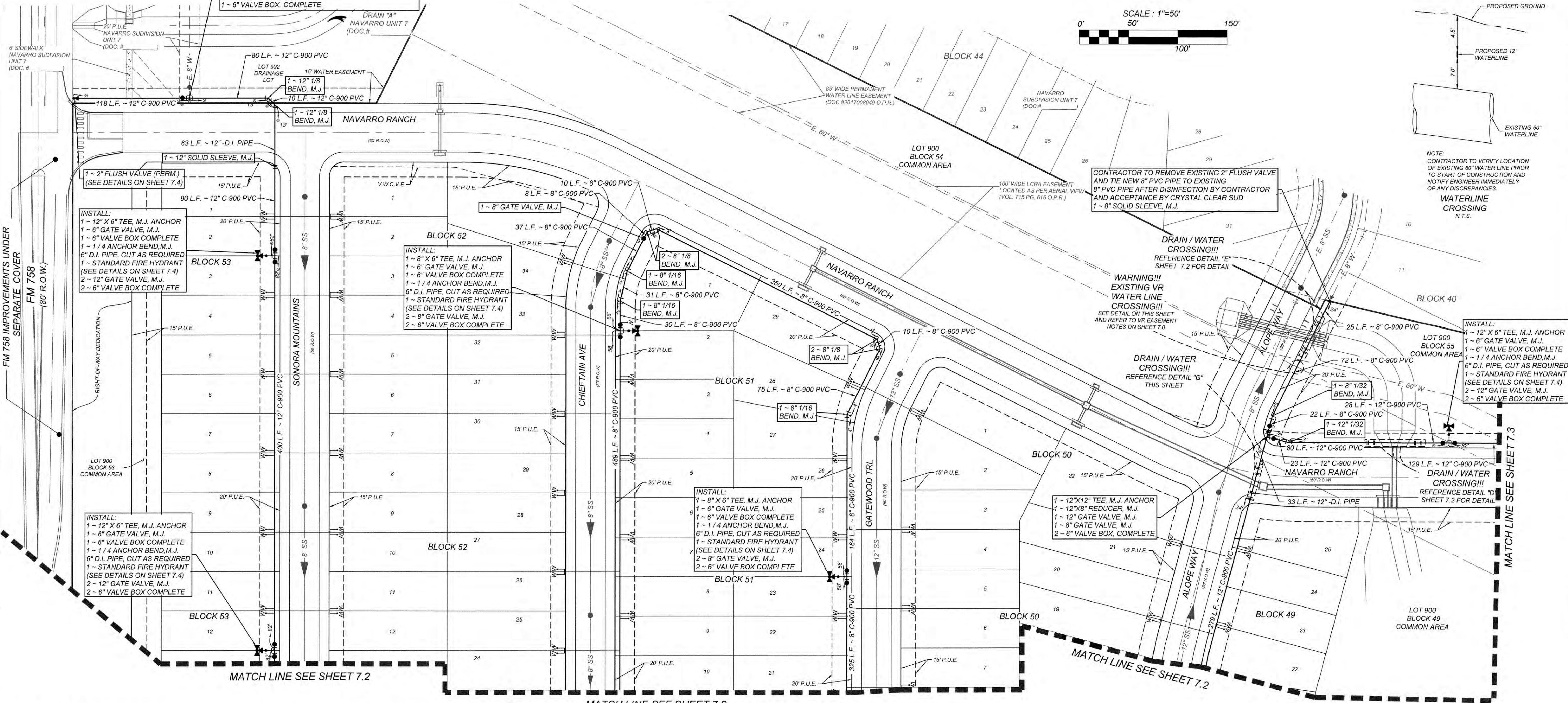
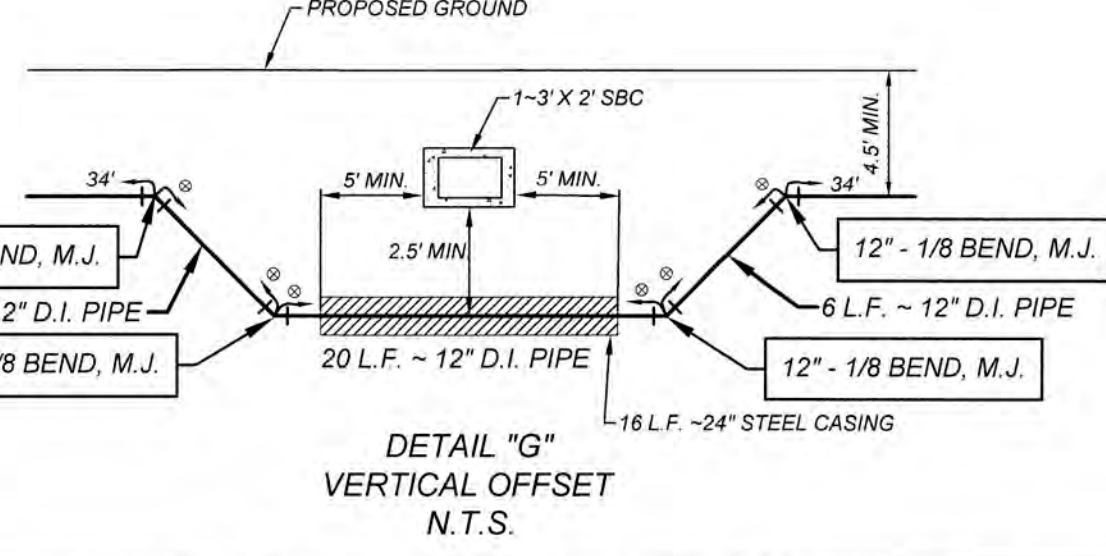
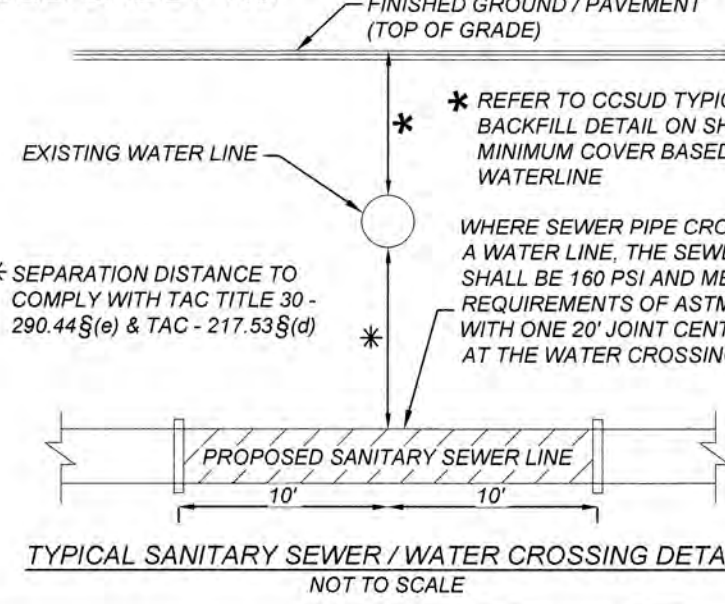
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UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK):
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") THICK. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTION OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 98% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHOD TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 300 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

GENERAL NOTE:
1. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.



TRENCH EXCAVATION SAFETY PROTECTION:
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL SAFETY EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!!
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

DRY UTILITY CONDUIT NOTE:
CONDUIT LOCATIONS SHOWN ON PLANS ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

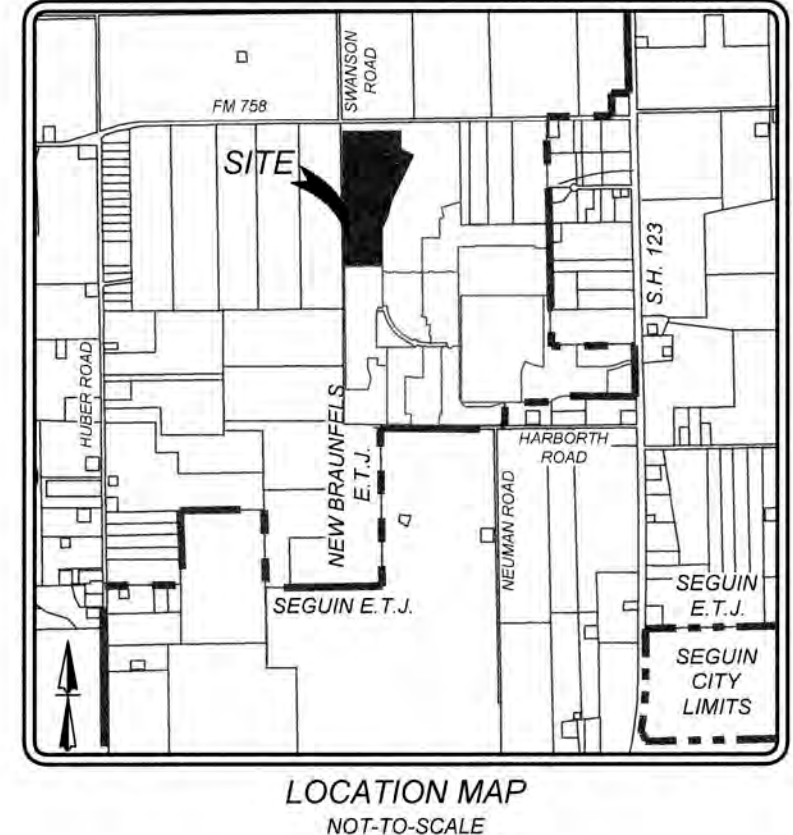
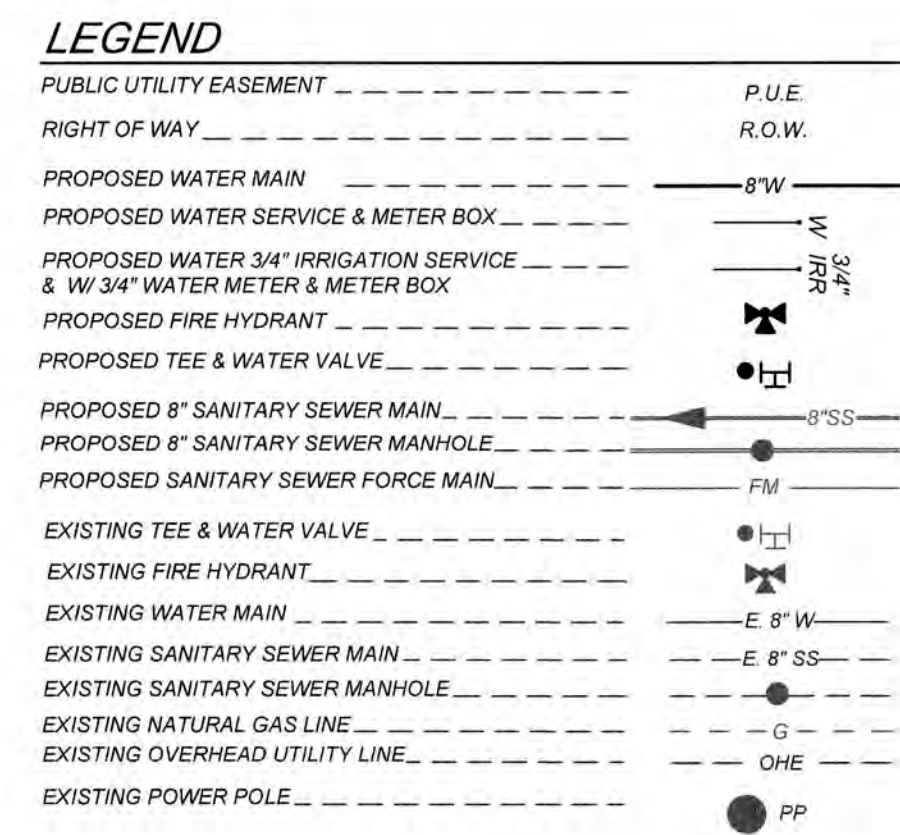
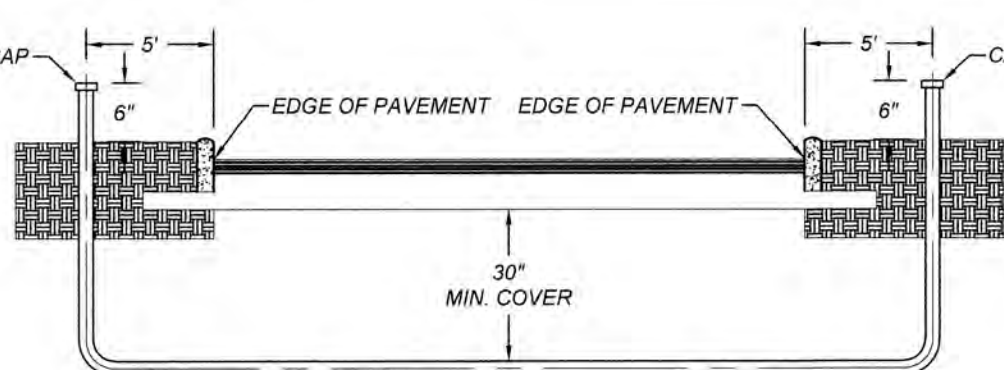
JOINT RESTRAINT NOTE:
CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESS OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT. OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED USING EBAA IRON'S RESTRAINT LENGTH CALCULATOR. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND OTHER JOINT RESTRAINING HARNESS AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE UNIT COST PER LINEAL FOOT OF PIPE INSTALLED.

COMPACTION NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE CITY OF SEGUIN UTILITIES INSPECTOR/TEST ADMINISTRATOR. PER EACH 12 INCH LOOSE LIFT PER 400 LINEAL FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY CITY OF SEGUIN UTILITIES WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

MISCELLANEOUS NOTE:
1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
2. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
3. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.

UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK):
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEOTECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 200 L.F. FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ADDITIONAL DENSITY TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

GENERAL NOTE:
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NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH GVEC FACILITY AT ALL STREETS AND DRAIN CROSSING. CONSTRUCTION SLEEVES MUST ALSO BE LOCATED FOR GVEC CREWS DURING CONSTRUCTION. (SEPARATE ITEM) SEE FINAL ELECTRIC PROVIDER'S DESIGN AND SPECIFICATION.

