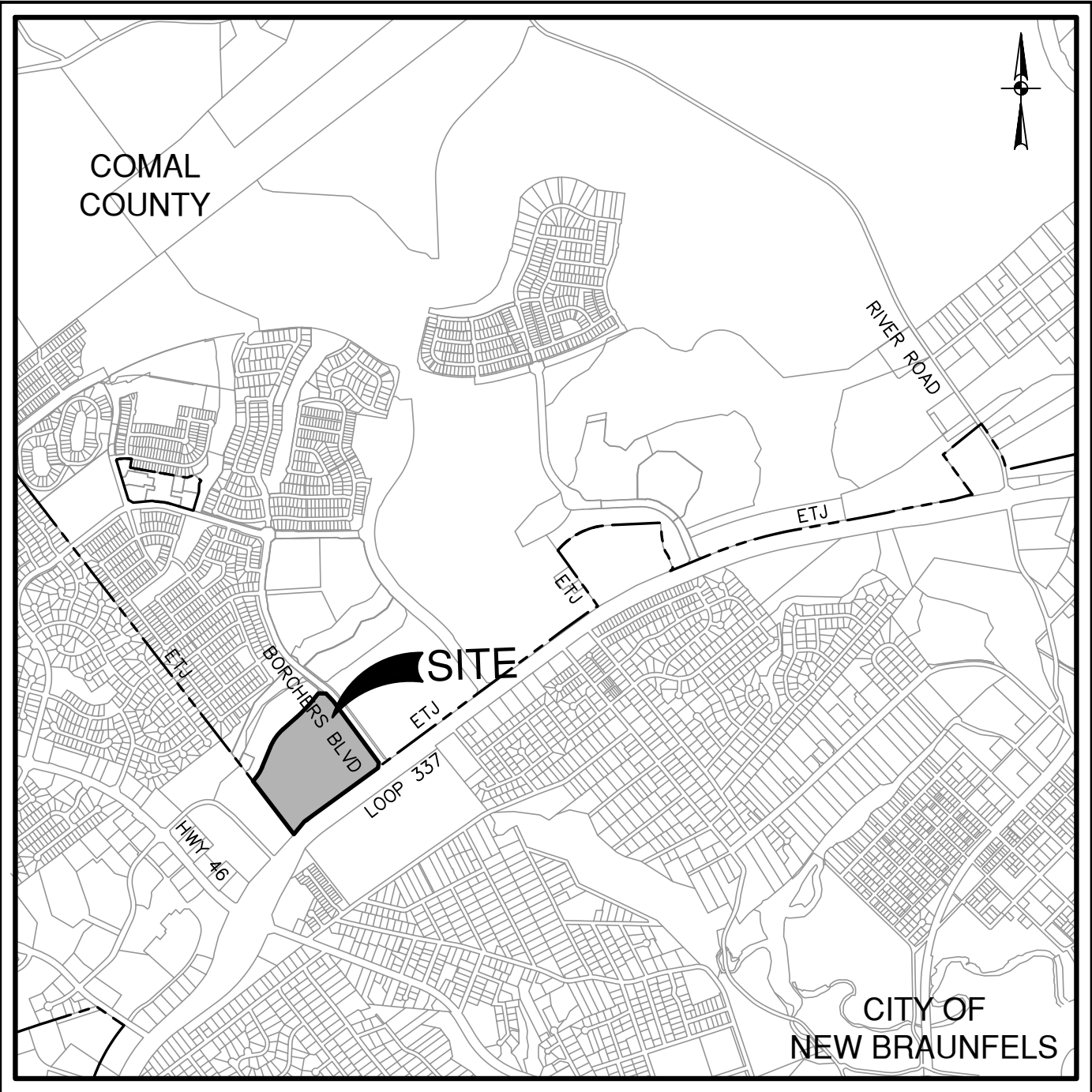


# VERAMENDI PRECINCT 11A

## NEW BRAUNFELS, TEXAS

### CIVIL CONSTRUCTION PLANS

NBU NO. W-245133/WW-245134



LOCATION MAP  
NOT-TO-SCALE

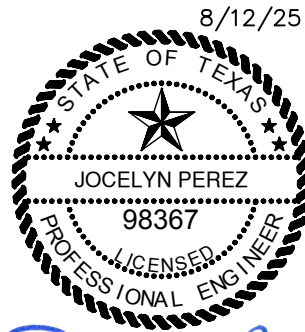
PREPARED FOR:

VERAMENDI PE-CAIRNS  
2168 OAK RUN PKWY, SUITE 101  
NEW BRAUNFELS, TX 78132

MAY 2024

**PAPE-DAWSON  
ENGINEERS**

1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



*Jocelyn Perez*

Sheet List Table

Sheet Title	Sheet Description	Sheet Number
COVER SHEET		C0.00
CONSTRUCTION NOTES		C0.01
PLAT		C0.02
PLAT		C0.03
OVERALL DRAINAGE PLAN - EXISTING CONDITIONS		C1.00
OVERALL DRAINAGE PLAN - ULTIMATE CONDITIONS		C1.01
STORM DRAIN A-1 - PLAN & PROFILE	STA 0+90.36 TO 4+60.00	C1.02
STORM DRAIN A-1 - PLAN & PROFILE	STA 4+60.00 TO 8+20.00	C1.03
STORM DRAIN A-1 - PLAN & PROFILE	STA 8+20.00 TO 11+80.00	C1.04
STORM DRAIN A-1 - PLAN & PROFILE	STA 11+80.00 TO 15+40.00	C1.05
STORM DRAIN A-1 - PLAN & PROFILE	STA 15+40.00 TO 19+20.00	C1.06
STORM DRAIN A-1 - PLAN & PROFILE	STA. 19+20.00 TO 22+57.27	C1.07
STORM DRAIN B-1 - PLAN & PROFILE	STA. 0+88.00 TO 4+20.00	C1.08
STORM DRAIN B-1 - PLAN & PROFILE	STA. 4+20.00 TO 7+65.38	C1.09
12 INCH WATER LINE W-01 - PLAN & PROFILE	STA. 2+05.00 TO 9+50.00	C4.00
12 INCH WATER LINE W-01 - PLAN & PROFILE	STA. 9+50.00 TO 16+85.10	C4.01
WATER DISTRIBUTION DETAILS		C4.10
WATER DISTRIBUTION NOTES		C4.11
OVERALL SANITARY SEWER PLAN		C5.00
SANITARY SEWER LINE A - PLAN & PROFILE	STA. 10+00.00 TO 17+50.00	C5.01
SANITARY SEWER LINE A - PLAN & PROFILE	STA. 17+50.00 TO 25+50.00	C5.02
SANITARY SEWER LINE A - PLAN & PROFILE	STA. 25+50.00 TO 33+60.80	C5.03
SANITARY SEWER DETAILS		C5.10
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WATER AND SEWER PLAN		C6.10
STORM WATER POLLUTION PREVENTION PLAN		C8.00
STORM WATER POLLUTION PREVENTION DETAILS		C8.01

**NBU NOTES:**

- ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, NEW BRAUNFELS UTILITIES MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
- THE ENGINEER OF RECORD ACKNOWLEDGES THAT ALL PROPOSED WATER OR WASTEWATER IMPROVEMENTS MUST COMPLY WITH CRITERIA FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, THE CITY OF NEW BRAUNFELS, NBU W&WW DESIGN CRITERIA, ANY OTHER GOVERNING ENTITY ORDINANCES OR CODES, AND SOUND ENGINEERING JUDGEMENT.
- THE ENGINEER OF RECORD ACKNOWLEDGES THAT THE POINT OF DELIVERY FOR THE NBU WATER SYSTEM IS THE MAIN SIDE OF THE SERVICE/LATERAL/LEAD FROM THE CUSTOMER'S METER, BACKFLOW PREVENTER, OR EASEMENT EDGE. THE CUSTOMER IS RESPONSIBLE FOR THE DESIGN, PERMITTING, CONSTRUCTION, OPERATION AND MAINTENANCE BEYOND THE POINT OF DELIVERY AND HAS SOLE CONTROL AND SUPERVISION OVER THE IT'S INSTALLATION.
- THE ENGINEER OF RECORD ACKNOWLEDGES THAT THE POINT OF DELIVERY FOR A NBU WASTEWATER SYSTEM IS THE MAIN SIDE OF THE SERVICE LATERAL FROM THE CUSTOMER'S CLEAN OUT OR PROPERTY LINE, WHICHEVER IS NEARER. THE CUSTOMER IS RESPONSIBLE FOR THE DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE BEYOND THE POINT OF DELIVERY AND HAS SOLE CONTROL AND SUPERVISION OVER ITS INSTALLATION.
- WATER IS A PRECIOUS COMMODITY IN THE STATE OF TEXAS AND NEW BRAUNFELS UTILITIES (NBU) IS PASSIONATE ABOUT PROTECTING THE LOCAL RESOURCE. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ACQUIRING A FIRE HYDRANT METER SO THAT ALL WATER USED FOR CONSTRUCTION OR TESTING PURPOSES IS PROPERLY ACCOUNTED FOR. NBU WILL NOT TOLERATE ANY WATER THEFT, REGARDLESS OF THE AMOUNT. IF WATER THEFT IS DISCOVERED, THE CONTRACTOR SHALL BE SUBJECT TO MONETARY PENALTIES, CRIMINAL CHARGES, AND STOPPAGE OF ALL CONSTRUCTION ACTIVITIES RELATED TO THE PROJECT. COSTS ASSOCIATED WITH ANY WORK STOPPAGE RESULTING FROM WATER THEFT SHALL BE AT THE FULL EXPENSE OF THE CONTRACTOR.

**NBU AS-BUILT REQUIREMENTS:**

NBU REQUIRES GPS POINTS FOR CERTAIN ELECTRIC, WATER AND WASTEWATER ATTRIBUTES, SOME OF WHICH MUST BE MEASURED PRIOR TO BACKFILL, DURING CONSTRUCTION.

GPS POINTS ARE REQUIRED FROM THE DEVELOPER'S CONTRACTOR OR ENGINEER. A MINIMUM OF THREE (3) COORDINATE POINTS FOR GEOREFERENCING ARE REQUIRED. THE WATER AND WASTEWATER GPS POINTS SHALL BE TO SURVEY GRADE AND ELECTRIC GPS POINTS SHALL BE MEASURED TO MAP GRADE. PLEASE REFERENCE NBU'S WATER CONNECTION POLICY FOR ADDITIONAL CAD DELIVERABLE REQUIREMENTS.

**REQUIRED MEASUREMENTS FOR THE WATER SYSTEM INCLUDE:**

- VERTICAL BENDS AND EDGES OF STEEL CASINGS (IF APPLICABLE) PRIOR TO BACKFILL.
- HORIZONTAL BENDS PRIOR TO BACKFILL.
- TEES PRIOR TO BACKFILL.
- FITTINGS (REDUCERS AND COUPLINGS) PRIOR TO BACKFILL.
- FIRE HYDRANTS (TOP FLANGE).
- VALVES.
- METERS (TOP CENTER OF BOX).
- BLOW OFF ASSEMBLIES.
- CORNER SLAB OF ALL WATER TANKS AND THE ISOLATION GATE VALVE ON THE WATER TANK.

**REQUIRED MEASUREMENTS FOR THE WASTEWATER SYSTEM INCLUDE:**

- MANHOLES.
- CLEANOUTS.
- CORNER SLAB OF ALL LIFT STATIONS.

**REQUIRED MEASUREMENTS FOR THE ELECTRIC SYSTEM:**

- POLES.
- TRANSFORMERS, BOTH ABOVE AND UNDERGROUND (FRONT LOCK).
- PULL BOXES.
- STREET LIGHTS.

**COORDINATE GPS REQUIREMENTS WITH NBU INSPECTOR**

**NOTES:**

- TYPE 3 DEVELOPMENT.
- 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 RECORD.
- IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE YEAR OF CITY APPROVAL FOR CONSTRUCTION INSPECTION, THAT APPROVAL IS NO LONGER VALID.
- THIS PROJECT IS WITHIN THE EDWARDS AQUIFER JURISDICTIONAL ZONES.
- NO PORTION OF THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0435F EFFECTIVE DATE 9/2/2009.
- GAS UTILITIES ARE NOT INCLUDED IN THE CIVIL CONSTRUCTION PLANS. FINAL GAS UTILITY DESIGN SHALL BE APPROVED BY THE CITY FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
- FOLLOWING PERMITS ARE REQUIRED PRIOR TO START OF CONSTRUCTION:
  - CITY OF NEW BRAUNFELS PUBLIC INFRASTRUCTURE PERMIT
  - NEW BRAUNFELS UTILITY APPROVAL
  - TCEQ WATER POLLUTION ABATEMENT PLAN APPROVAL
  - TCEQ SEWAGE COLLECTION SYSTEM APPROVAL

**LEGAL DESCRIPTION:**

BEING 34.171 ACRES OF LAND, A PORTION OUT OF THE 48.237 ACRE TRACT DESCRIBED IN DOCUMENT NUMBER 20160606009473, AND A PORTION OUT OF THE 255.715 ACRE TRACT DESCRIBED IN DOCUMENT NUMBER 201706013192, BOTH IN THE OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS, IN THE JUAN MARTIN DE VERAMENDI SURVEY NO. 2, ABSTRACT 3, COMAL COUNTY, TEXAS.





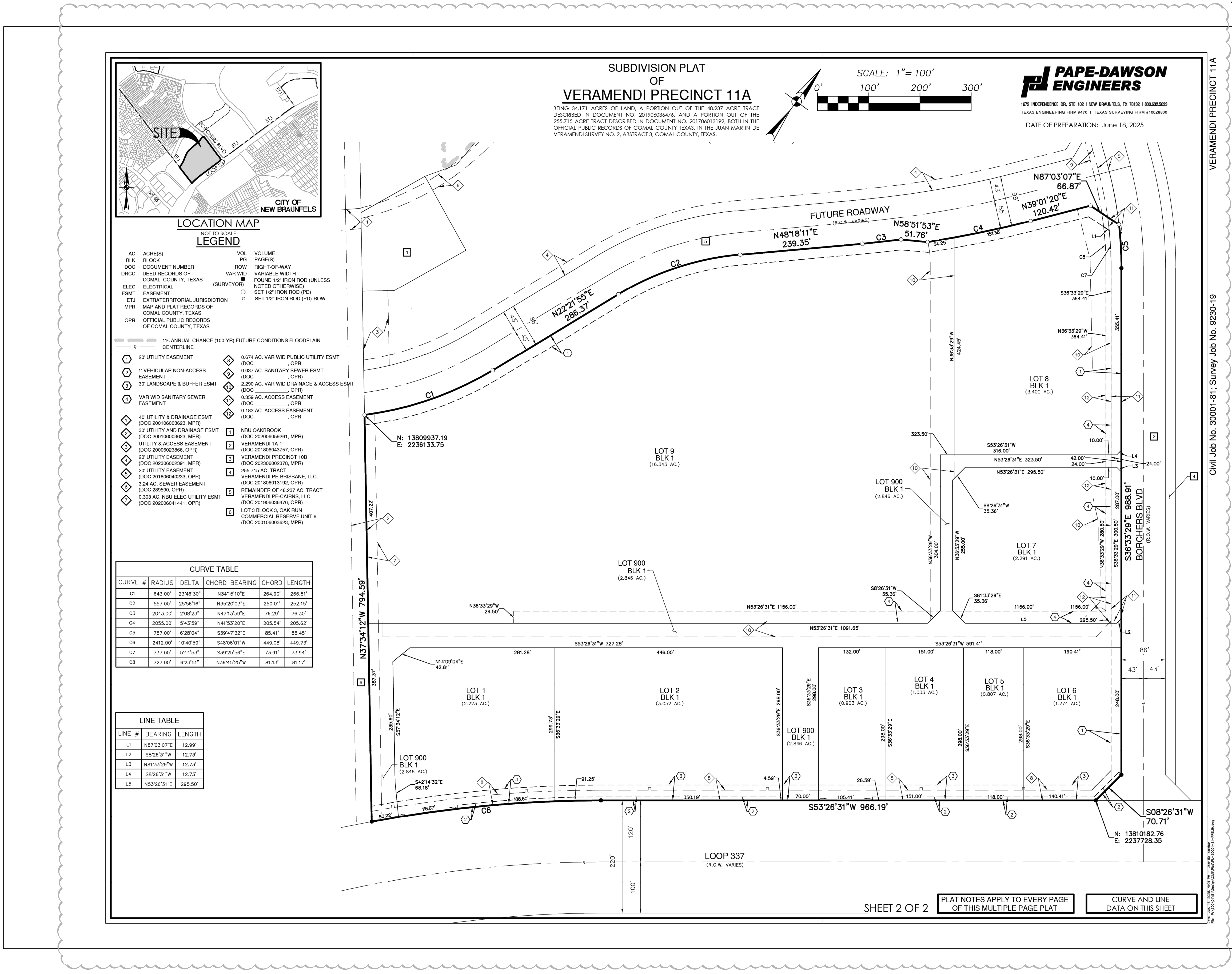






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NO.	REVISION	DATE
1	LOT LINES	06/25/25

6-25-2025

STATE OF TEXAS

JOCELYN PEREZ

98367

PROFESSIONAL ENGINEER

Joelyn Perez

**PAPE-DAWSON ENGINEERS**

1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78122 | 830.632.5533  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #19028800

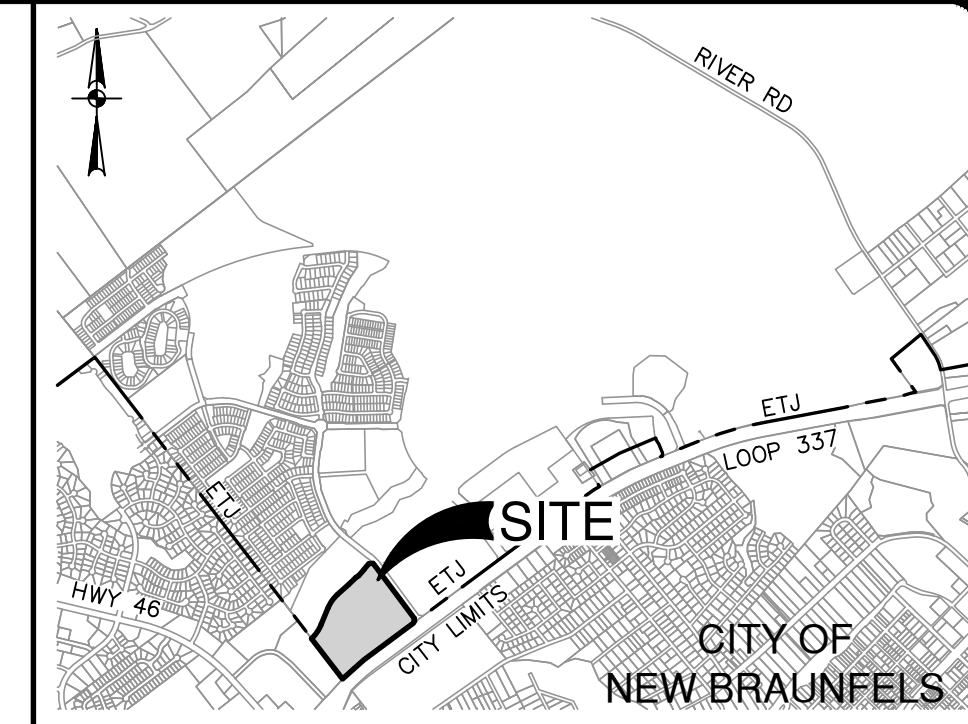
**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS  
PLAT

PLAT NO.	30001-81
JOB NO.	30001-81
DATE	JUNE 2025
DESIGNER	CP
CHECKED	TMM
DRAWN	CP
SHEET	C0.03



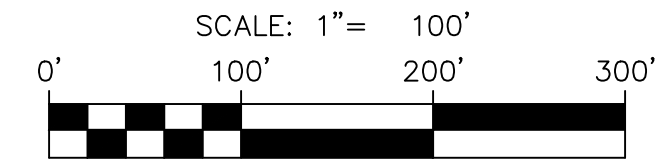


DETAIL "A"  
SCALE 1:1000



## LOCATION MAP

NOT-TO-SCALE



PROJECT LIMITS

EXISTING CONTOUR

100 YR FLOODPLAIN

RUNOFF FLOW PATH

DRAINAGE AREA BOUNDARY

FHA LOT GRADING TYPE

PROPOSED DIRECTION OF FLOW

DRAINAGE CALCULATION POINT

DRAINAGE AREA

690

A, B, C

11

A

Calc Pt	Description	Drainage Area		Time of Conc. (minutes)	Intensity (in/hr)	C	Discharge Q (cfs)	Frequency (year)
		Area ID	Acres					
14	EXISTING OUTFALL	EA	19.15	19.00	3.75	0.33	24	2
					5.50	0.38	40	10
					6.62	0.42	53	25
					8.46	0.49	79	100
15	EXISTING OUTFALL	EB	35.79	21.00	3.57	0.33	42	2
					5.23	0.38	71	10
					6.29	0.42	95	25
					8.01	0.49	140	100
J-A	MODELED WITH HEC-HMS EXISTING 5"5'x4' MBC (APPROVED WITH VERAMENDI 1A-1)						363	2
							696	10
							872	25
							1198	100



**PAPE-DAWSON  
ENGINEERS**

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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

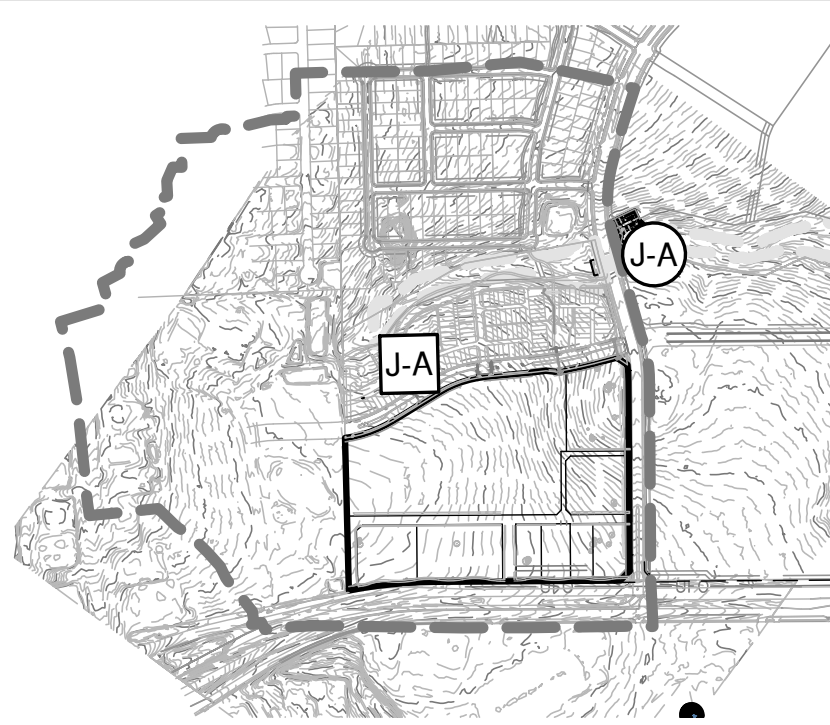
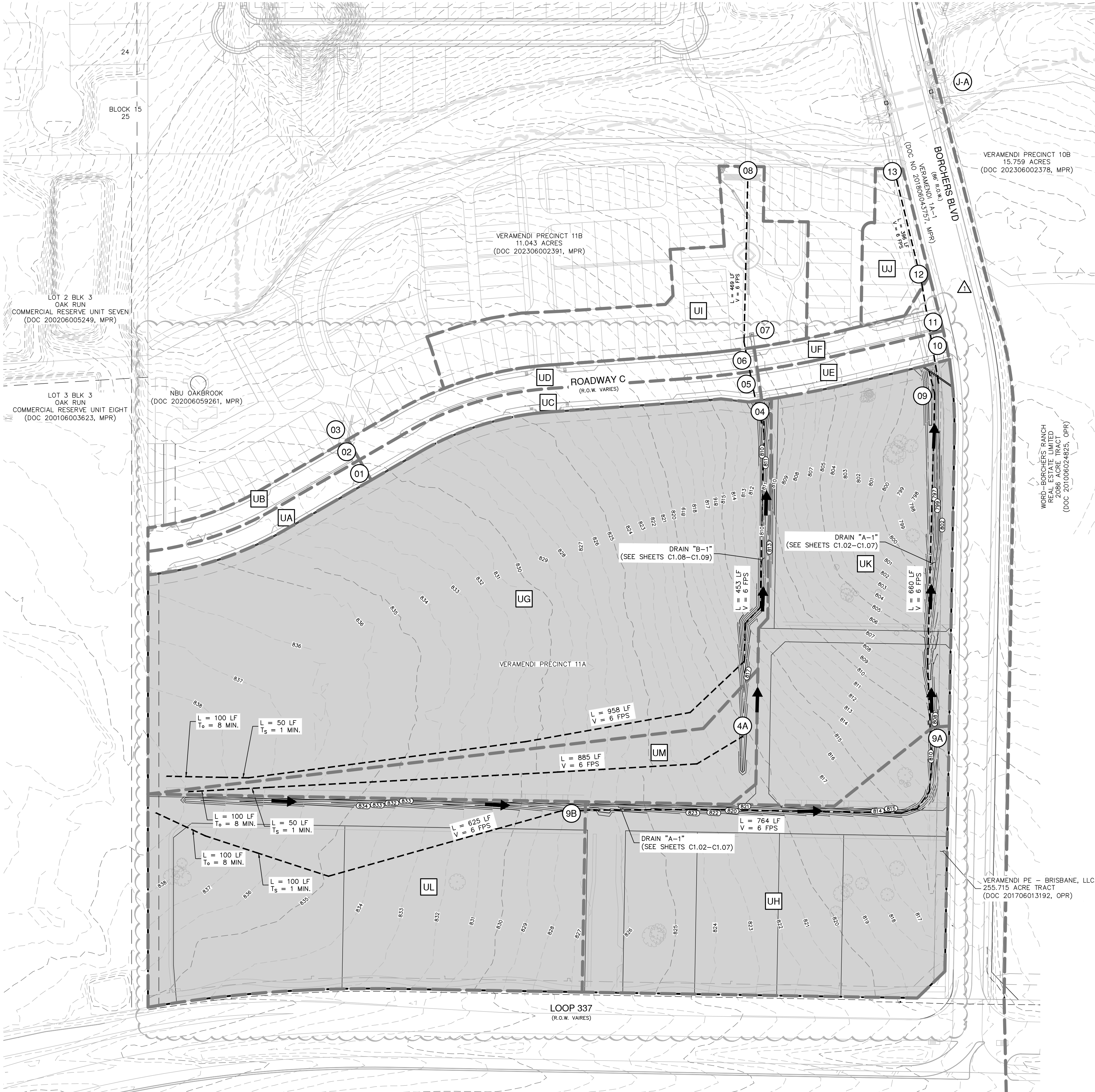
**VERAMENDI PRECINCT 11A**  
**NEW BRAUNFELS, TEXAS**

PLAT NO. \_\_\_\_\_  
JOB NO. 30001-81  
DATE SEPTEMBER 2024  
DESIGNER \_\_\_\_\_ CP  
CHECKED CK DRAWN \_\_\_\_\_ CP  
SHEET C1.00

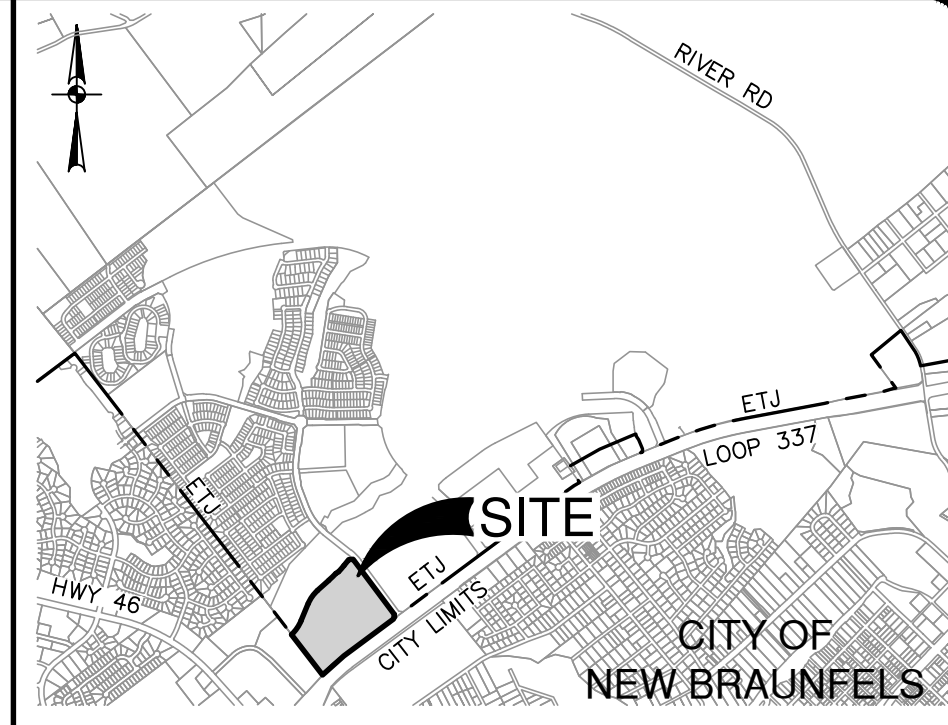


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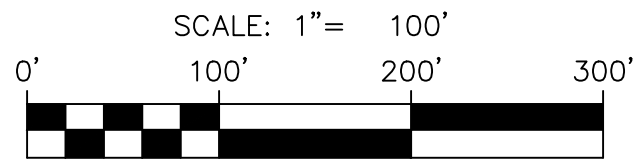
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DETAIL "A"  
SCALE 1:1000



LOCATION MAP  
NOT-TO-SCALE



### MASTER DRAINAGE LEGEND

PROJECT LIMITS		690'
EXISTING CONTOUR		
100 YR FLOODPLAIN		
RUNOFF FLOW PATH		
DRAINAGE AREA BOUNDARY		
FHA LOT GRADING TYPE		A,B,C
PROPOSED DIRECTION OF FLOW		
DRAINAGE CALCULATION POINT		11
DRAINAGE AREA		A

**NOTE:**  
ULTIMATE DEVELOPMENT IMPERVIOUS COVER VALUE FOR EACH INDIVIDUAL LOTS 1-9 NOT TO EXCEED 90% PER THE APPROVED VERAMENDI SECTOR PLAN 2.

Calc Pt	Description	Drainage Area Area ID	Acres	Time of Conc. (minutes)	Intensity (in/hr)	C	Discharge Q (cfs)	Frequency (year)	Total Q (cfs)
1	ON GRADE INLET PULL FOR WQ	UA	0.43	10.00	5.05 7.50 9.12 11.70	0.68 0.75 0.80 0.89	2 3 4 100	2 3 25 100	
2	ON GRADE INLET PULL FOR WQ	UB	0.41	10.00	5.05 7.50 9.12 11.70	0.67 0.74 0.79 0.88	1 2 3 4	2 10 25 100	
3	PIPE FLOW	UA+UB						2 10 25 100	3 5 6 9
4	DRAIN B-1	UG+UM	16.10	11.00	4.87 7.23 8.78 11.26	0.33 0.38 0.42 0.49	26 44 59 89	2 10 25 100	
4A	DRAIN B-1	UM	2.04	11.00	4.87 7.23 8.78 11.26	0.33 0.38 0.42 0.49	3 5 8 11	2 10 25 100	
5	ON GRADE INLET PULL FOR WQ	UC	0.76	10.00	5.05 7.50 9.12 11.70	0.66 0.73 0.78 0.87	2 4 5 8	2 10 25 100	
6	ON GRADE INLET PULL FOR WQ	UD	0.76	10.00	5.05 7.50 9.12 11.70	0.66 0.74 0.79 0.87	2 4 5 8	2 10 25 100	
7	PIPE FLOW	UG+UM+UC(C)+UD(C)						2 10 25 100	31 53 70 104
8	BASIN OUTFALL	UI+UG+UM+UC(C)+UD(C)	18.85	14.00	4.39 6.47 7.82 10.03	0.60 0.67 0.71 0.80	49 81 105 123	2 10 25 100	55 90 116 166
9	DRAIN A-1	UK+UH+UL	18.10	13.00	4.54 6.72 8.13 10.42	0.71 0.79 0.83 0.92	58 95 123 174	2 10 25 100	
9A	DRAIN A-1	UH+UL	12.31	11.00	4.87 7.23 8.78 11.26	0.71 0.79 0.83 0.92	23 37 48 128	2 10 25 100	
9B	DRAIN A-1	UL	6.58	11.00	4.87 7.23 8.78 11.26	0.71 0.79 0.83 0.92	23 37 48 68	2 10 25 100	
10	ON GRADE INLET PULL FOR WQ	UE	0.47	10.00	5.05 7.50 9.12 11.70	0.64 0.71 0.76 0.84	2 3 3 5	2 10 25 100	
11	ON GRADE INLET PULL FOR WQ	UF	0.39	10.00	5.05 7.50 9.12 11.70	0.65 0.72 0.77 0.86	1 2 3 4	2 10 25 100	
12	PIPE FLOW	UH+UL+UK+UE(C)+UF(C)						2 10 25 100	61 100 129 182
13	DRAIN OUTFALL	UI+UH+UL+UK+UE(C)+UF(C)	18.30	15.00	4.24 6.24 7.52 9.64	0.60 0.67 0.71 0.80	46 76 98 141	2 10 25 100	49 81 104 149
J-A								2 10 25 100	422 775 940 1250

MODELED WITH HEC-HMS  
EXISTING 5"X4" IMBC  
(APPROVED WITH VERAMENDI 1A-1)

**PAPE-DAWSON**  
**ENGINEERS**

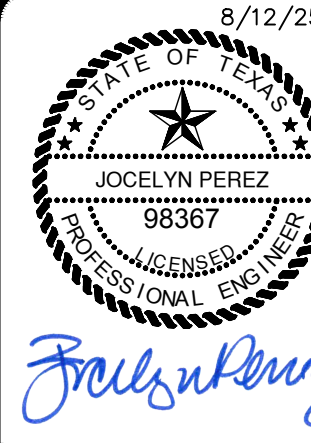
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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