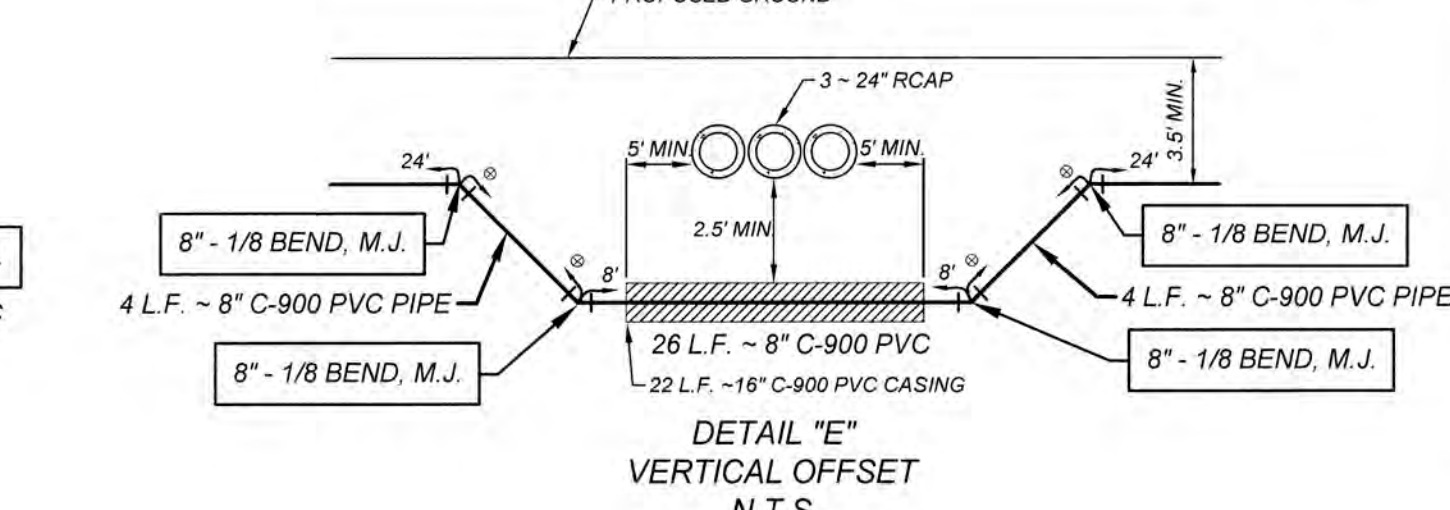
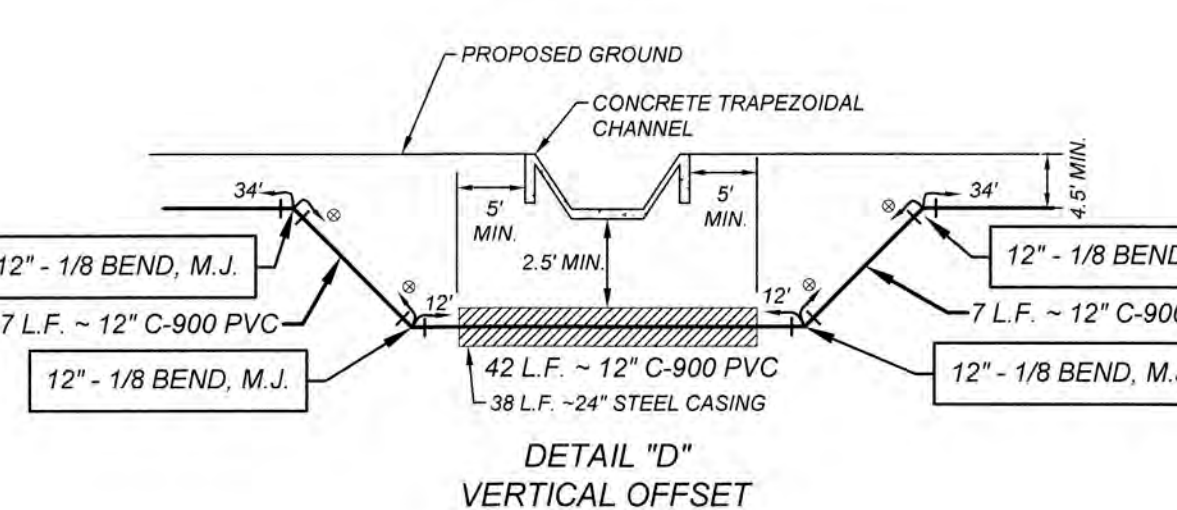
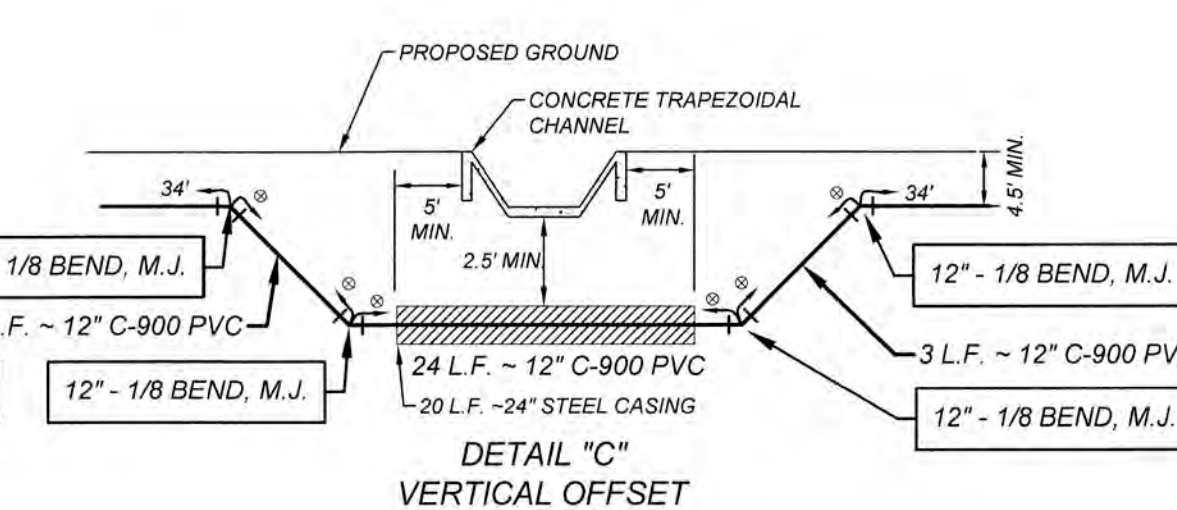
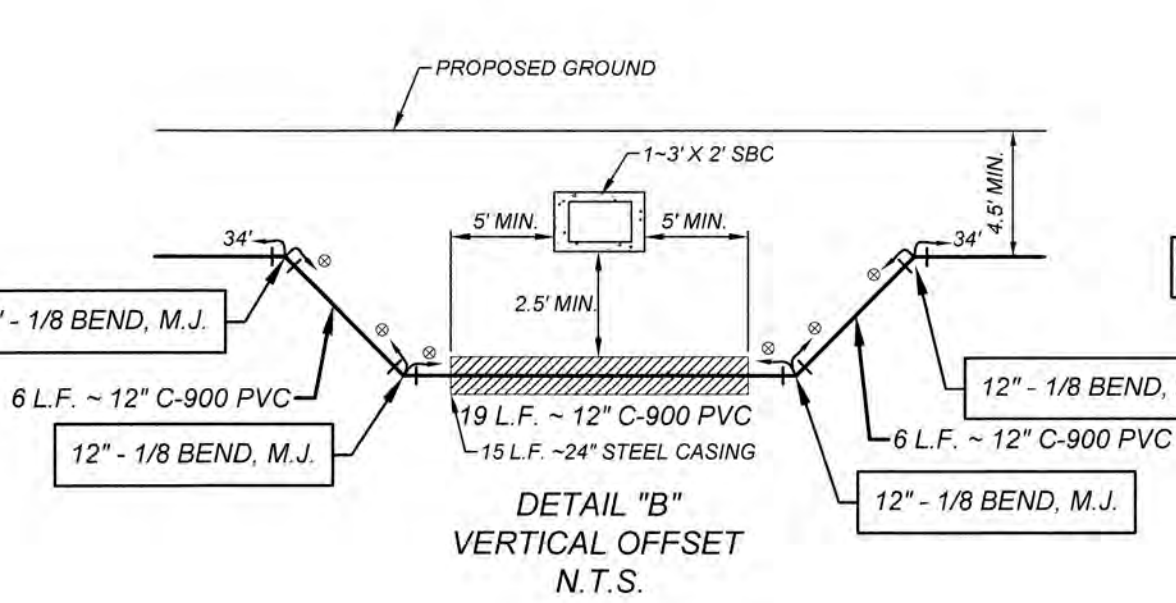
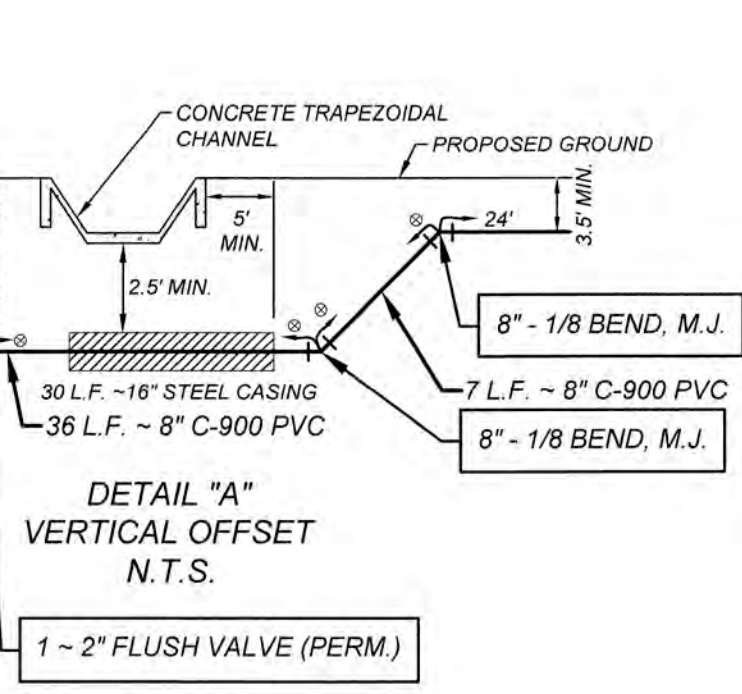
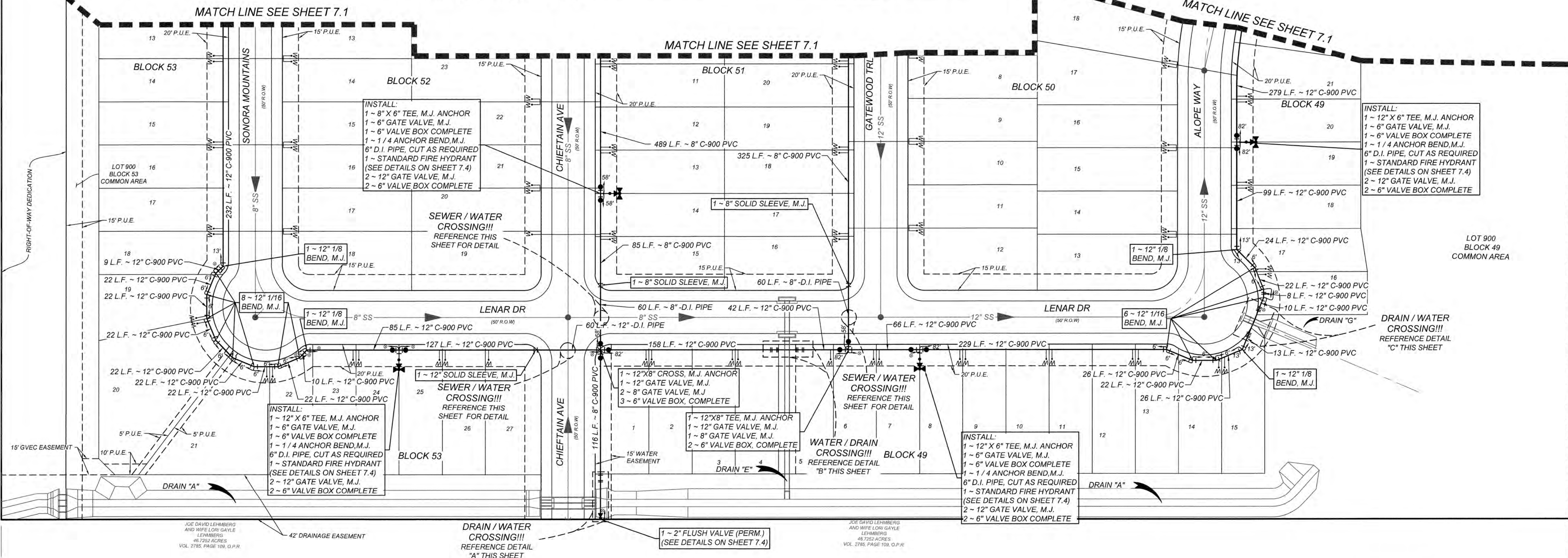
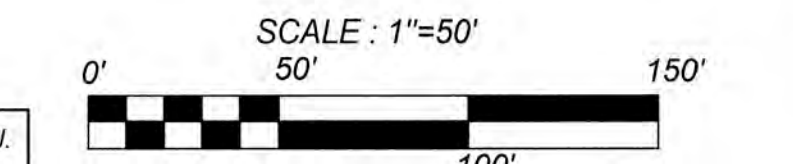
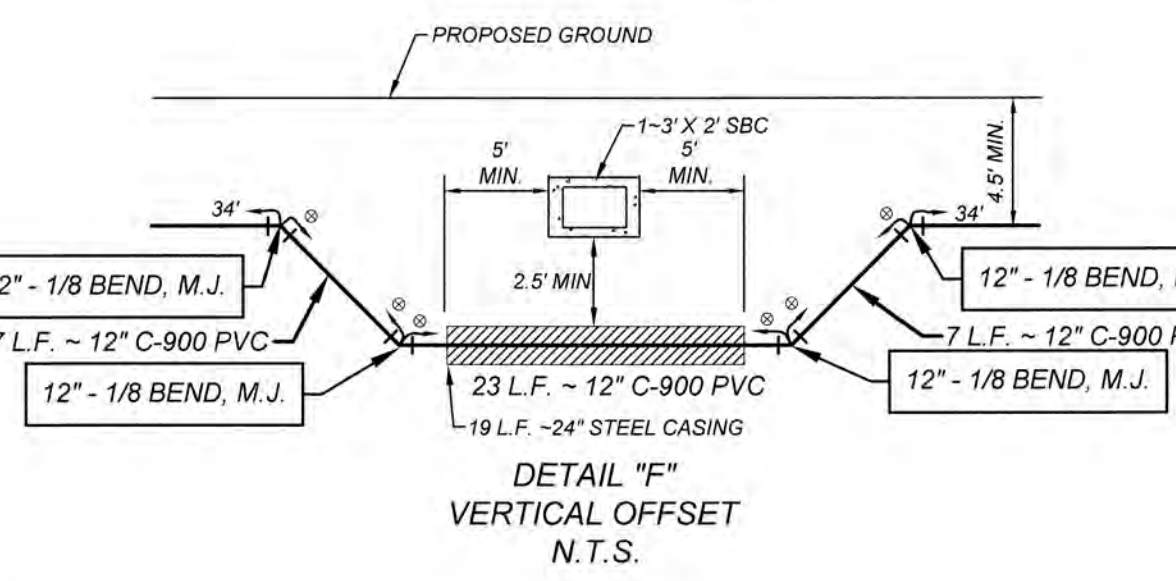
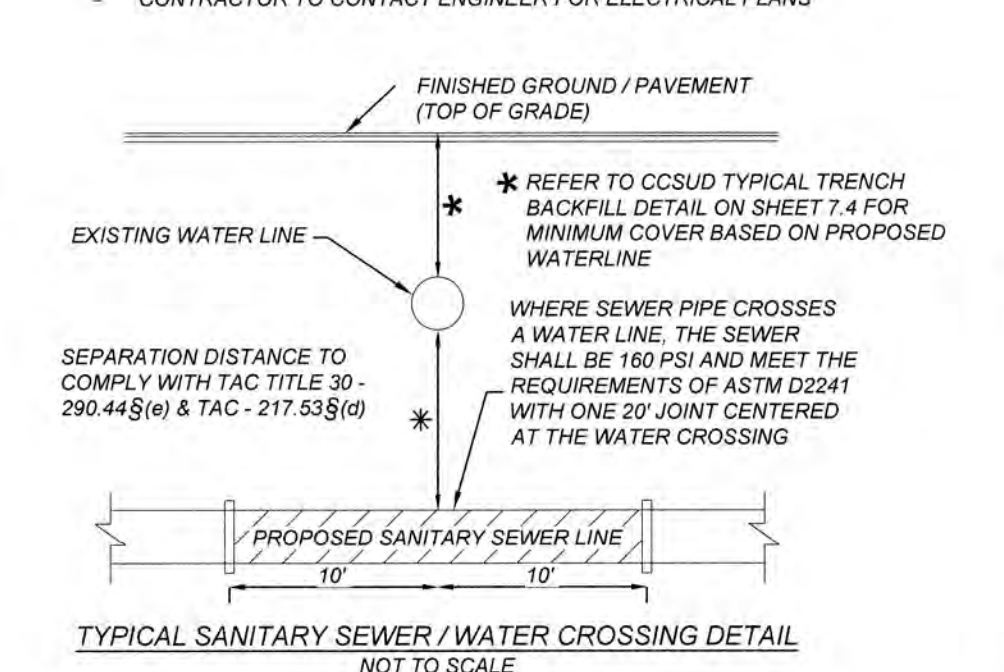
CONTRACTOR TO CONTACT ENGINEER FOR APPROPRIATE NUMBER AND SIZE OF CONDUITS FOR TELECOMMUNICATIONS

CONTRACTOR TO CONTACT ENGINEER FOR ELECTRICAL PLANS

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NEW

ENGINEERS + SURVEYING

152 W. Mill St. New Braunfels, TX 78130
TEL: 817.267.6997
TXBE Firm # 4513 • TBP&S Firm # 10122300

ISSUE DATE: _____

REVISIONS: _____

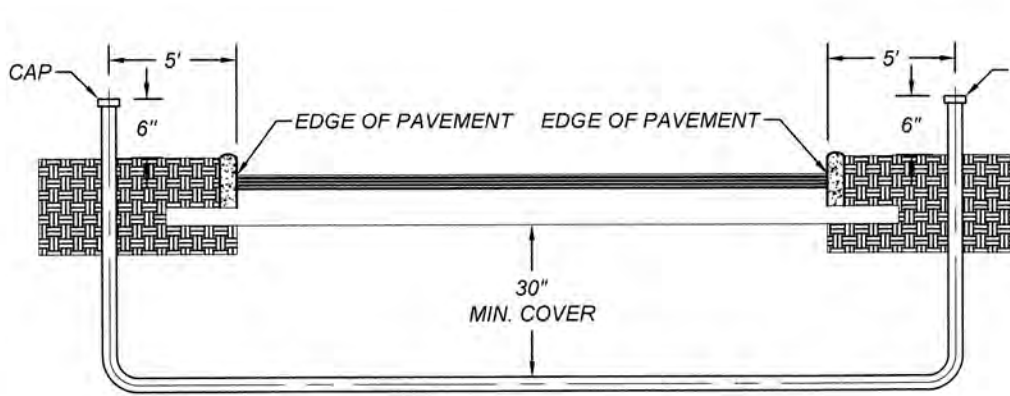
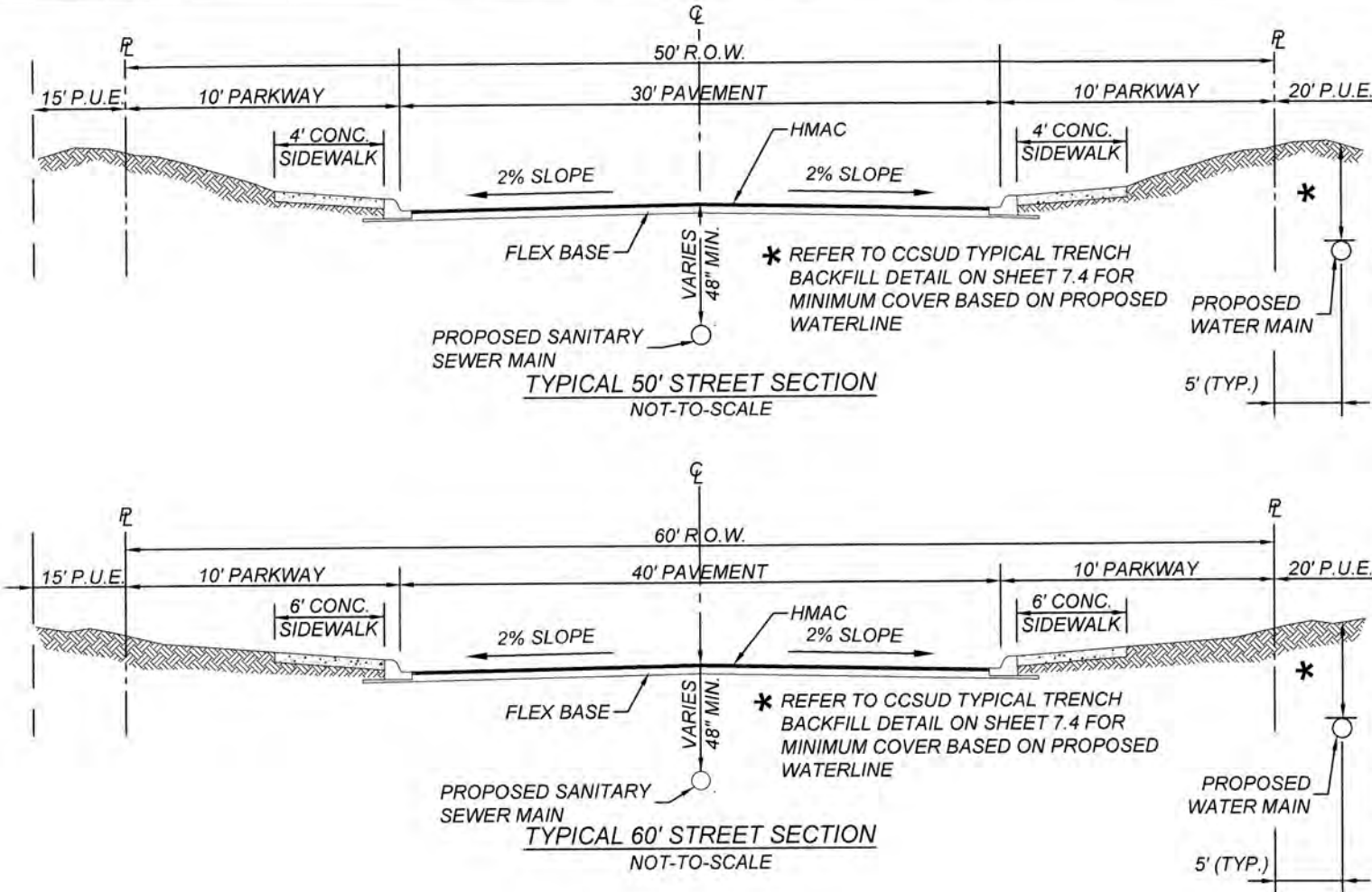
STATE OF TEXAS
NICHOLAS REYNOLDS
11666
LICENSED PROFESSIONAL ENGINEER

Nicholas Reynolds

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
WATER DISTRIBUTION PLAN

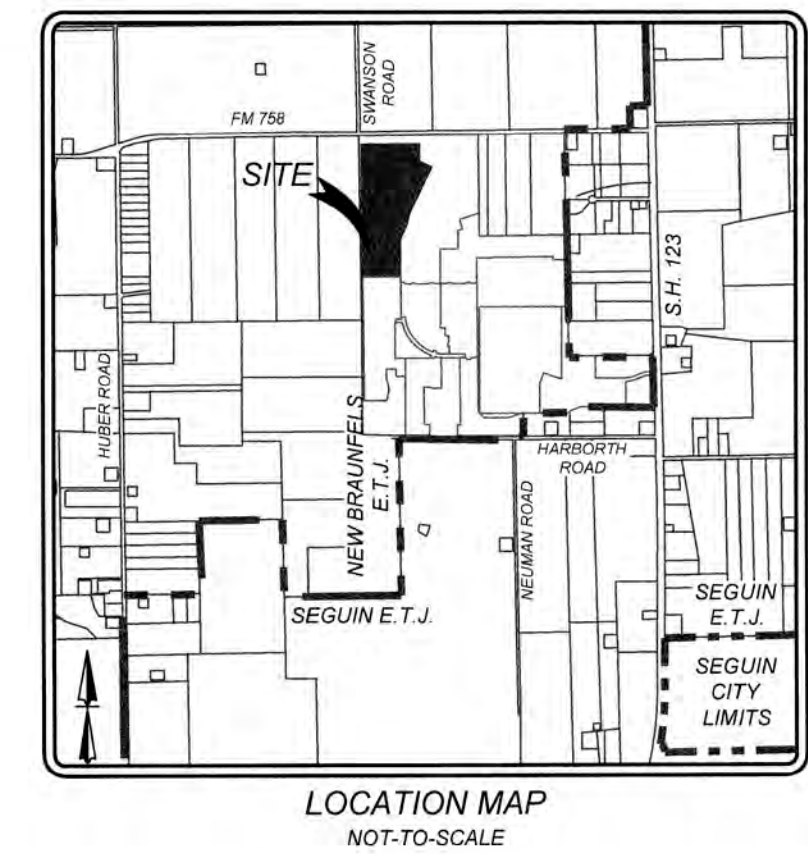
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DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

DRY UTILITY CONDUIT NOTE:
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CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES
BASED ON THE DRY UTILITY PURVEYOR'S PLAN.



LEGEND

PUBLIC UTILITY EASEMENT		P.U.E
RIGHT OF WAY		R.O.W.
PROPOSED WATER MAIN	8" W	
PROPOSED WATER SERVICE & METER BOX		3/4"
PROPOSED WATER 3/4" IRRIGATION SERVICE & 1/2" 3/4" WATER METER & METER BOX		3/4"
PROPOSED FIRE HYDRANT		
PROPOSED TEE & WATER VALVE		
PROPOSED 8" SANITARY SEWER MAIN	8" SS	
PROPOSED 8" SANITARY SEWER MANHOLE		
PROPOSED SANITARY SEWER FORCE MAIN	FM	
EXISTING TEE & WATER VALVE		
EXISTING FIRE HYDRANT		
EXISTING WATER MAIN	8" W	
EXISTING SANITARY SEWER MAIN	8" SS	
EXISTING SANITARY SEWER MANHOLE		
EXISTING NATURAL GAS LINE	G	
EXISTING OVERHEAD UTILITY LINE	OH	
EXISTING POWER POLE		



KFW
ENGINEERS + SURVEYING
162 W Mill St. New Braunfels, Tx. 78130
Phone #: (830) 220-6042 • Fax #: (830) 627-9097

ISSUE DATE



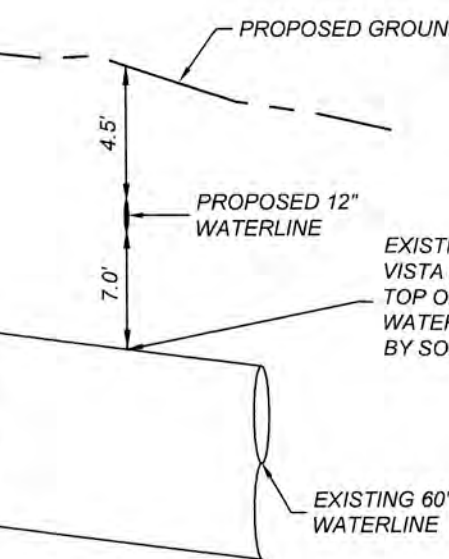
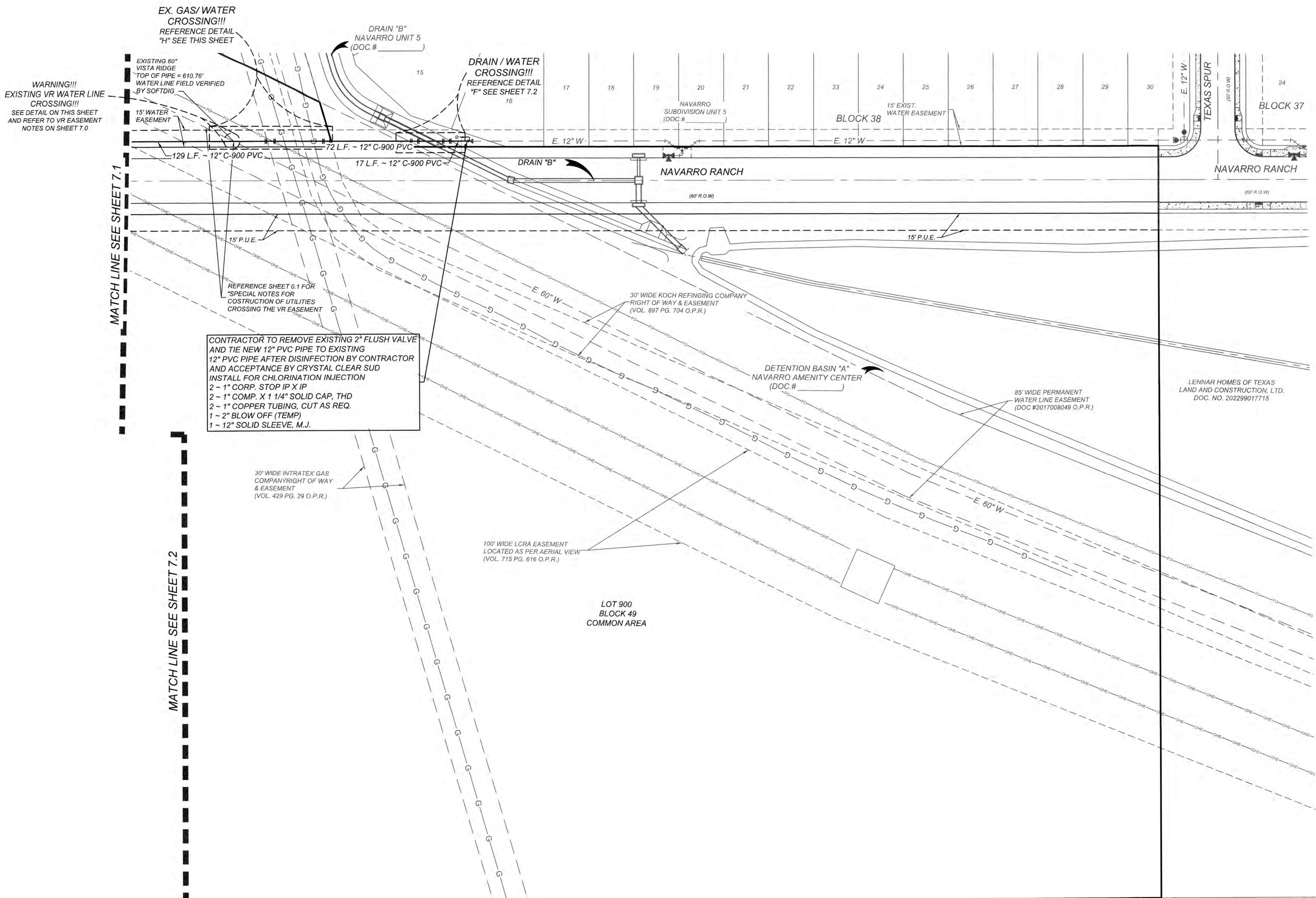
Val R. H. P.E.

NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY

WATER DISTRIBUTION PLAN

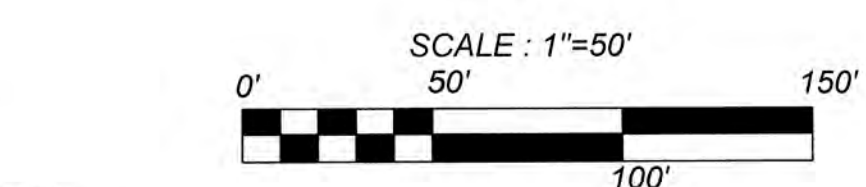
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NOTE:
CONTRACTOR TO VERIFY LOCATION
OF EXISTING 60" WATER LINE PRIOR
TO START OF CONSTRUCTION AND
NOTIFY ENGINEER IMMEDIATELY
OF ANY DISCREPANCIES.

WATERLINE
CROSSING
N.T.S.