**VERAMENDI PRECINCT 11A**  
**NEW BRAUNFELS, TEXAS**

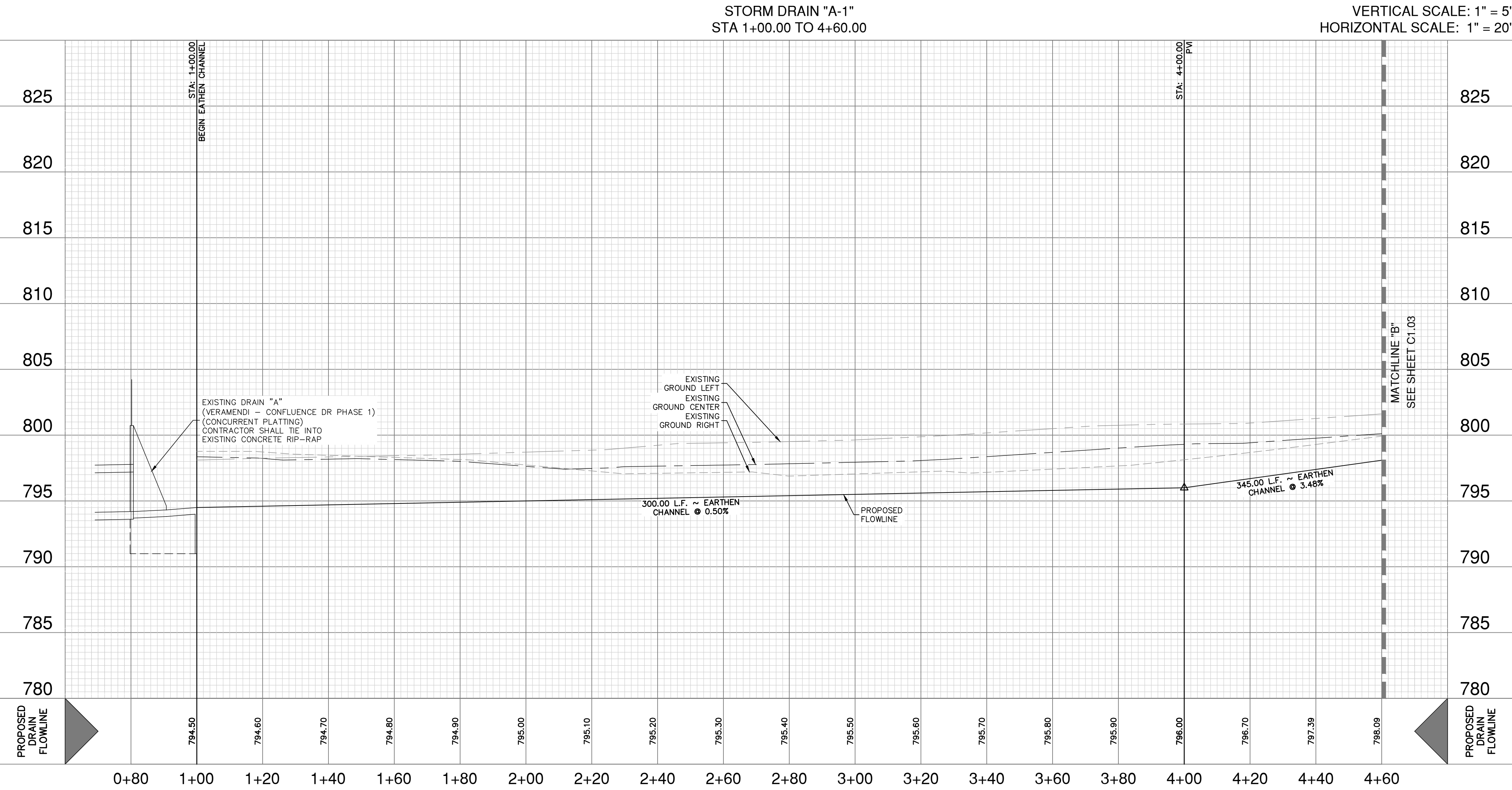
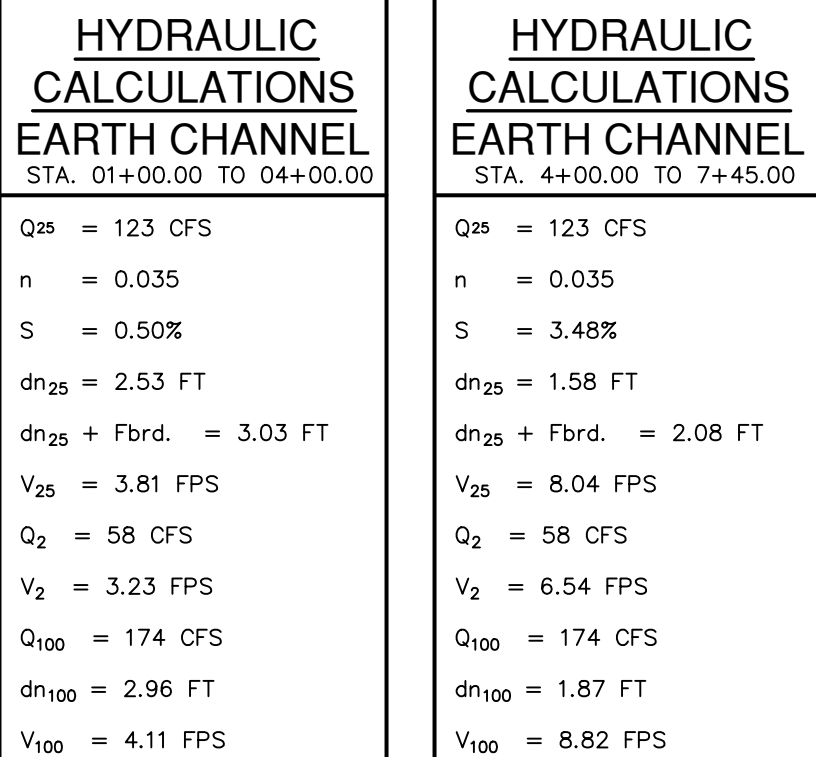
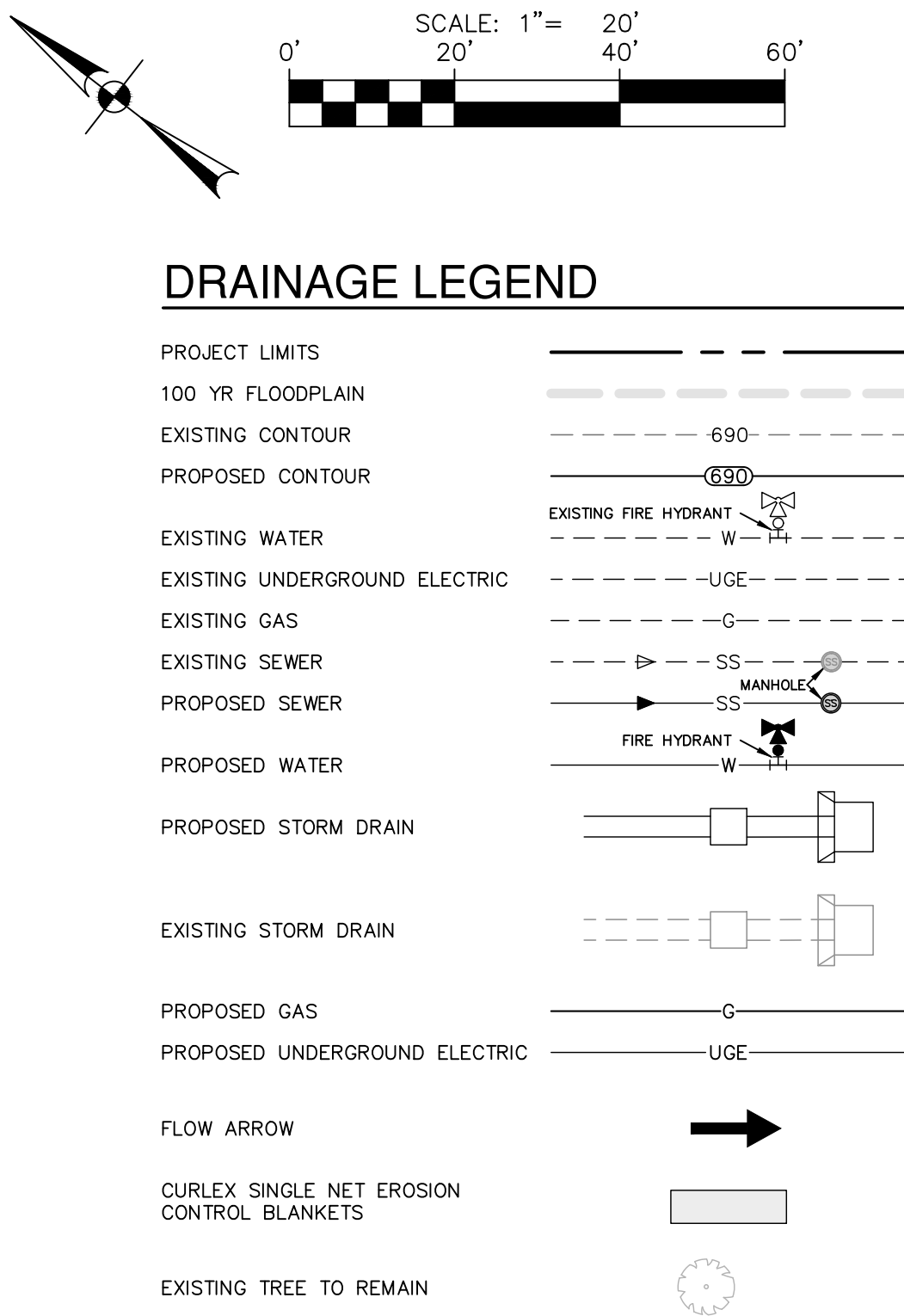
**OVERALL DRAINAGE PLAN - ULTIMATE CONDITIONS**

PLAT NO. \_\_\_\_\_  
JOB NO. 30001-81  
DATE AUGUST 2025  
DESIGNER CP  
CHECKED TMM DRAWN CP  
SHEET C1.01

NO.	REVISION	DATE
1	CHANGED LOT LINES	06/25/25







- [illegible]

[illegible]

**VERAMENDI PRECINCT 11A**  
**NEW BRAUNFELS, TEXAS**

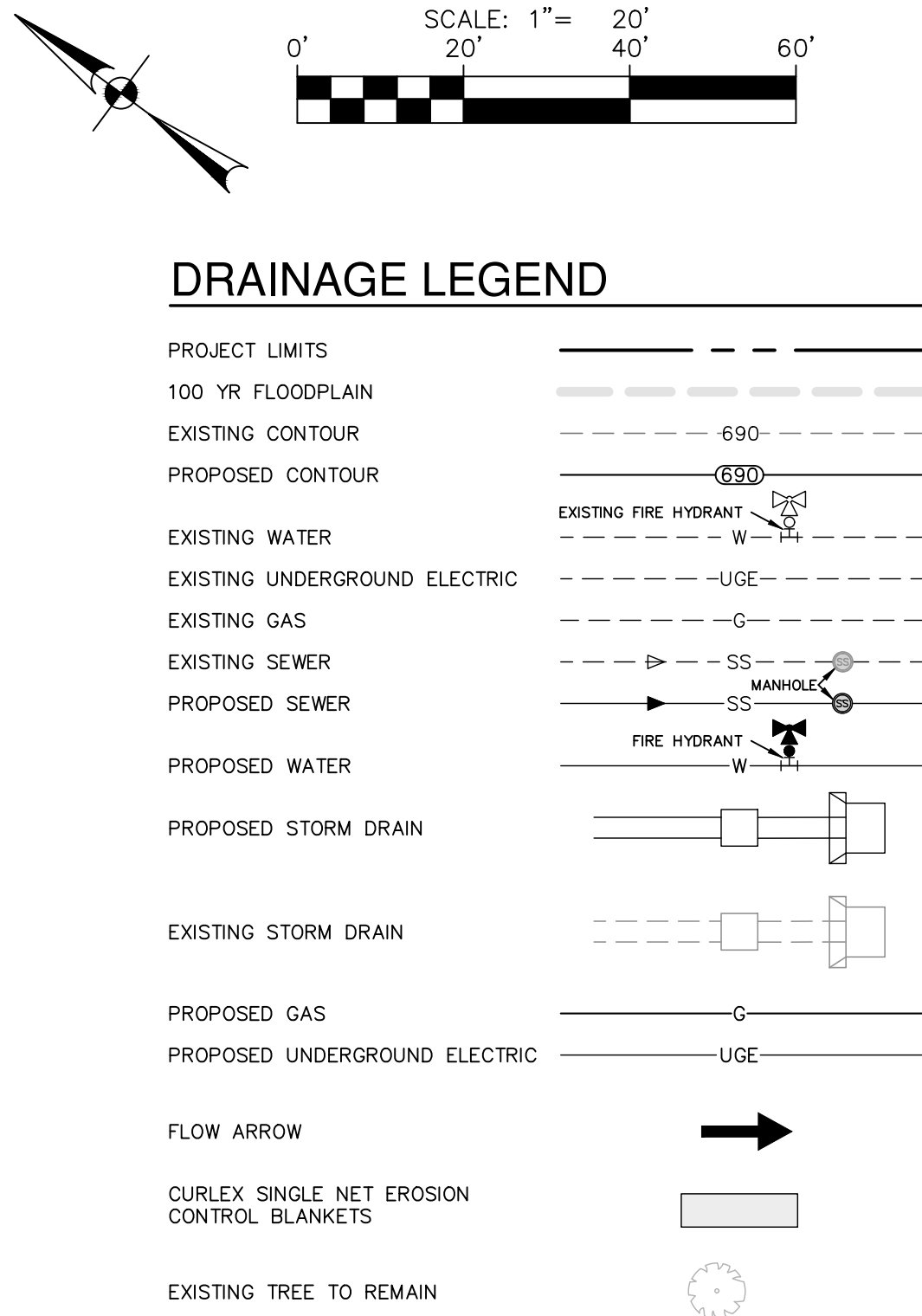
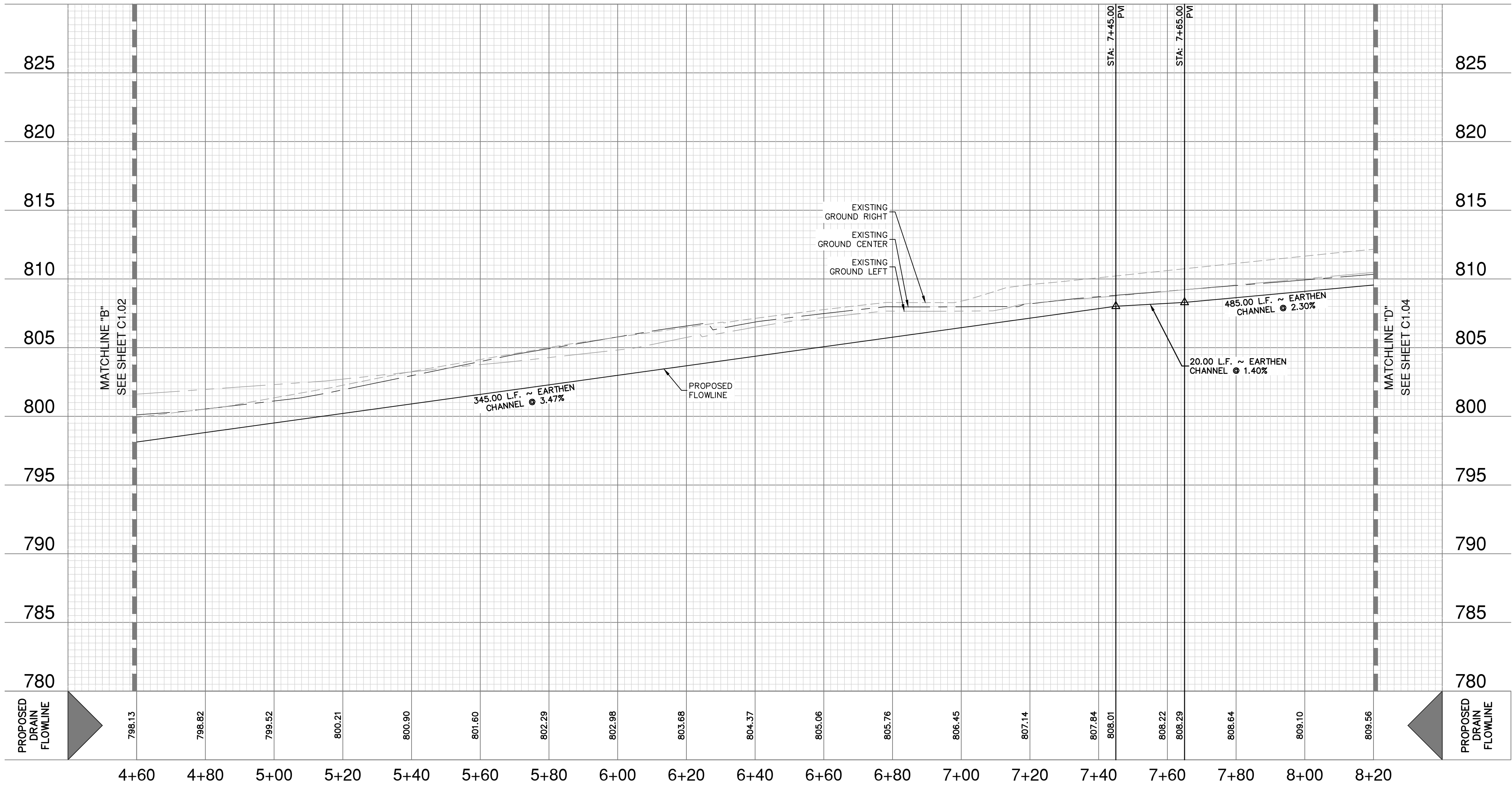
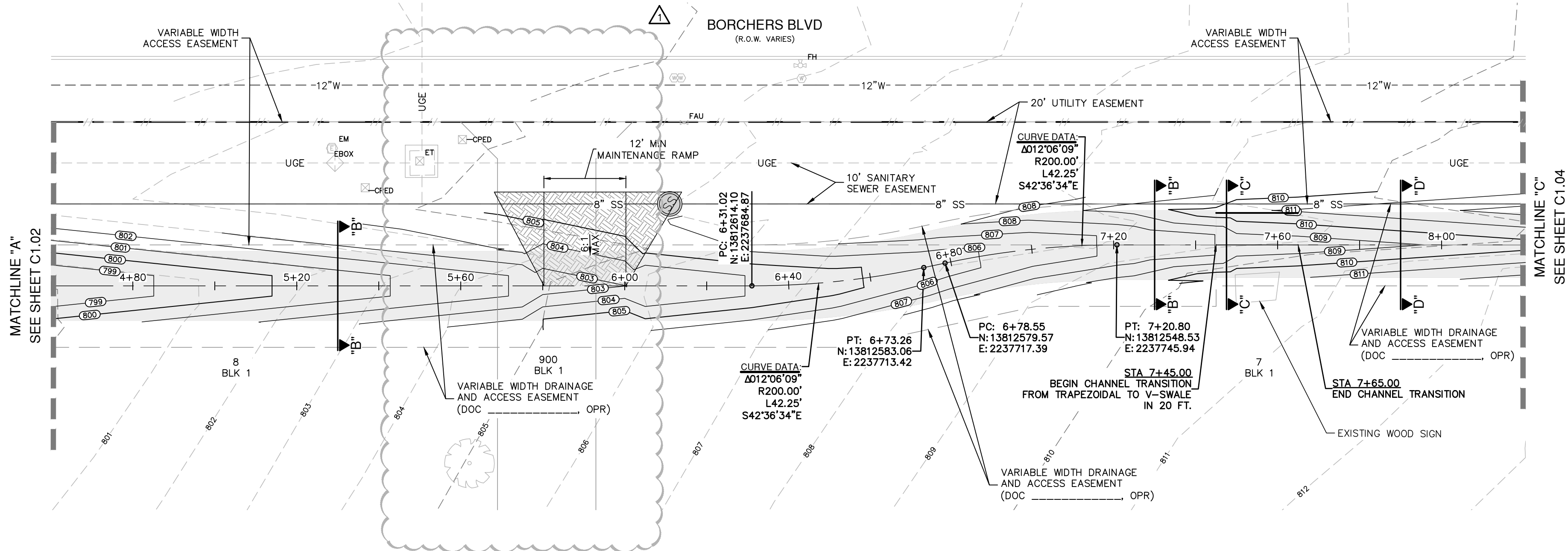
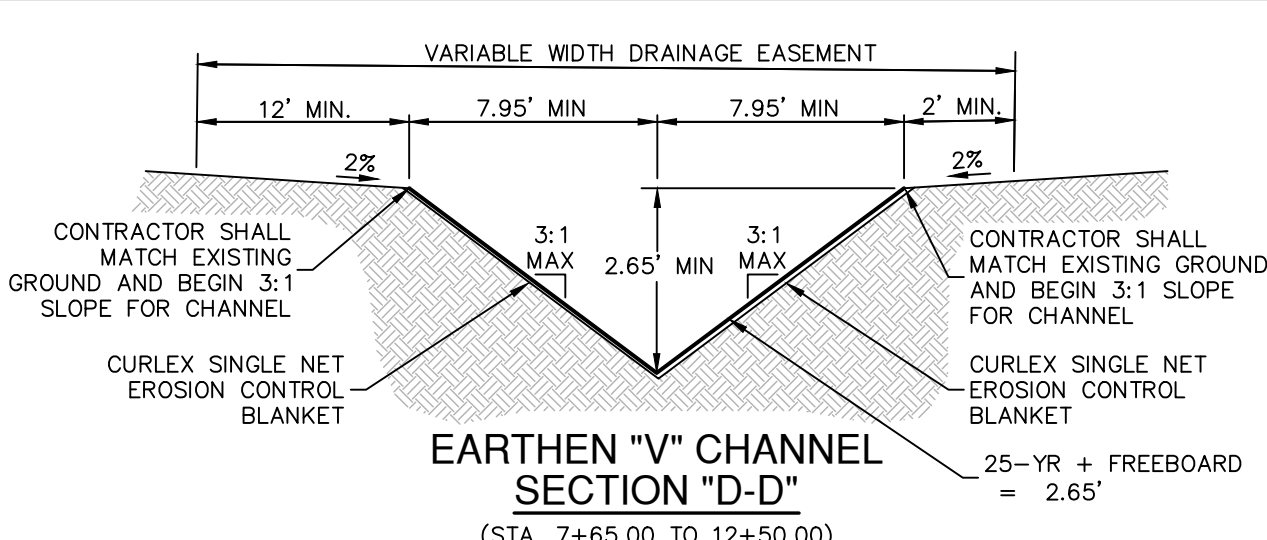
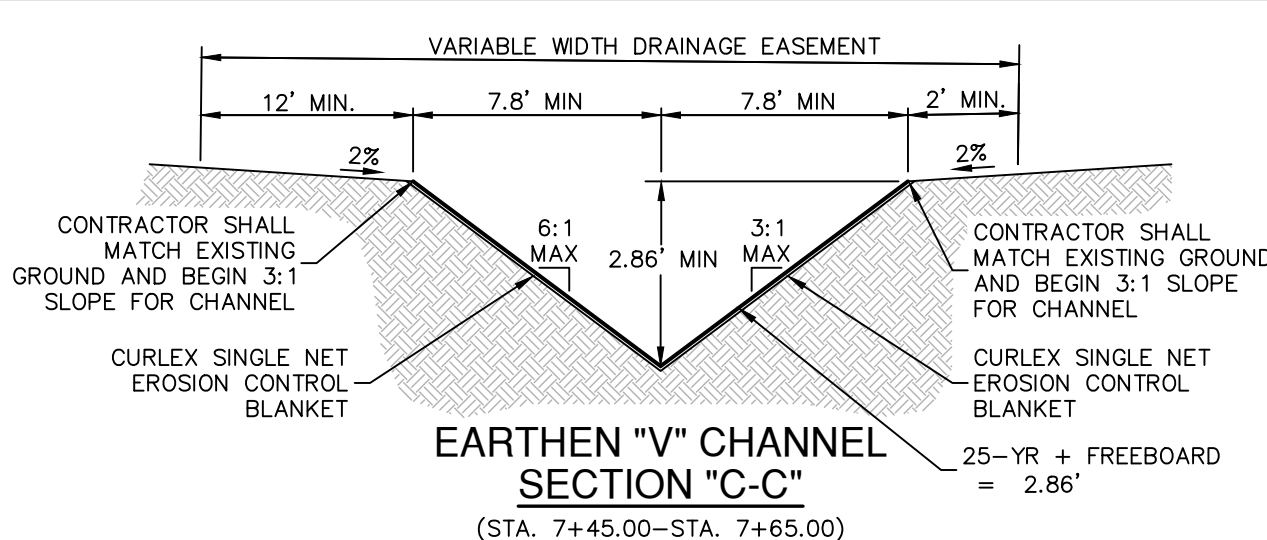
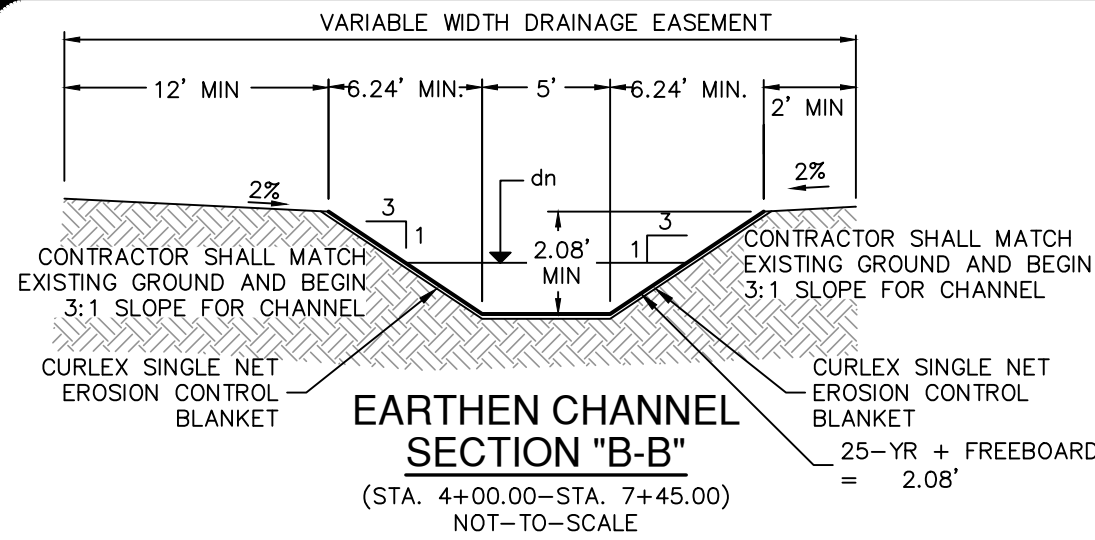
**STORM DRAIN A-1 - PLAN & PROFILE**  
**STA 1+00.00 TO 4+60.00**

PLAT NO. \_\_\_\_\_  
JOB NO. 30001-81  
DATE DECEMBER 2024  
DESIGNER CP  
CHECKED CK DRAWN CP  
SHEET C1.02



Date: March 13, 2024, 12:11 PM - User ID: carchter  
 File: P:\300\01\81\Design\Civil\SDA-30001-81.dwg

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HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 4+00.00 TO 7+45.00	HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 7+45.00 TO 12+50.00	HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 7+45.00 TO 12+50.00
Q <sub>25</sub> = 123 CFS n = 0.035 S = 3.47% dn <sub>25</sub> = 1.58 FT dn <sub>25</sub> + Fbrd. = 2.08 FT V <sub>25</sub> = 8.04 FPS Q <sub>2</sub> = 58 CFS V <sub>2</sub> = 6.54 FPS Q <sub>100</sub> = 174 CFS dn <sub>100</sub> = 1.87 FT V <sub>100</sub> = 8.82 FPS	Q <sub>25</sub> = 90 CFS n = 0.035 S = 1.40% dn <sub>25</sub> = 2.36 FT dn <sub>25</sub> + Fbrd. = 2.86 FT V <sub>25</sub> = 5.41 FPS Q <sub>2</sub> = 42 CFS V <sub>2</sub> = 4.47 FPS Q <sub>100</sub> = 128 CFS dn <sub>100</sub> = 2.69 FT V <sub>100</sub> = 5.91 FPS	Q <sub>25</sub> = 90 CFS n = 0.035 S = 2.30% dn <sub>25</sub> = 2.15 FT dn <sub>25</sub> + Fbrd. = 2.65 FT V <sub>25</sub> = 6.52 FPS Q <sub>2</sub> = 42 CFS V <sub>2</sub> = 5.39 FPS Q <sub>100</sub> = 128 CFS dn <sub>100</sub> = 2.45 FT V <sub>100</sub> = 7.12 FPS

- DRAINAGE & GRADING NOTES:**  
 1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.  
 2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.  
 3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.  
 4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.  
 5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.  
 6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.  
 7. ALL RCP SHALL BE AASHTO M170 CLASS III RCP.  
**CAUTION!!**  
 CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING 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 TEXAS 811 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.  
**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 ANY 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY 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.

DATE  
06/25/25  
 NO. 1  
 REVISION  
CHANGED LOT LINES

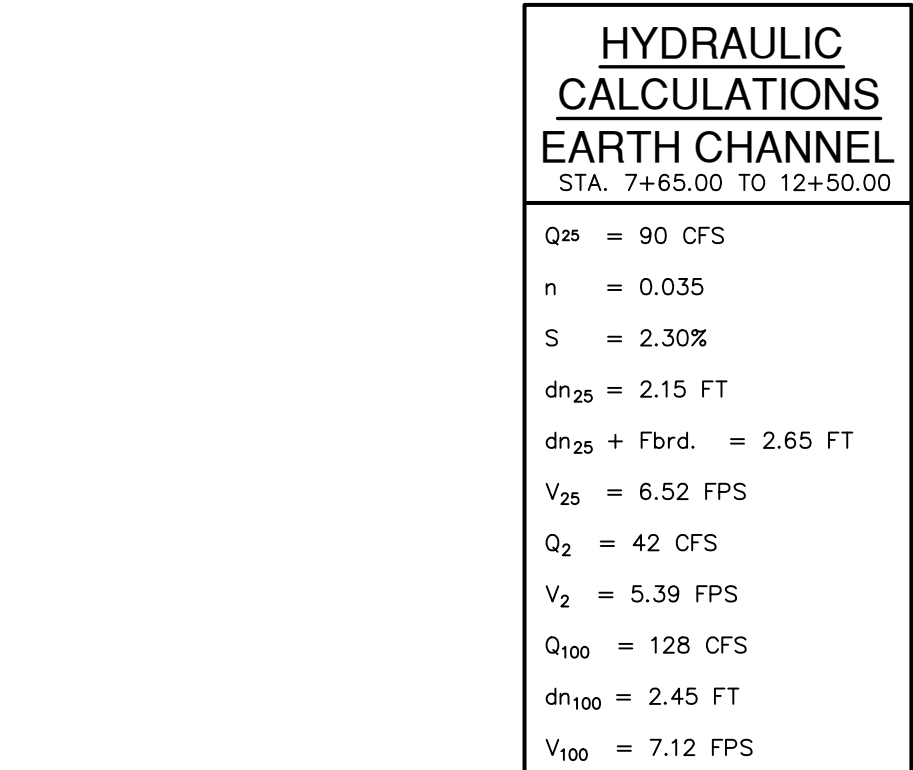
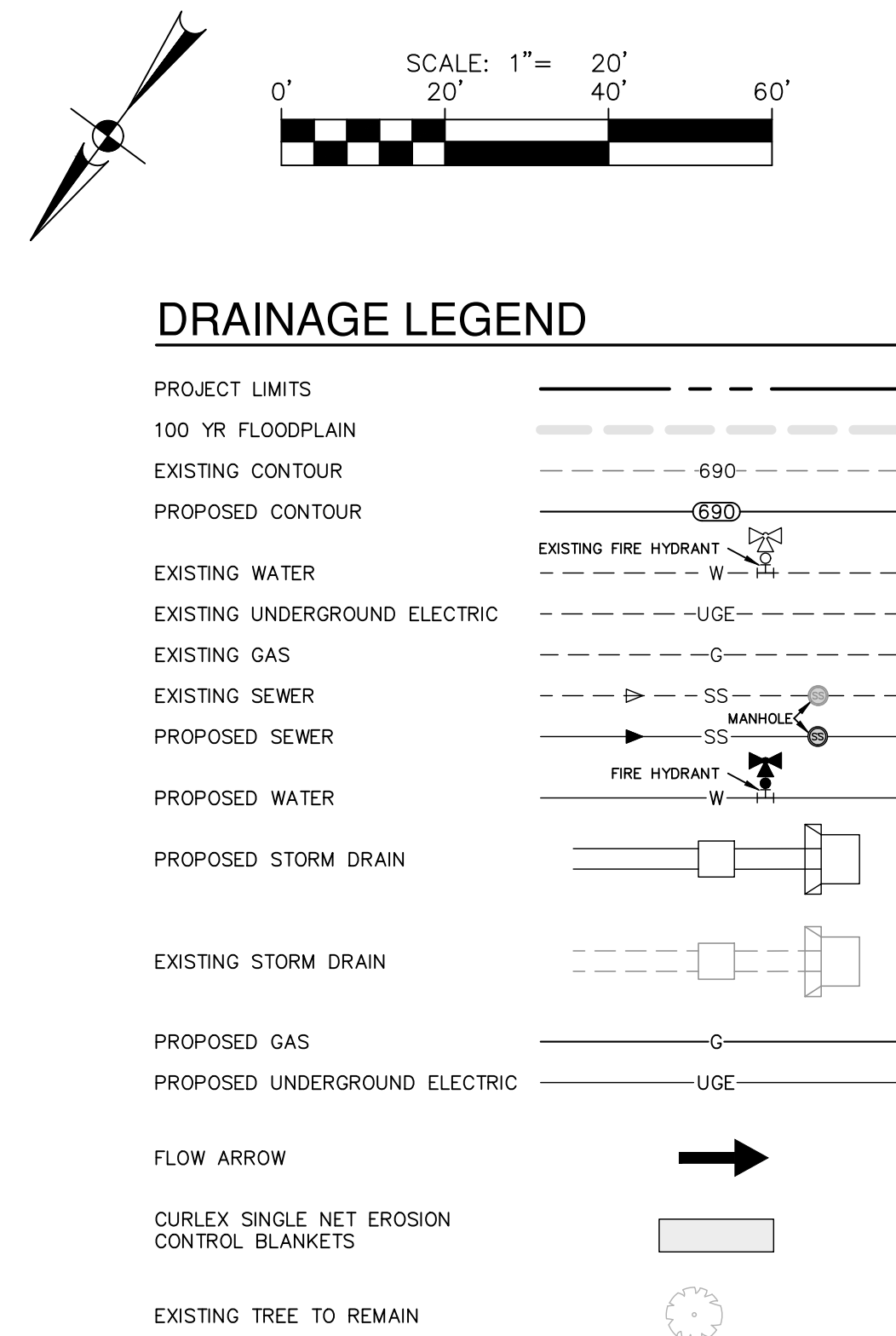
6-25-2025  
 JOCELYN PEREZ  
 98367  
 PROFESSIONAL ENGINEER  
 J. Perez

**PAPE-DAWSON**  
**ENGINEERS**  
 1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5533  
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

**VERAMENDI PRECINCT 11A**  
 NEW BRAUNFELS, TEXAS  
**STORM DRAIN A-1 - PLAN & PROFILE**  
 STA 4+60.00 TO 8+20.00

JOB NO. 30001-81  
 DATE JUNE 2025  
 DESIGNER CP  
 CHECKED TMM DRAWN CP  
 SHEET C1.03





- ## **DRAINAGE & GRADING NOTES:**
1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AND DRAINAGE STRUCTURES TO VERIFY SIZE, GRADE AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. THERE SHALL BE NO CHANGES TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT. SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
  2. ALL CONCRETE FOR TYPICAL DRAINAGE STRUCTURES SHALL MEET TYPICAL SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
  3. REFERENCE DRAWING DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
  4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
  5. EARLY CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. PROPOSED CHANNELS MUST BE VEGETATED WITH ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
  6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
  7. ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

**CAUTION!!**

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTS, LANDFILL, AIRRAIL, FACILITY, AND LINES. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL UTILITIES AND BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT TEXAS 811\* A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR 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.