FINISHED GROUND / PAVEMENT
(TOP OF GRADE)

EXISTING WATER LINE

* REFER TO CCSUD TYPICAL TRENCH
BACKFILL DETAIL ON SHEET 7.4 FOR
MINIMUM COVER BASED ON PROPOSED
WATERLINE

SEPARATION DISTANCE TO COMPLY WITH TAC TITLE 30 - 290.44§(e) & TAC - 217.53§(d)

WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED

Diagram of a beam with a point load at the water crossing. The beam is supported by two vertical supports. A downward arrow labeled 'AT THE WATER CROSSING' indicates the point load.

Diagram showing the proposed sanitary sewer line with a 10' offset on each side of the centerline.

JOINT RESTRAINT NOTE:
CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING BUSHINGS AND WASHERS AND GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED USING EBAA IRON'S RESTRAINT LENGTH CALCULATOR. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND WASHERS. CONTRACTOR SHALL PROVIDE WASHERS AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE JOINT COST PER LINEAL FOOT OF PIPE INSTALLED.
® ENTIRE LENGTH OF PIPE TO BE RESTRAINT
COMPACTION NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND ONE LOCATION FOR THE TESTS TO BE REQUIRED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION PER RANDOMLY SELECTED 100' OF TRENCH FOR EACH 100' OF TRENCH. INSURE THAT THE TESTS ARE DONE AT THE BOTTOM OF THE TRENCH. PER EACH 12 INCH LUGS LIFT PER 400 LINEAR FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY CITY OF SEGUIN UTILITIES WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

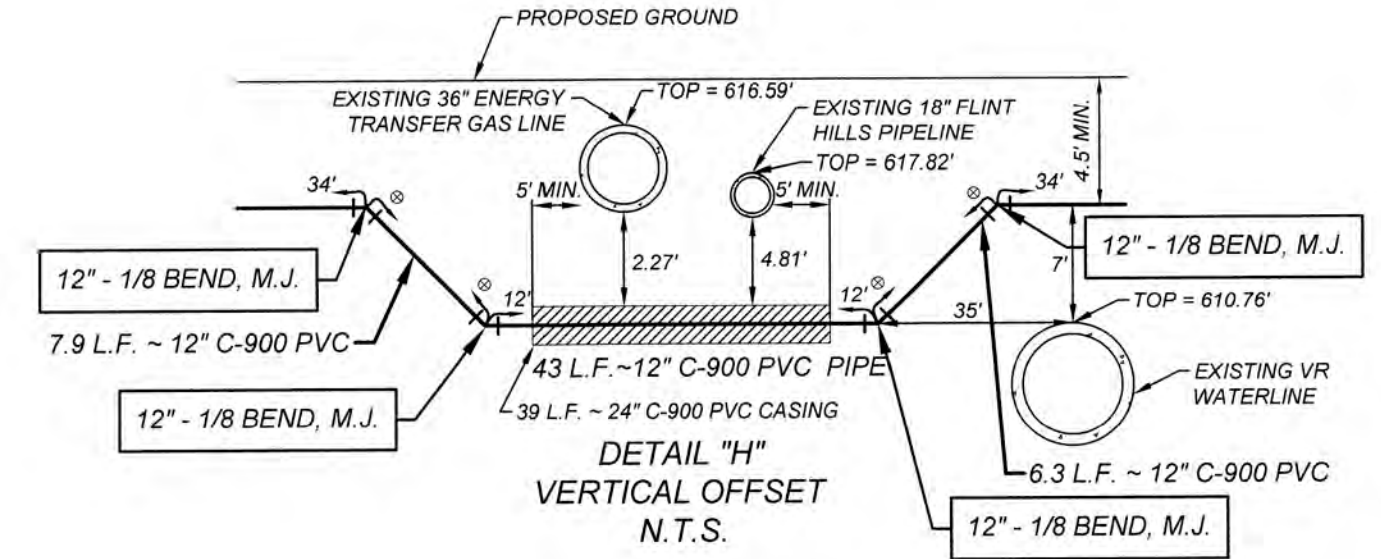
MISCELLANEOUS NOTE:

1. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
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3. ENSURE ALL DRIVEWAY APPROACHES ARE BUILT IN GENERAL ACCORDANCE WITH A.D.A. SPECIFICATIONS.

UTILITY TRENCH COMPACTION (STREET PAVEMENT / SIDEWALK)
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPERS GEOTECHNICAL ENGINEER. ALL FILL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 12" (12") LOOSE. DETERMINE THE MAXIMUM FILL THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATION AND EQUIPMENT USED TO MEET THE REQUIRED DENSITY. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY OF THE MAXIMUM DENSITY OF THE MATERIAL. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR. AT THE COMPLETION OF THE UTILITY TRENCH, THE CITY OF NEW BRAUNFELS STREET INSPECTOR SHALL BE NOTIFIED. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CITY OF NEW BRAUNFELS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT AND FILLING OF THE UTILITY TRENCH IS IN ACCORDANCE WITH THE CITY OF NEW BRAUNFELS PLANS. ADDITIONAL TESTING MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS INSPECTOR.

GENERAL NOTE:

1. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5-FEET IN DEPTH LOCATED IN PUBLIC RIGHT-OF-WAY OR EASEMENTS. DEEP TRENCHES POSE COMPACTION TESTING AND CONSTRUCTION CHALLENGES AND CITY METHODS FOR TESTING AND COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO CITY PRIOR TO UTILITY INSTALLATION.



JOE DAVID LEHMBERG
AND WIFE LORI GAYLE LEHMBERG
46.7252 ACRES
VOL. 2785, PAGE 109, O.P.R.

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. REFERENCE TO FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

Date: Aug 18, 2023, 11:26am User ID: nscego
File: U:\Projects\314\28\19\Design\Civil\WATER\7.3 WATER DISTRIBUTION PLAN.dwg

Date: Dec 07, 2023, 2:17pm User ID: nreeds
File: U:\Projects\314-28-19 Design\Crystal Water\7.4 WATER DISTRIBUTION DETAIL SHEET.dwg



Crystal Clear SUD

Approved Equipment List (AEL)

Below is a list of Crystal Clear SUD (CCSUD) approved brands for use in the Distribution and Collection system.

Brands

Air Relief Valves: Empire Controls, Val-matic, Apos.

Corporation Stops: Ford

Curb Stops: Ford

Fire Hydrants: American, Mueller Company, EJ.

Gate Valves: Mueller Company, American Cast Iron Pipe Company, EJ Group, Inc., Clow Valve Company, Matco-Norca.

Pipe Type: High Density Polyethylene, C900 Series.

Restraining Joints: EBAW Iron Inc., Star Pipe Products

Service Saddles: Smith-Blair, Ford, Mueller, JCM Industries

Tapping Sleeves: Smith-Blair, Mueller

Tapping Valves: American, Mueller

Meters: Kamstrup

Meter Boxes: DFW Plastics, NDS Meter Boxes.

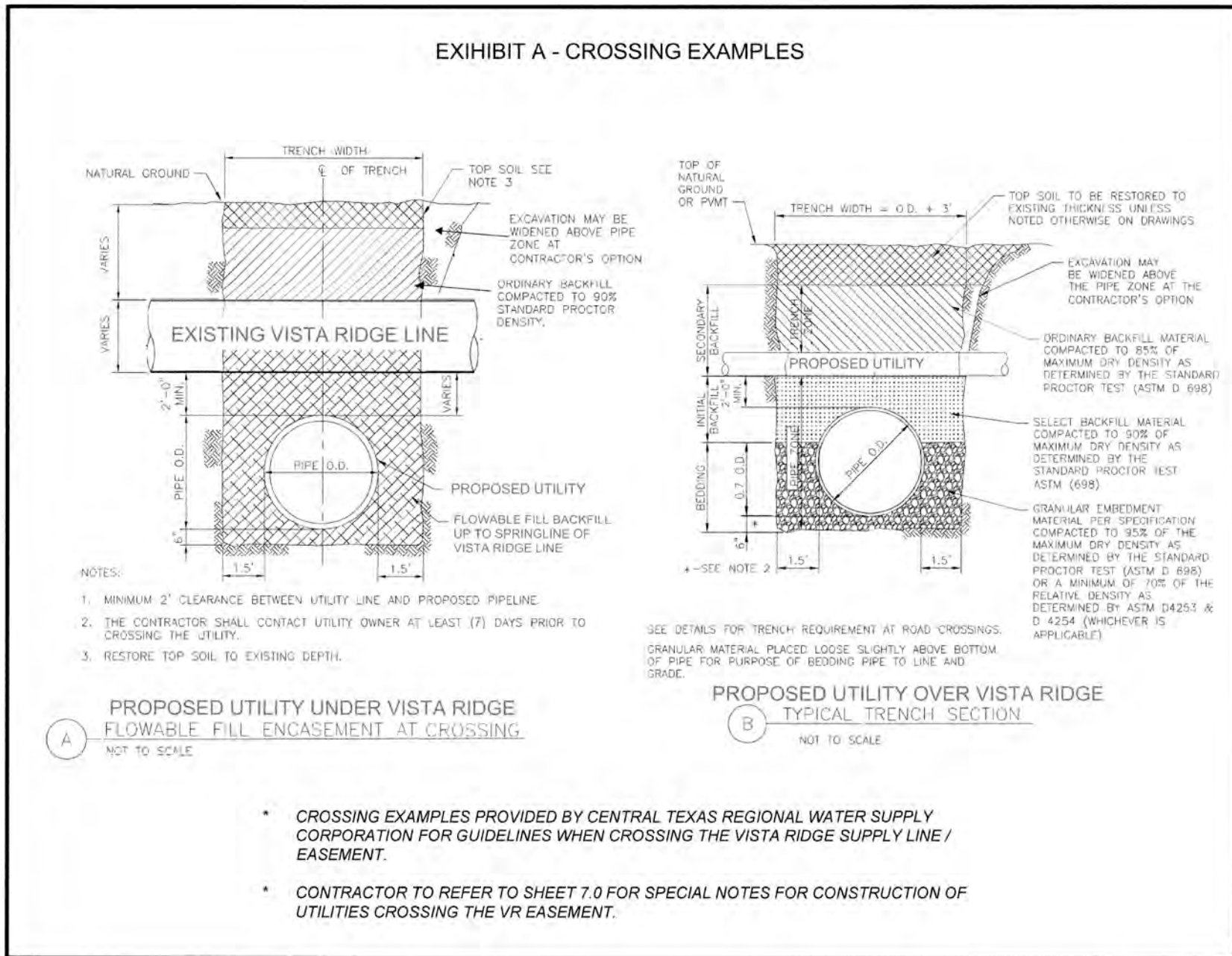
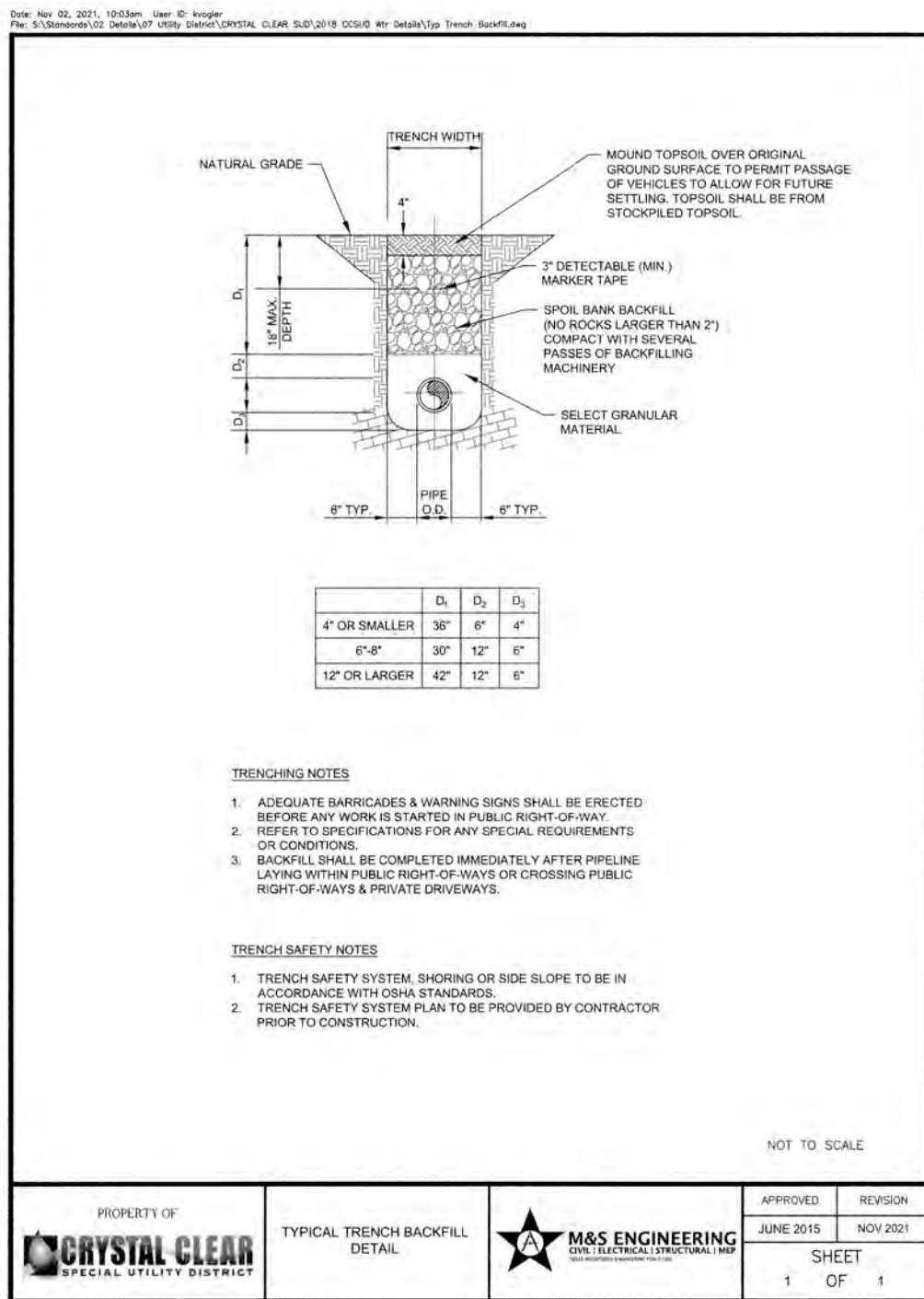
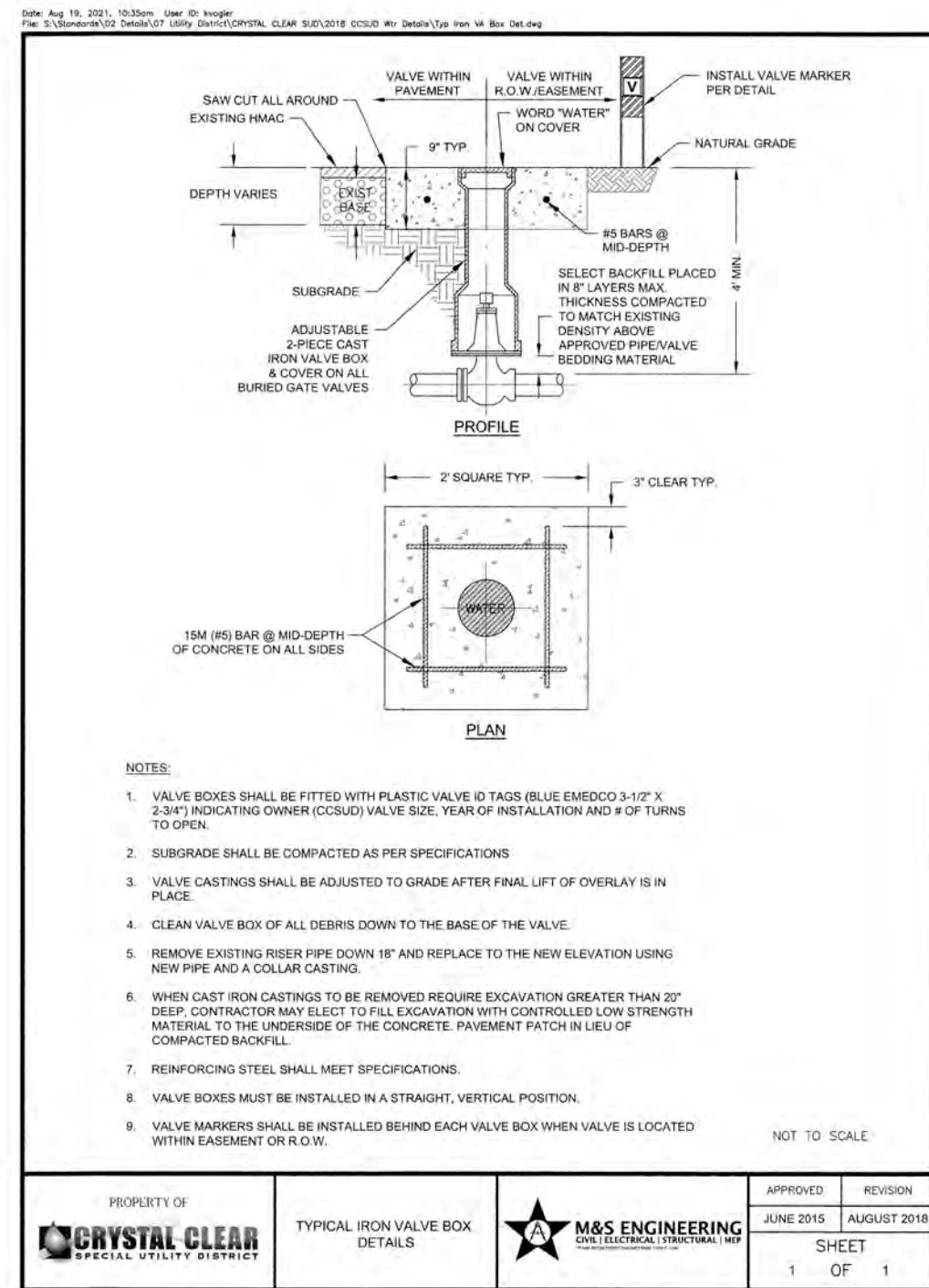
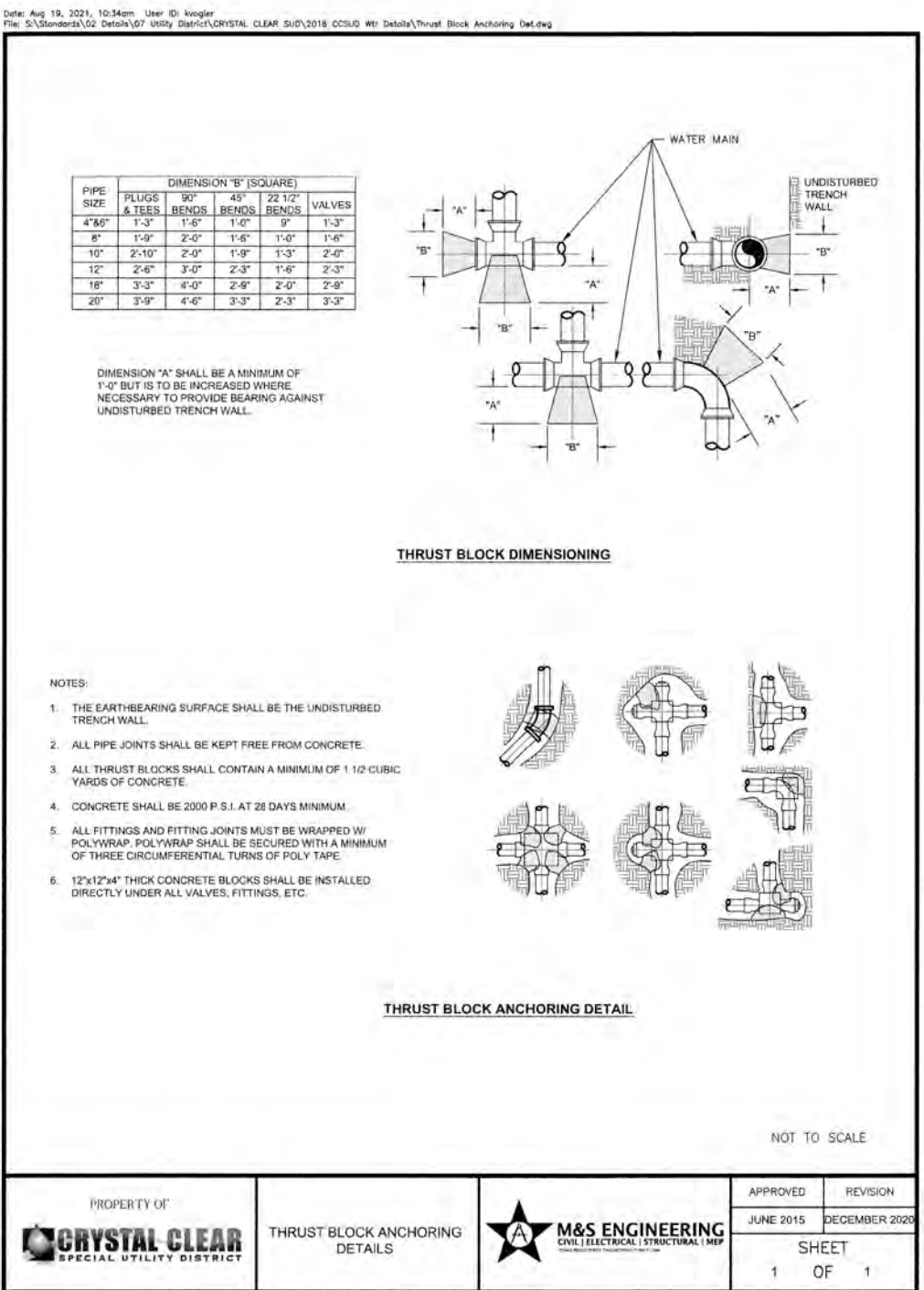
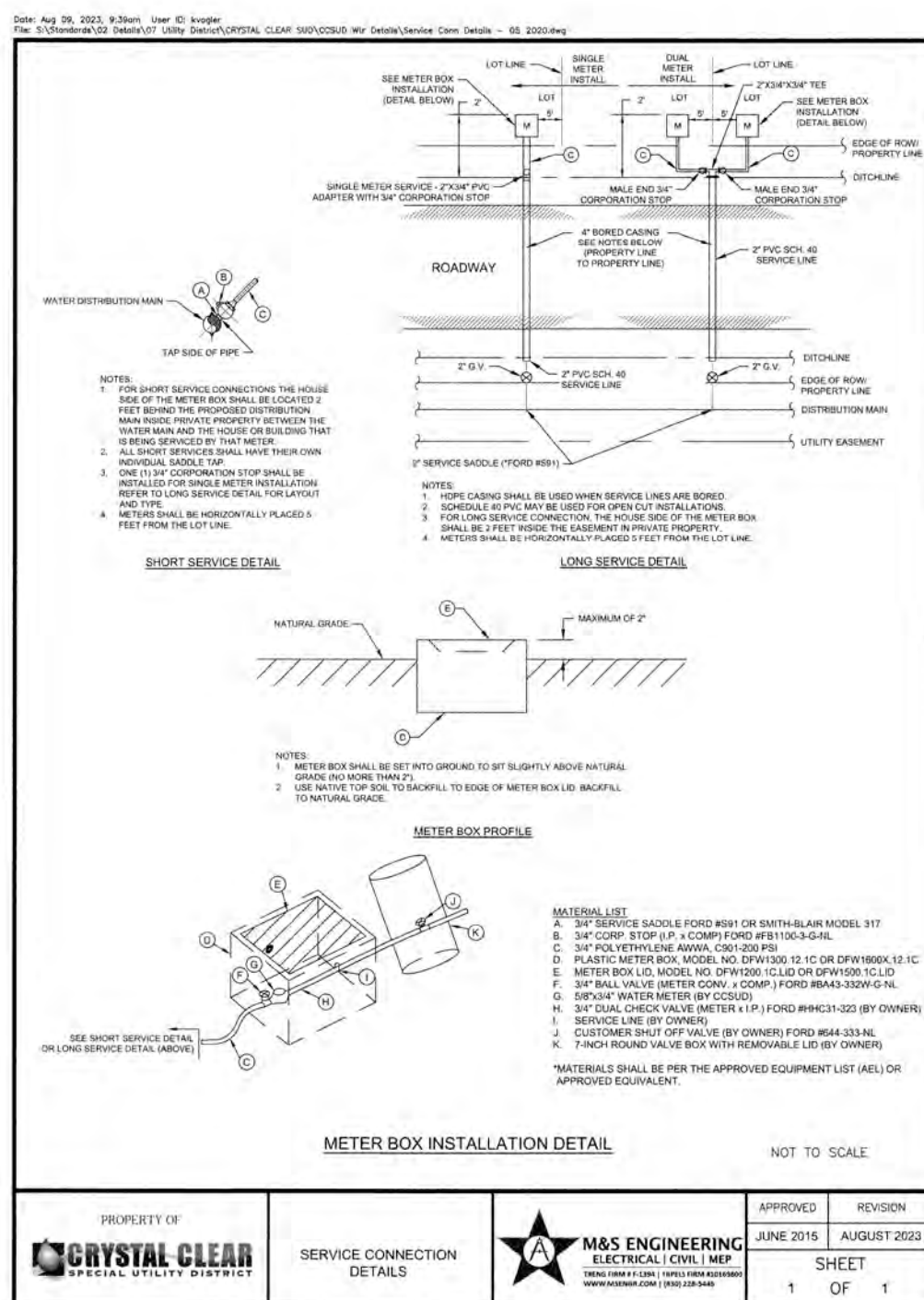
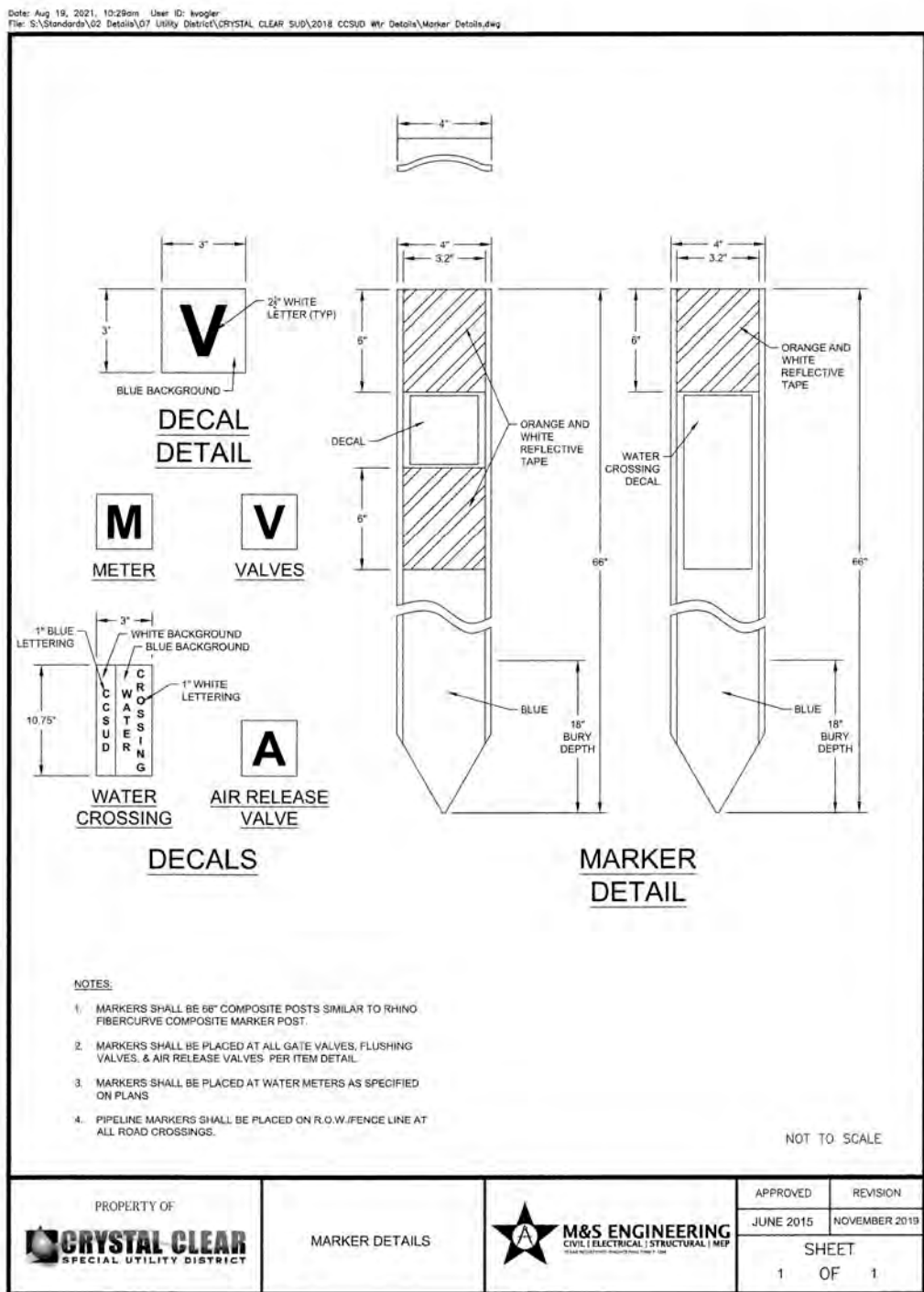
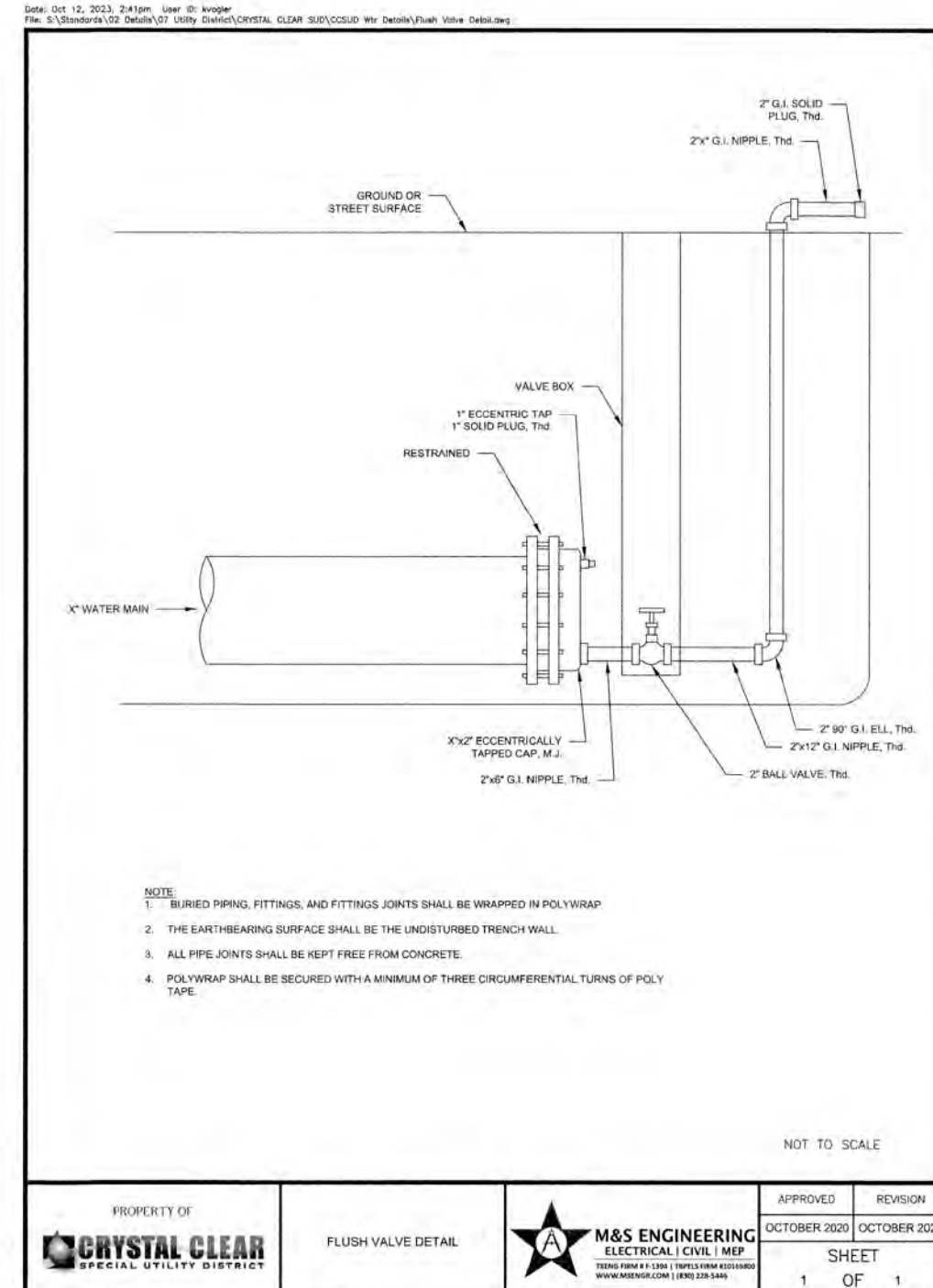
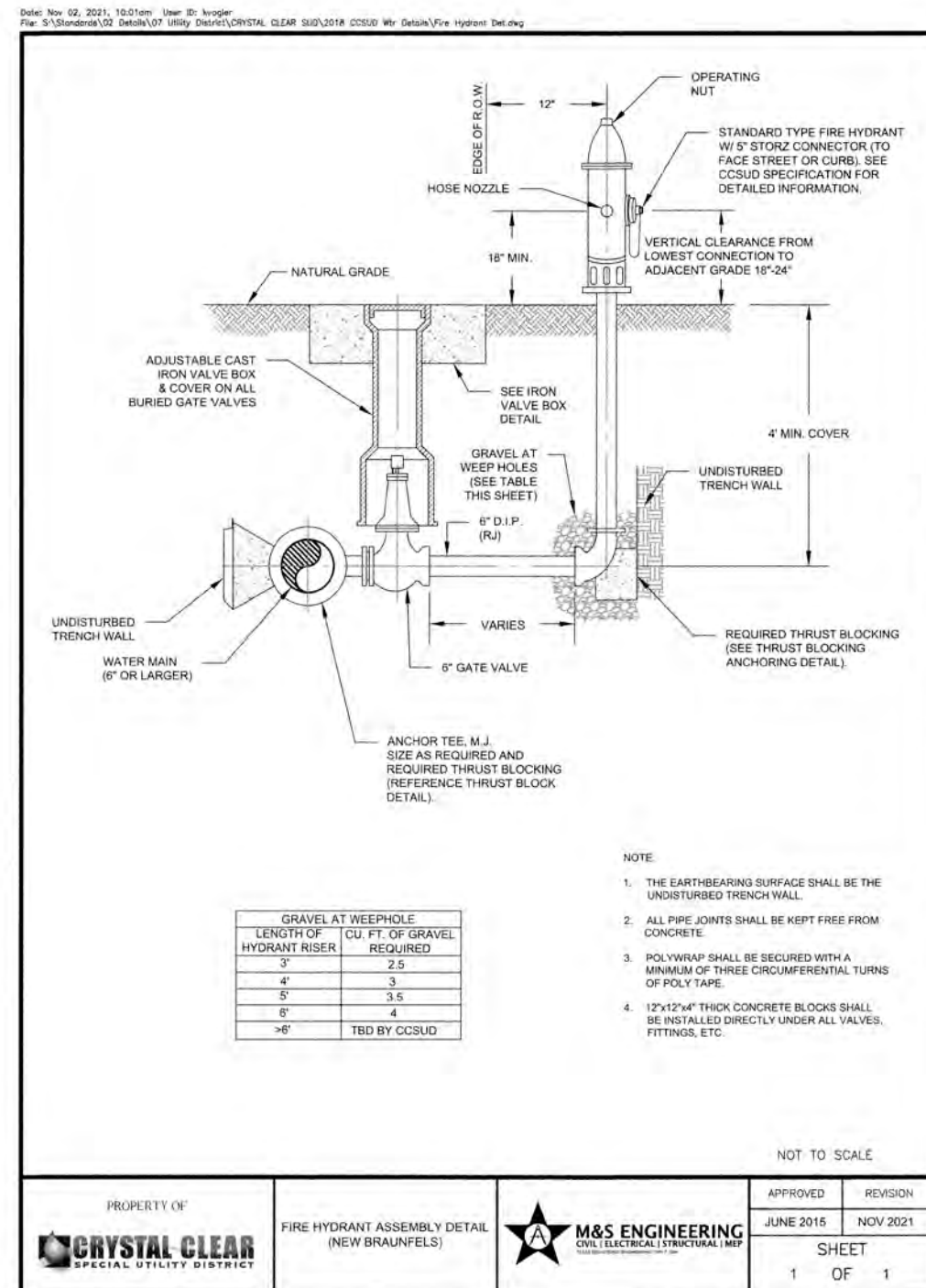
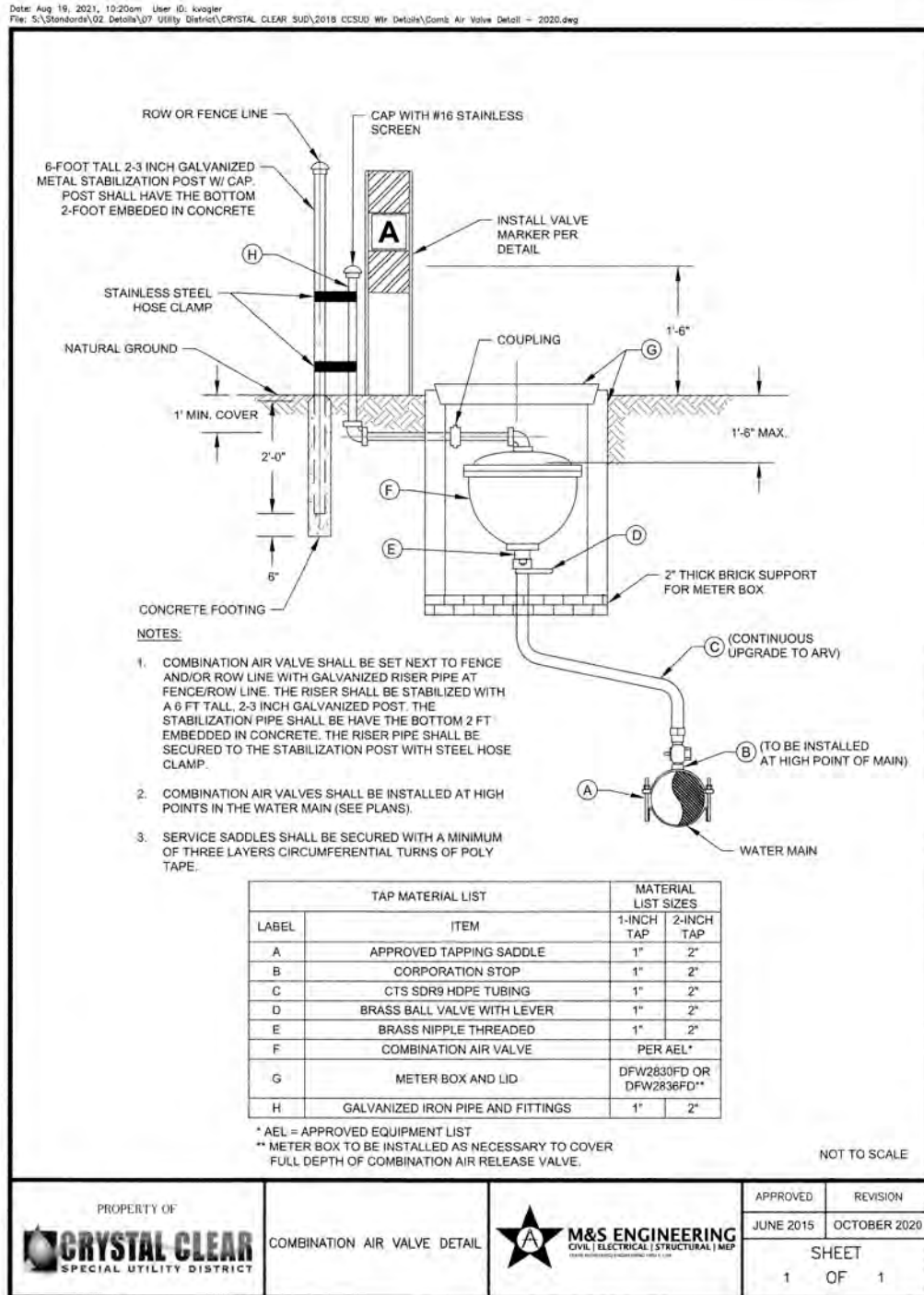
VFD: Yakawa