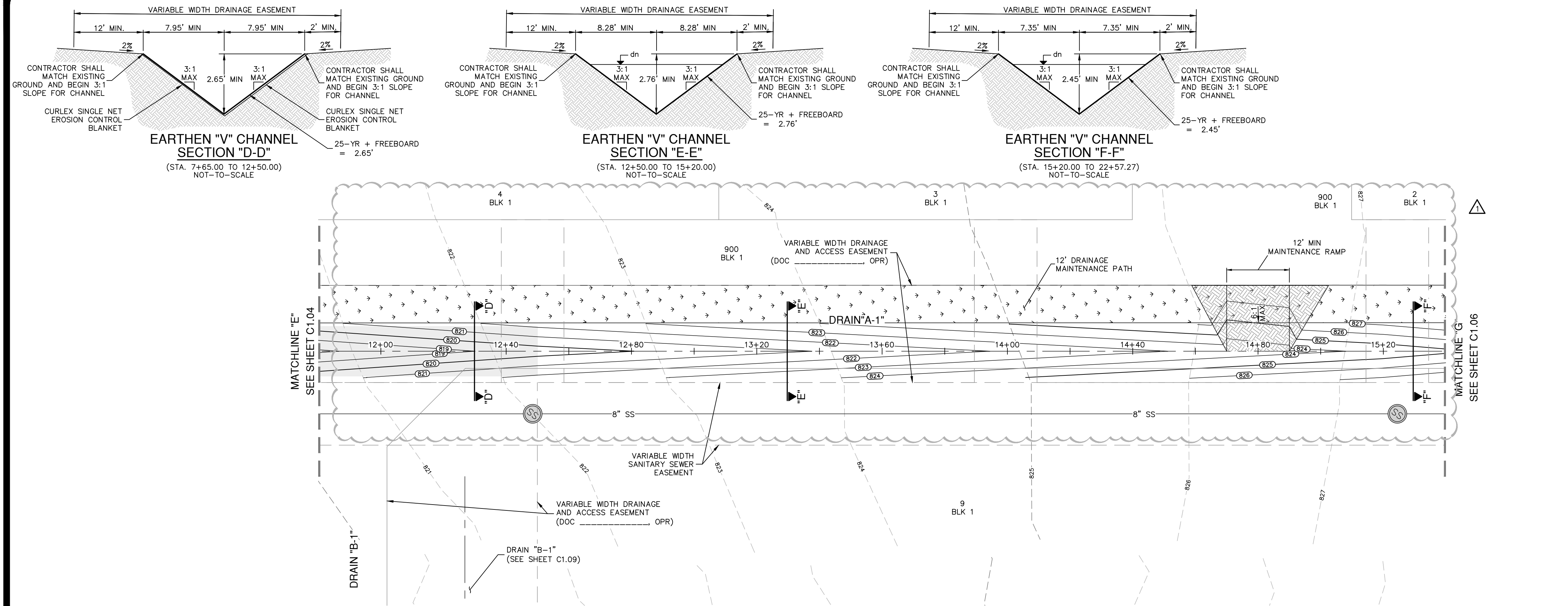
**TRENCH EXCAVATION SAFETY PROTECTION:**

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, SHALL BE RESPONSIBLE FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS, 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 SHALL BE RESPONSIBLE FOR THE DESIGN, 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 COMPLY WITH AS A MINIMUM, OSHA STANDARDS AND REGULATIONS, AND ANY APPLICABLE SPECIFICALLY CONTRACTED AND CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH THE TRENCH SAFETY PROGRAMS AND PREVENTING ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



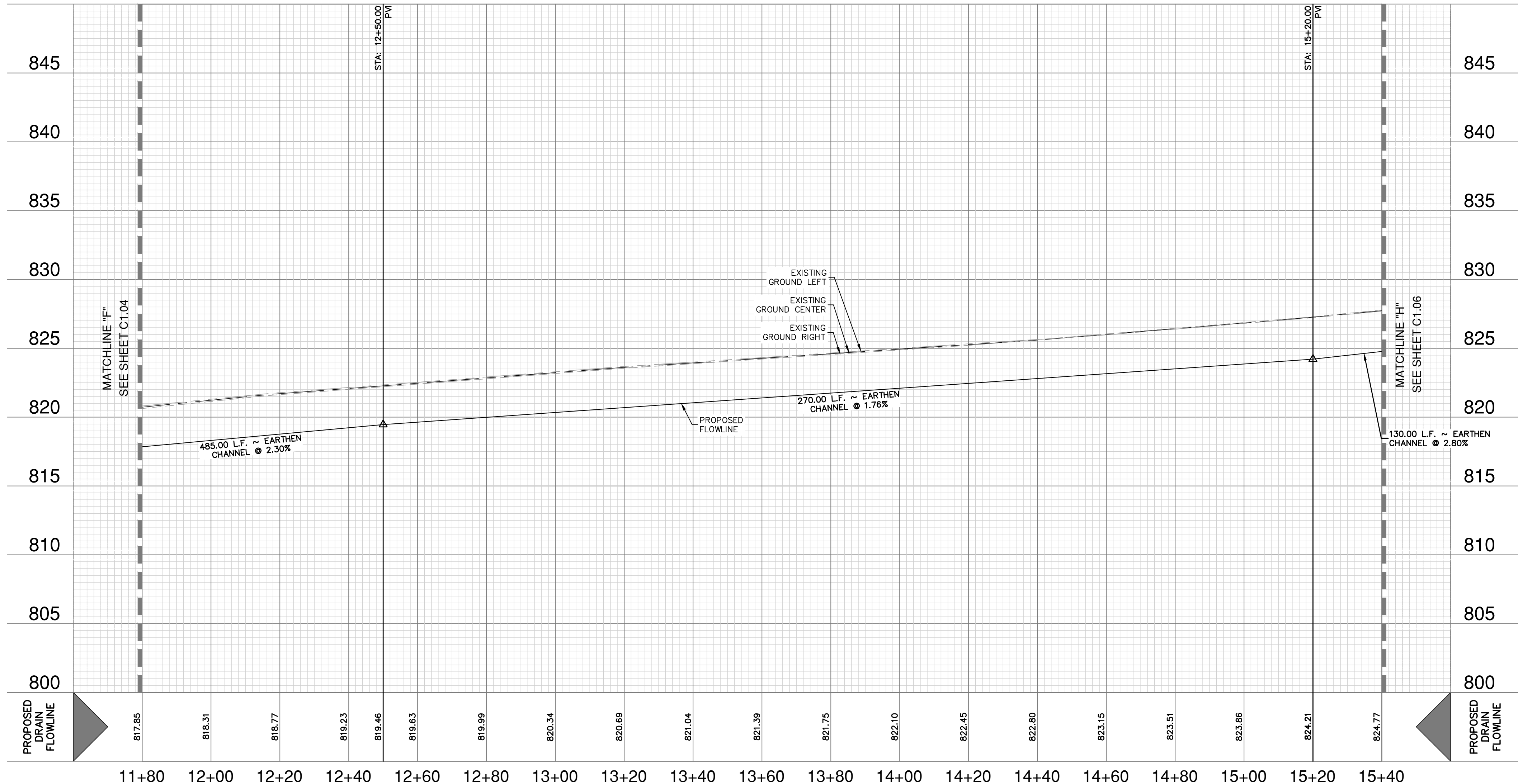
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STORM DRAIN "A-1"  
STA 11+80.00 TO 15+40.00

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 20'



## DRAINAGE LEGEND

PROJECT LIMITS	---
100 YR FLOODPLAIN	---
EXISTING CONTOUR	---
PROPOSED CONTOUR	---
EXISTING WATER	---
EXISTING UNDERGROUND ELECTRIC	---
EXISTING GAS	---
EXISTING SEWER	---
PROPOSED SEWER	---
PROPOSED WATER	---
PROPOSED STORM DRAIN	---
EXISTING STORM DRAIN	---
PROPOSED GAS	---
PROPOSED UNDERGROUND ELECTRIC	---
FLOW ARROW	→
CURLEX SINGLE NET EROSION CONTROL BLANKETS	---
EXISTING TREE TO REMAIN	---

HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 7+65.00 TO 12+50.00
Q <sub>25</sub> = 90 CFS
n = 0.035
S = 2.30%
dn <sub>25</sub> = 2.15 FT
dn <sub>25</sub> + Fbrd. = 2.65 FT
V <sub>25</sub> = 6.52 FPS
Q <sub>2</sub> = 42 CFS
V <sub>2</sub> = 5.39 FPS
Q <sub>100</sub> = 128 CFS
dn <sub>100</sub> = 2.45 FT
V <sub>100</sub> = 7.12 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 12+50.00 TO 15+20.00
Q <sub>25</sub> = 90 CFS
n = 0.035
S = 2.30%
dn <sub>25</sub> = 2.26 FT
dn <sub>25</sub> + Fbrd. = 2.76 FT
V <sub>25</sub> = 5.89 FPS
Q <sub>2</sub> = 42 CFS
V <sub>2</sub> = 4.87 FPS
Q <sub>100</sub> = 128 CFS
dn <sub>100</sub> = 2.58 FT
V <sub>100</sub> = 6.44 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 15+20.00 TO 16+50.00
Q <sub>25</sub> = 48 CFS
n = 0.035
S = 2.80%
dn <sub>25</sub> = 1.64 FT
dn <sub>25</sub> + Fbrd. = 2.14 FT
V <sub>25</sub> = 5.95 FPS
Q <sub>2</sub> = 23 CFS
V <sub>2</sub> = 4.99 FPS
Q <sub>100</sub> = 68 CFS
dn <sub>100</sub> = 1.87 FT
V <sub>100</sub> = 6.84 FPS

## DRAINAGE & GRADING NOTES:

- THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
- ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
- REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
- CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
- EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
- CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
- ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

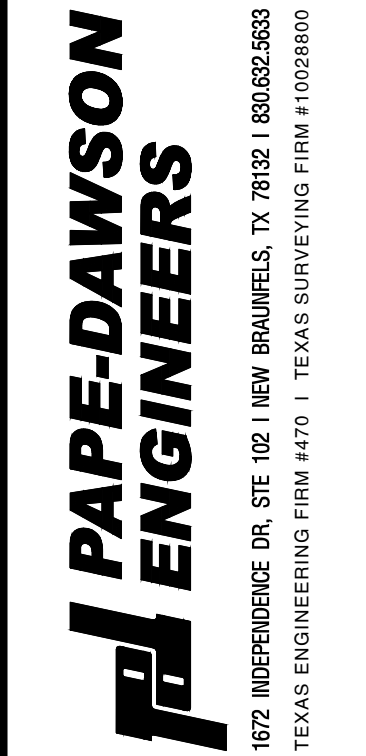
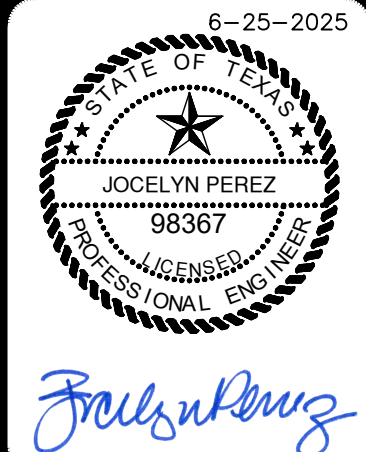
## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING 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 "TEXAS 811" 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.

## 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 ANY 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY 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 ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NO.	REVISION	DATE
1	CHANGED LOTS & SSWM EMT	06/25/23



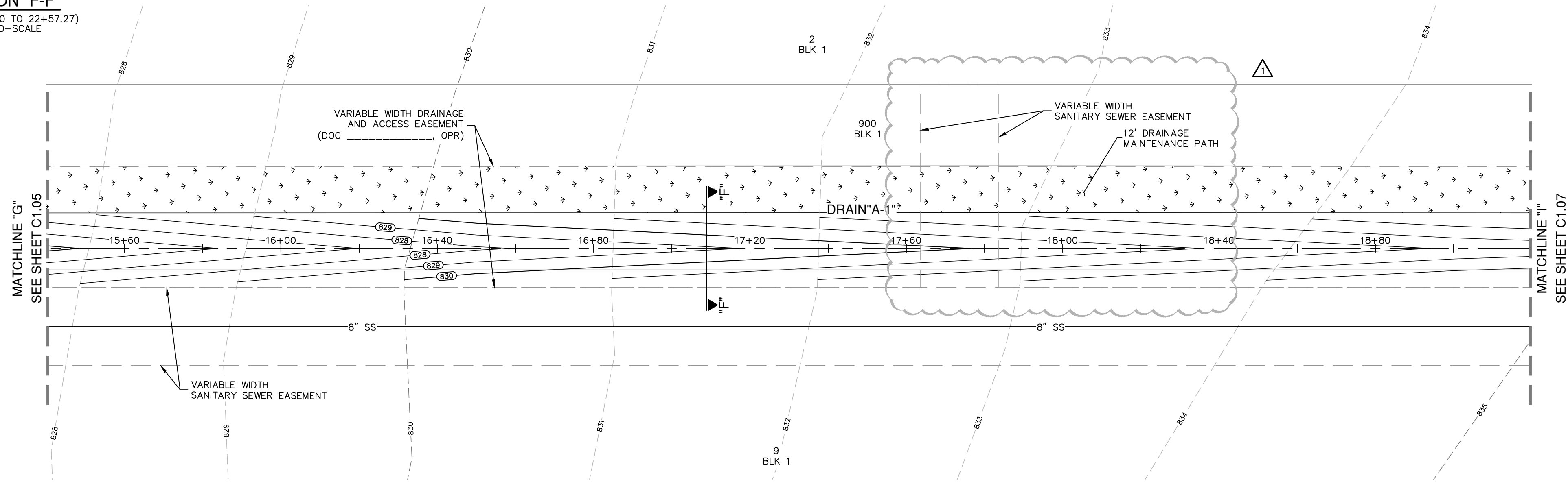
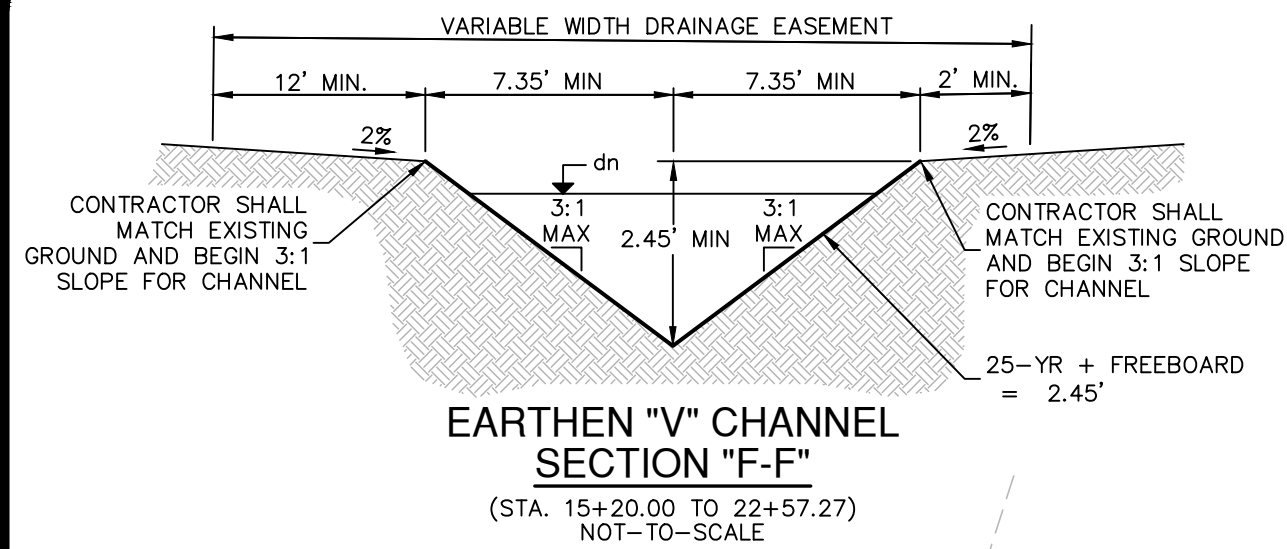
VERAMENDI PRECINCT 11A  
NEW BRAUNFELS, TEXAS  
STORM DRAIN A-1 - PLAN & PROFILE  
STA 11+80.00 TO 15+40.00

PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DESIGNER	CP
CHECKED	TMM
DRAWN	CP
SHEET	C1.05



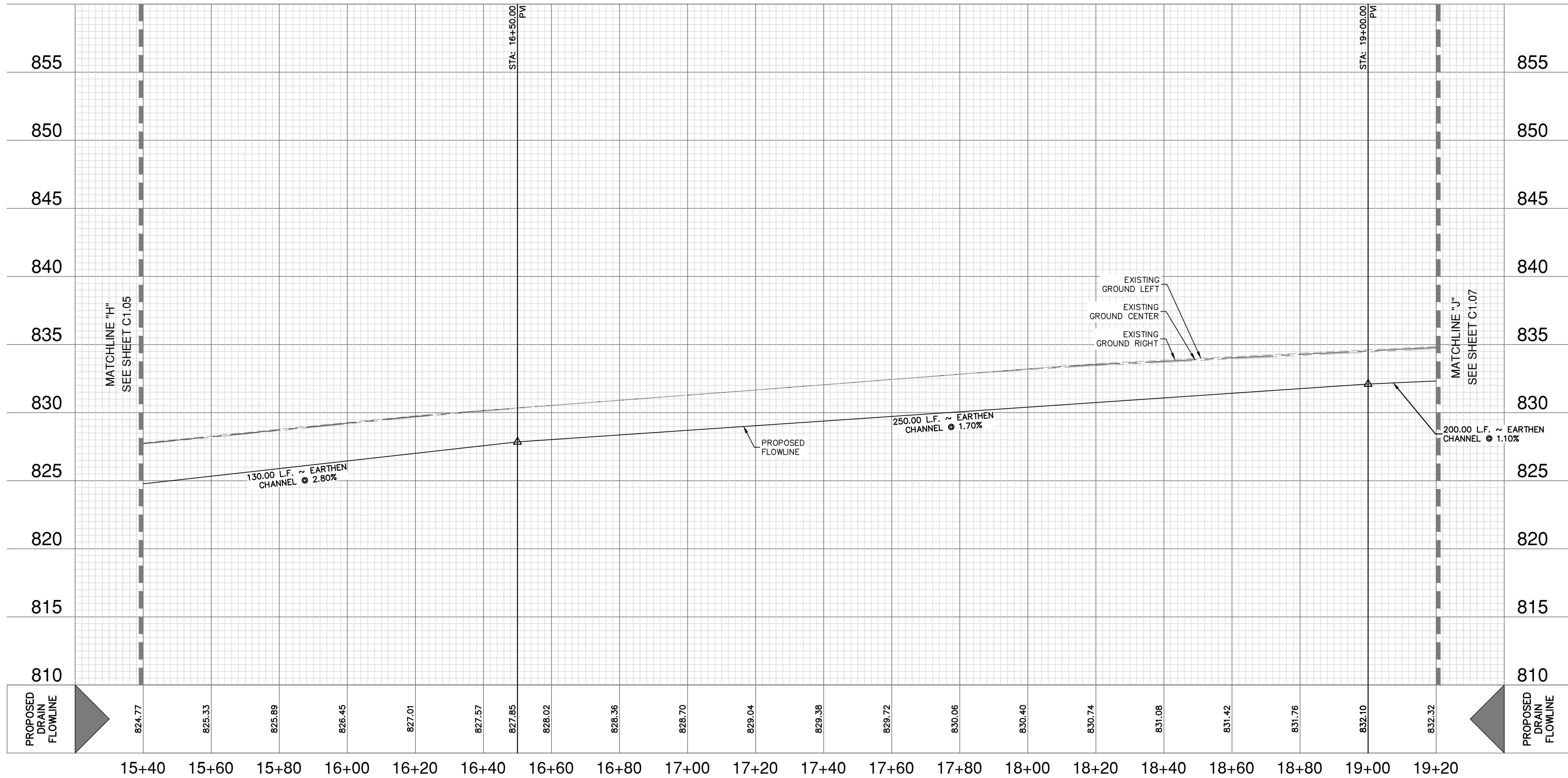
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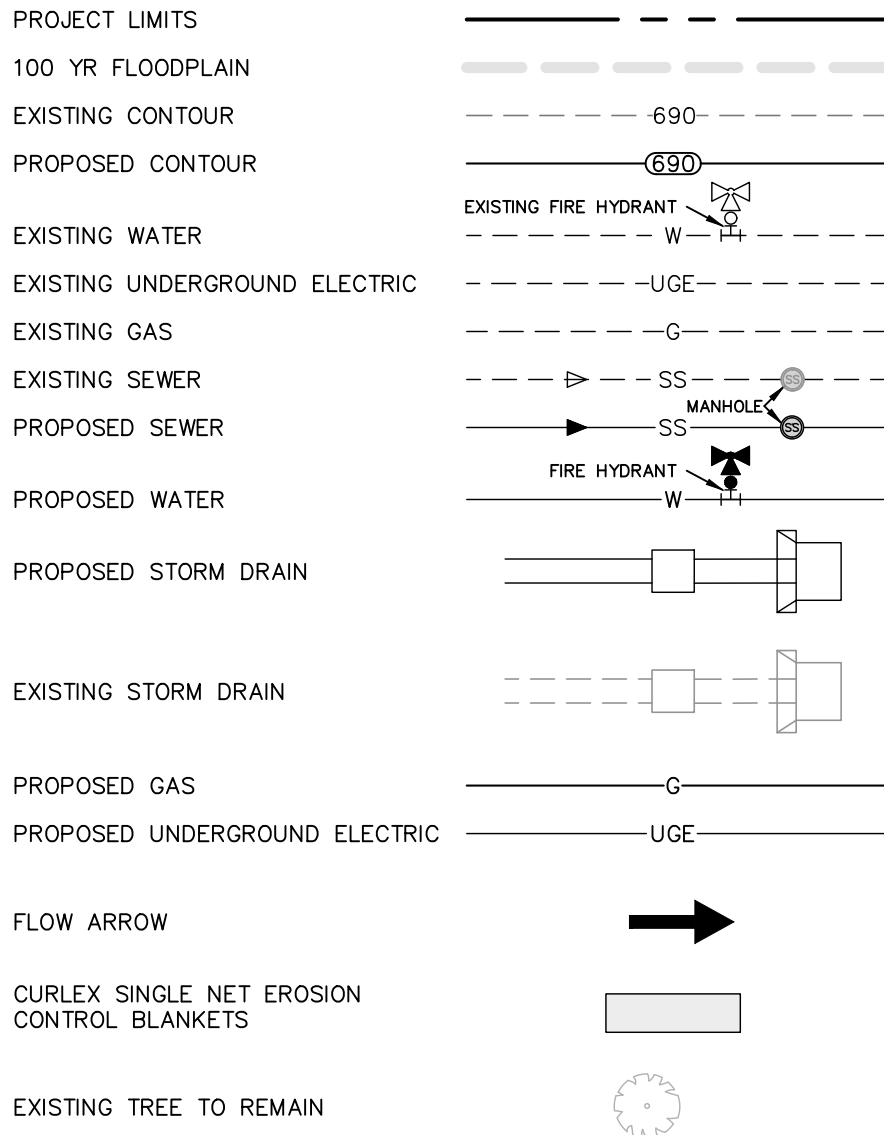


STORM DRAIN "A-1"  
STA 15+40.00 TO 19+20.00

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 20'



## DRAINAGE LEGEND



HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 15+20.00 TO 16+50.00
Q <sub>25</sub> = 48 CFS
n = 0.035
S = 2.80%
dn <sub>25</sub> = 1.64 FT
dn <sub>25</sub> + Fbrd. = 2.14 FT
V <sub>25</sub> = 5.95 FPS
Q <sub>2</sub> = 23 CFS
V <sub>2</sub> = 4.99 FPS
Q <sub>100</sub> = 68 CFS
dn <sub>100</sub> = 1.87 FT
V <sub>100</sub> = 6.84 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 16+50.00 TO 19+00.00
Q <sub>25</sub> = 48 CFS
n = 0.035
S = 1.70%
dn <sub>25</sub> = 1.80 FT
dn <sub>25</sub> + Fbrd. = 2.30 FT
V <sub>25</sub> = 4.94 FPS
Q <sub>2</sub> = 23 CFS
V <sub>2</sub> = 4.08 FPS
Q <sub>100</sub> = 68 CFS
dn <sub>100</sub> = 2.05 FT
V <sub>100</sub> = 5.39 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 19+00.00 TO 21+00.00
Q <sub>25</sub> = 48 CFS
n = 0.035
S = 1.10%
dn <sub>25</sub> = 1.95 FT
dn <sub>25</sub> + Fbrd. = 2.45 FT
V <sub>25</sub> = 4.21 FPS
Q <sub>2</sub> = 23 CFS
V <sub>2</sub> = 3.50 FPS
Q <sub>100</sub> = 68 CFS
dn <sub>100</sub> = 2.22 FT
V <sub>100</sub> = 4.60 FPS

## DRAINAGE & GRADING NOTES:

- THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
- ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
- REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
- CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
- EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
- CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
- ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

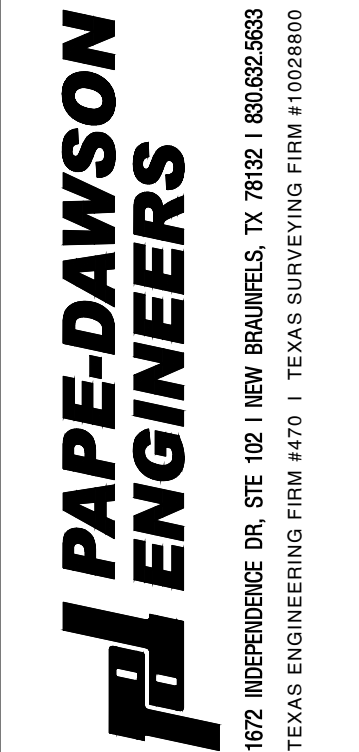
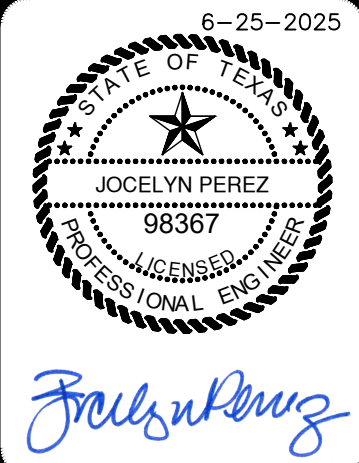
## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING 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 "TEXAS 811" 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.

## TRENCH EXCAVATION SAFETY PROTECTION:

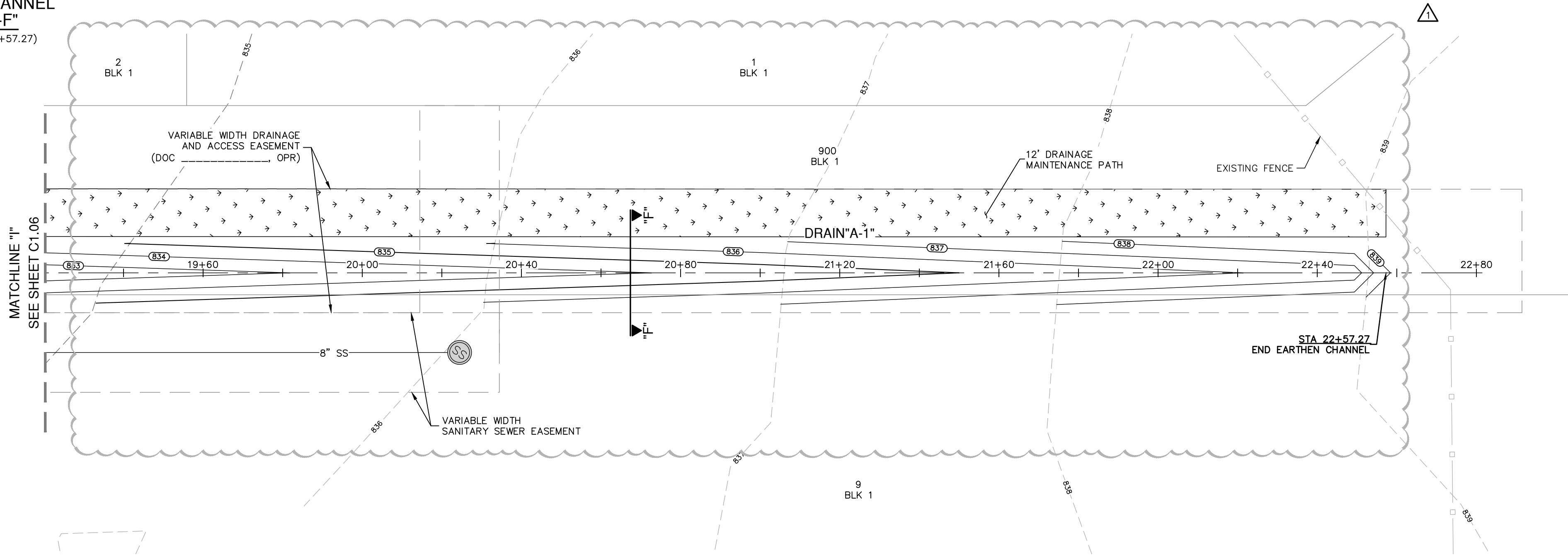
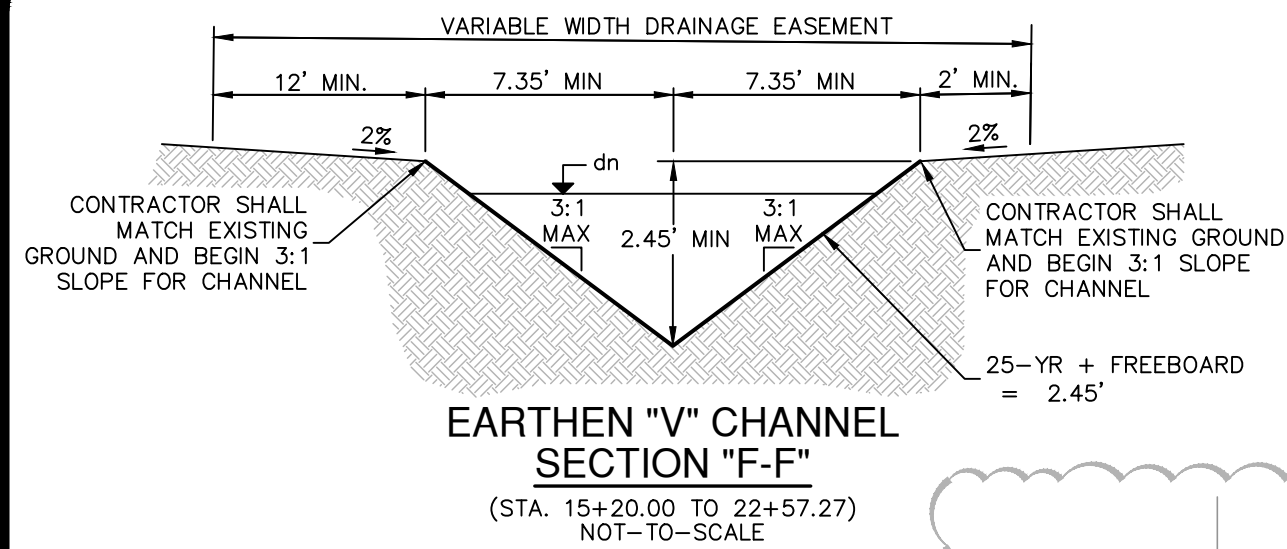
CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

NO.	REVISION	DATE
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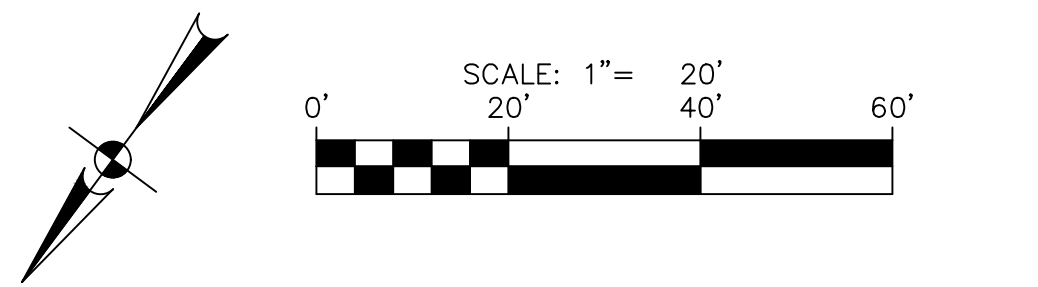
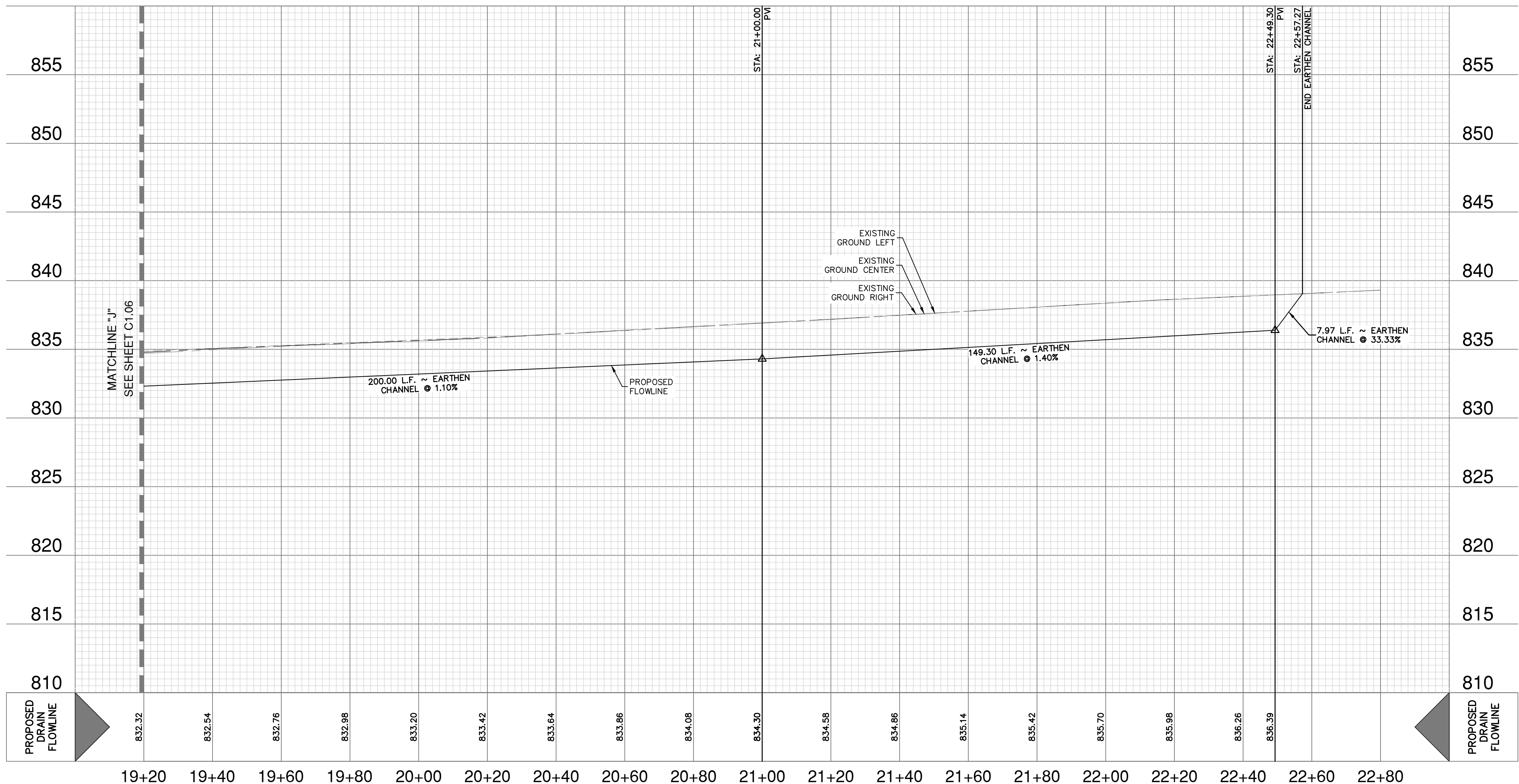
PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DESIGNER	CP
CHECKED	TMM
DRAWN	CP
SHEET	C1.06





STORM DRAIN "A-1"  
STA. 19+20.00 TO 22+57.27

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 20'



## DRAINAGE LEGEND

PROJECT LIMITS	---
100 YR FLOODPLAIN	---
EXISTING CONTOUR	---
PROPOSED CONTOUR	---
EXISTING WATER	---
EXISTING UNDERGROUND ELECTRIC	---
EXISTING GAS	---
EXISTING SEWER	---
PROPOSED SEWER	---
PROPOSED WATER	---
PROPOSED STORM DRAIN	---
EXISTING STORM DRAIN	---
PROPOSED GAS	---
PROPOSED UNDERGROUND ELECTRIC	---
FLOW ARROW	→
CURLEX SINGLE NET EROSION CONTROL BLANKETS	---
EXISTING TREE TO REMAIN	---

HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 19+00.00 TO 21+00.00
Q <sub>25</sub> = 48 CFS
n = 0.035
S = 1.10%
dn <sub>25</sub> = 1.95 FT
dn <sub>25</sub> + Fbrd. = 2.45 FT
V <sub>25</sub> = 4.21 FPS
Q <sub>2</sub> = 23 CFS
V <sub>2</sub> = 3.50 FPS
Q <sub>100</sub> = 68 CFS
dn <sub>100</sub> = 2.22 FT
V <sub>100</sub> = 4.60 FPS

HYDRAULIC CALCULATIONS EARTH CHANNEL STA. 21+00.00 TO 22+57.27
Q <sub>25</sub> = 48 CFS
n = 0.035
S = 1.40%
dn <sub>25</sub> = 1.87 FT
dn <sub>25</sub> + Fbrd. = 2.37 FT
V <sub>25</sub> = 4.58 FPS
Q <sub>2</sub> = 23 CFS
V <sub>2</sub> = 3.80 FPS
Q <sub>100</sub> = 68 CFS
dn <sub>100</sub> = 2.13 FT
V <sub>100</sub> = 5.00 FPS

## DRAINAGE & GRADING NOTES:

- THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
- ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
- REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
- CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
- EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
- CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
- ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

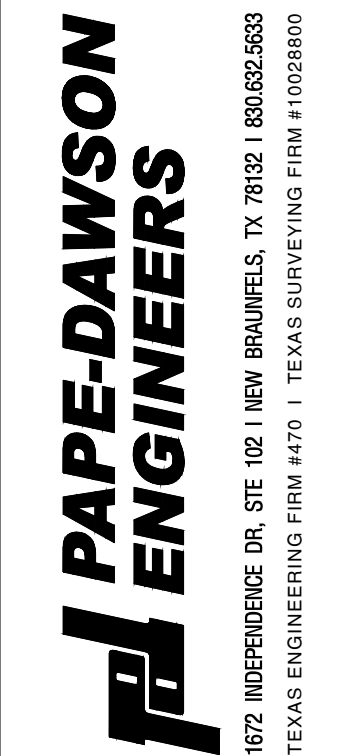
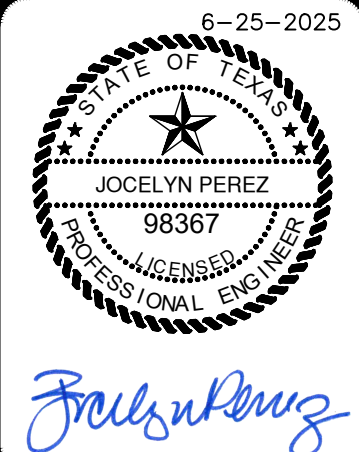
## CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING 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 "TEXAS 811" 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.

## TRENCH EXCAVATION SAFETY PROTECTION:

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NO.	REVISION	DATE
1	CHANGED LOTS & SS&W ESMT	06/25/23

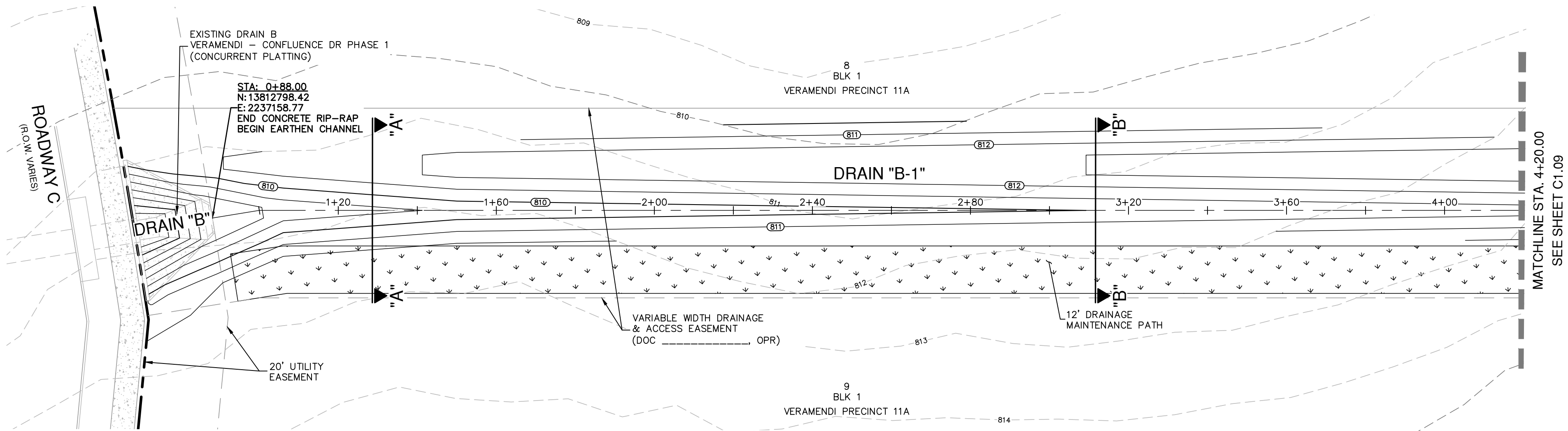
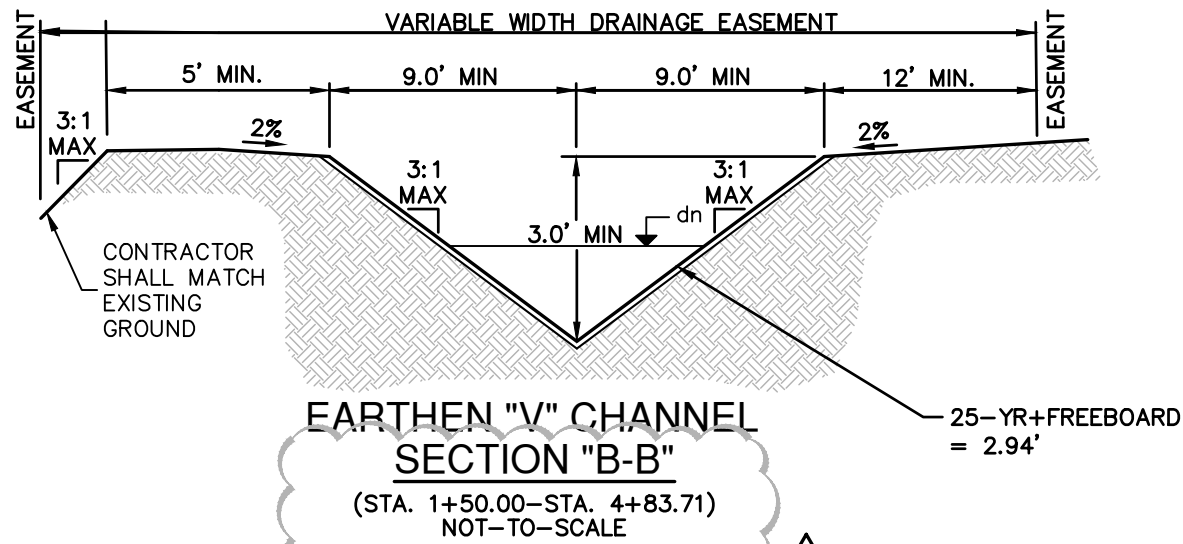
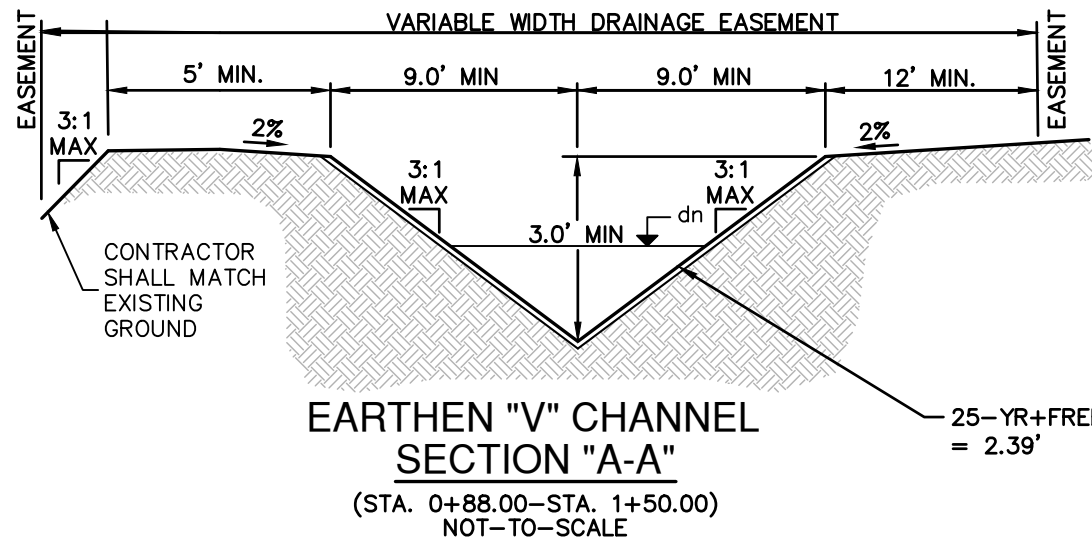


PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DESIGNER	CP
CHECKED	TMM
DRAWN	CP
SHEET	C1.07



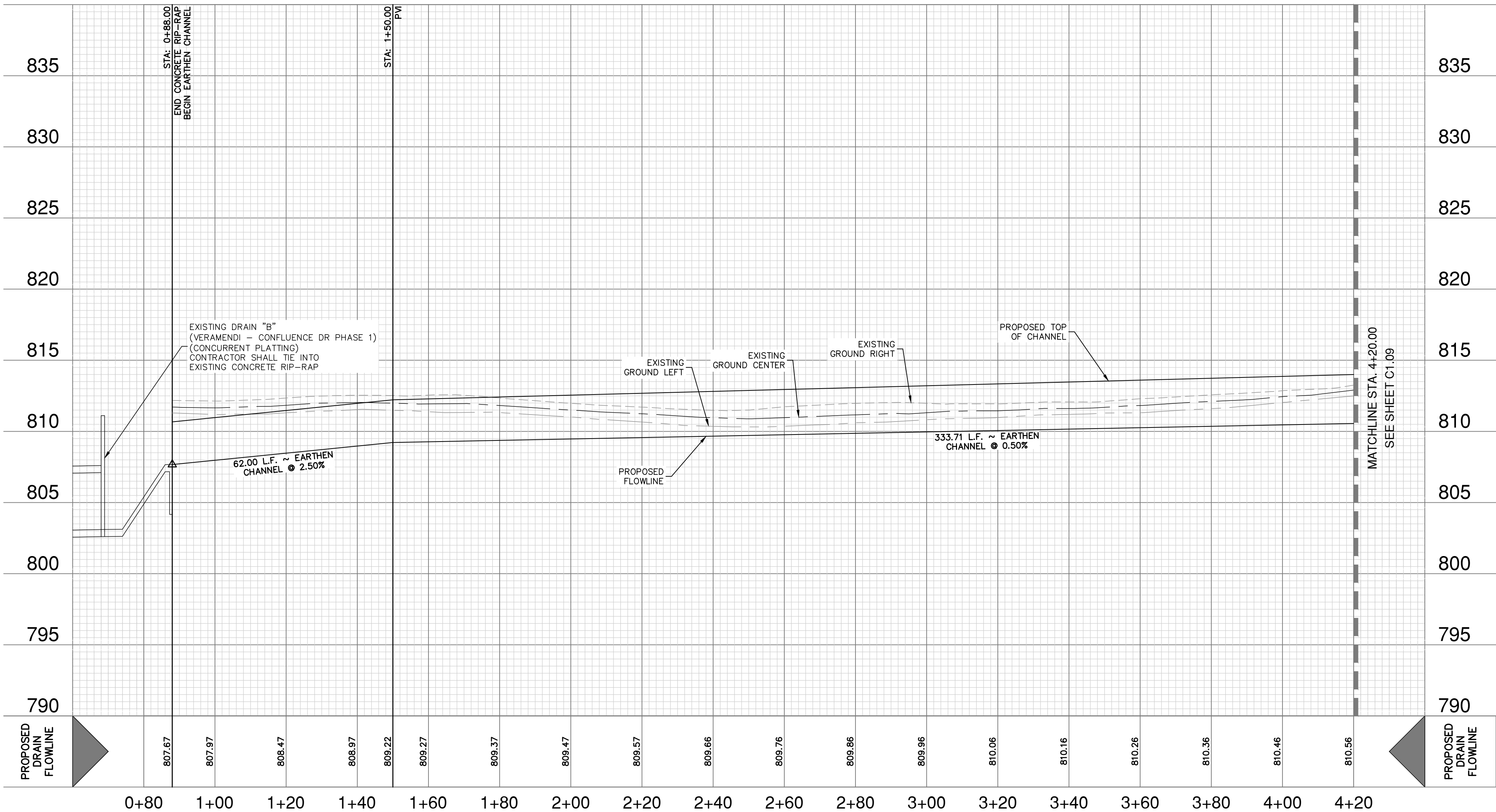
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THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE/UNLESS OTHERWISE NOTED. Imagery © 2016, CARPOOLdigital, Global Texas Orthorectography Program, USDA Farm Service Agency.



STORM DRAIN "B-1"  
STA. 0+88.00 TO 4+20.00

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 20'



## DRAINAGE LEGEND

PROJECT LIMITS	---
100 YR FLOODPLAIN	---
EXISTING CONTOUR	---690---
PROPOSED CONTOUR	---(690)---
EXISTING WATER	---
EXISTING UNDERGROUND ELECTRIC	---UG---
EXISTING GAS	---
EXISTING SEWER	---
PROPOSED SEWER	---
PROPOSED WATER	---
PROPOSED STORM DRAIN	---
EXISTING STORM DRAIN	---
PROPOSED GAS	---
PROPOSED UNDERGROUND ELECTRIC	---
FLOW ARROW	→
CURLEX SINGLE NET EROSION CONTROL BLANKETS	---
EXISTING TREE	---
MAINTENANCE ACCESS PATH	---

HYDRAULIC CALCULATIONS
EARTH CHANNEL
STA. 0+88.00 TO 1+50.00
Q <sub>25</sub> = 59 CFS
n = 0.035
S = 2.50%
dn <sub>25</sub> = 1.89 FT
dn <sub>25</sub> + Fbrd. = 2.39 FT
V <sub>25</sub> = 6.00 FPS
Q <sub>2</sub> = 26 CFS
V <sub>2</sub> = 4.90 FPS
Q <sub>100</sub> = 89 CFS
dn <sub>100</sub> = 2.23 FT
V <sub>100</sub> = 6.66 FPS

HYDRAULIC CALCULATIONS
EARTH CHANNEL
STA. 1+50.00 TO 4+83.71
Q <sub>25</sub> = 59 CFS
n = 0.035
S = 0.50%
dn <sub>25</sub> = 2.44 FT
dn <sub>25</sub> + Fbrd. = 2.94 FT
V <sub>25</sub> = 3.31 FPS
Q <sub>2</sub> = 26 CFS
V <sub>2</sub> = 2.70 FPS
Q <sub>100</sub> = 89 CFS
dn <sub>100</sub> = 2.85 FT
V <sub>100</sub> = 3.67 FPS

**NOTE:**  
CHANNEL SIZED BASED ON EXISTING CONDITIONS C-VALUE CALCULATIONS.

## DRAINAGE & GRADING NOTES:

- THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
- ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
- REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
- CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
- EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF NEW BRAUNFELS WILL ACCEPT.
- CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.
- ALL RCP SHALL BE AASHTO M170 CLASS III RCP.

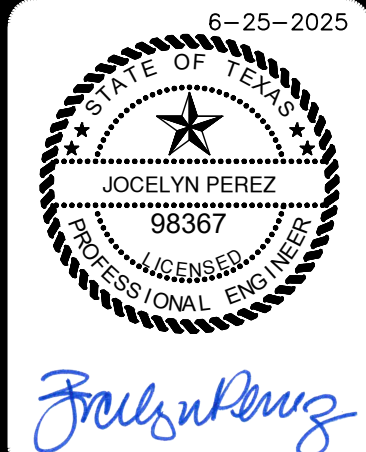
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DATE	06/25/25
REVISION	LOT LINES & CHANNEL CHANGE
NO.	1

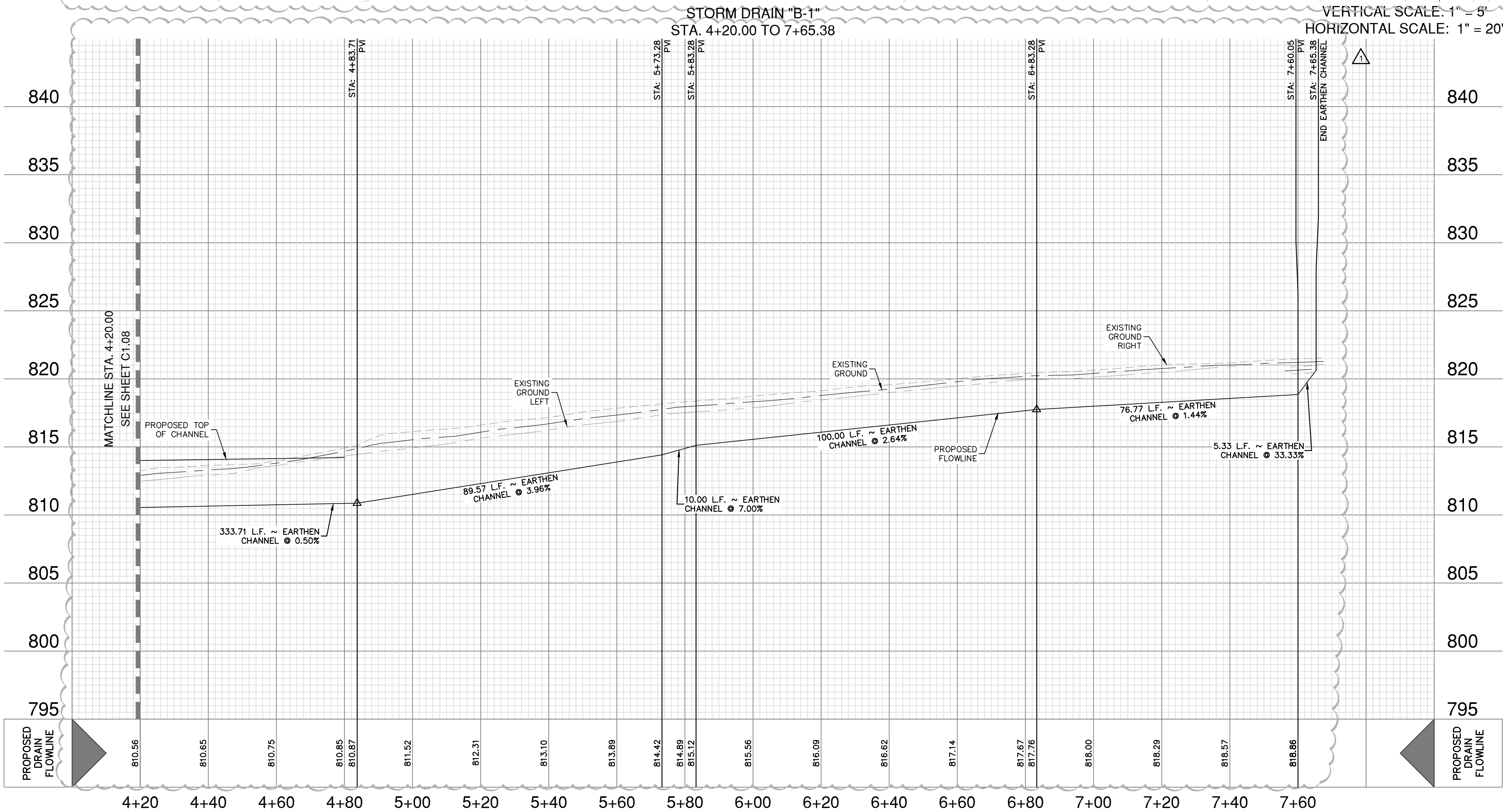
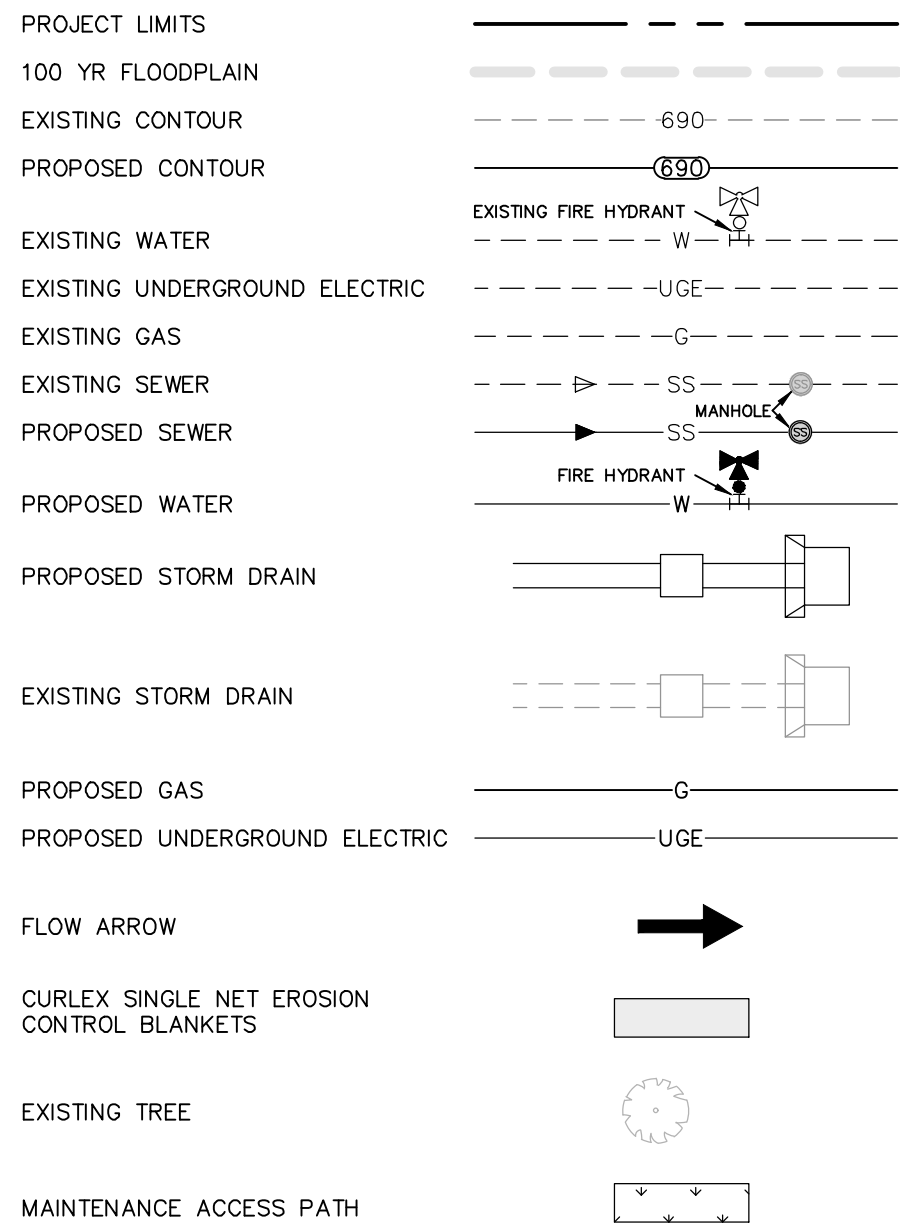
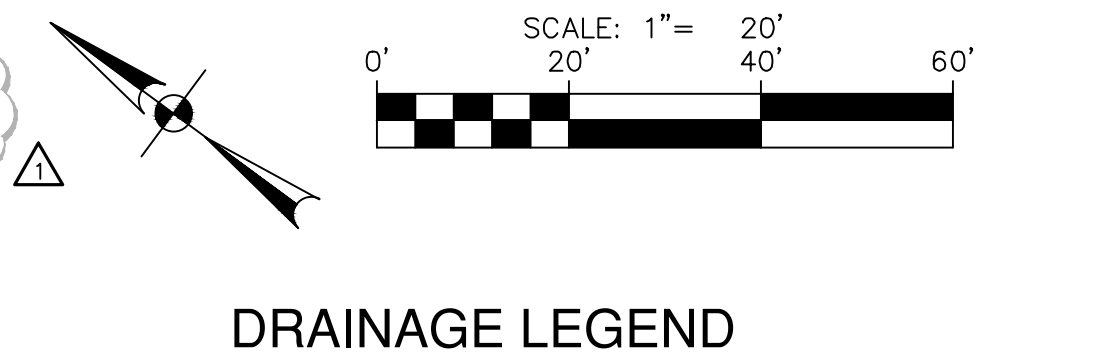
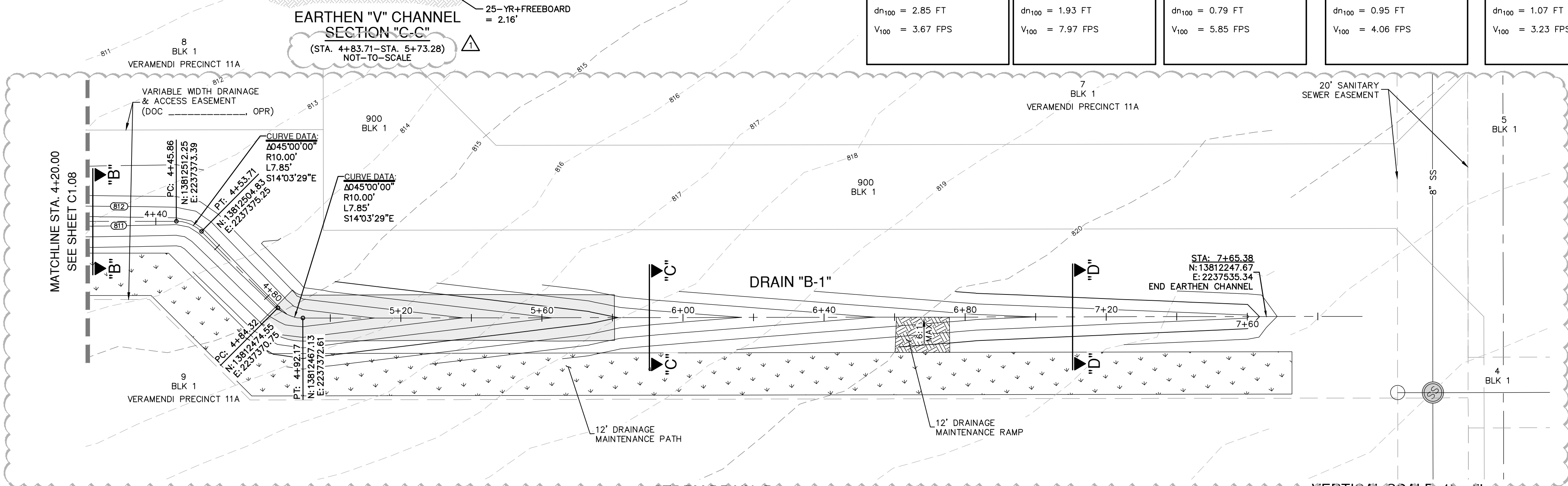


**PAPE-DAWSON ENGINEERS**  
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS  
STORM DRAIN B-1 - PLAN & PROFILE  
STA. 0+88.00 TO 4+20.00

PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DESIGNER	CP
CHECKED	TMM
DRAWN	CP
SHEET	C1.08





**NOTE:**  
CHANNEL SIZED BASED ON EXISTING CONDITIONS C-VALUE CALCULATIONS.

DRAINAGE & GRADING NOTES:

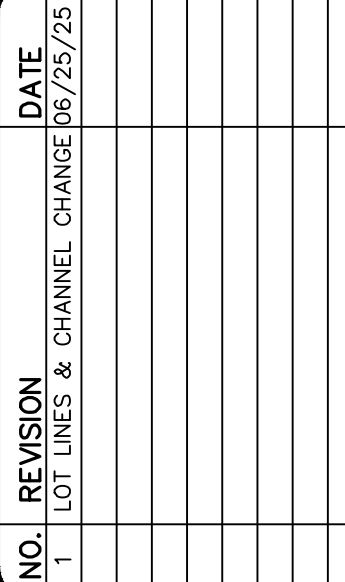
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2. ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAWING DETAILS FOR PIPE TRENCH DETAILS, B CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND B CULVERT BEDDING AND EXCAVATION LIMITS.
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**PAPE-DAWSON  
ENGINEERS**

1672 INDEPENDENCE DR, STE 102 | NEW BRAUNFELS, TX 78132 | 530.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

VERAMENDI PRECINCT 11A  
NEW BRAUNFELS, TEXAS

STORM DRAIN B-1 - PLAN & PROFILE  
STA. 4+20.00 TO 7+65.38

PLAT NO. \_\_\_\_\_  
JOB NO. 30001-81  
DATE JUNE 2025  
DESIGNER CP  
CHECKED TMM DRAWN CP  
SHEET C1.09



**CAUTION!!!:**  
THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.

**NBU PRESSURE ZONE:**  
PROPOSED WATER MAIN IS WITHIN NBU PRESSURE ZONE 4.

**NOTE:**  
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

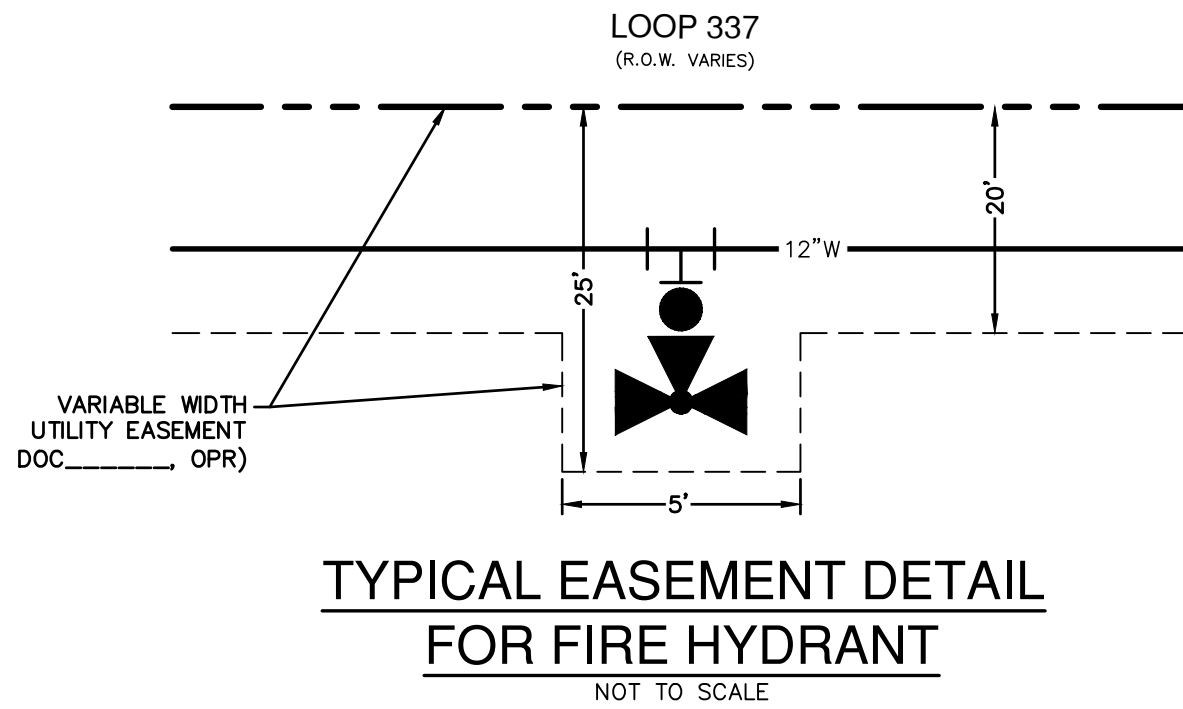
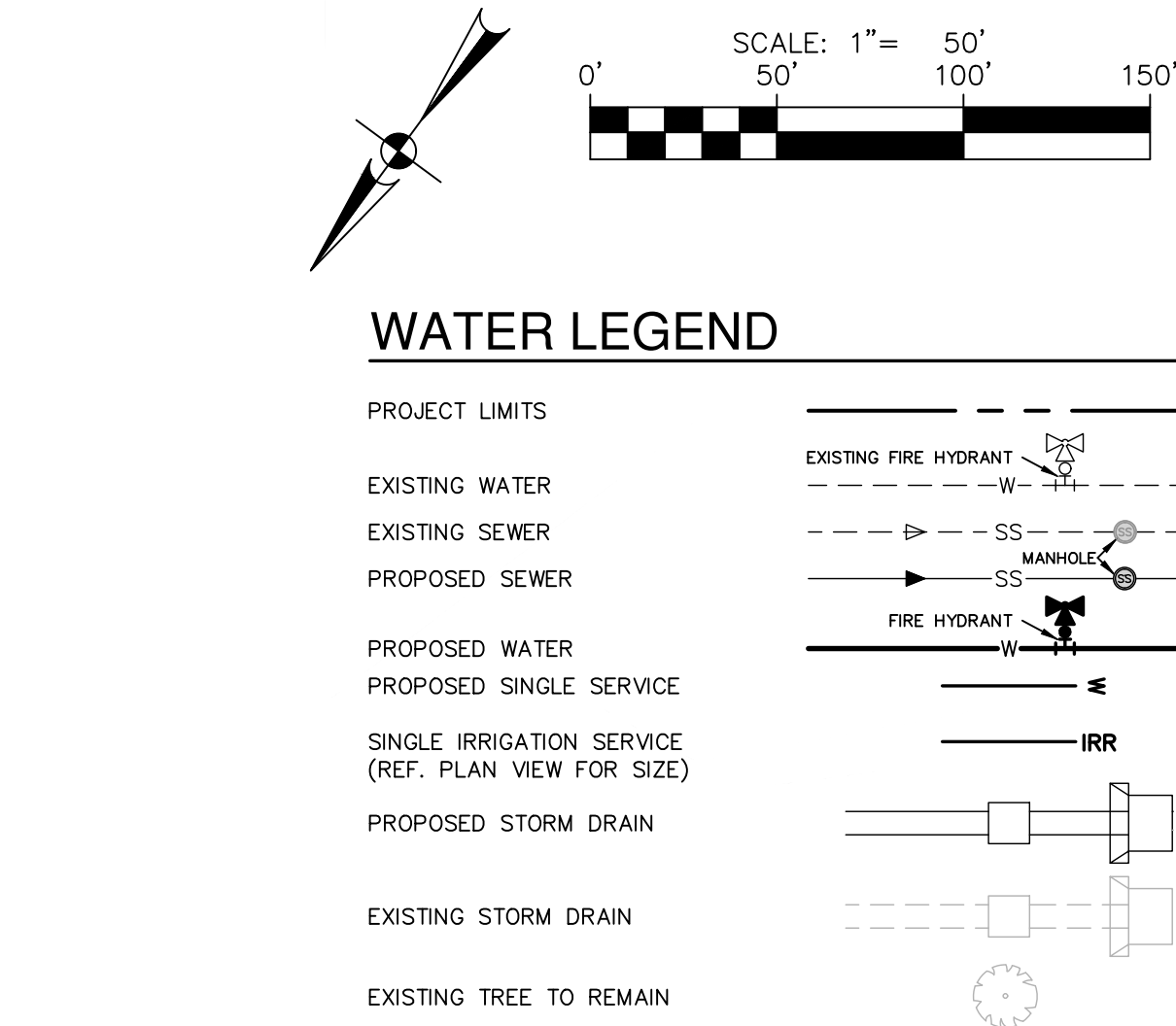
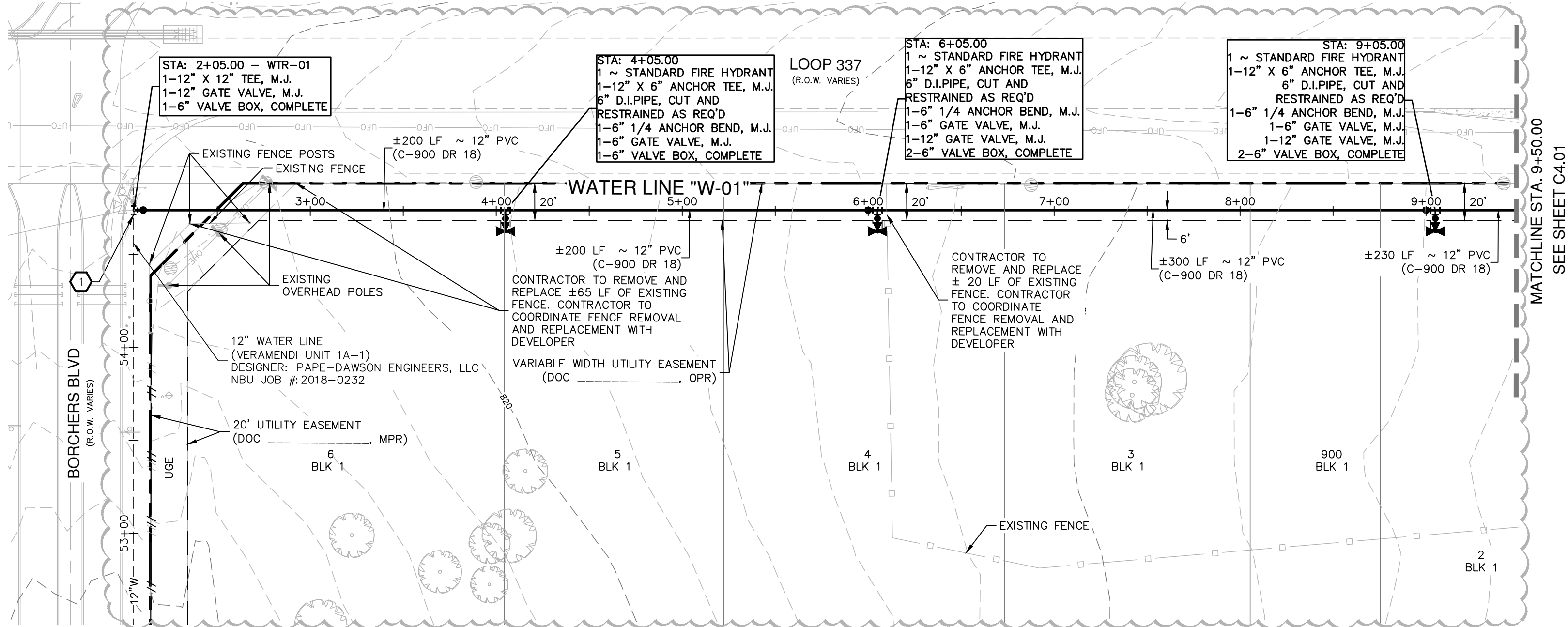
FOR CHLORINATION INJECTION  
2 - 1" CORPORATION STOP, C.C.XLP  
1 - 1" COPPER TUBING, CUT AS REQUIRED  
2 - 1" COMP. 1 1/4 COUPLING, CORP. STOP  
2 - 1 1/4" THD. SOLID CAPS, THR.

12" VALVE SHALL REMAIN CLOSED UNTIL NEW MAINS HAVE BEEN DISINFECTED BY CONTRACTOR AND ACCEPTED BY NBU

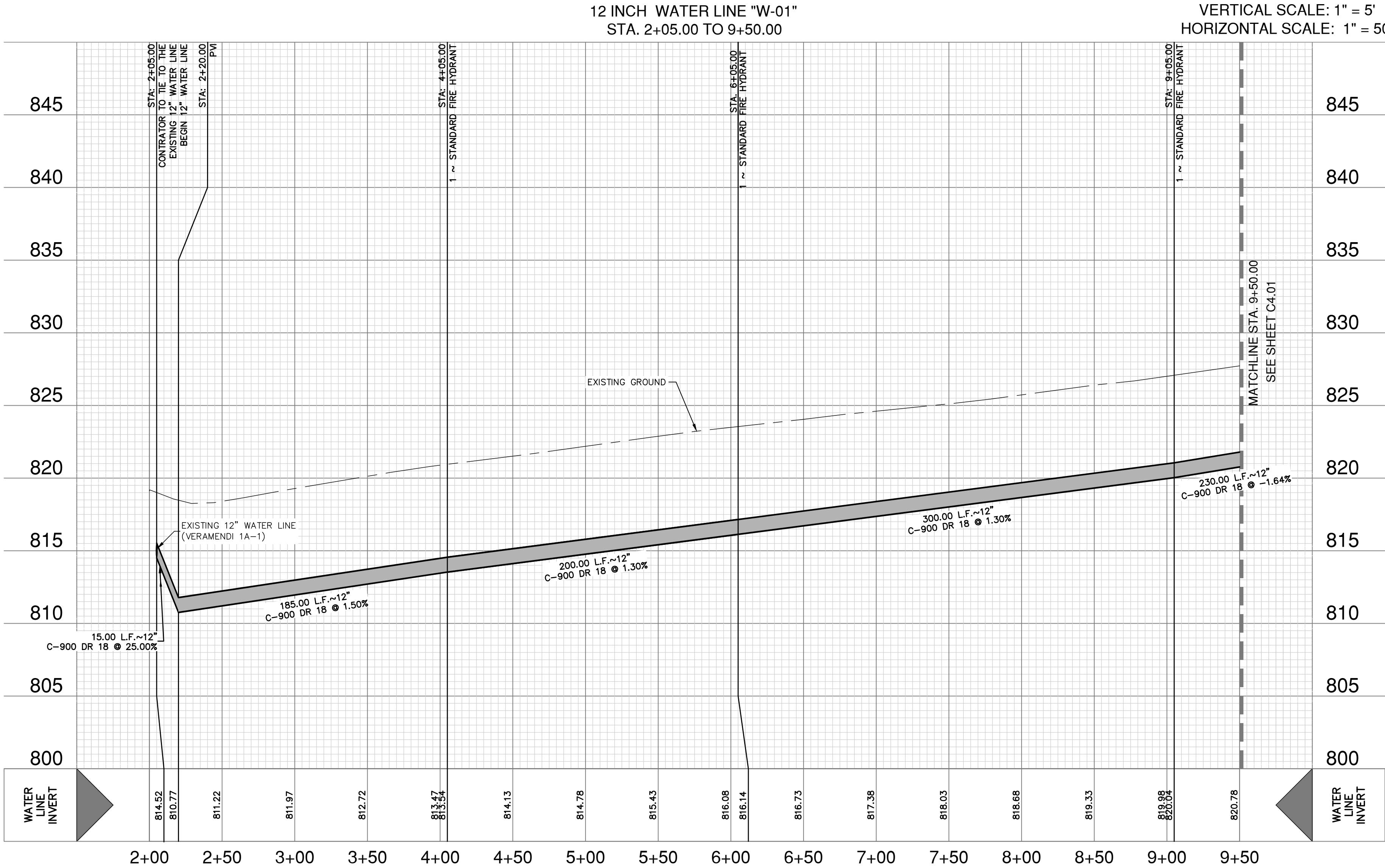
CONTRACTOR SHALL TIE PROPOSED 12" MAIN TO EXISTING 12" PVC C-900 DR 18 MAIN AND PROVIDE VERTICAL BENDS AS NEEDED AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY NBU

2" TEMPORARY BLOWOFF ASSEMBLY (SEE NBU STD DWG 253)

Pipe Restraint Length Calculations				
Source: EBAA Iron, Restraint Length Calculator v 7.1.2				
Assumptions:				
Soil Type	Safety Factor	Trench Type	Depth of Bury	Test Pressure
CH	1.5 to 1.0	5	4 ft	200 psi
Minimum Restraint Lengths in Feet				
12" Waterline				
Main				
Branch				
Horizontal Bends				
11.25 Degrees				
22.5 Degrees				
45 Degrees	17			
Misc. Fittings				
8"x6" Tee				
8"x8" Tee				
12"x6" Tee			59 (6" Branch)	
12"x8" Tee				
Dead End/ Gate Valve	110			
16"x12" Cross				
16"x12" Reducer				
Vertical Bends (assumes low side depth of 10)				
	High Side	Low Side		
11.25 Degrees	11	2		
22.5 Degrees	22	4		
45 Degrees	46	7		



WATER (NBU JOB NO. W-245133)		
ITEM	UNIT	QUANTITY
12" WATER LINE	LF	1480
LUes	EA	48
FIRE HYDRANT	EA	1
6" GATE VALVE	EA	1
12" GATE VALVE	EA	4
2" SERVICE LINE WITH 1.5" METER	EA	2
2" SERVICE LINE WITH 2" METER	EA	1



#### JOINT RESTRAINT NOTE:

CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESSSES 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. CONTRACTOR SHALL USE PIPE RESTRAINT LENGTH TABLE PROVIDED ON THIS SHEET. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE JOINT RESTRAINTS WITH THE DEVELOPER'S ENGINEER IF CHANGES OCCUR.

#### NOTE:

- ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS SHALL HAVE A REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (R/P) INSTALLED PRIOR TO PLACEMENT OF METER. ALL NEW FACILITIES ARE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THE LATEST NBU BACKFLOW POLICY.
- ALL GATE VALVES 16" AND SMALLER SHALL BE RESILIENT SEATED GATE VALVES.

#### CITY OF NEW BRAUNFELS NOTES

- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5- FEET IN DEPTH. 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.
- UTILITY TRENCH COMPACTION - 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.

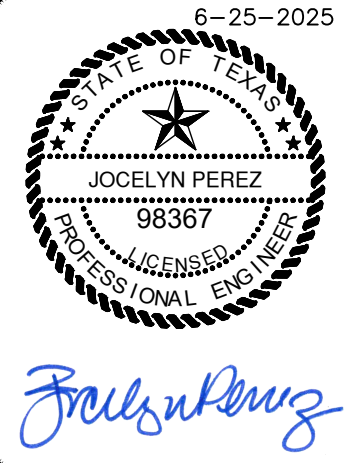
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NO.	REVISION	DATE
1	LOT LINES CHANGED	06/25/25



**PAPE-DAWSON ENGINEERS**  
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS  
12 INCH WATER LINE W-01 - PLAN & PROFILE  
STA. 2+05.00 TO 9+50.00

PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DRAWN	CP
CHECKED	TMM
SHEET	C4.00

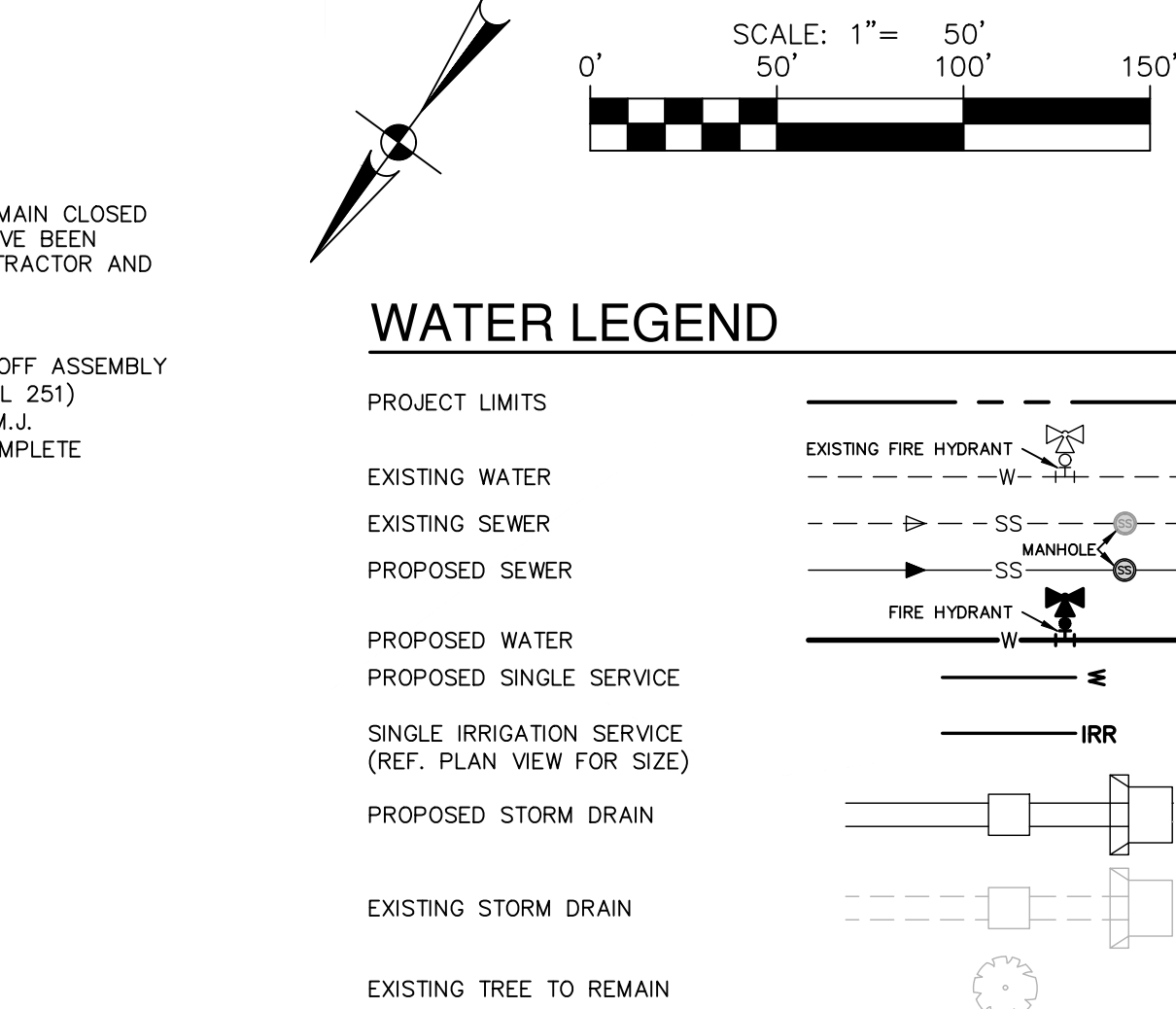
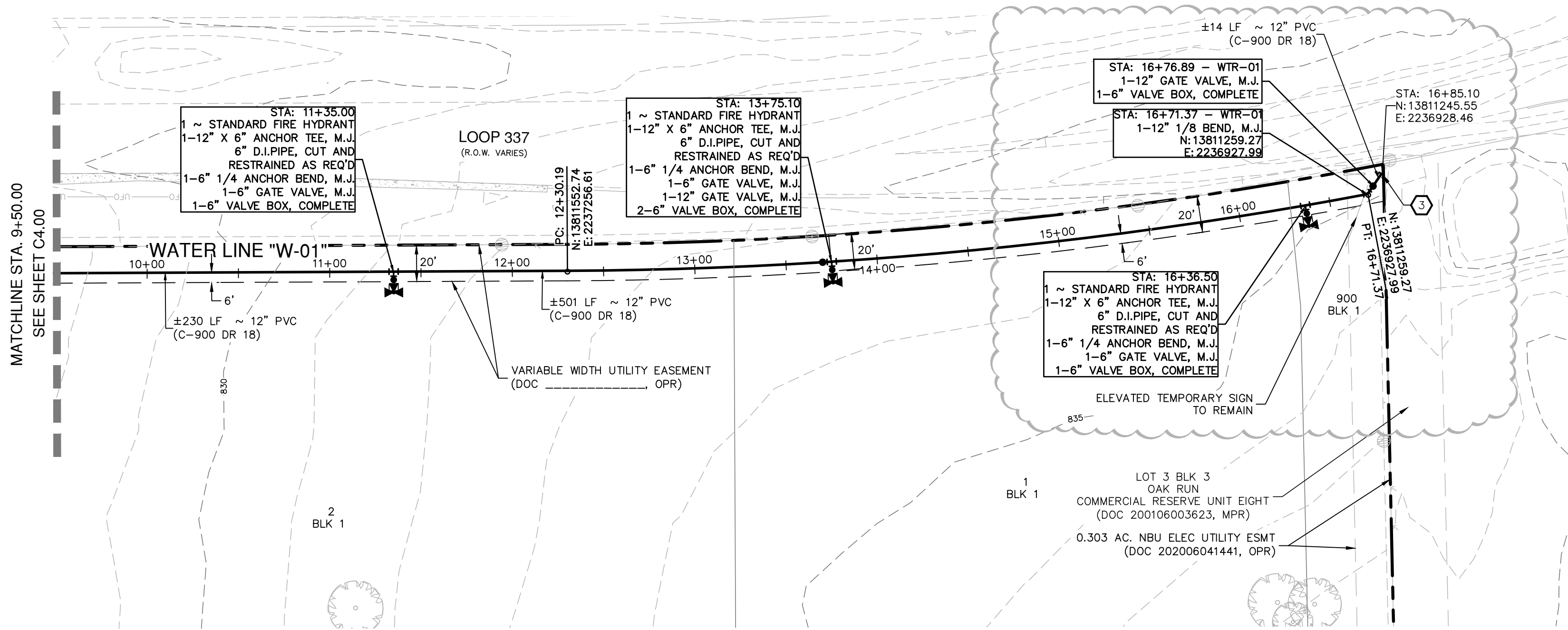


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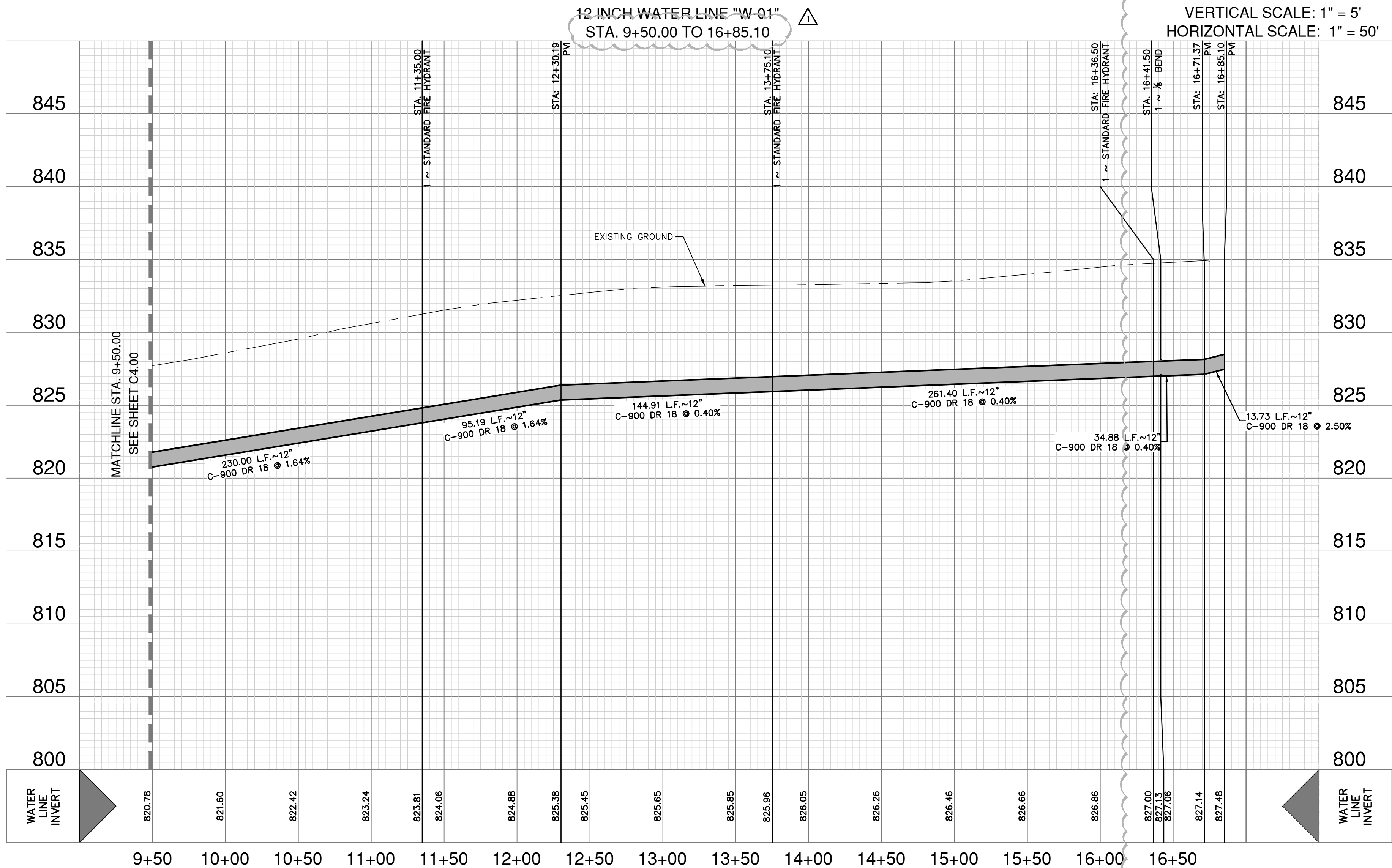
**NBU PRESSURE ZONE:**  
PROPOSED WATER MAIN IS WITHIN NBU PRESSURE ZONE 4.

**NOTE:**  
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

Pipe Restraint Length Calculations				
Source: EBAA Iron, Restraint Length Calculator v 7.1.2				
Assumptions:				
Soil Type	Safety Factor	Trench Type	Depth of Bury	Test Pressure
CH	1.5 to 1.0	5	4 ft	200 psi
Minimum Restraint Lengths in Feet				
12" Waterline				
Main		Branch		
Horizontal Bends				
11.25 Degrees				
22.5 Degrees				
45 Degrees	17			
Misc. Fittings				
8"x6" Tee				
8"x8" Tee				
12"x6" Tee		59 (6" Branch)		
12"x8" Tee				
Dead End/ Gate Valve	110			
16"x12" Cross				
16"x12" Reducer				
Vertical Bends (assumes low side depth of 10)				
	High Side	Low Side		
11.25 Degrees	11	2		
22.5 Degrees	22	4		
45 Degrees	46	7		



WATER (NBU JOB NO. W-245133)		
ITEM	UNIT	QUANTITY
12" WATER LINE	LF	1480
ELVES	EA	48
FIRE HYDRANT	EA	1
6" GATE VALVE	EA	1
12" GATE VALVE	EA	4
2" SERVICE LINE WITH 1.5" METER	EA	2
2" SERVICE LINE WITH 2" METER	EA	1



**JOINT RESTRAINT NOTE:**  
CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT PRESSURE BACKFLOW PREVENTION ASSEMBLY (R/P) INSTALLED PRIOR TO PLACEMENT OF METER. ALL NEW FACILITIES ARE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THE LATEST NBU BACKFLOW POLICY.

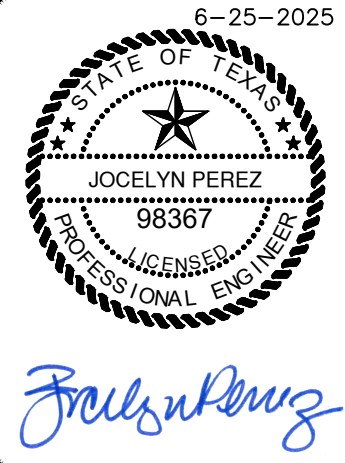
**NOTE:**  
1. ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS SHALL HAVE A REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (R/P) INSTALLED PRIOR TO PLACEMENT OF METER. ALL NEW FACILITIES ARE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THE LATEST NBU BACKFLOW POLICY.  
2. ALL GATE VALVES 16" AND SMALLER SHALL BE RESILIENT SEATED GATE VALVES.

**CITY OF NEW BRAUNFELS NOTES**  
1. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.  
2. ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.  
3. THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5- FEET IN DEPTH. 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.  
4. UTILITY TRENCH COMPACTION - 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.

**CAUTION!!!**  
CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING 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 "TEXAS 811" 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.

**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 ANY 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY 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.

DATE	06/25/25
REVISION	1 WATER LINE EXTENDED
NO.	1



**PAPE-DAWSON ENGINEERS**  
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5693  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS  
12 INCH WATER LINE W-01 - PLAN & PROFILE  
STA. 9+50.00 TO 16+85.10

JOB NO.	30001-81
DATE	JUNE 2025
DRAWN	CP
CHECKED	TMM
SHEET	C4.01







Date: March 13, 2024, 1:25 PM -- User: ID: carcher  
File: P:\300\01\81\Design\Civil\WNT--30001--81.dwg

General Notes

General Notes:

- All materials and construction procedures within the scope of the project shall be approved by New Braunfels Utilities and comply with the current "New Braunfels Utilities Water Systems Connection/Construction Policy".
- Contractor shall not proceed with any pipe installation work until they obtain a copy of the plans from the Consultant or Engineer and notify NBU Water Systems Engineering at 830-608-8971 with at least two (2) working days (48 hours) notice. **WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A NOTICE TO PROCEED FROM NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.**
- The Developer dedicates the water / wastewater mains upon completion by the Contractor and acceptance by the New Braunfels Utilities Water System. NBU will own and maintain said water / wastewater mains which are located within platted utility easements or public ROW of proposed developments. (As applicable).
- Contractor agrees to assume sole and complete responsibility for job site conditions during the construction of the project, including safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours. The contractor shall defend, indemnify and hold the owners and the engineer and his employees, partners, officers, directors, or consultants harmless from any and all liability, real or alleged, in connection with the performance of the work on this project, excepting from liability arising from sole negligence of the owner or engineer, engineer's directors, officers, employees, or consultants.
- Contractor to contact the engineer-of-record (EOR) for any field changes. Any revisions or changes to the approved construction plans will require additional approval by NBU in writing.
- 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.
- Contractor shall be responsible for restoring to its original or better condition, any damages done to existing fences, curbs, streets, driveways, landscaping and structures, and existing utilities (not adjusted on plans). Cost of Restorations, if any, shall be the contractor's entire expense.
- The Contractor shall avoid cutting roots larger than one inch in diameter when excavating near existing trees. Excavation in vicinity of trees shall proceed with caution.
- Contractor shall procure all permits and licenses, pay all charges, fees and taxes and give all notices necessary and incidental to the due and lawful prosecution of the work.

Appendix/Appendix B

Approved 12/9/03; Rev 3/31/11

Page 1 of 3

General Notes

- Thrust blocks will not be allowed on the system without special approval. Joints will be restrained with restraining systems approved by NBU and restraint length shall be submitted to NBU at the time of plan submittal. Water jutting the backfill within a street will not be permitted. Wastewater trenches subject to traffic shall conform to NBU Connection and Construction Policy Manual.
- Where the minimum 9 foot separation distance between wastewater lines and water lines / mains cannot be maintained, the installation of wastewater lines shall be in strict accordance with 30 TAC 217.
- 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 site(s) 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 the 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.
- Utility Trench Compaction with street R.O.W.
  - All utility trench compaction test within the street pavement section shall be the responsibility of the developer's Geo-technical engineer.
  - Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose.
  - Each layer of material shall be compacted as specified and tested for density and moisture in accordance with Text Methods TEX-113-E, TEX-114-E, TEX-115-E.
  - The number and location of required tests shall be determined by the Geo-technical Engineer and approved by the City of New Braunfels Street Inspector.
  - Upon completion of testing the Geo-technical 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.

Appendix/Appendix B

Approved 12/9/03; Rev 3/31/11

Page 3 of 3

Water Notes

WATER NOTES:

- All water mains shall be AWWA C900 (class 150 or greater).
- Water services shall be single 1" copper tubing.
- Water line is to be constructed in accordance with the NBU Systems Connection & Construction Policy.
- Water main shall have a minimum of 42 inches of cover, otherwise concrete encasement will be required.
- Each unit in a duplex, triplex, fourplex, or condominium shall be provided with an individual water meter. A master meter can be considered for separate buildings, however, those buildings must be plumbed to allow separate meters for future consideration.
- Contractor will keep the area on top of and around the water meter box free of all objects and debris.
- Initial backfill of water lines shall be manufactured sand or pea gravel as per NBU Systems Connection & Construction Policy.
- Secondary backfill of water lines shall generally consist of material removed from the trench and shall be free from brush, debris and trash or stones having any dimension larger than 6" inches at the largest dimension. Hydrostatic testing is done from valve to valve.
- No meter boxes to be set in driveways or sidewalks. Any meter boxes set in driveways or sidewalks will be relocated at contractor's and/or developer's expense.
- Meter boxes must be set at the proposed grade. Any meter boxes that are not set at the final grade will be adjusted at contractor's and/or developer's expense.
- Acceptable meter boxes are D13-BAMR and D15-BAMR. New residential lots are required to use the D15-BAMR meter boxes (double AMR). Commercial lots should choose which box applies to the domestic and/or irrigation meter layout.
- Thrust blocks will not be allowed on the system without special approval. Joints will be restrained with restraining systems approved by NBU and restraint length shall be submitted to NBU at the time of plan submittal.
- Contractor shall place tracer wire on top of the water mains. Tracer wire should run from valve to valve and exit at the valve box. The tracer wire should be attached to the top of the pipe using tape. Excess wire should be left within valve boxes to be placed within lid of cover.
- Water quality shall be protected with appropriate backflow prevention assemblies installed on all irrigation systems, fire suppression systems and multi-unit complexes along with multi-level properties on the domestic meter containment. NBU can assist with the decision on appropriate backflow assemblies on a case by case basis. Contact NBU backflow prevention specialist for more details. Email questions to [crossconnection@nbutexas.com](mailto:crossconnection@nbutexas.com)
- All backflow prevention assemblies shall be tested upon installation and report sent to NBU via the online tracking system, contact NBU backflow prevention specialist for more details. Email questions to [crossconnection@nbutexas.com](mailto:crossconnection@nbutexas.com)
- All residential and commercial properties shall have a Customer Service Inspection certificate (CSI Inspection) completed upon completion of the building or home structure. Contact NBU backflow prevention specialist for more details. Email questions to [crossconnection@nbutexas.com](mailto:crossconnection@nbutexas.com)

Appendix/Appendix B

Approved 12/9/03; Rev 5/16/19

Page 2 of 2

General Notes

- No extra payment shall be allowed for work called for on the plans but not included on the bid schedule. This incidental work will be required and shall be included under the pay item to which it relates.
- Contractor is responsible for removal of all waste materials upon project completion. The contractor shall not permanently place any waste materials in the 100-year flood plain without first obtaining an approved flood plain development permit.
- The contractor shall not place any materials on the recharge zone of the Edwards aquifer without an approved water pollution abatement plan from the TCEQ 31 TAC 313.4 and 31 TAC 313.9.
- Barricades and warning signs shall conform to the "Texas manual on uniform traffic control devices" and shall be located to provide maximum protection to the public as well as construction personnel and equipment while providing continuous traffic flow at all times during construction. The contractor is responsible for maintaining all devices during construction.
- Contractor is required to verify project elevations. The term "match existing" shall be understood to signify both horizontal and vertical alignment.
- The location of utilities, either underground or overhead, shown within the right of way are approximate and shall be verified by the contractor before beginning construction operations.
- OSHA regulations prohibit operations that will bring persons or equipment within 10 feet of an energized line. Where workmen and/or equipment have to work close to an energized electrical line, the contractor shall notify the electrical power company involved and make whatever adjustments necessary to ensure the safety of those workmen.
- It shall be the contractor's responsibility to locate utility service lines as required for construction. Contractors shall call the One Call System for water/wastewater location.
- Due to federal regulations Title 49, part 192 (8), Gas companies must maintain access to gas valves at all times. The contractor must protect and work around any gas valves that are in the project area.
- The contractor is fully responsible for the traffic control and will be responsible for furnishing all traffic control devices, and flaggers. The construction methods shall be conducted to provide the least possible interference to traffic so as to permit the continuous movement of the traffic in one direction at all times. The contractor shall clean up and remove from the work area any loose material resulting from contract operations at the end of each workday.
- Prior to ordering materials to be used in construction, contractor shall provide the engineer with four (4) copies of the source, type, gradation, material specification data and / or shop drawings, as applicable, to satisfy the requirements of the following items and all material items referred to in these listed items:
  - Water mains and services
  - Wastewater mains and services

Appendix/Appendix B

Approved 12/9/03; Rev 3/31/11

Page 2 of 3

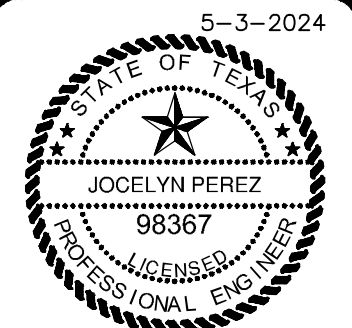
FLOODPLAIN NOTE

- NO PORTION OF THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48091C0435F EFFECTIVE DATE 9/2/2009.

CITY OF NEW BRAUNFELS NOTES

- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5'-FEET IN DEPTH. 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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DATE									
NO.	REVISION								



*Jocelyn Perez*

**PAPE-DAWSON**  
**ENGINEERS**

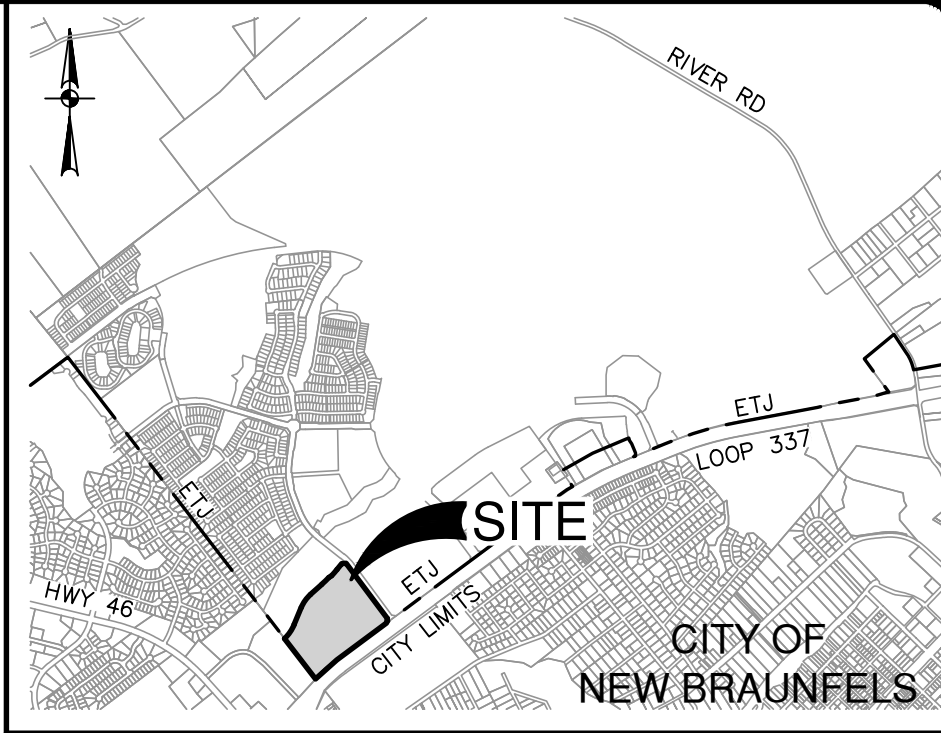
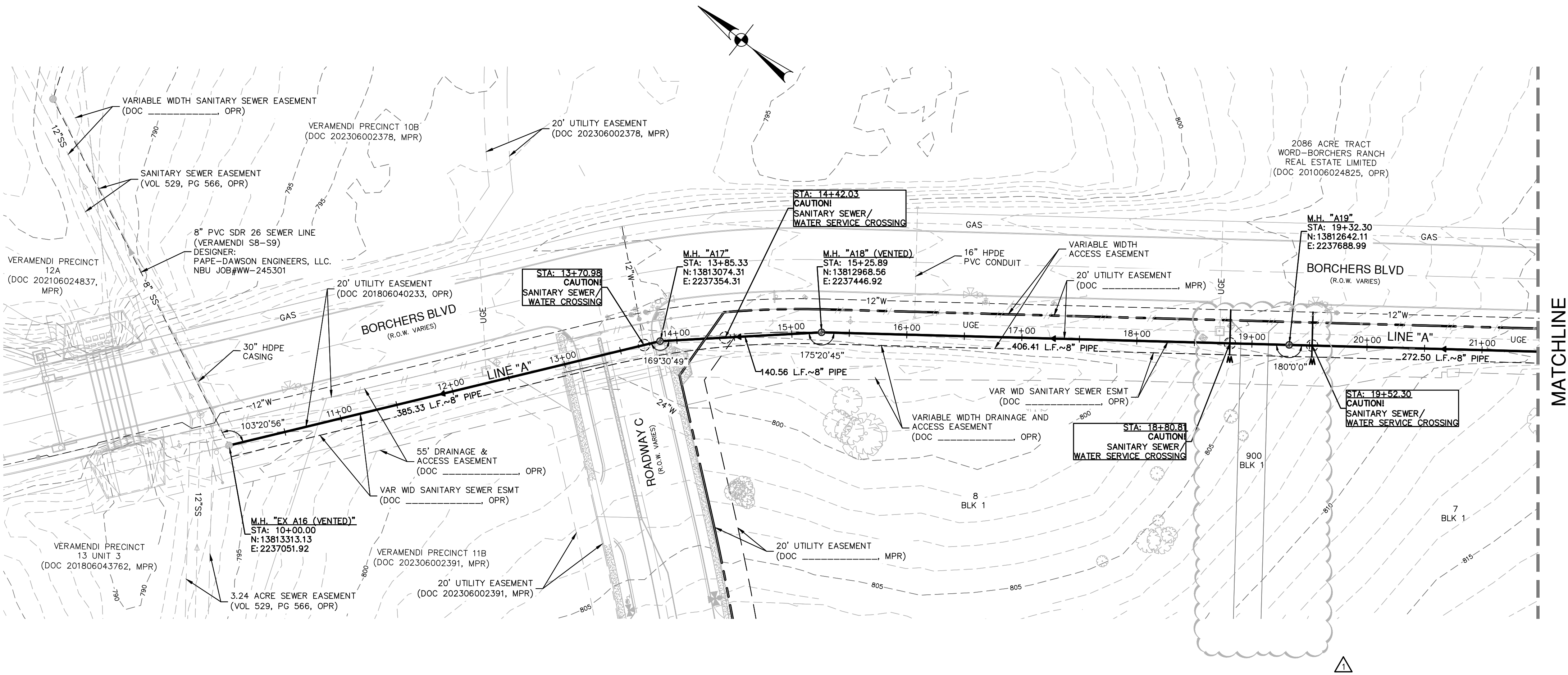
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS

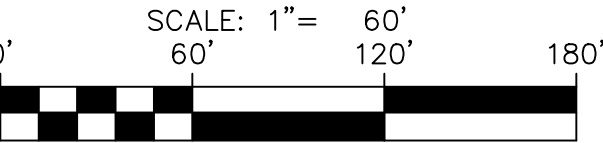
**WATER DISTRIBUTION NOTES**

PLAT NO.	
JOB NO.	30001-81
DATE	MAY 2024
DESIGNER	CP
CHECKED	<input checked="" type="checkbox"/> DRAWN
SHEET	C4.11

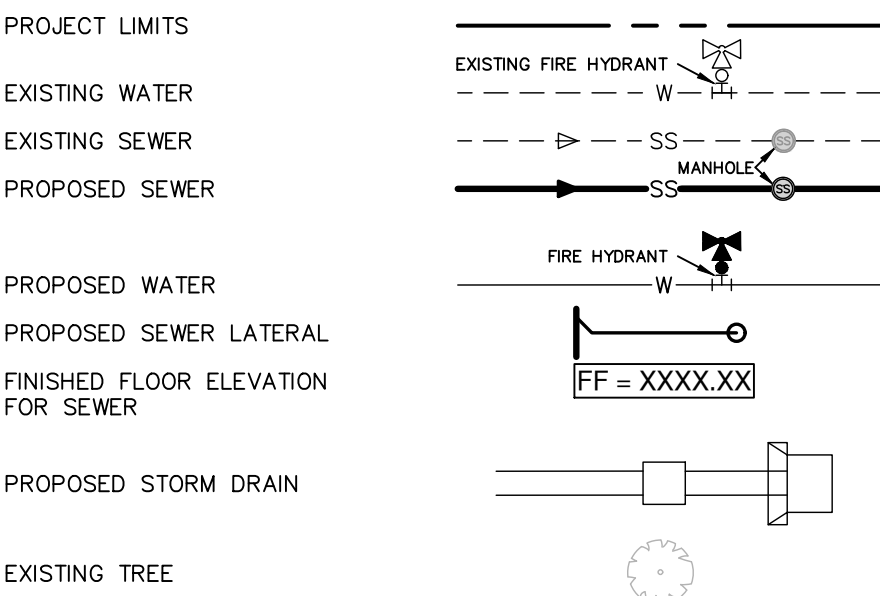




LOCATION MAP  
NOT-TO-SCALE



### SEWER LEGEND



### FLOODPLAIN NOTE

- NO PORTION OF ANY LOT ON THIS PROJECT IS WITHIN AN INDICATED SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FEMA FIRM MAP NO. 48187C0095F EFFECTIVE DATE 9/2/2009.

### CITY OF NEW BRAUNFELS NOTES

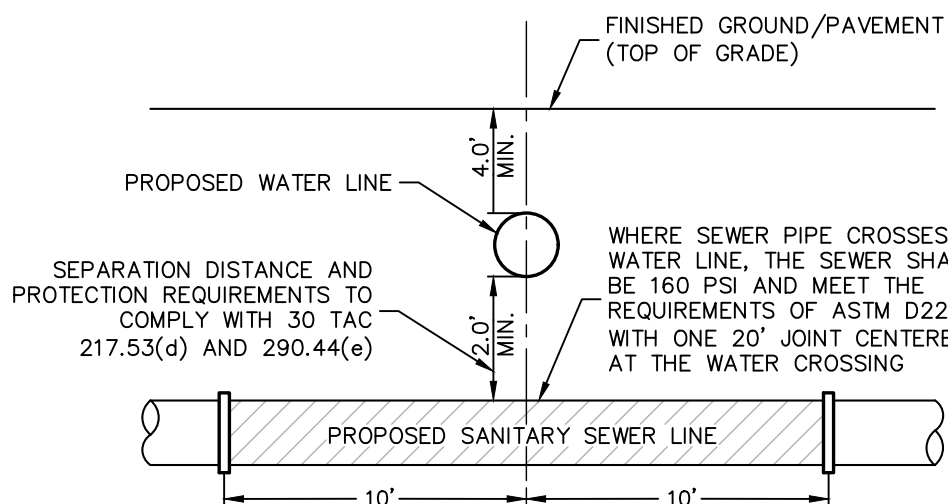
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### TRENCH EXCAVATION SAFETY PROTECTION:

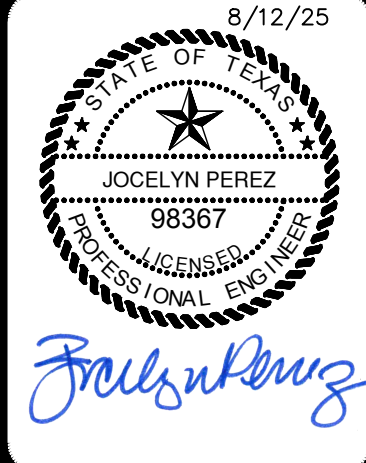
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TYPICAL SANITARY  
SEWER/WATER CROSSING DETAIL  
NOT-TO-SCALE

WASTEWATER (NBU JOB NO. WW-245134)		
ITEM	UNIT	QUANTITY
8" SANITARY SEWER PIPE	LF	2,361
48" MANHOLES	EA	147
8" SANITARY SEWER LATERALS	LF	464

NO.	REVISION	DATE
1	SANITARY SEWER CHANGES	06/25/25



**PAPE-DAWSON  
ENGINEERS**  
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #1008800

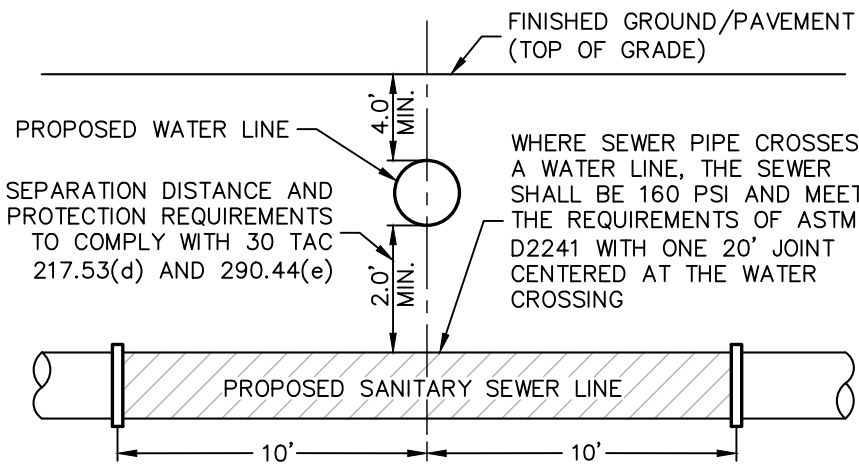
**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS  
OVERALL SANITARY SEWER PLAN

PLAT NO.	30001-81
DATE	AUGUST 2025
DRAWN	CP
CHECKED	TMM
DRAWN	CP
SHEET	C5.00

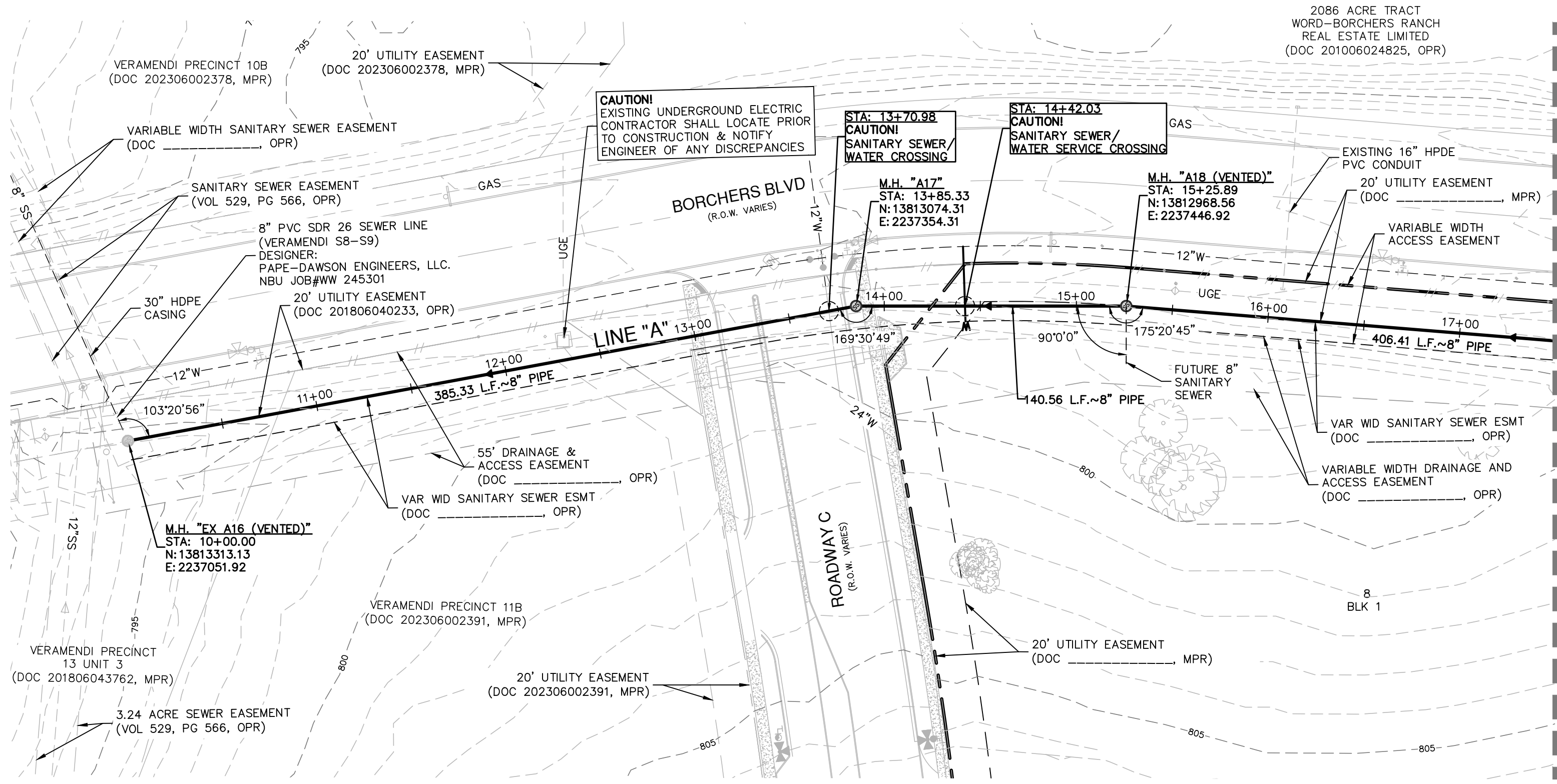


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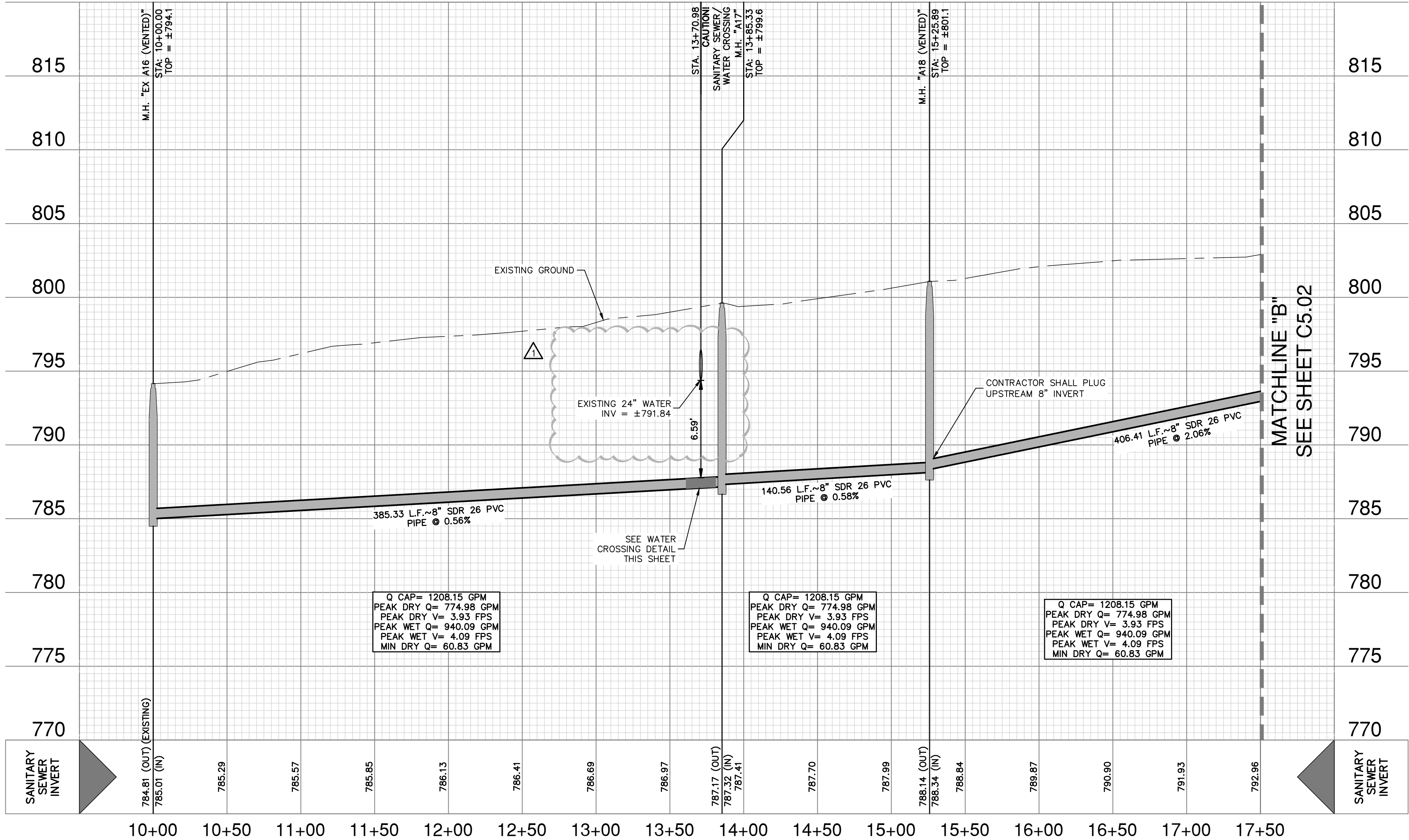
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL  
NOT-TO-SCALE



MATCHLINE "A"  
SEE SHEET C5.02

SANITARY SEWER LINE "A"  
STA. 10+00.00 TO 17+50.00

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 50'



MATCHLINE "B"  
SEE SHEET C5.02

NOTES

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- NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
- WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH NBU'S WATER CONNECTION POLICY IN THE VICINITY OF WATER MAINS. (SEE SEWER NOTES SHEET C5.20)
- CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 2" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT. CONTRACTOR SHALL ENSURE THAT MANHOLES IN PAVED AREAS ARE SET TO MATCH TOP OF FINISHED GRADE.
- ALL SEWER PIPES SHALL BE 8" PVC (SDR 26), UNLESS OTHERWISE NOTED.
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- SEE THIS SHEET FOR TYPICAL SANITARY SEWER/WATER CROSSING DETAIL.
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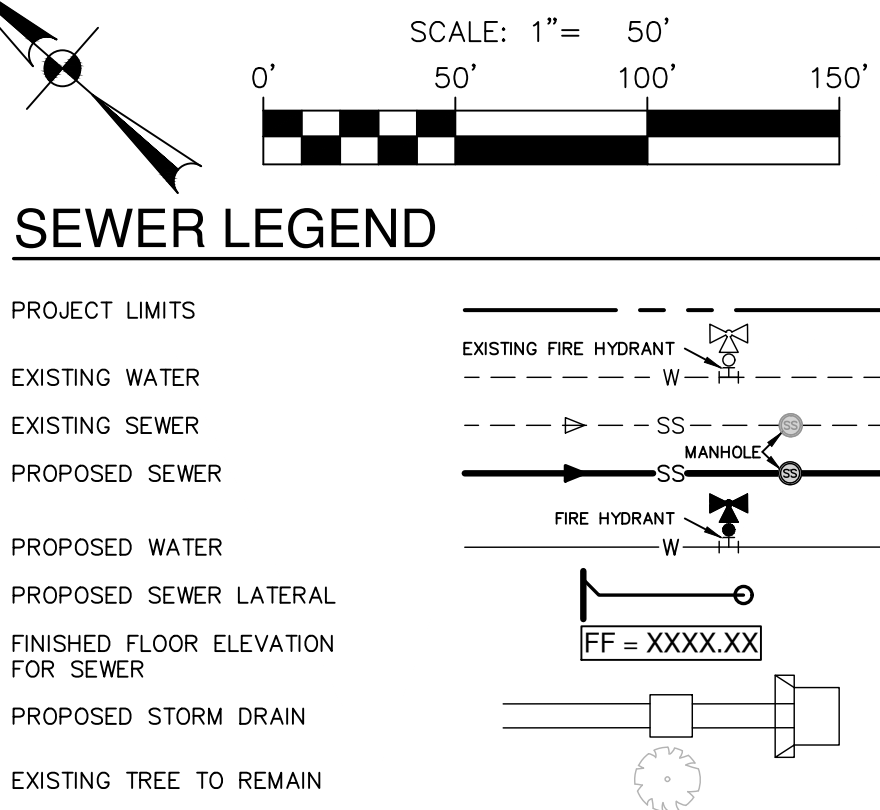
NOTE:  
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT.

CAUTION!!

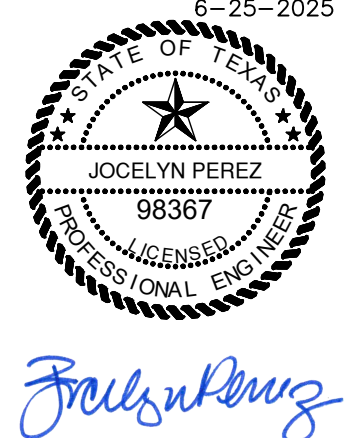
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DATE	06/25/25
REVISION	1 CHANGED WATER PIPE
NO.	



**PAPE-DAWSON ENGINEERS**  
1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

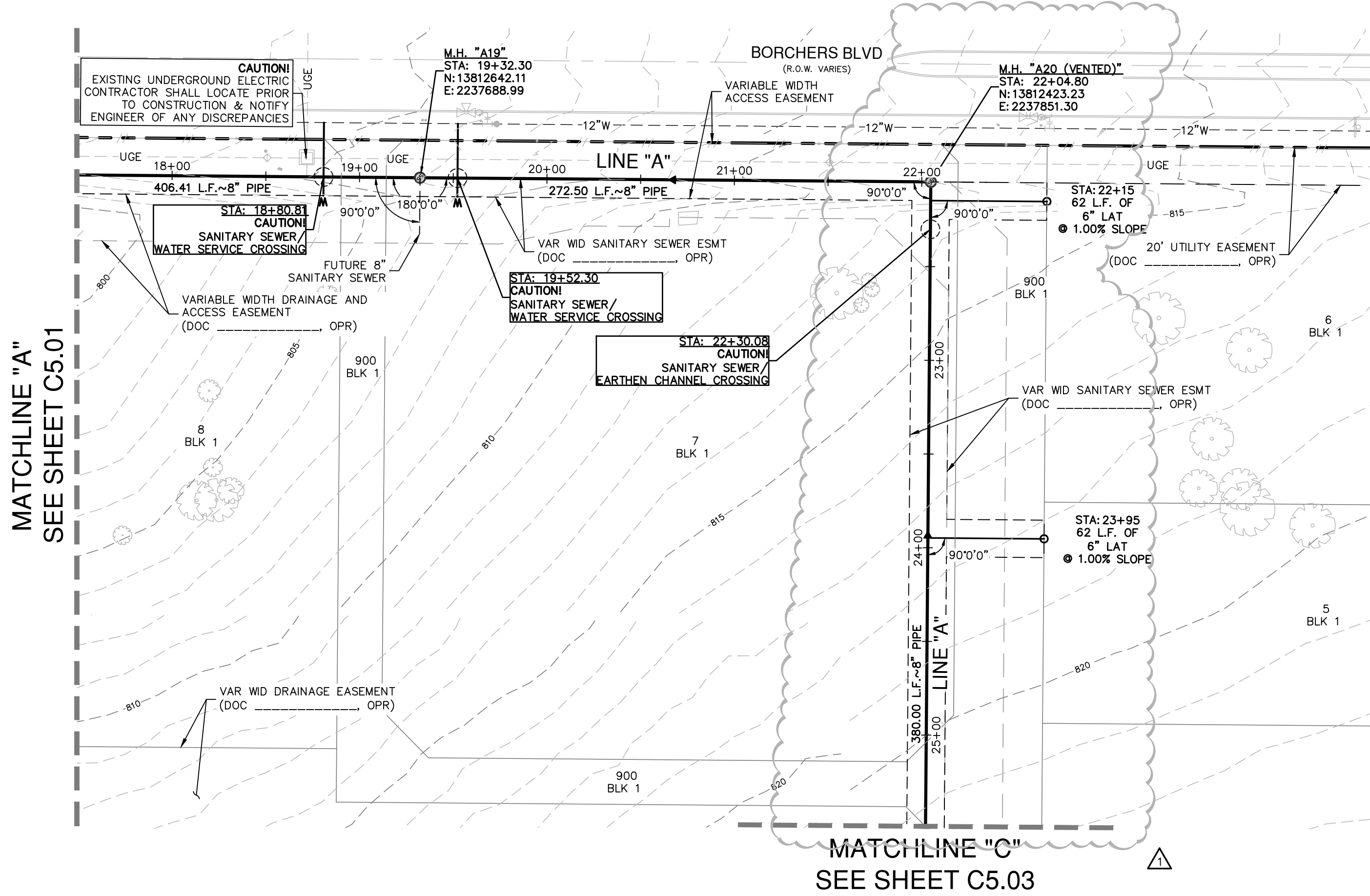
**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS  
**SANITARY SEWER LINE A - PLAN & PROFILE**  
STA. 10+00.00 TO 17+50.00

PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DRAWN	CP
CHECKED	TMM
DRAWN	CP
SHEET	C5.01



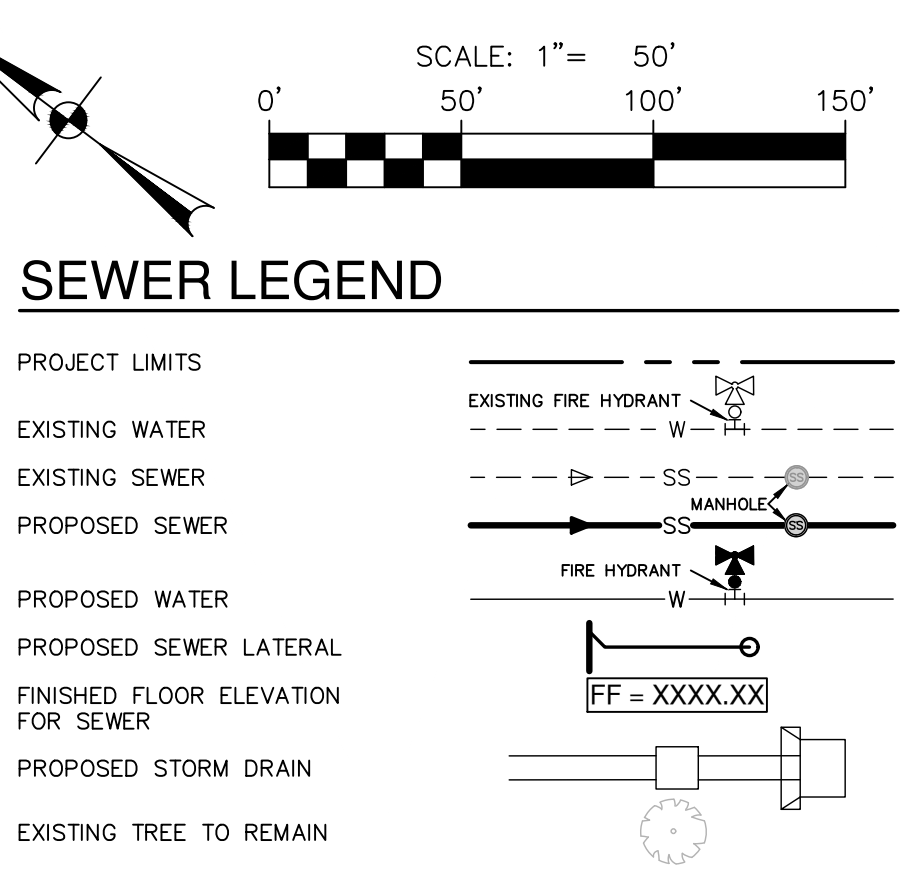
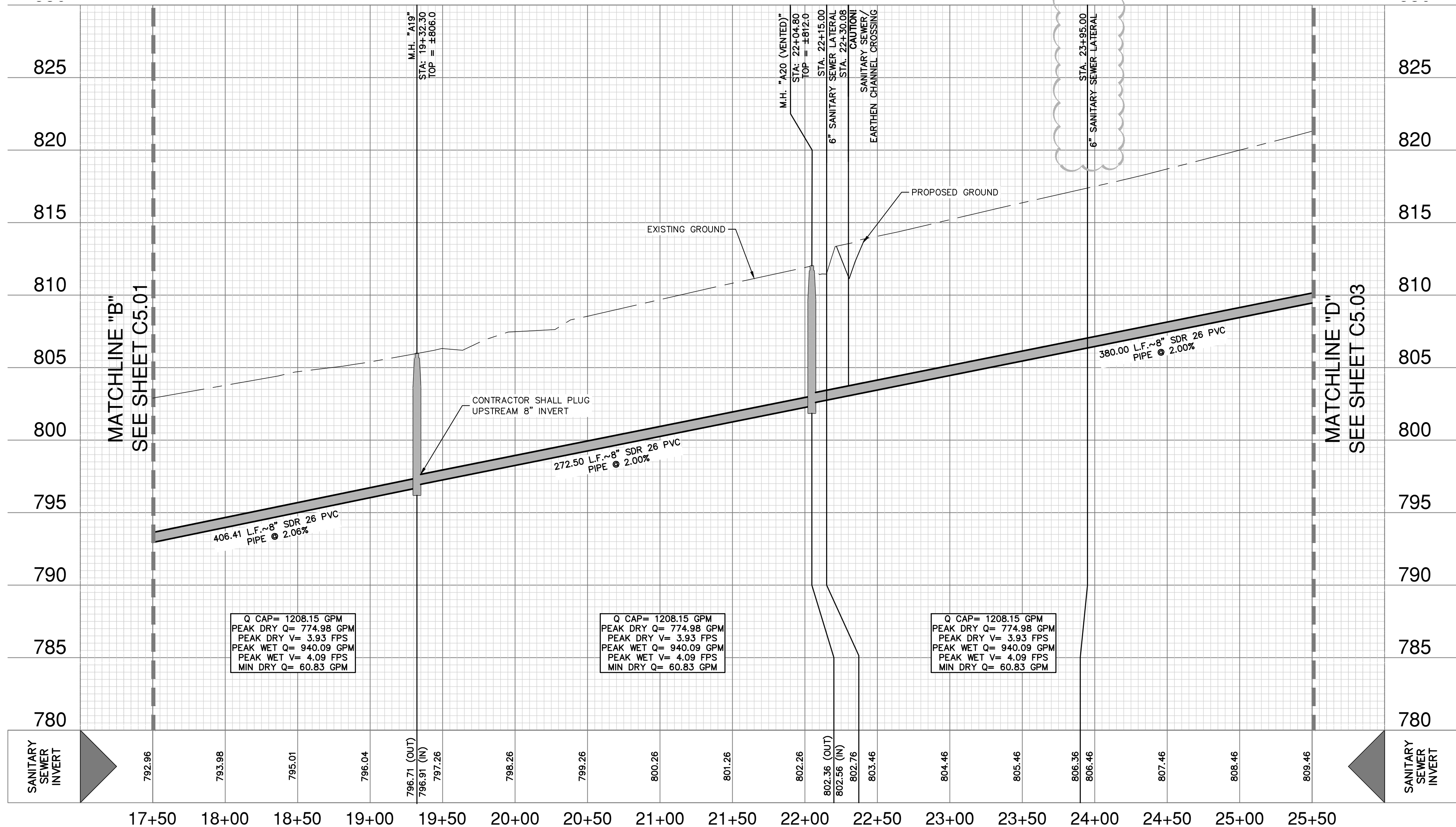
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SANITARY SEWER LINE "A"  
STA. 17+50.00 TO 25+50.00

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 50'



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DATE	REVISION	NO.	DESCRIPTION
06/25/25	1		SANITARY SEWER CHANGES

6-25-2025

JOCelyn PEREZ  
98367  
PROFESSIONAL ENGINEER

*Jocelyn Perez*

**PAPE-DAWSON**  
**ENGINEERS**

1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS

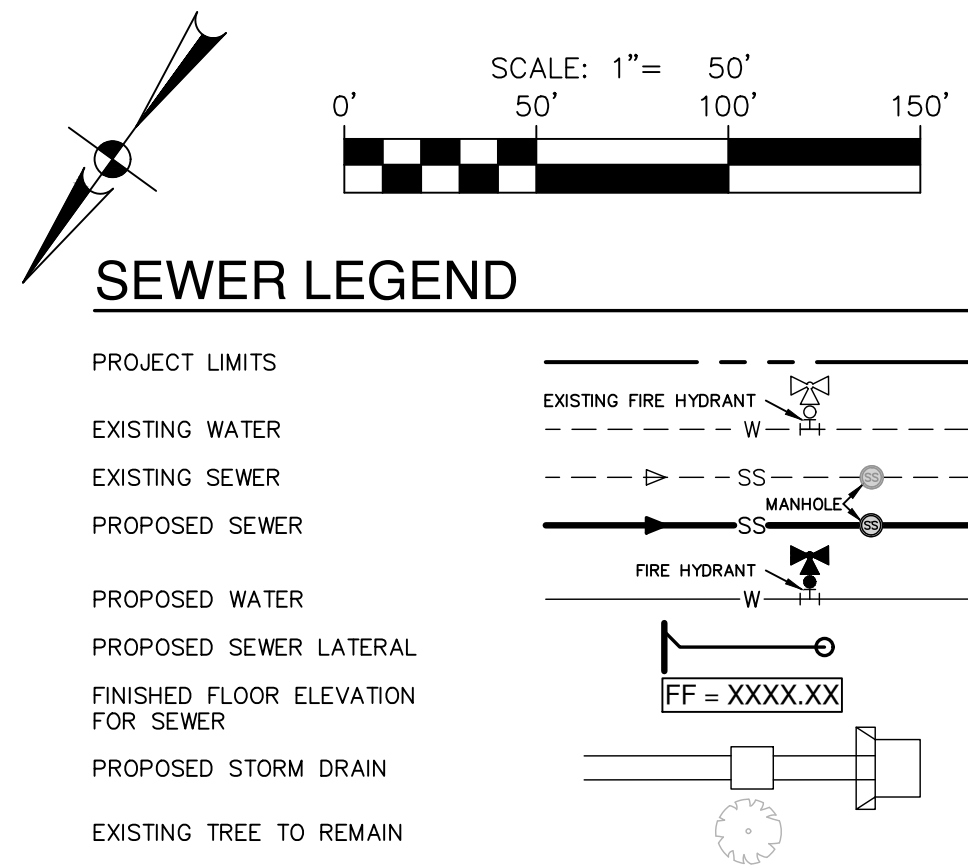
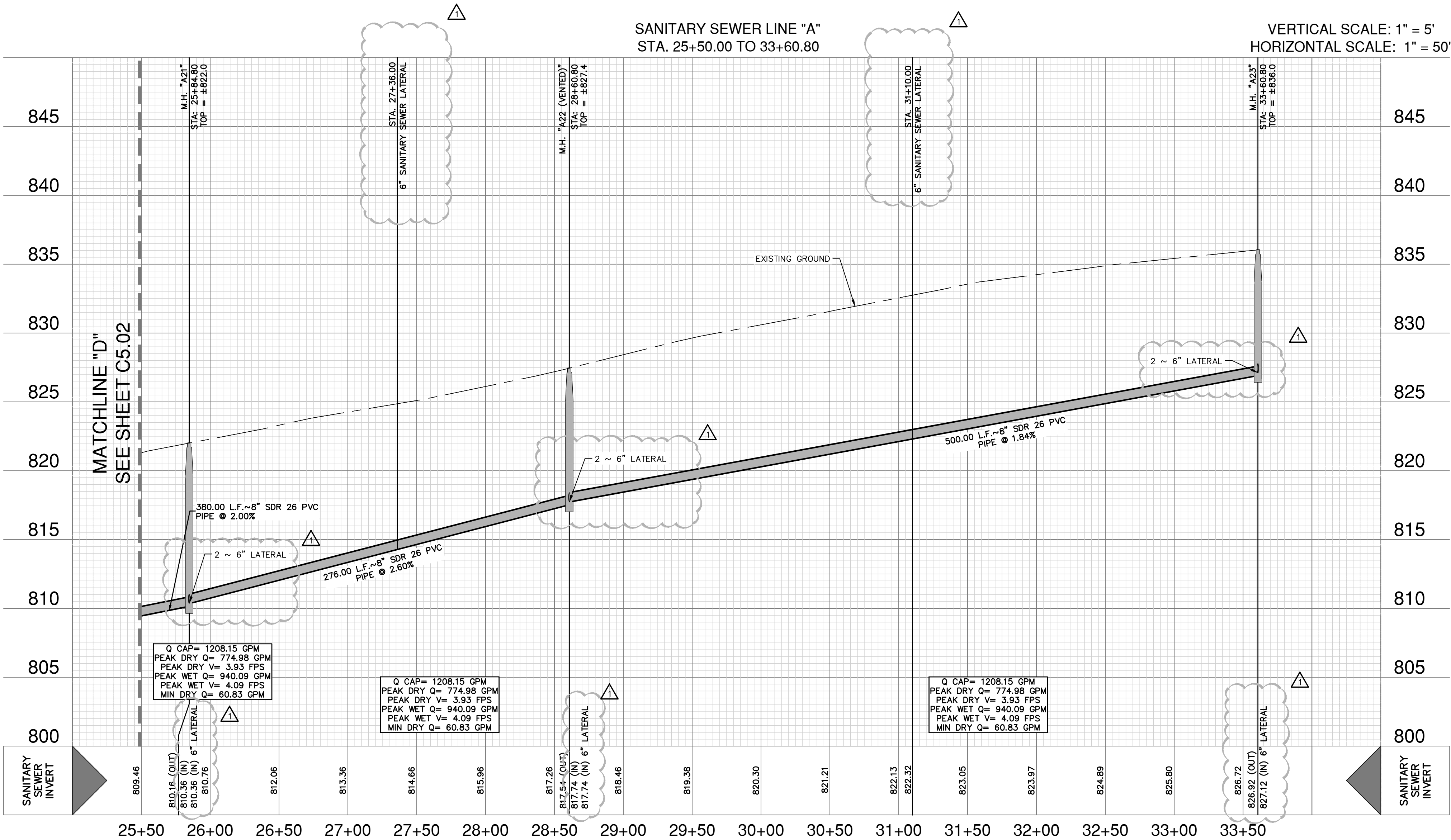
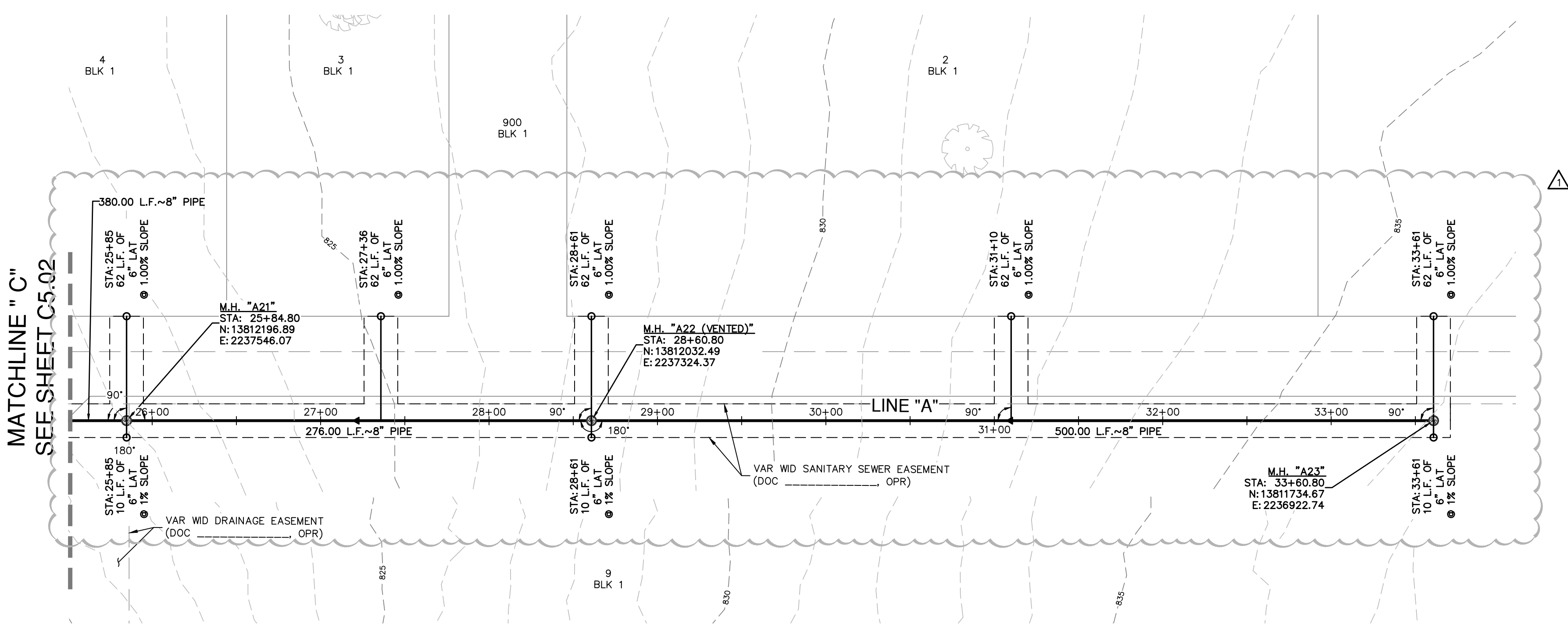
**SANITARY SEWER LINE A - PLAN & PROFILE**  
STA. 17+50.00 TO 25+50.00

PLAT NO.	JOB NO.	DATE	DESIGNER	CHECKED	DRAWN	SHEET
	30001-81	JUNE 2025	CP	TMM	CP	C5.02



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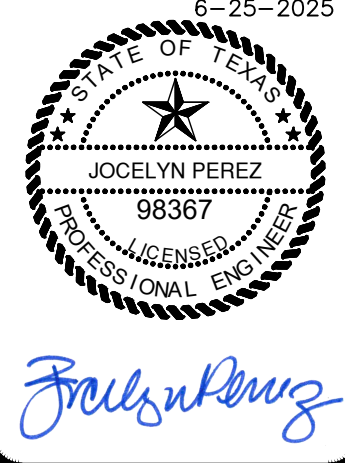
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DATE	06/25/25
REVISION	
NO.	1
DESCRIPTION	SANITARY SEWER CHANGES



VERAMENDI PRECINCT 11A  
NEW BRAUNFELS, TEXAS  
SANITARY SEWER LINE A - PLAN & PROFILE  
STA. 25+50.00 TO 33+60.80

PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DRAWN	CP
CHECKED	TMM
SHEET	C5.03







Texas Commission on Environmental Quality  
Organized Sewage Collection System  
General Construction Notes

Edwards Aquifer Protection Program Construction Notes – Legal Disclaimer

The following listed "construction notes" are intended to be advisory in nature only and do not constitute an approval or conditional approval by the Executive Director, nor do they constitute a comprehensive listing of rules or conditions to be followed during construction. Further actions may be required to achieve compliance with TCEQ regulations found in Title 30, Texas Administrative Code, Chapters 213 and 217, as well as local ordinances and regulations providing for the protection of water quality. Additionally, nothing contained in the following listed "construction notes" restricts the powers of the Executive Director, the commission or any other governmental entity to prevent, correct, or curtail activities that result or may result in pollution of the Edwards Aquifer or hydrologically connected surface waters. The holder of any Edwards Aquifer Protection Plan containing "construction notes" is still responsible for compliance with Title 30, Texas Administrative Code, Chapters 213 and any other applicable TCEQ regulation, as well as all conditions of an Edwards Aquifer Protection Plan through all phases of plan implementation. Failure to comply with any condition of the Executive Director's approval, whether or not in contradiction of any "construction notes," is a violation of TCEQ regulations and any violation is subject to administrative rules, orders, and penalties as provided under Title 30, Texas Administrative Code § 213.10 (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. The following listed "construction notes" in no way represent an approved exception by the Executive Director to any part of Title 30 Texas Administrative Code, Chapters 213 and 217, or any other TCEQ applicable regulation.

- This Organized Sewage Collection System (SCS) must be constructed in accordance with 30 Texas Administrative Code (TAC) §213.5(c), the Texas Commission on Environmental Quality's (TCEQ) Edwards Aquifer Rules and any local government standard specifications.
- 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.
- 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.
- 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.
- Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) 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.
- 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 geologist's assessment of the location and extent of the feature discovered must be reported to the 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

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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.

- Sewer lines located within or crossing the 5-year floodplain of a drainage way will be protected from inundation and stream 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.
  - Blasting procedures for protection of existing sewer lines and other utilities will be in accordance with the National Fire Protection Association criteria. Sand is not allowed as bedding or backfill in trenches that have been blasted. If any existing sewer lines are damaged, the lines must be repaired and retested.
  - 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 commission's rules concerning manholes and sewer line/manhole inverts described in 30 TAC §217.55 are included on Plan Sheet C5.10.

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.

- 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).
- 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:

If pipe flexure is proposed, the following method of preventing deflection of the joint must be used:

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.

- 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 vyes 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 not furnished with stub outs must be connected using a manufactured saddle and in accordance with accepted plumbing techniques.

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If no stub-out is present an alternate method of joining laterals is shown in the detail on Plan Sheet \_\_\_ of \_\_\_. (For potential future laterals).

The private service lateral stub-outs must be installed as shown on the plan and profile sheets on Plan Sheet \_\_\_ of \_\_\_, and marked after backfilling as shown in the detail on Plan Sheet \_\_\_ of \_\_\_.

- 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 IA, IB, II or III. Rigid pipe bedding must comply with the requirements of ASTM C 12 (ANSI A 106.2) classes A, B or C.
- 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).

- All sewer lines must be tested in accordance with 30 TAC §217.57. The engineer must retain copies of all test results which must be made available to the executive director upon request. The engineer must certify in writing that all wastewater lines have passed all required testing to the appropriate regional office within 30 days of test completion and prior to use of the new collection system. Testing method will be:
  - For a collection system pipe that will transport wastewater by gravity flow, the design must specify an infiltration and exfiltration test or a low-pressure air test. A test must conform to the following requirements:
    - Low Pressure Air Test**
      - A low pressure air test must follow the procedures described in American Society For Testing And Materials (ASTM) C-828, ASTM C-924, or ASTM F-1417 or other procedure approved by the executive director, except as to testing times as required in Table C.3 in subparagraph (C) of this paragraph or Equation C.3 in subparagraph (B)(i) of this paragraph.
      - For sections of collection system pipe less than 36 inch average inside diameter, the following procedure must apply, unless a pipe is to be tested as required by paragraph (2) of this subsection.
        - A pipe must be pressurized to 3.5 pounds per square inch (psi) greater than the pressure exerted by groundwater above the pipe.
        - Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

$$\text{Equation C.3} \quad T = \frac{0.085 \times D \times K}{Q}$$

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

- Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 psi gauge to 2.5 psi gauge is computed from the following equation:

$$\text{Equation C.3} \quad T = \frac{0.085 \times D \times K}{Q}$$

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

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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

- 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)	Maximum Length for Minimum Time (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

- An owner may stop a test if no pressure loss has occurred during the first 25% of the calculated testing time.
- 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.
- 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.
- A testing procedure for pipe with an inside diameter greater than 33 inches must be approved by the executive director.
- Infiltration/Exfiltration Test**
  - 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.
  - An owner shall use an infiltration test in lieu of an exfiltration test when pipes are installed below the groundwater level.
  - 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.
  - 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.
  - If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, an owner shall undertake remedial action in order to reduce

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- The infiltration or exfiltration to an amount within the limits specified. An owner shall retest a pipe following a remediation action.
- If a gravity collection pipe is composed of flexible pipe, deflection testing is also required. The following procedures must be followed:
  - For a collection pipe with inside diameter less than 27 inches, deflection measurement requires a rigid mandrel.
    - Mandrel Sizing**
      - 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 ASTMs, American Water Works Association, UNI-BELL, or American National Standards Institute, or any related appendix.
      - 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.
      - All dimensions must meet the appropriate standard.
    - Mandrel Design**
      - A rigid mandrel must be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed.
      - A mandrel must have nine or more odd number of runners or legs.
      - A barrel section length must equal at least 75% of the inside diameter of a pipe.
      - Each size mandrel must use a separate pivoting ring.
    - Method Options**
      - An adjustable or flexible mandrel is prohibited.
      - A test may not use television inspection as a substitute for a deflection test.
      - If requested, the executive director may approve the use of a deflectometer or a mandrel with removable legs or runners on a case-by-case basis.
    - For a gravity collection system pipe with an inside diameter 27 inches and greater, other test methods may be used to determine vertical deflection.
      - A deflection test method must be accurate to within plus or minus 0.2% deflection.
      - An owner shall not conduct a deflection test until at least 30 days after the final backfill.
      - Gravity collection system pipe deflection must not exceed five percent (5%).
      - 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.

- All manholes must be tested to meet or exceed the requirements of 30 TAC §217.58.
  - All manholes must pass a leakage test.
  - 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.
  - Hydrostatic Testing
    - The maximum leakage for hydrostatic testing or any alternative test method is 0.025 gallons per foot diameter per foot of manhole depth per hour.
    - 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.
    - A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.
  - Vacuum Testing
    - To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
    - No grout must be placed in horizontal joints before testing.
    - Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.
    - 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.
    - A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.
    - There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
    - A test does not begin until after the vacuum pump is off.
    - 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.

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- The maximum leakage for hydrostatic testing or any alternative test method is 0.025 gallons per foot diameter per foot of manhole depth per hour.
- 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.
- A test for concrete manholes may use a 24-hour wetting period before testing to allow saturation of the concrete.
- Vacuum Testing
  - To perform a vacuum test, an owner shall plug all lift holes and exterior joints with a non-shrink grout and plug all pipes entering a manhole.
  - No grout must be placed in horizontal joints before testing.
  - Stub-outs, manhole boots, and pipe plugs must be secured to prevent movement while a vacuum is drawn.
  - 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.
  - A test head must be placed at the inside of the top of a cone section, and the seal inflated in accordance with the manufacturer's recommendations.
  - There must be a vacuum of 10 inches of mercury inside a manhole to perform a valid test.
  - A test does not begin until after the vacuum pump is off.
  - 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.

- All private service laterals must be inspected and certified in accordance with 30 TAC §213.5(c)(3)(f). After installation of and, prior to covering and connecting a private service lateral to an existing organized sewage collection system, a Texas Licensed Professional Engineer, Texas Registered Sanitarian, or appropriate city inspector must visually inspect the private service 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 forward copies to the appropriate regional office upon request. Connections may only be made to an approved sewage collection system.

Austin Regional Office 12100 Park 35 Circle, Building A Austin, Texas 78753-1808 Phone (512) 339-2929 Fax (512) 339-3795	San Antonio Regional Office 14250 Judson Road San Antonio, Texas 78233-4480 Phone (210) 490-3098 Fax (210) 545-4329
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THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

WASTEWATER NOTES:

- The contractor shall maintain service to existing wastewater system at all times during construction.
- A minimum of 8" wastewater pipe and fittings (P.V.C. SDR-26, ASTM, D-3034, D-3212, F-4477) are required on new installation.
- All residential wastewater service laterals shall be extended to the property line and a cleanout shall be installed at the property line. Services to lots will extend four (4) feet past the underground electric conduit if electric is installed in the front easement. All sewer cleanouts that lead to NBU mains shall be installed with a protective utility shroud and pivoting marker pole during time of construction.
- Pipe bedding of wastewater lines shall be manufactured sand or pea gravel as per NBU specifications.
- Secondary backfill of wastewater lines shall generally consist of materials removed from the trench and shall be free from brush, debris and trash, no rocks or stones having any dimension larger than 6 inches at the largest dimension.
- All wastewater pipes shall have compression or mechanical joints as per 30 TAC §217.53 (c) (2).
- For wastewater lines less than 24" in diameter, select initial backfill material shall be placed in two lifts.
  - The first lift shall be spread uniformly and simultaneously on each side and under the shoulders of the pipe to the mid point or spring line of the pipe.
  - The second lift shall be placed to a depth as shown on the pipe backfill detail. For pipes larger than 24", 12" maximum lifts shall be used.
- All manholes must be water tight, either monolithic, cast-in-place concrete structures or prefabricated manholes specifically approved by NBU. The manholes shall have water-tight joints and covers. Wherever they are within the 100-year floodplain, the manhole covers shall be bolted. Every third manhole in sequence shall have an alternate means of venting. 30 TAC §213.5 (c) (3) (A) and 30 TAC §217.55 (c).
- All manholes shall be constructed so that the top of the ring is two inches (2") above surrounding ground except when located in paved area. In paved areas, the manhole ring shall be flush with pavement.
- All new manholes, unless approved by NBU Engineering, are to have covers with 32" openings.
- Wastewater pipe connections to pre-cast manholes will be compression joints or mechanical "boot type" joint as approved by NBU.
- Wastewater lines shall be tested from manhole to manhole.
- In areas where a new wastewater manhole is to be constructed over an existing wastewater system, it shall be the contactor's responsibility to test the existing manholes before construction. After the proposed manhole(s) has been built, the contractor shall re-test the existing system to the satisfaction of the construction inspector. (no separate pay item).
- Where the minimum 9 foot separation distance between wastewater lines and water lines / mains cannot be maintained, the installation of wastewater lines shall be in strict accordance with TCEQ. The wastewater line shall be constructed of cast iron, ductile iron or PVC meeting the ASTM specification for both pipes and joints of 150 psi and shall be in accordance with 30 TAC §217.53 (d) (3) (A) (i).
- No testing will be performed prior to 30 days from complete installation of the wastewater lines. The following sequence will be strictly adhered to:
  - Pull mandrel
  - Perform Air test
  - Cleaning of any debris
  - Flushing of system
  - TV Inspection (within 72 hours of flushing)
- A minimum of 3 feet of cover is to be maintained over the wastewater main and laterals at subgrade, otherwise concrete encasement will be required.
- Wastewater main connections made directly to existing manholes will require successful testing of the manhole in accordance with NBU Connection & Construction Policy Manual.
- TCEQ and EPA require erosion and sedimentation control for construction of wastewater collection systems. Developer or authorized representative shall provide erosion and sedimentation control as notes on the project's plan and profile sheets. All temporary erosion and sedimentation controls shall be removed by the Contractor at final acceptance of the project by NBU Water Systems.
- All manholes not within paved streets shall have locking concrete collar to secure ring and cover to manhole cone per NBU Detail drawing #329.
- All manholes over the Edwards Aquifer Recharge Zone shall have locking concrete collar to secure ring and cover to manhole cone per NBU detail drawing #329.

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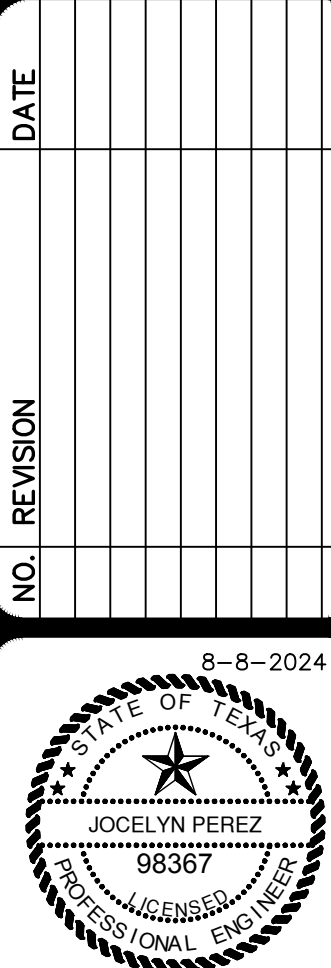
CITY OF NEW BRAUNFELS UTILITY NOTES

- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5'-FEET IN DEPTH. 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.
- UTILITY TRENCH COMPACTION – 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.

NBU WATER CONNECTION POLICY GENERAL NOTES

- MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THE PROJECT SHALL BE APPROVED BY NEW BRAUNFELS UTILITIES AND COMPLY WITH THE CURRENT NEW BRAUNFELS UTILITIES WATER SYSTEMS CONNECTION/CONSTRUCTION POLICIES WATER SYSTEMS'.
- CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE PLANS FROM THE CONSULTANT OR ENGINEER AND NOTIFY NBU WATER SYSTEMS ENGINEERING AT 830-608-8971 WITH AT LEAST THREE (3) BUSINESS DAYS BEFORE THE START OF WORK. WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A NOTICE TO PROCEED WITH NEW BRAUNFELS UTILITIES WATER SYSTEMS ENGINEERING WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
- THE DEVELOPER DEDICATES THE WATER / WASTEWATER MAINS UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE NEW BRAUNFELS UTILITIES WATER SYSTEM. NBU WILL OWN AND MAINTAIN SAID WATER / WASTEWATER MAINS WHICH ARE LOCATED WITHIN SAID PARTICULAR SUBDIVISION. (AS APPLICABLE).
- CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER AND HIS EMPLOYEES, PARTNERS OFFICERS, DIRECTORS, OR CONSULTANTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THE PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER, ENGINEER'S DIRECTORS, OFFICERS, EMPLOYEES, OR CONSULTANTS.
- CONTRACTOR AND / OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH THE PRESENCE AND THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION, ANY DAMAGES DONE TO EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, LANDSCAPING AND STRUCTURES, AND EXISTING UTILITIES (NOT ADJUSTED ON PLANS). COST OF RESTORATIONS, IF ANY, SHALL BE THE CONTRACTOR'S ENTIRE EXPENSE.
- THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION.
- CONTRACTOR SHALL PROCURE ALL PERMITS AND LICENSES, PAY ALL CHARGES, FEES AND TAXES, AND GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
- NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENT AND WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.
- CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAN DEVELOPMENT PERMIT.
- THE CONTRACTOR SHALL NOT PLACE ANY MATERIALS ON THE RECHARGE ZONE OF THE EDWARDS AQUIFER WITHOUT AN APPROVED WATER POLLUTION ABATEMENT PLAN FROM THE TCEQ §31 TAC 313.4 and 31 TAC 313.9.
- BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND SHALL BE LOCATED TO PROVIDE MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT WHILE PROVIDING CONTINUOUS TRAFFIC FLOW AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL DEVICES DURING CONSTRUCTION.
- CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. THE TERM "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH HORIZONTAL AND VERTICAL ALIGNMENT.
- THE LOCATION OF UTILITIES, EITHER UNDERGROUND OR OVERHEAD, SHOWN WITHIN THE RIGHT OF WAY ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE BEGINNING CONSTRUCTION OPERATIONS.
- OSHA REGULATIONS PROHIBIT OPERATIONS THAT WILL BRING PERSONS OR EQUIPMENT WITHIN 10 FEET OF AN ENERGIZED LINE. WHERE WORKMEN AND/OR EQUIPMENT HAVE TO WORK CLOSE TO AN ENERGIZED ELECTRICAL LINE, THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL POWER COMPANY INVOLVED AND MAKE WHATEVER ADJUSTMENTS NECESSARY TO ENSURE THE SAFETY OF THOSE WORKMEN.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION. UTILITY COMPANIES ARE ALSO PREVIOUSLY MENTIONED IN "UTILITY COMPANY NOTIFICATION".
- DUE TO FEDERAL REGULATIONS TITLE 49, PART 192 (B), GAS COMPANIES MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR FURNISHING ALL TRAFFIC CONTROL DEVICES, AND FLAGGERS. THE CONSTRUCTION METHODS SHALL BE CONDUCTED TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC SO AS TO PERMIT THE CONTINUOUS MOVEMENT OF THE TRAFFIC IN ONE DIRECTION AT ALL TIMES. THE CONTRACTOR SHALL START UP AND REMOVE FROM THE WORK AREA ANY LOOSE MATERIAL RESULTING FROM CONTRACT OPERATIONS AT THE END OF EACH WORKDAY.
- PRIOR TO ORDERING MATERIALS TO BE USED IN CONSTRUCTION, CONTRACTOR SHALL PROVIDE THE ENGINEER WITH FOUR (4) COPIES OF THE SOURCE, TYPE, GRADATION, MATERIAL SPECIFICATION DATA AND / OR SHOP DRAWINGS, AS APPLICABLE, TO VERIFY THE REQUIREMENTS OF THE FOLLOWING ITEMS AND ALL MATERIAL ITEMS REFERRED TO IN THESE LISTED ITEMS:
  - WATER MAINS AND SERVICES
  - SEWER MAINS AND SERVICES
- NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOXES SET IN DRIVEWAYS WILL BE RELOCATED AT CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
- WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN SEWER LINES AND WATER LINES / MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ.
- 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 SITE(S) 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 THE 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.
- UTILITY TRENCH COMPACTION WITH STREET R.O.W.

- ALL UTILITY TRENCH COMPACTION TEST WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER.
- FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE.
- EACH LAYER OF MATERIAL SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEXT METHODS TEX–113–E, TEX–114–E, TEX–115–E.
- THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS STREET INSPECTOR.
- UPON COMPLETION OF TESTING THE GEO-TECHNICAL 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.



Fallsburg

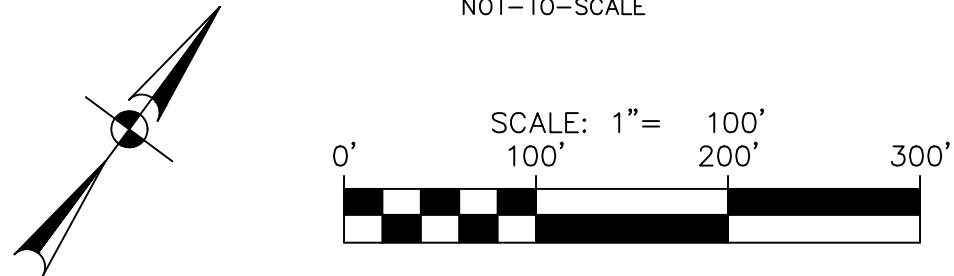
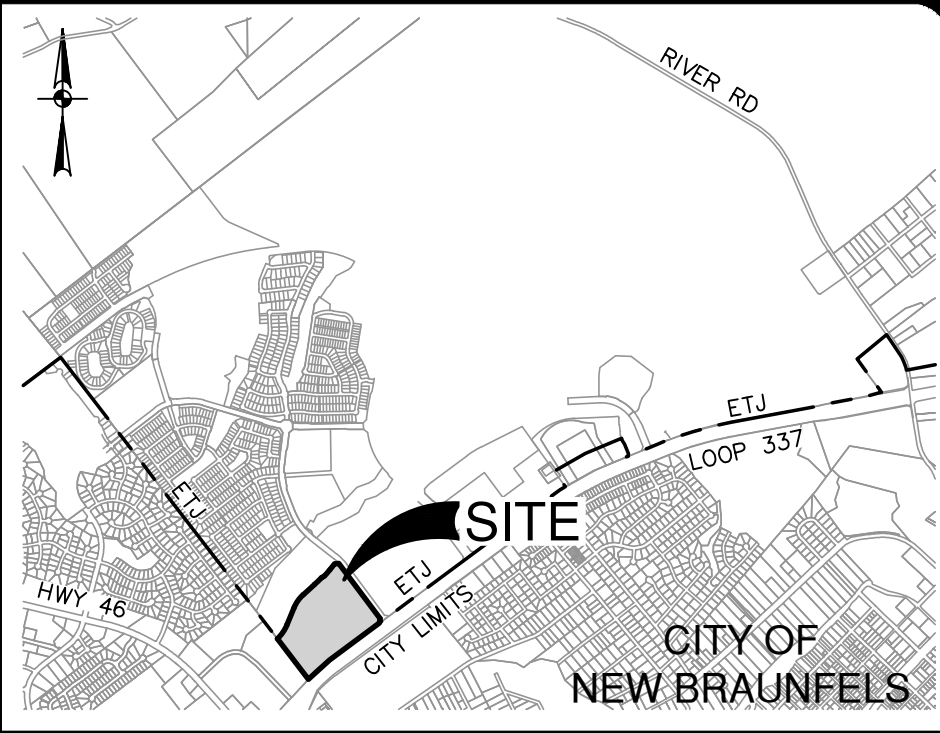
VERAMENDI PRECINCT 11A  
NEW BRAUNFELS, TEXAS  
SANITARY SEWER NOTES

PLAT NO.  
JOB NO. 30001-81  
DATE AUGUST 2024  
DESIGNER CP  
CHECKED ☒ DRAWN CP  
SHEET C5.20



Date: March 13, 2024, 1:39 PM -- User: ID: sflores  
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### UTILITY LEGEND

PROJECT LIMITS	
EXISTING WATER	
EXISTING UNDERGROUND ELECTRIC	
EXISTING GAS	
EXISTING SEWER	
PROPOSED SEWER	
PROPOSED WATER	
PROPOSED WYE & LATERAL	
SINGLE WATER SERVICE	
STREET LIGHTS	
PROPOSED STORM DRAIN	
EXISTING STORM DRAIN	
PROPOSED GAS	
PROPOSED UNDERGROUND ELECTRIC	
EXISTING TREE TO REMAIN	

### CITY OF NEW BRAUNFELS NOTES

- NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.
- ALL UTILITIES TO BE CONSTRUCTED PRIOR TO STREETS.
- THIS PROJECT INCLUDES UTILITY INSTALLATIONS GREATER THAN 5- FEET IN DEPTH. 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.
- UTILITY TRENCH COMPACTION -- 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 COMPACTION 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.

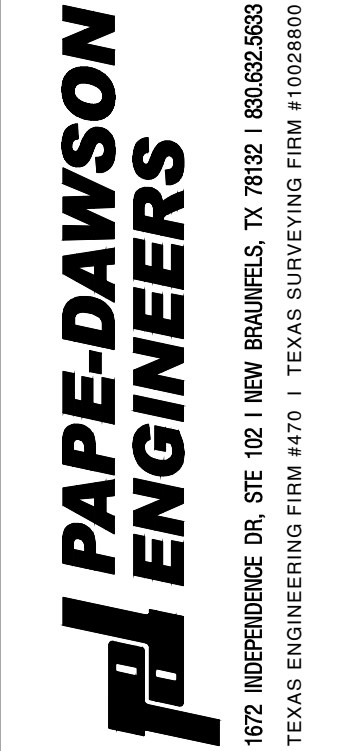
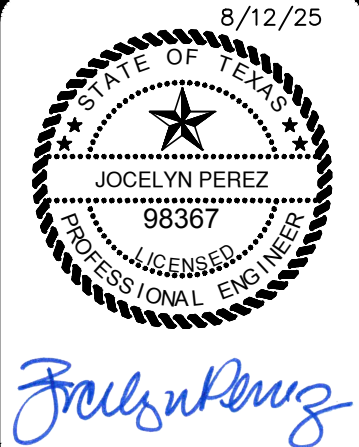
### CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING 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 TEXAS 811 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.

### 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 ANY 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 FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY 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.

NO.	REVISION	LOT LINE CHANGES/CREATED	DATE
1			06/25/25



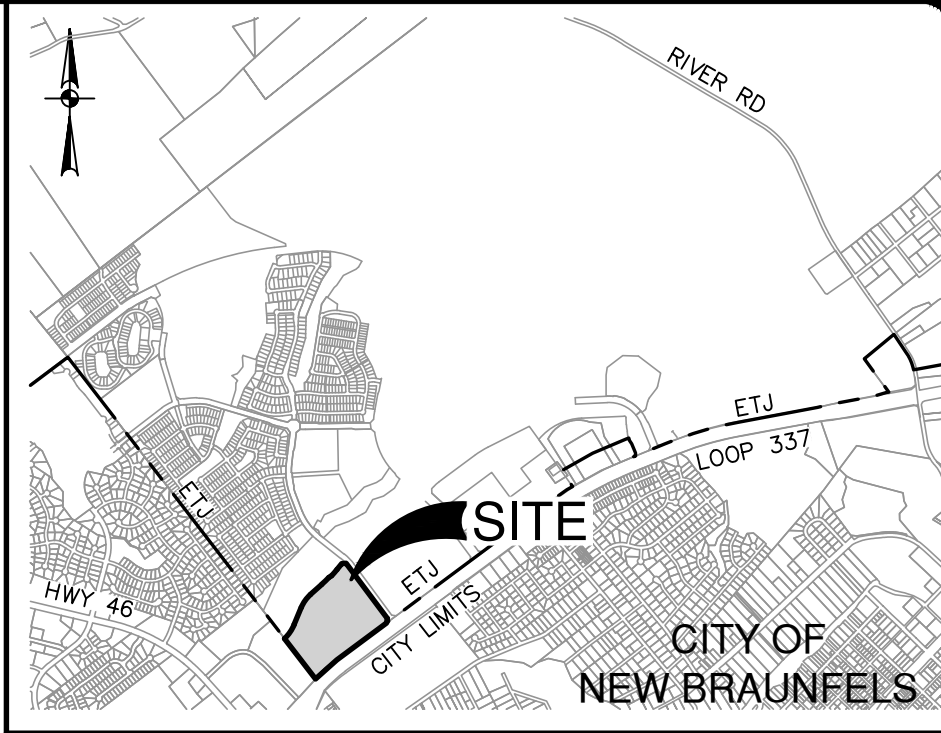
**VERAMENDI PRECINCT 11A**  
NEW BRAUNFELS, TEXAS  
OVERALL UTILITY PLAN

PLAT NO.	
JOB NO.	30001-81
DATE	AUGUST 2025
DESIGNER	CP
CHECKED	TMM
DRAWN	CP
SHEET	C6.00

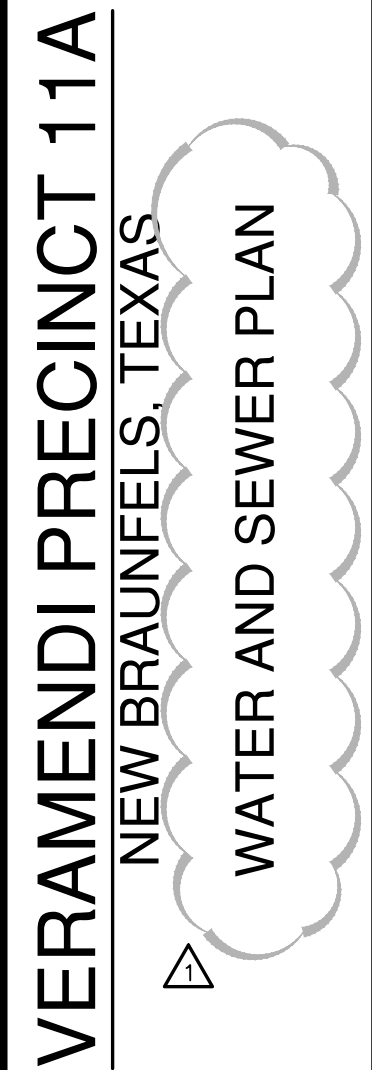
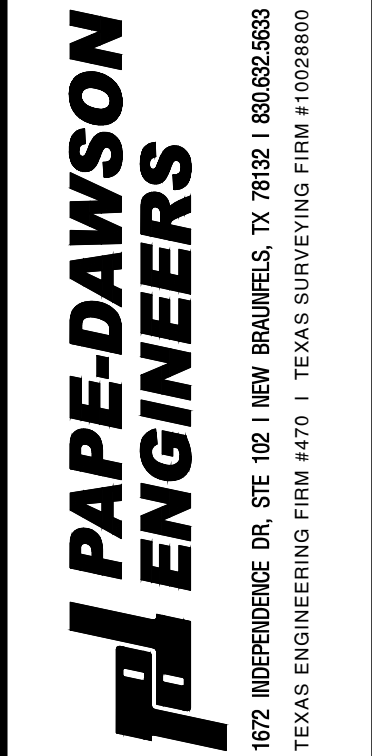
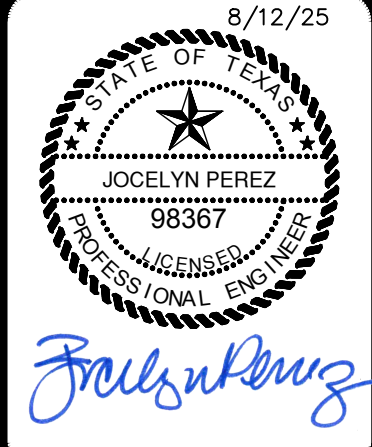


WATER (NBU JOB NO. W-245133)		
ITEM	UNIT	QUANTITY
12" WATER LINE	LF	1480
LUES	EA	48
FIRE HYDRANT	EA	1
6" GATE VALVE	EA	1
12" GATE VALVE	EA	4
2" SERVICE LINE WITH 1.5" METER	EA	2
2" SERVICE LINE WITH 2" METER	EA	1

WASTEWATER (NBU JOB NO. WW-245134)		
ITEM	UNIT	QUANTITY
8" SANITARY SEWER PIPE	LF	2,361
LUES	EA	147
48" MANHOLES	EA	7
8" SANITARY SEWER LATERALS	LF	464



NO.	REVISION	DATE
1	DATE & SEWER ESMT CHANGED	06/25/25
	WATER LINE EXTENDED	
	ADDED AND EXTENDED LATERALS	



### UTILITY LEGEND

PROJECT LIMITS	EXISTING FIRE HYDRANT
EXISTING WATER	EXISTING UNDERGROUND ELECTRIC
EXISTING UNDERGROUND ELECTRIC	EXISTING GAS
EXISTING GAS	EXISTING SEWER
EXISTING SEWER	PROPOSED SEWER
PROPOSED SEWER	PROPOSED WATER
PROPOSED WATER	PROPOSED WYE & LATERAL
PROPOSED WYE & LATERAL	SINGLE WATER SERVICE
SINGLE WATER SERVICE	STREET LIGHTS
STREET LIGHTS	PROPOSED STORM DRAIN
PROPOSED STORM DRAIN	EXISTING STORM DRAIN
EXISTING STORM DRAIN	PROPOSED GAS
PROPOSED GAS	PROPOSED UNDERGROUND ELECTRIC
PROPOSED UNDERGROUND ELECTRIC	EXISTING TREE TO REMAIN

### CITY OF NEW BRAUNFELS NOTES

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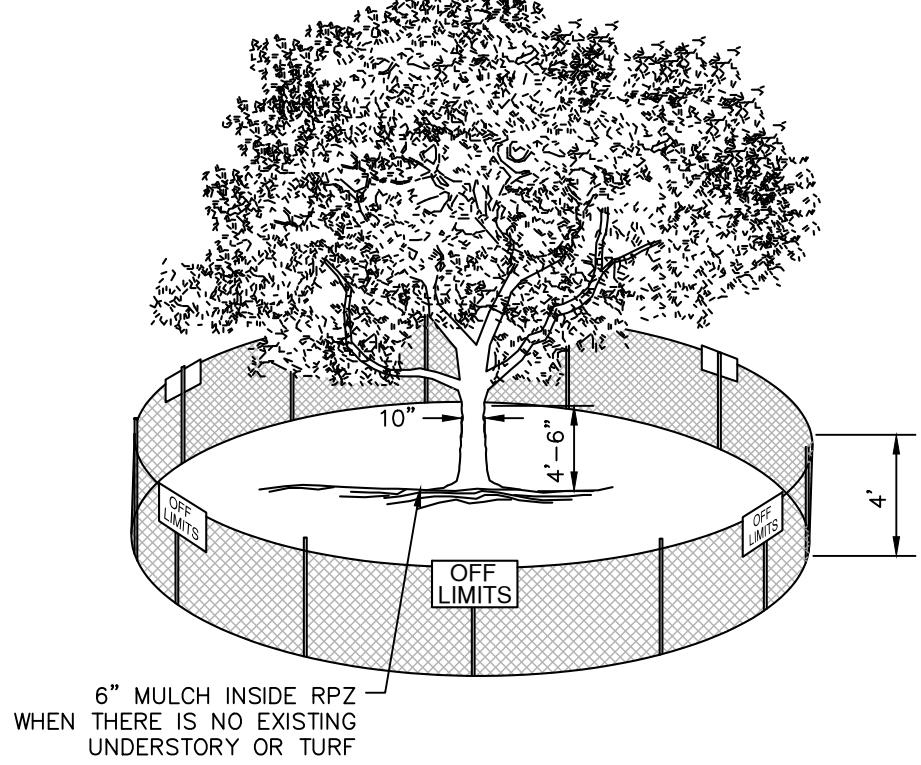
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PLAT NO.	JOB NO.
30001-81	30001-81
DATE	DESIGNER
AUGUST 2025	CP
CHECKED	DRAWN
CP	CP
SHEET	C6.10

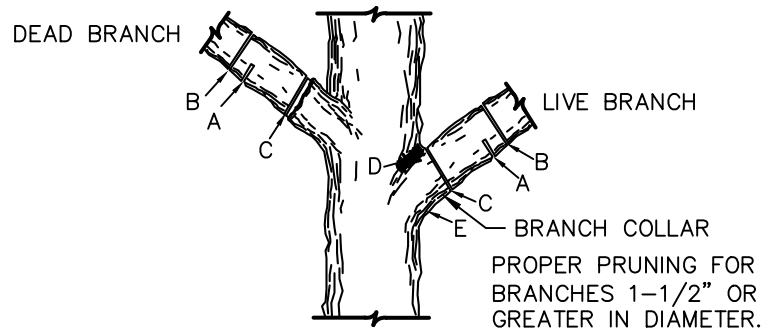


- NOTE:  
1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY, WILL CONFORM TO THE DRIP LINE AND IS LIMITED TO PROJECT BOUNDARY.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECS.
3. CHAIN LINK FENCE SHALL BE ERECTED PRIOR TO ANY CLEARING, GRUBBING OR SITE WORK OF ANY KIND. FENCING SHALL STAY ERECTED UNTIL FINAL LANDSCAPE OPERATIONS COMMENCE.
4. ANY PRUNING TO PROVIDE CLEARANCE TO PRESERVED TREES MUST BE APPROVED BY A CERTIFIED ARBORIST.
5. DO NOT REMOVE ANY TREES OVER 1" CALIPER WITHIN THE TREE PROTECTION FENCING OR OUTSIDE THE LIMITS OF CONSTRUCTION.
6. TREE ROOT CUTS SHALL BE MECHANICALLY CUT AT THE DIRECTION OF A CERTIFIED ARBORIST. CUTS SHALL BE CLEAN CUTS, WITHOUT PULLING OR TEARING.
7. CONTRACTOR SHALL PLACE AND MAINTAIN 3" OF MULCH AROUND THE BASE OF THE TREE.
8. CONTRACTOR SHALL WATER THE TREE 1" EVERY WEEK FOR THE DURATION OF CONSTRUCTION.



### TREE PROTECTION ZONE

NOT TO SCALE

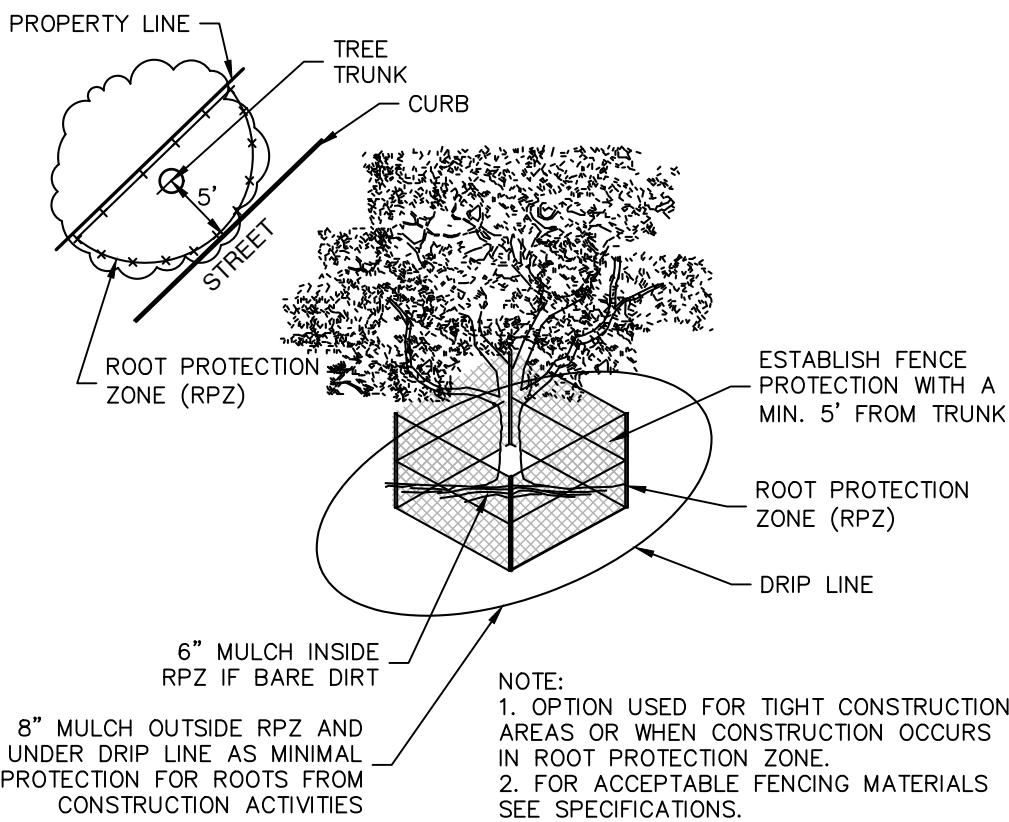


- NOTE:  
DO NOT CUT FROM D TO E.
- A. FIRST CUT - TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
- B. SECOND CUT - TO REDUCE THE WEIGHT OF BRANCH.
- C. FINAL CUT - ALLOW FOR HEALING COLLAR BUT NO STUBS

FOR OAKS ONLY:  
PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN. TO PREVENT THE SPREAD OF OAK WILT.

### BRANCH PRUNING

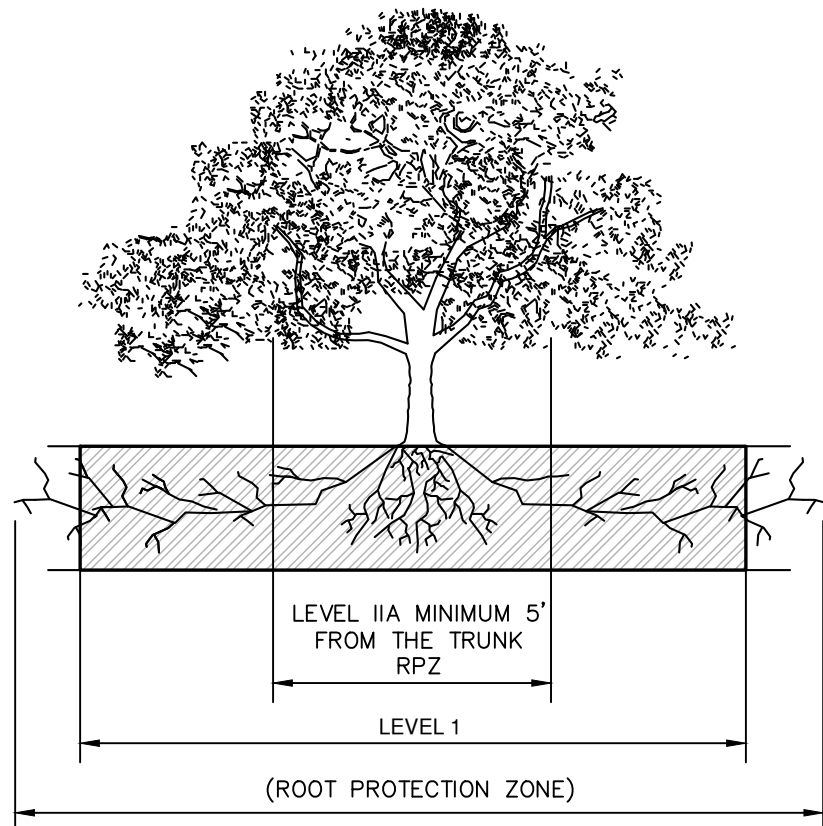
NOT TO SCALE



- NOTE:  
1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

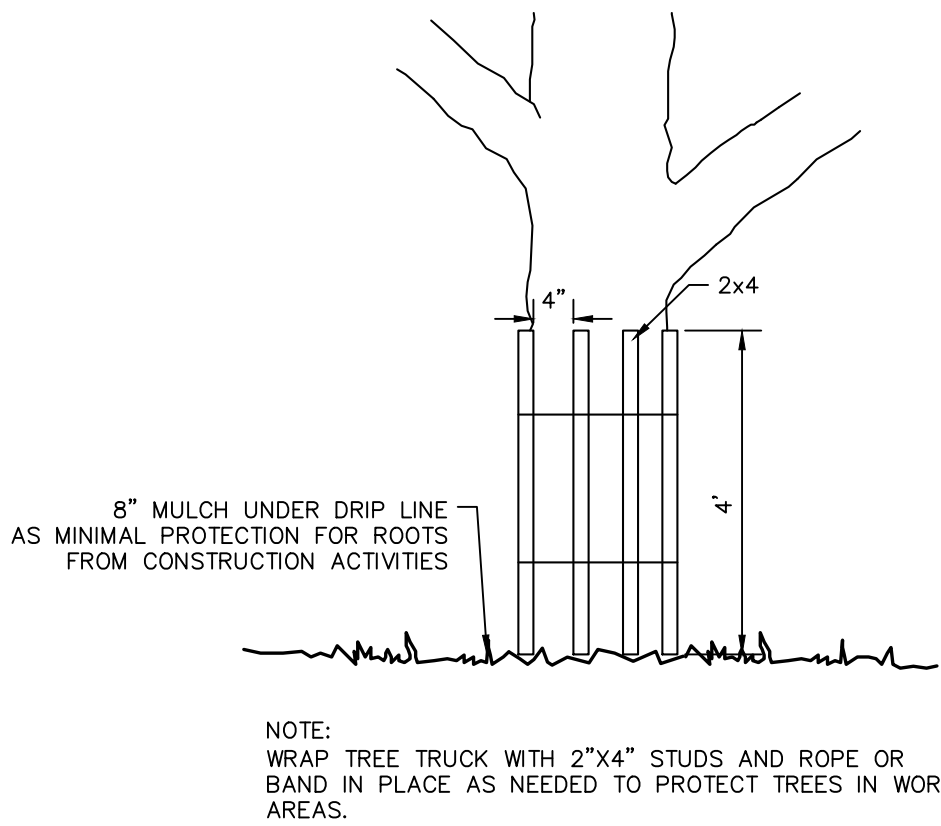
### LEVEL II A FENCE PROTECTION

NOT TO SCALE



### ELEVATION

NOT TO SCALE



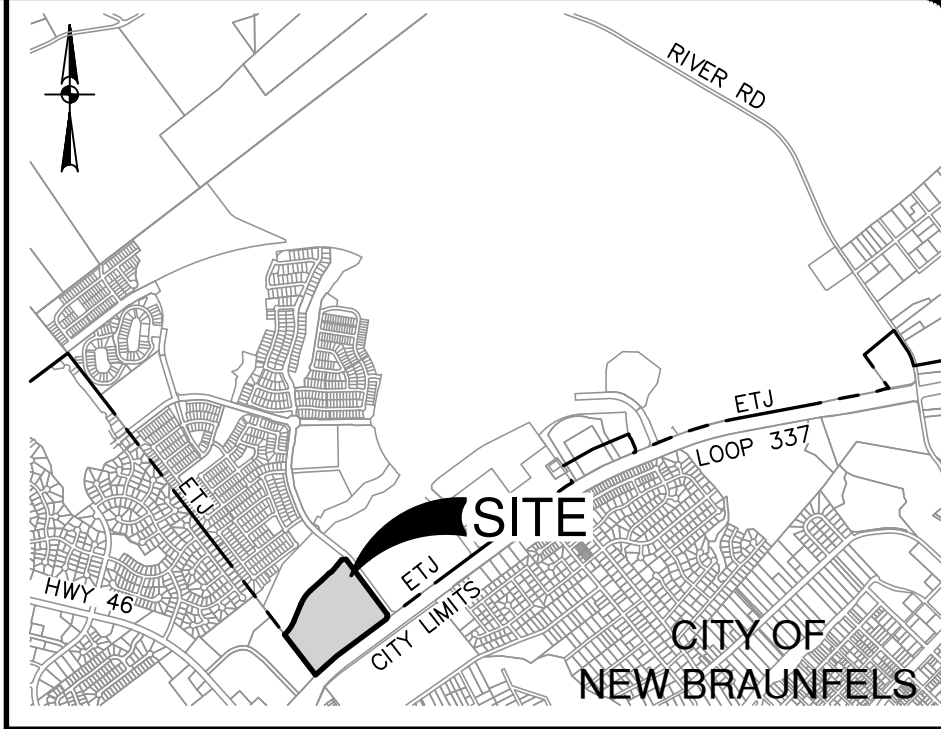
### LEVEL II B FENCE PROTECTION

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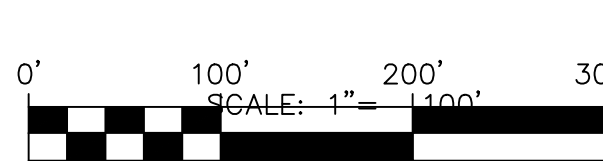
### SWP3 MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION



### LOCATION MAP

NOT-TO-SCALE



### SWPPP LEGEND

PROJECT LIMITS	---
EXISTING CONTOUR	- - - - -976-
PROPOSED CONTOUR	- - - - -970-
FLOW ARROW (EXISTING)	→
FLOW ARROW (PROPOSED)	→
SILT FENCE	- / - / - / - / - / - / - / -
TREE PROTECTION	○
ROCK BERM	◆◆◆◆◆
GRAVEL FILTER BAGS	●●●●●
GRATE INLET PROTECTION	●●●●●
SEDIMENT CONTROL ROLLS	▨
LIMITS OF DISTURBED AREA	▨
STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)	▨
CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)	▨
CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)	▨
EXISTING TREE TO REMAIN	○

### GENERAL NOTES

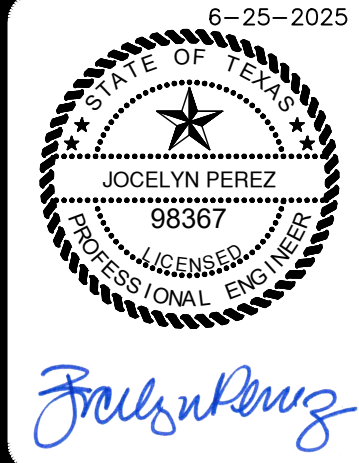
- DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
- CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.
- STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED TO THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
- RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
- ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
- FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.
- STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.
- AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
- BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADE AREAS.
- BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.
- UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.
- WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS. OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.
- SHADED AREA [ ] DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT A PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES. HOUSE CONSTRUCTION ACTIVITIES WILL REQUIRE A SEPARATE STORM WATER POLLUTION PREVENTION PLAN.
- PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE PLACEMENT OF TEMPORARY BEST MANAGEMENT PRACTICES WITHIN TxDOT RIGHT-OF-WAY WITH TxDOT.
- NBU WILL FUNCTION AS A SECONDARY OPERATOR ON THIS PROJECT AND WILL BE INSTALLING ELECTRIC UTILITIES FOR ON-SITE CONSTRUCTION AND OFF-SITE FEED TO THE PROJECT.
- 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.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

### EXHIBIT 2

DATE	REVISION	NO.	LOT LINES & CHANNE B-1
06/25/25	1		



**PAPE-DAWSON**  
**ENGINEERS**

1672 INDEPENDENCE DR. STE 102 | NEW BRAUNFELS, TX 78132 | 830.632.5633  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008800

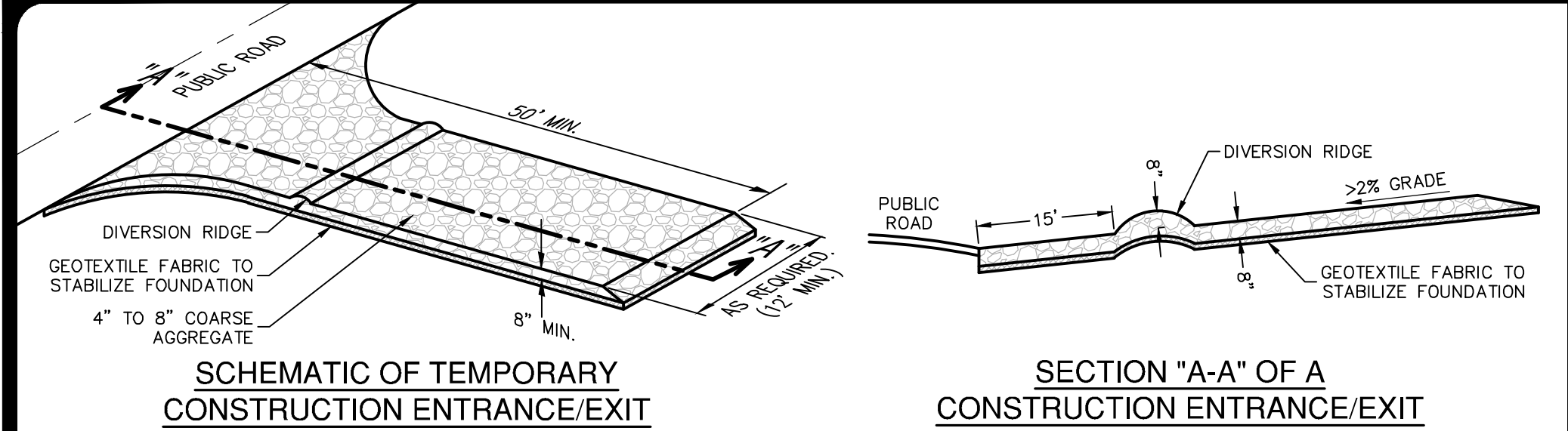
**VERAMENDI PRECINCT 11A**  
**NEW BRAUNFELS, TEXAS**

**STORM WATER POLLUTION PREVENTION PLAN**

PLAT NO.	
JOB NO.	30001-81
DATE	JUNE 2025
DESIGNER	CP
CHECKED	TMM
DRAWN	CP
SHEET	C8.00



Date: March 13, 2024, 1:38 PM -- User: ID: carcher  
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**MATERIALS**

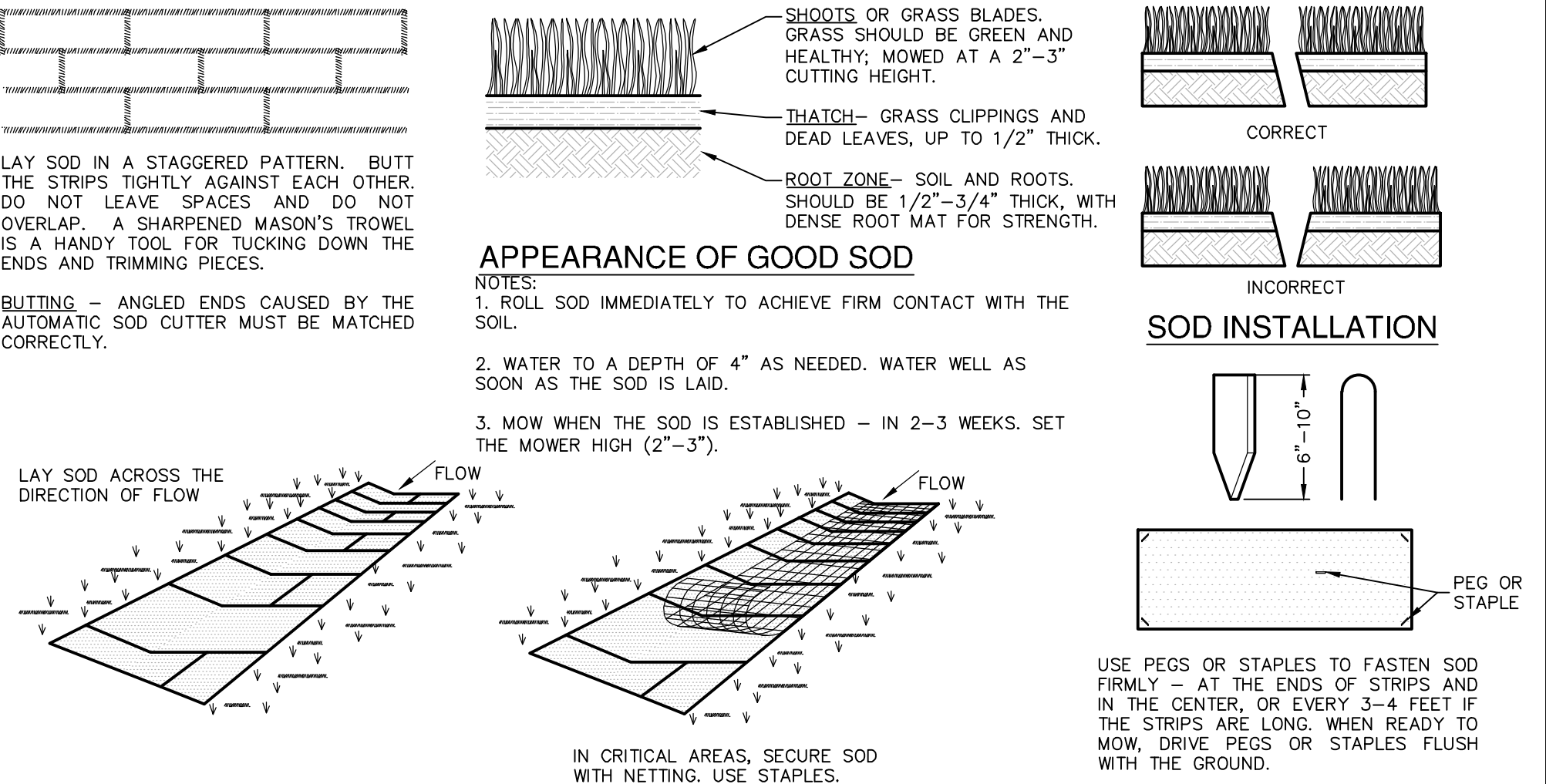
1. THE AGGREGATE SHOULD CONSIST OF 4-INCH TO 8-INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.
2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8-INCHES.
3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD<sup>2</sup>, A MULLEN BURST RATING OF 140 LB/IN<sup>2</sup>, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4-INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

**INSTALLATION**

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBSERVABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6-INCHES TO 8-INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.
8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

**STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL**

NOT-TO-SCALE



**MATERIALS**

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.
2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.
3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.
4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

**SITE PREPARATION**

1. PRIOR TO SOD PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.
2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.
3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

**INSTALLATION IN CHANNELS**

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).
2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

**SOD INSTALLATION DETAIL**

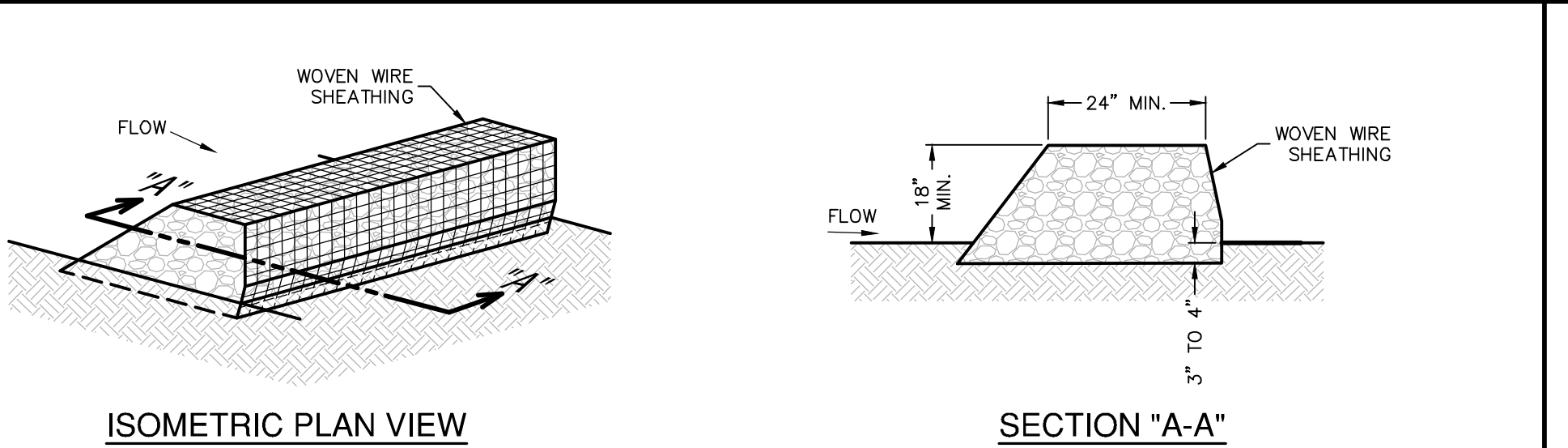
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**COMMON TROUBLE POINTS**

1. INADEQUATE RUNOFF CONTROL-SEDIMENT WASHES ONTO PUBLIC ROAD.
2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.
3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC-EXTEND PAD BEYOND THE MINIMUM 50-FOOT LENGTH AS NECESSARY.
4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.
5. UNSTABLE FOUNDATION - USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

**INSPECTION AND MAINTENANCE GUIDELINES**

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.



**ISOMETRIC PLAN VIEW**

**SECTION "A-A"**

**ROCK BERMS**

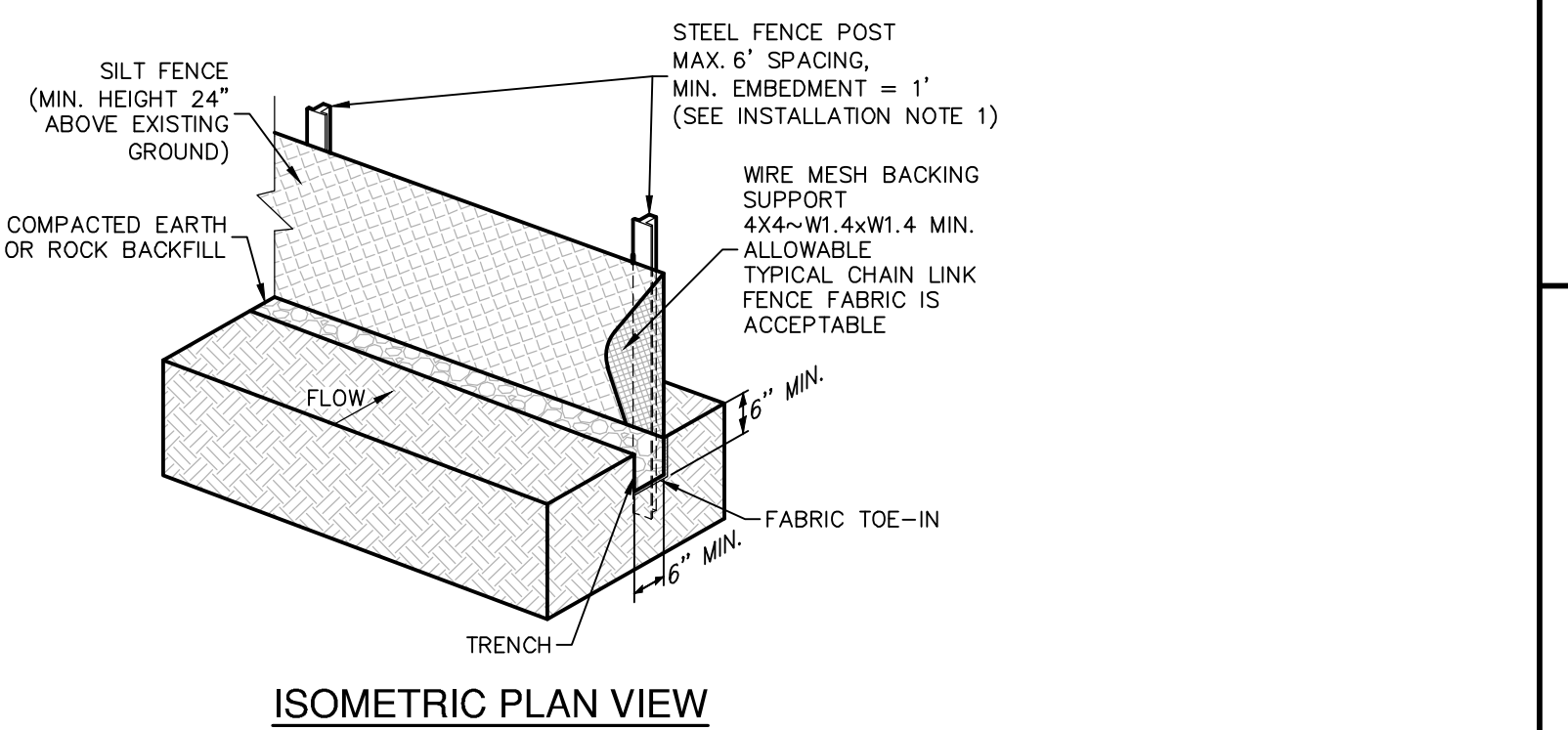
THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE AS SUCH. ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

**INSPECTION AND MAINTENANCE GUIDELINES**

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.
3. REPAIR ANY LOOSE WIRE SHEATHING.
4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

**ROCK BERM DETAIL**

NOT-TO-SCALE



**SILT FENCE**

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

**MATERIALS**

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN<sup>2</sup>, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.
2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINELL HARDNESS EXCEEDING 140.
3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

**INSTALLATION**

1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1-FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER, WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.
2. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

**SILT FENCE DETAIL**

NOT-TO-SCALE

**MATERIALS**

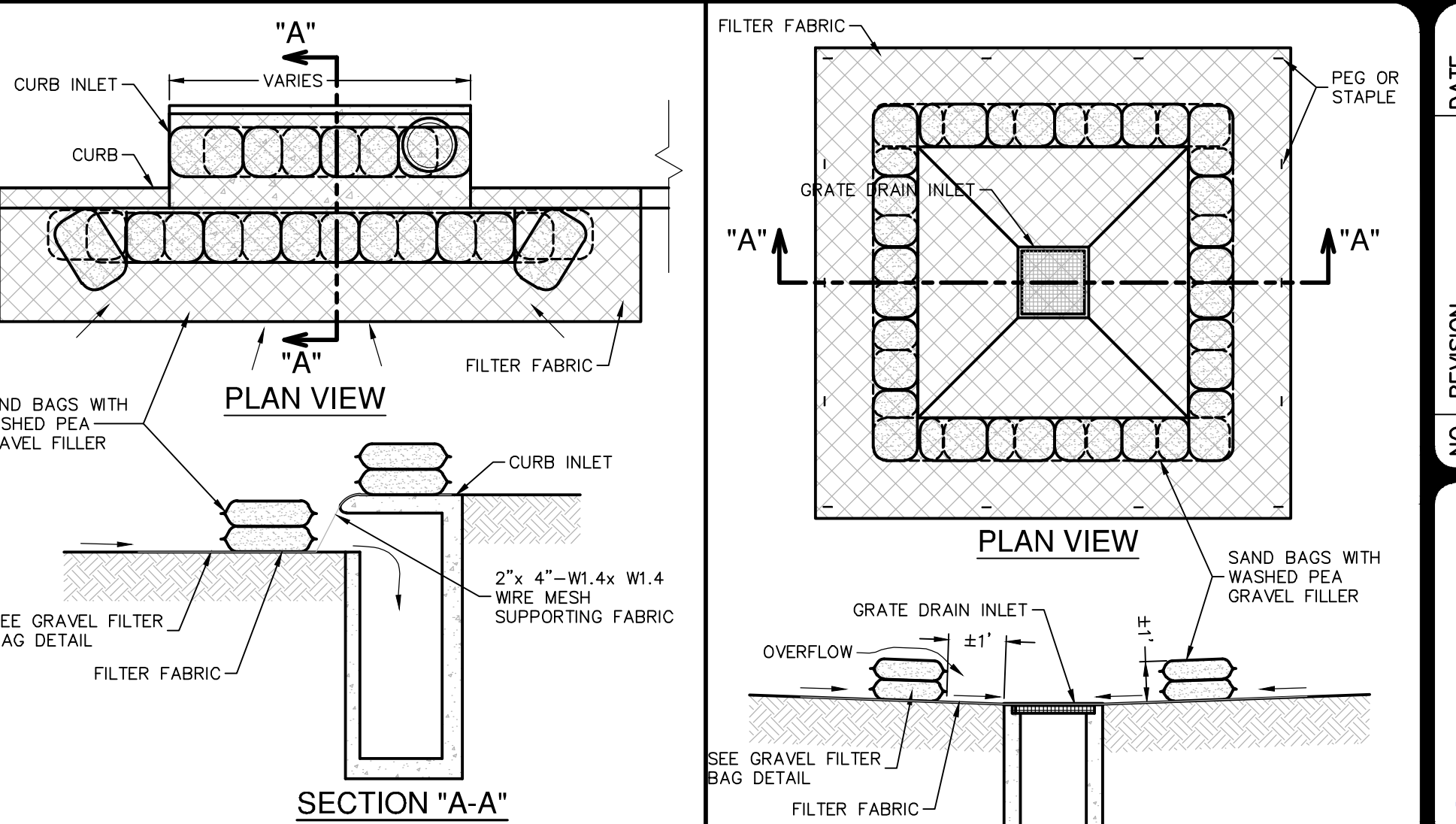
1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.
2. CLEAN, OPEN GRADED 3-INCH TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-INCH TO 8-INCH DIAMETER ROCKS MAY BE USED.

**INSTALLATION**

1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.
2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".
4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

**COMMON TROUBLE POINTS**

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).



**GENERAL NOTES**

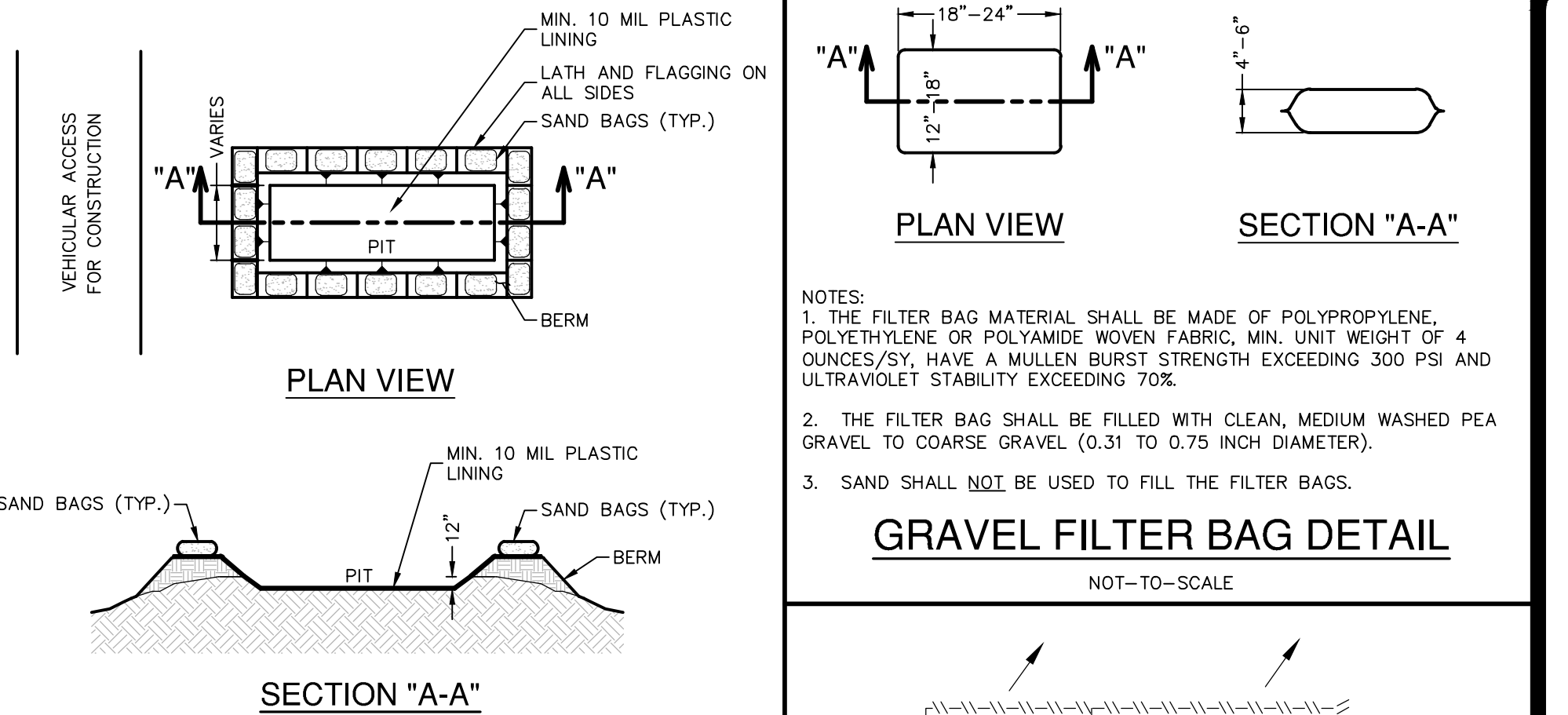
1. CONTRACTOR TO INSTALL 2"x4"-W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CUPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.
2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

**INSPECTION AND MAINTENANCE GUIDELINES**

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.
5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

**BAGGED GRAVEL CURB INLET PROTECTION DETAIL**

NOT-TO-SCALE



**GENERAL NOTES**

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.
2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.
4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.
5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

**MATERIALS**

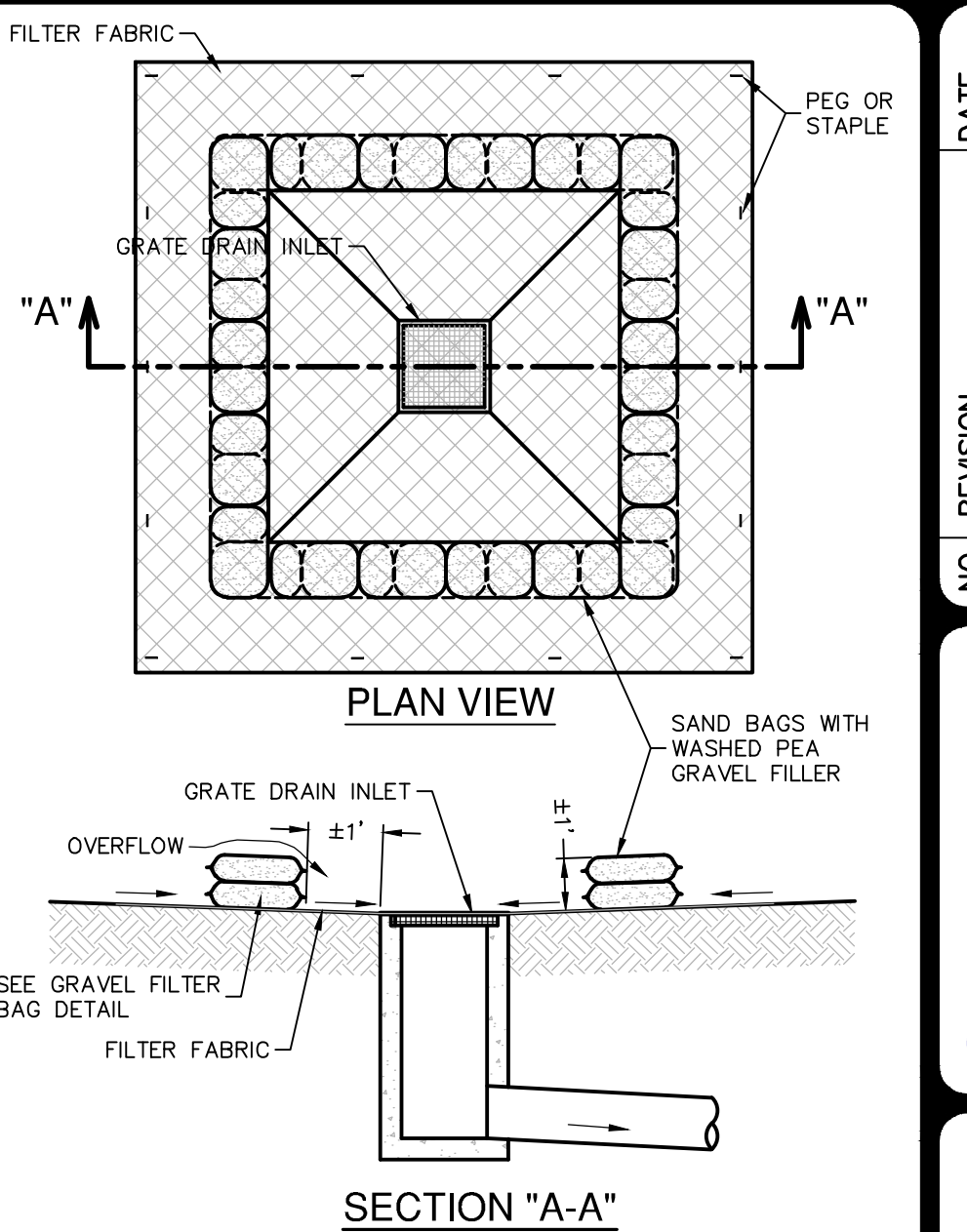
PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

**MAINTENANCE**

1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.
2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.
3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

**CONCRETE TRUCK WASHOUT PIT DETAIL**

NOT-TO-SCALE

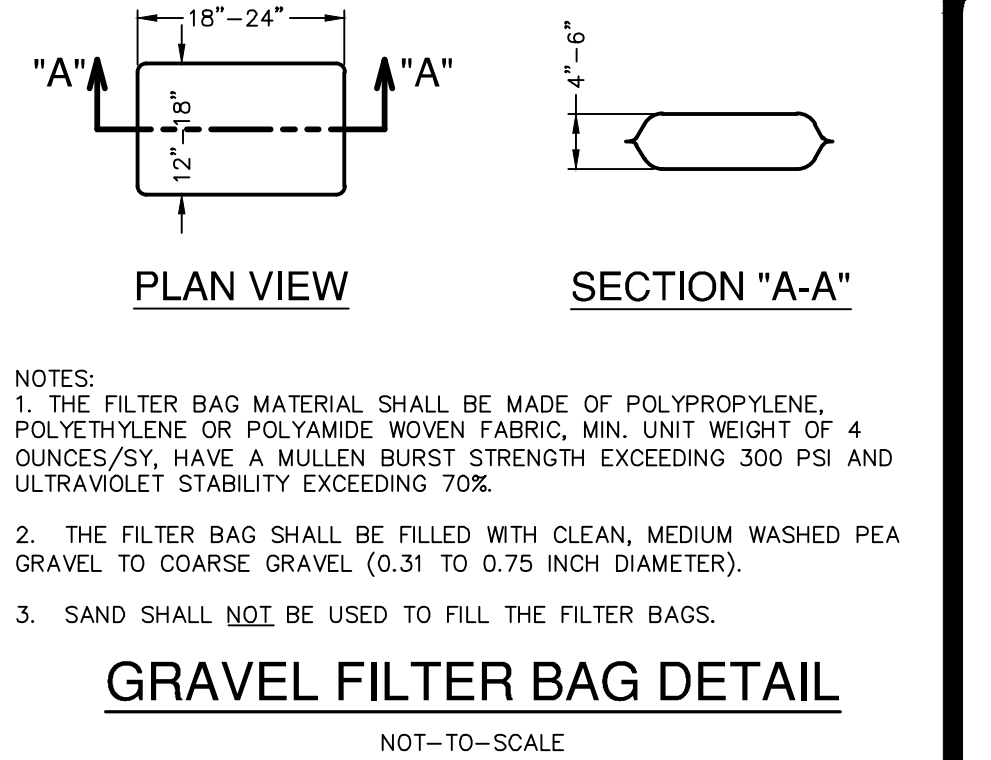


**GENERAL NOTES**

1. THE SANDBAGS SHOULD BE FILLED WITH WASHED PEA GRAVEL AND STACKED TO FORM A CONTINUOUS BARRIER ABOUT 1 FOOT HIGH AROUND INLETS.
  2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
- INSPECTION AND MAINTENANCE GUIDELINES**
1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
  2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
  3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
  4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.
  5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

**BAGGED GRAVEL GRATE INLET PROTECTION DETAIL**

NOT-TO-SCALE

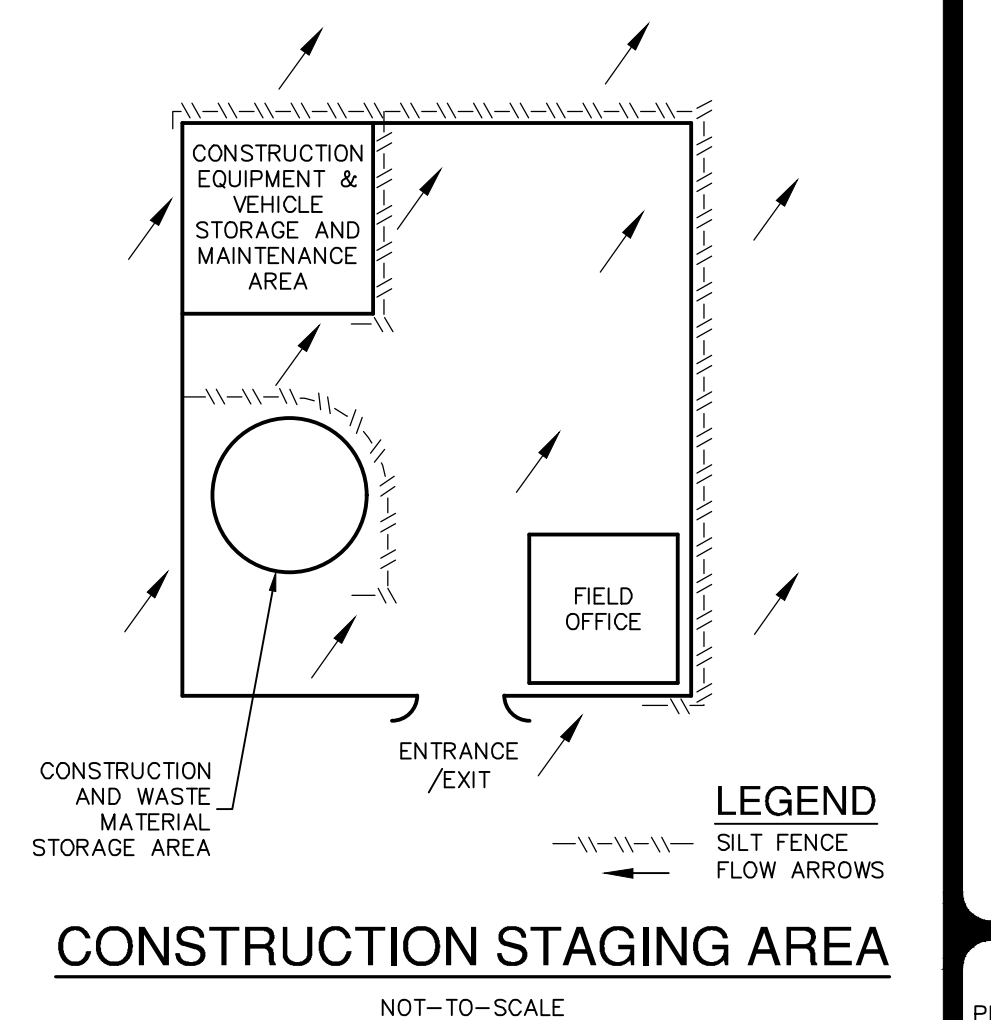


**GENERAL NOTES**

1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.
2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).
3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

**GRAVEL FILTER BAG DETAIL**

NOT-TO-SCALE



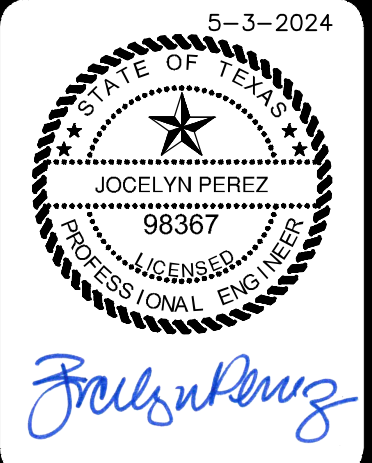
**CONSTRUCTION STAGING AREA**

NOT-TO-SCALE

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

**EXHIBIT 3**

DATE	
NO.	
REVISION	



**VERAMENDI PRECINCT 11A**  
**NEW BRAUNFELS, TEXAS**  
**STORM WATER POLLUTION PREVENTION DETAILS**

PLAT NO.	
JOB NO.	30001-81
DATE	MAY 2024
DESIGNER	CP
CHECKED	CK
DRAWN	CP
SHEET	C8.01