Vertical Turbine Pump: HydroFlo

Motors: TECO or US Motor

Any equipment to be installed in the CCSUD Distribution or Collection systems must come from the list above. Any equipment installed that is not listed above must be approved by the CCSUD Inspector or a CCSUD Manager or the installation is subject to a failed inspection until the correct brand can be installed. If you have any questions about these procedures please contact the CCSUD Inspector.

Last Updated: 08/2023



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
WATER DISTRIBUTION DETAIL SHEET

JOB NO: 314-28-19
DATE: JUL 2022
DRAWN: AC
CHECKED: DA

SHEET NUMBER: 7.4

INSTALLATION:

1. ALL OPERATORS SHALL SUBMIT A NOTICE OF INTENT (NOI) AT LEAST 48 HOURS IN ADVANCE AND ALL BEST MANAGEMENT PRACTICES (BMPs) SHALL BE IN PLACE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.
2. CONTRACTOR TO ENSURE THAT STRUCTURAL BMPs ARE INSTALLED WITHIN THE LIMITS OF THE SITE BOUNDARY.
3. CONTRACTOR MAY INSTALL THE BEST MANAGEMENT PRACTICES IN PHASES THAT COINCIDE WITH THE DISTURBANCE OF UP GRADIENT AREAS. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
4. CONTRACTOR TO VERIFY SUFFICIENT VEGETATION IN AREAS DENOTED AS VEGETATED FILTER STRIP. IF INSUFFICIENT VEGETATION EXISTS, CONTRACTOR SHALL IMPLEMENT A DIFFERENT BEST MANAGEMENT PRACTICE AND WILL SHOW IT ON THIS PLAN WITH NOTATION IN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.

MAINTENANCE AND INSPECTION:

1. CONTRACTOR SHOULD LIMIT CONSTRUCTION ACTIVITIES TO ONLY THOSE AREAS SHOWN TO BE DISTURBED ON THIS PLAN. IF ADDITIONAL VEGETATED AREAS ARE DISTURBED, THEY SHOULD BE PROTECTED WITH APPROPRIATE BEST MANAGEMENT PRACTICES UNTIL THE AREAS HAVE BEEN STABILIZED AS PER THE SPECIFICATIONS OF THE SWPPP. THE AREAS OF THIS ADDITIONAL SOIL DISTURBANCE AND THE MEASURES USED SHOULD BE SHOWN ON THE SITE PLAN AND NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF BMPs AS PER THE SPECIFICATIONS OF THE SWPPP. THE CONTRACTOR MAY MODIFY THE CONTROLS AS NECESSARY TO PREVENT SEDIMENT RUNOFF. THESE MODIFICATIONS SHOULD BE SHOWN AND THE SITE PLAN AND NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
3. LOCATION OF CONSTRUCTION ENTRANCE/EXIT, CONCRETE WASHOUT PIT, AND EQUIPMENT AND STORAGE ARE TO BE FIELD DETERMINED. LOCATIONS SHALL BE UPDATED ON THIS PLAN.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

PROJECT COMPLETION:

1. ALL DISTURBED AREAS ARE NOT COVERED BY IMPERVIOUS COVER ARE TO BE STABILIZED PER THE SWPPP AND PROJECT SPECIFICATIONS PRIOR TO REMOVAL OF ANY BMPs AND/OR PRIOR TO FILING A NOTICE OF TERMINATION (NOT).
2. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN PHASES IF ALL UPGRADIENT AREAS HAVE BEEN STABILIZED PER SWPPP AND PROJECT SPECIFICATIONS. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
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GENERAL:

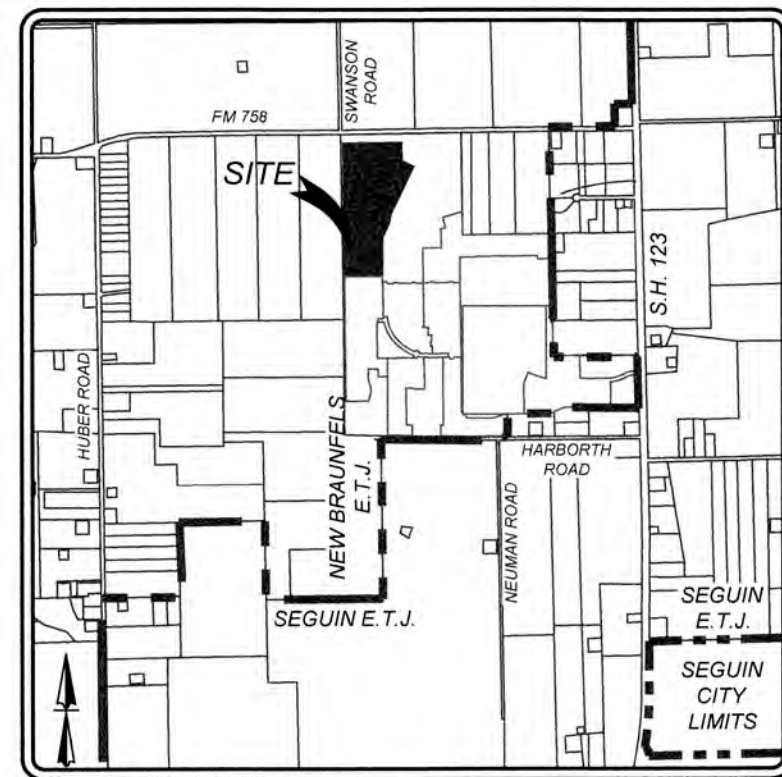
1. THIS EXHIBIT IS TO BE USED FOR THE PURPOSES OF STORMWATER POLLUTION PREVENTION ONLY. ALL OTHER CIVIL ENGINEERING INFORMATION SHOULD BE OBTAINED FROM THE APPROPRIATE CONSTRUCTION DOCUMENTS.
2. THE PURPOSE OF THE SIGNATURE AND SEAL OF THE ENGINEER ON THIS DOCUMENT IS TO DEMONSTRATE COMPLIANCE WITH THE TPDES STORMWATER POLLUTION PREVENTION PLAN REGULATIONS ONLY.
3. ALL OWNERS/OPERATORS ARE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE STORMWATER POLLUTION PREVENTION PLAN AND COMPLYING WITH THE REGULATIONS CONTAINED WITHIN IT.
4. PER TPDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

COORDINATION NOTE:

1. CONTACT SPECTRUM TO COORDINATE CABLE TV SERVICE. (210) 244-0500
2. CONDUIT FOR ELECTRICAL SERVICE, CONFIRM REQUIREMENTS AND COORDINATE WITH GUADALUPE VALLEY ELECTRIC COOPERATIVE FOR INSPECTION. (830) 379-2114
3. CONTACT AT&T TO COORDINATE TELEPHONE SERVICE. 1-800-449-7928.
4. CONTRACTOR TO COORDINATE WITH GUADALUPE VALLEY ELECTRIC COOPERATIVE PRIOR TO CONSTRUCTION TO PLAN ELECTRIC SERVICE.
5. CONTRACTOR TO COORDINATE WITH CITY OF SEGUIN TO PLAN SANITARY SEWER SERVICES (830) 379-9718
6. CONTRACTOR TO COORDINATE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICT TO PLAN WATER SERVICES (830) 914-2330
7. CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

SW3P MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION



LOCATION MAP NOT-TO-SCALE

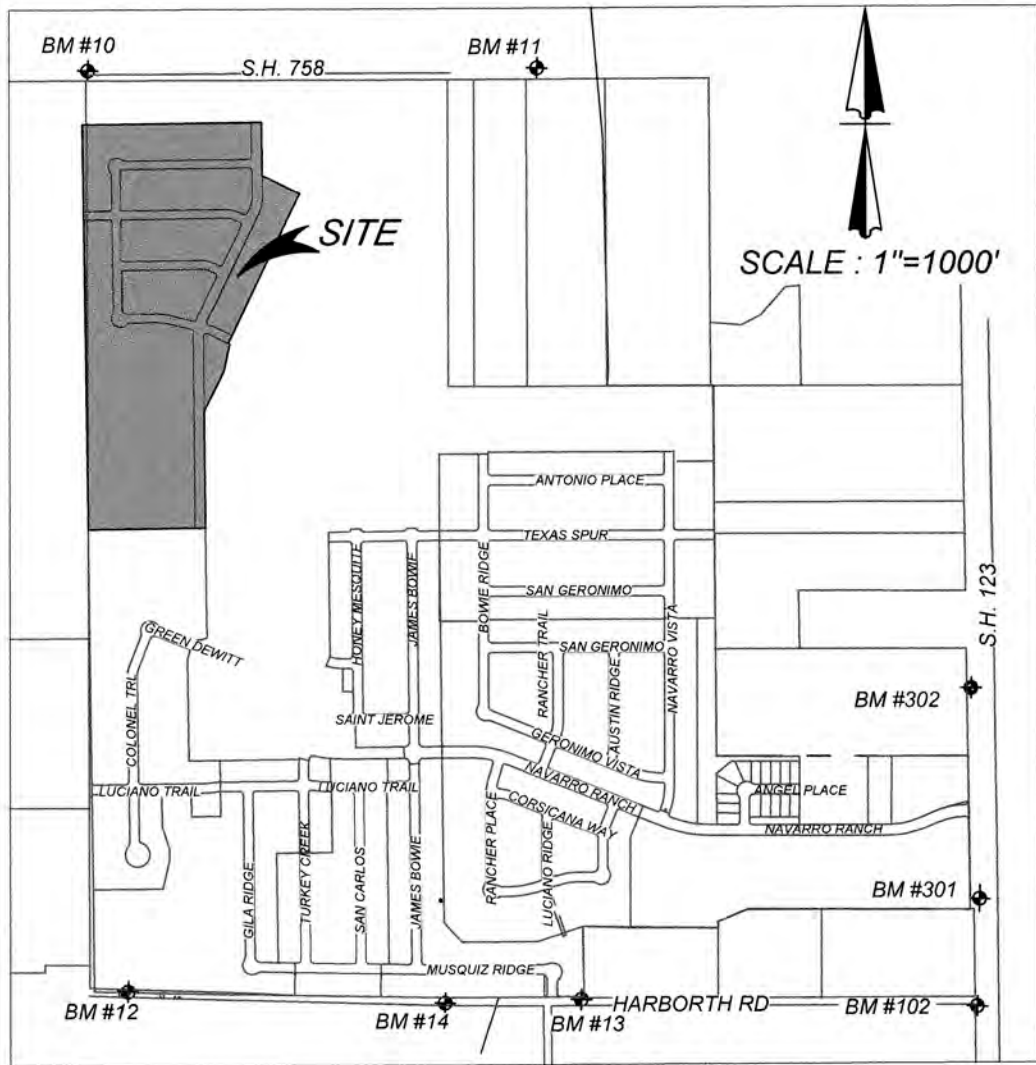
LEGEND

- LIMITS OF CONSTRUCTION
- EXISTING CONTOURS
- PROPOSED GRADE
- ADJACENT UNIT PROPOSED CONTOUR
- FLOW ARROW
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA
- CONCRETE TRUCK WASHOUT PIT
- INLET WITH PROTECTION (GRAVEL FILTER BAGS)
- DISTURBED AREA
- ROCK BERM
- SILT FENCE PHASE 2
- SILT FENCE
- NATURAL VEGETATIVE BUFFER

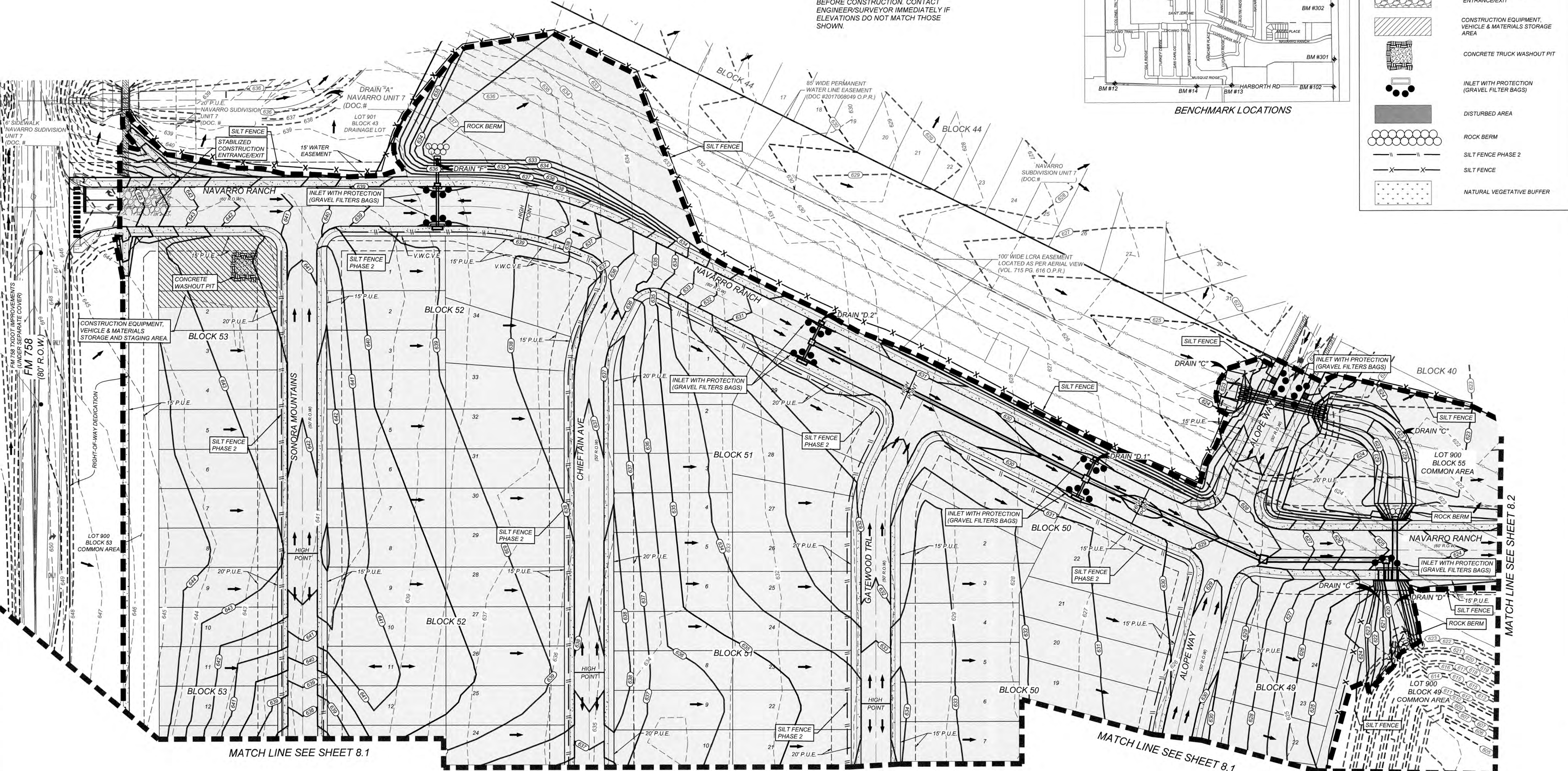
BENCHMARKS

BM#	NORTHING	EASTING	ELEVATION	DESCRIPTION
10	13806312.21	2292966.40	646.25	SPKCP LEVELED
11	13806348.67	2295304.22	630.34	SPKCP LEVELED
12	13801521.21	2293214.28	610.13	SPKCP LEVELED
13	13801500.90	2295572.49	603.87	SPKCP LEVELED
14	13801476.82	2294868.10	607.69	SPKCP LEVELED
102	13801482.85	2297640.53	595.37	SPKCP LEVELED
301	13802042.87	2297647.48	599.92	SBM LEVELED
302	13803141.51	2297593.91	599.69	SBM LEVELED

* CONTRACTOR TO RUN LEVEL LOOP THROUGH BMs PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.



BENCHMARK LOCATIONS



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
EROSION AND SEDIMENTATION CONTROL PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

8.0

INSTALLATION:

1. ALL OPERATORS SHALL SUBMIT A NOTICE OF INTENT (NOI) AT LEAST 48 HOURS IN ADVANCE AND ALL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE IN PLACE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.
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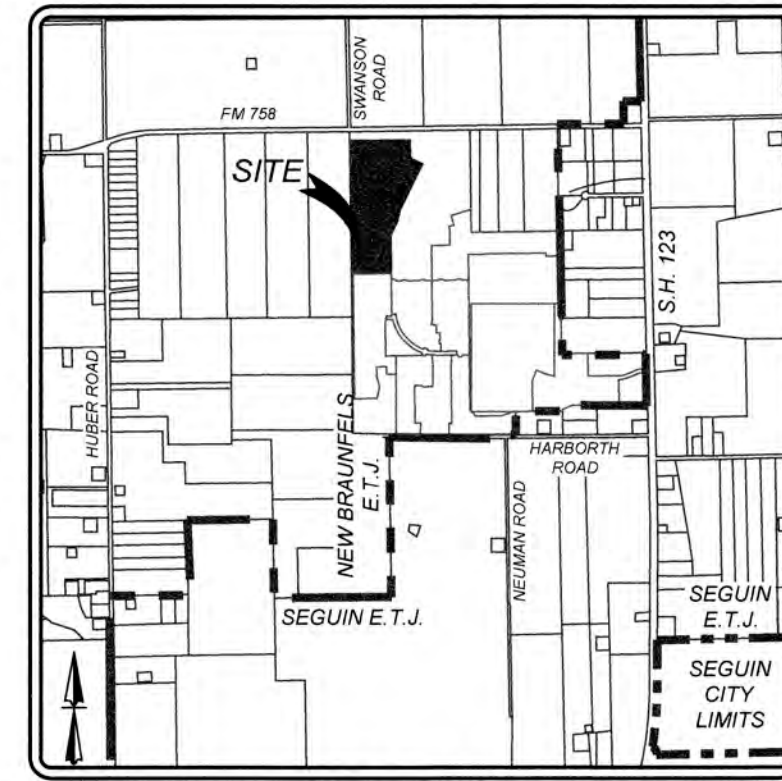
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SW3P MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION



LOCATION MAP NOT-TO-SCALE

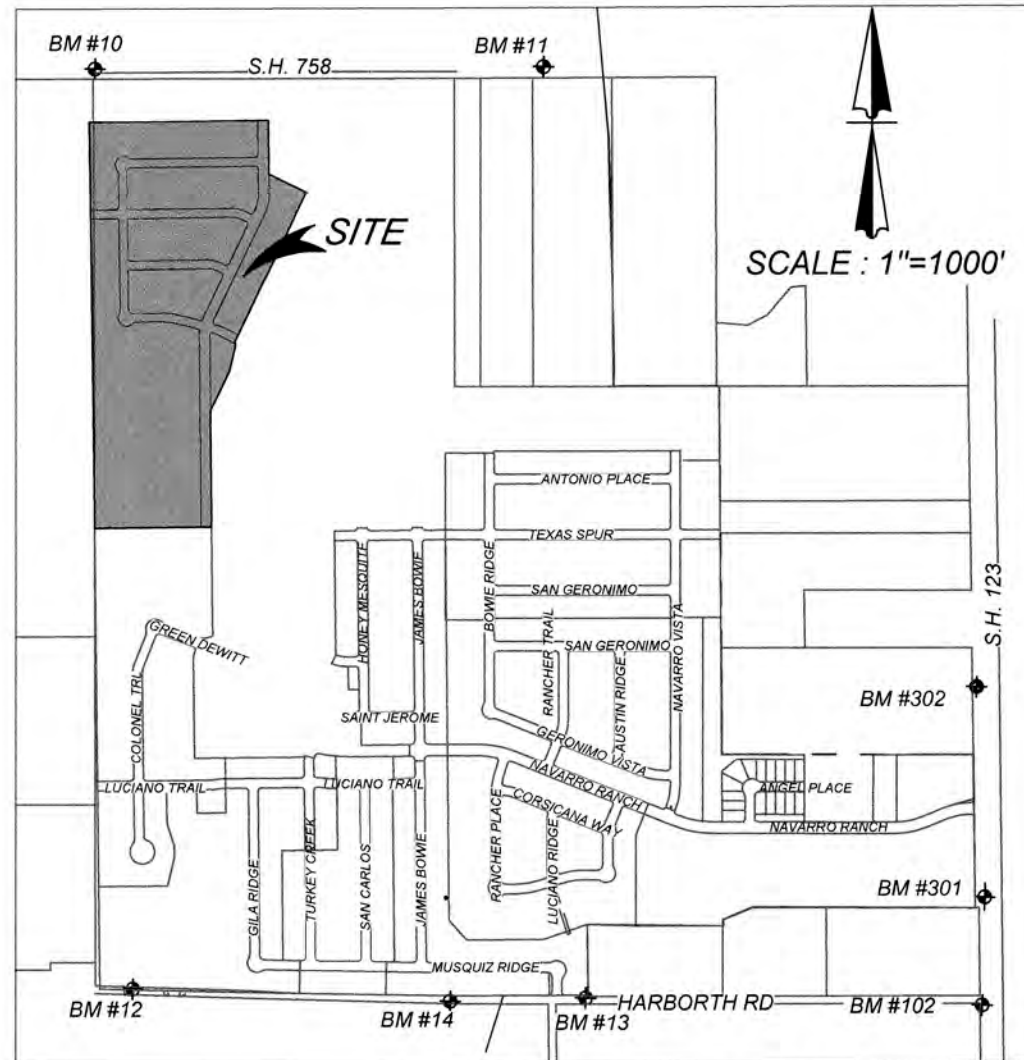
LEGEND

- 780 --- LIMITS OF CONSTRUCTION
- 780 --- EXISTING CONTOURS
- 780 --- PROPOSED GRADE
- 543 --- ADJACENT UNIT PROPOSED CONTOUR
- 543 --- FLOW ARROW
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA
- CONCRETE TRUCK WASHOUT PIT
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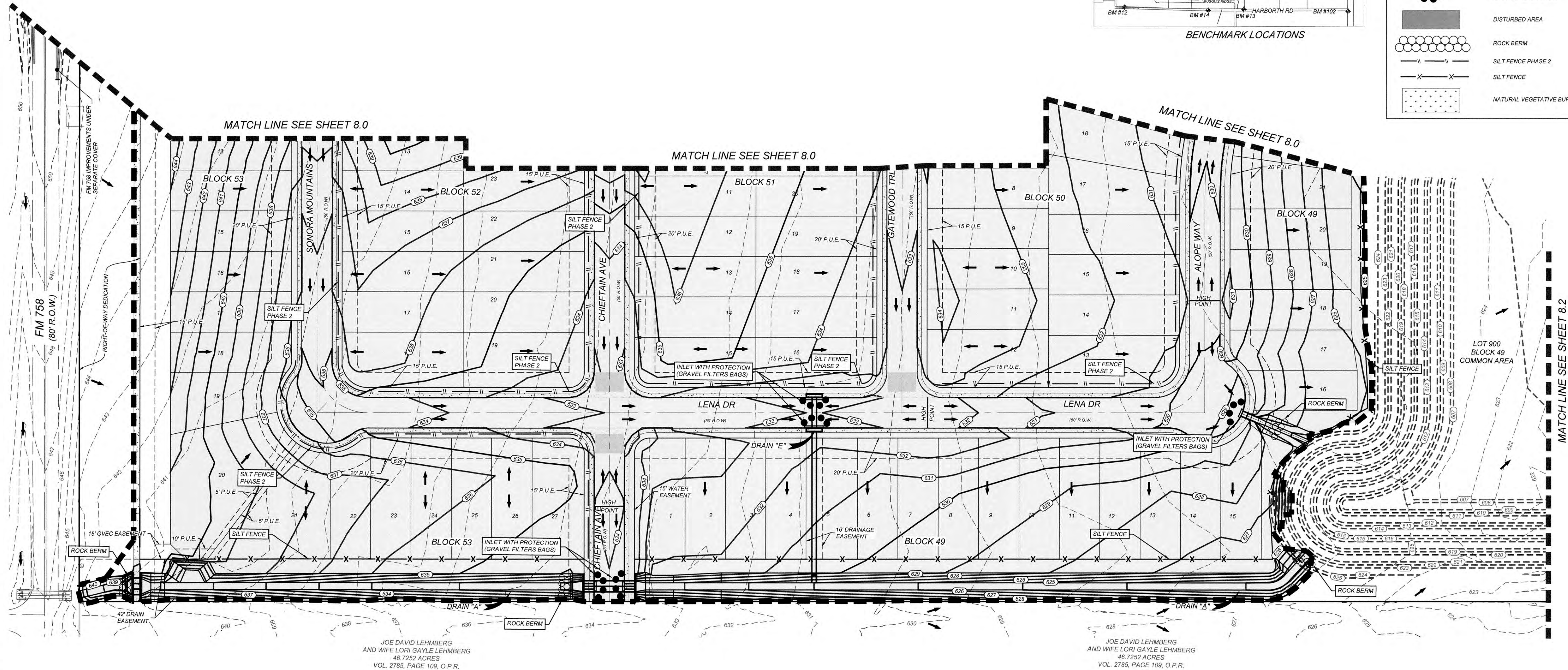
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BENCHMARK LOCATIONS



JOE DAVID LEHMBERG
AND WIFE LORI GAYLE LEHMBERG
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NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
EROSION AND SEDIMENTATION CONTROL PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

8.1

INSTALLATION:

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1. ALL DISTURBED AREAS ARE NOT COVERED BY IMPERVIOUS COVER ARE TO BE STABILIZED PER THE SWPPP AND PROJECT SPECIFICATIONS PRIOR TO REMOVAL OF ANY BMP'S AND/OR PRIOR TO FILING A NOTICE OF TERMINATION (NOT).
2. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN PHASES IF ALL UPGRADIENT AREAS HAVE BEEN STABILIZED PER SWPPP AND PROJECT SPECIFICATIONS. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
3. CONTRACTOR TO ENSURE THEY HAVE MET ALL REQUIREMENTS OF THE SWPPP BEFORE FILING A NOTICE OF TERMINATION (NOT).

GENERAL:

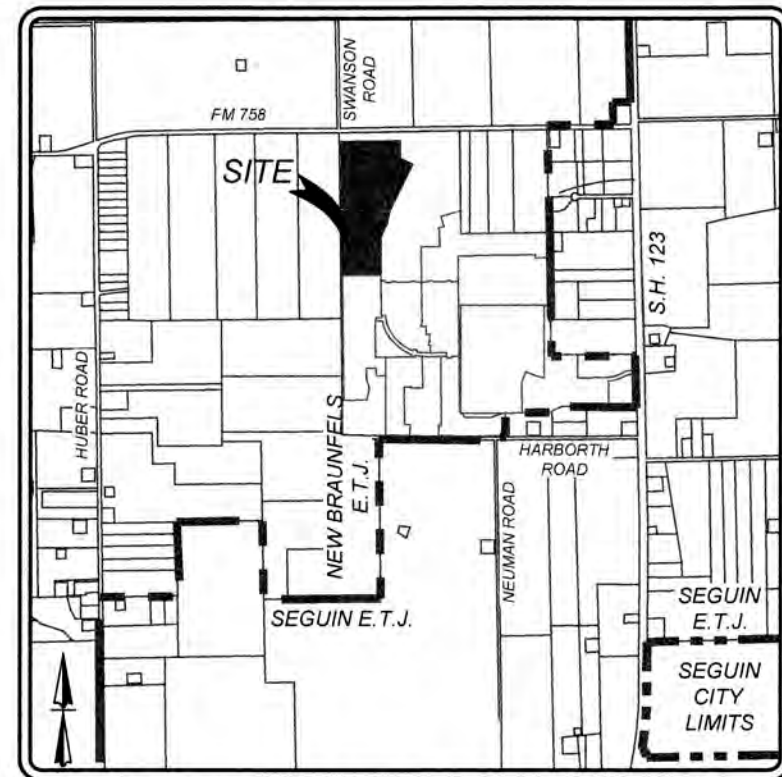
1. THIS EXHIBIT IS TO BE USED FOR THE PURPOSES OF STORMWATER POLLUTION PREVENTION ONLY. ALL OTHER CIVIL ENGINEERING INFORMATION SHOULD BE OBTAINED FROM THE APPROPRIATE CONSTRUCTION DOCUMENTS.
2. THE PURPOSE OF THE SIGNATURE AND SEAL OF THE ENGINEER ON THIS DOCUMENT IS TO DEMONSTRATE COMPLIANCE WITH THE TDES STORMWATER POLLUTION PREVENTION PLAN REGULATIONS ONLY.
3. ALL OWNERS/OPERATORS ARE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE STORMWATER POLLUTION PREVENTION PLAN AND COMPLYING WITH THE REGULATIONS CONTAINED WITHIN IT.
4. PER TDES REQUIREMENTS, DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITIES HAVE CEASED (TEMPORARILY OR PERMANENTLY) SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITY RESUMES WITHIN 21 DAYS. SEEDING DOES NOT CONSTITUTE AS STABILIZATION.

COORDINATION NOTE:

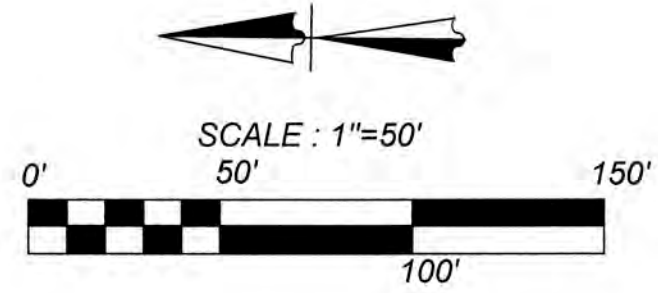
1. CONTACT SPECTRUM TO COORDINATE CABLE TV SERVICE. (210) 244-0500
2. CONDUIT FOR ELECTRICAL SERVICE. CONFIRM REQUIREMENTS AND COORDINATE WITH GUADALUPE VALLEY ELECTRIC COOPERATIVE FOR INSPECTION. (830) 379-2114.
3. CONTACT AT&T TO COORDINATE TELEPHONE SERVICE. 1-800-449-7928.
4. CONTRACTOR TO COORDINATE WITH GUADALUPE VALLEY ELECTRIC COOPERATIVE PRIOR TO CONSTRUCTION TO PLAN ELECTRIC SERVICE.
5. CONTRACTOR TO COORDINATE WITH CITY OF SEGUIN TO PLAN SANITARY SEWER SERVICES. (830) 914-2330
6. CONTRACTOR TO COORDINATE WITH CRYSTAL CLEAR SPECIAL UTILITY DISTRICT TO PLAN WATER SERVICES. (830) 914-2330
7. CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

SW3P MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

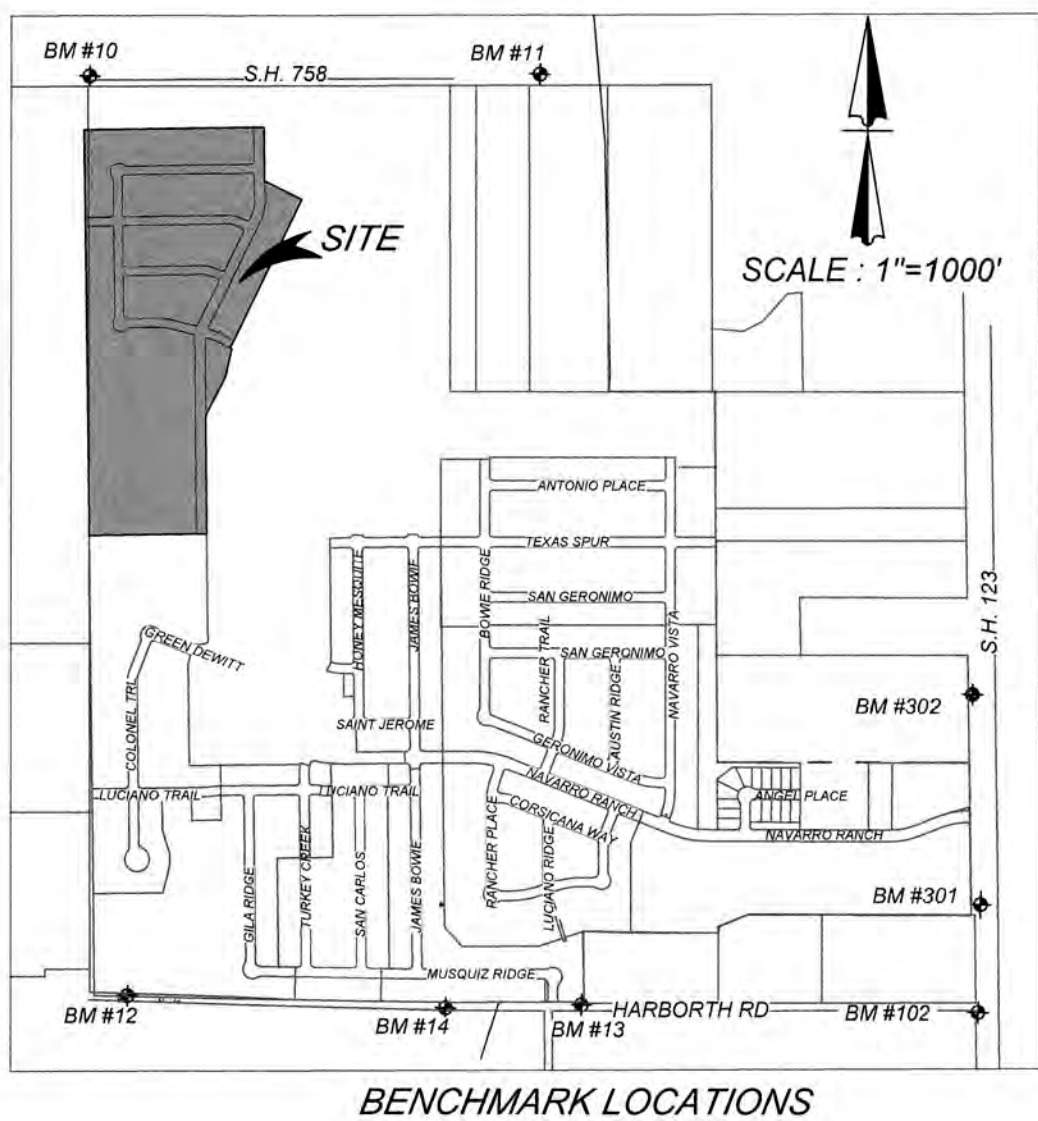


LOCATION MAP
NOT-TO-SCALE



LEGEND

- LIMITS OF CONSTRUCTION
- EXISTING CONTOURS
- PROPOSED GRADE
- ADJACENT UNIT PROPOSED CONTOUR
- FLOW ARROW
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA
- CONCRETE TRUCK WASHOUT PIT
- INLET WITH PROTECTION (GRAVEL FILTER BAGS)
- DISTURBED AREA
- ROCK BERM
- SILT FENCE PHASE 2
- SILT FENCE
- NATURAL VEGETATIVE BUFFER



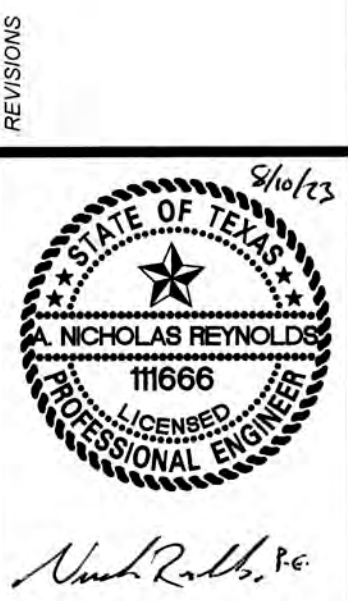
BENCHMARK LOCATIONS

BENCHMARKS

BM#	NORTHING	EASTING	ELEVATION	DESCRIPTION
10	13806312.21	2292866.40	646.25	SPKCP LEVELED
11	13806348.67	2295304.22	630.34	SPKCP LEVELED
12	13801521.21	2293214.28	610.13	SPKCP LEVELED
13	13801500.90	2295572.49	603.87	SPKCP LEVELED
14	13801476.82	2294868.10	607.69	SPKCP LEVELED
102	13801482.85	2297640.53	595.37	SPKCP LEVELED
301	13802042.87	2297647.48	599.92	SBM LEVELED
302	13803141.51	2297593.91	599.69	SBM LEVELED

* CONTRACTOR TO RUN LEVEL LOOP THROUGH BM'S PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

K&W
ENGINEERS & SURVEYING
1534 N. ST. 153
SEGUIN, TEXAS 78155
Phone #: (830) 226-6042 • Fax #: (830) 627-9097
TBP# Firm #: 1513 • TBP#S Firm #: 1012300



NAVARRO SUBDIVISION - UNIT 8
NEW BRAUNFELS E.T.J. / GUADALUPE COUNTY
EROSION AND SEDIMENTATION CONTROL PLAN

JOB NO. 314-28-19
DATE: JUL 2022
DRAWN: AC CHECKED: DA
SHEET NUMBER:

