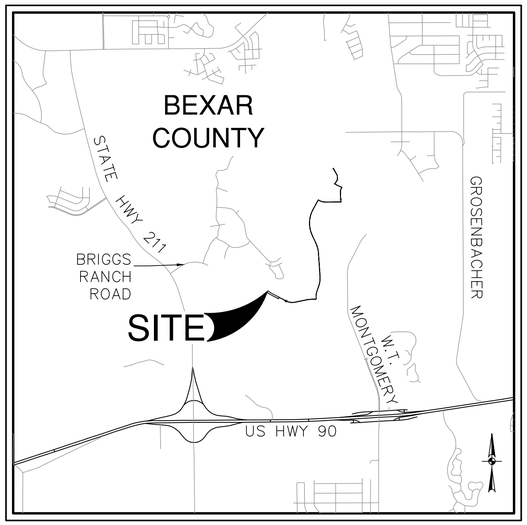
BRE PHASE 1-16 INCH WATER MAIN

BEXAR COUNTY, TEXAS

CIVIL CONSTRUCTION PLANS



LOCATION MAP
NOT-TO-SCALE

SHEET INDEX

Sheet Title	Sheet Description	Sheet No.
COVER SHEET		C0.00
16 INCH WATER DISTRIBUTION PLAN	OVERALL & SHEET INDEX PLAN	C1.00
16 INCH WATER DISTRIBUTION PLAN	(STA. 10+00.00 TO STA. 38+40.00)	C1.01
16 INCH WATER DISTRIBUTION PLAN	(STA. 38+40.00 TO STA. 70+75.00)	C1.02
16 INCH WATER DISTRIBUTION PLAN	(STA. 70+75.00 TO STA. 95+30.00)	C1.03
16 INCH WATER DISTRIBUTION PLAN	(STA. 90+30.00 TO END)	C1.04
16 INCH WATER DISTRIBUTION NOTES		C1.10
16 INCH WATER DISTRIBUTION DETAILS		C1.20
16 INCH WATER GRADING & PROFILE DETAIL		C2.00
STORM WATER POLLUTION PREVENTION PLAN	SHEET (1 OF 4)	C3.00
STORM WATER POLLUTION PREVENTION PLAN	(SHEET 2 OF 4)	C3.01
STORM WATER POLLUTION PREVENTION PLAN	(SHEET 3 OF 4)	C3.02
STORM WATER POLLUTION PREVENTION PLAN	(SHEET 4 OF 4)	C3.03
STORMWATER POLLUTION PREVENTION PLAN DETAILS	DETAILS	C3.10

PREPARED FOR:

HDC HWY 211, LLC
100 NE LOOP 410, SUITE 1080
SAN ANTONIO, TEXAS 78216

JULY 2025

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

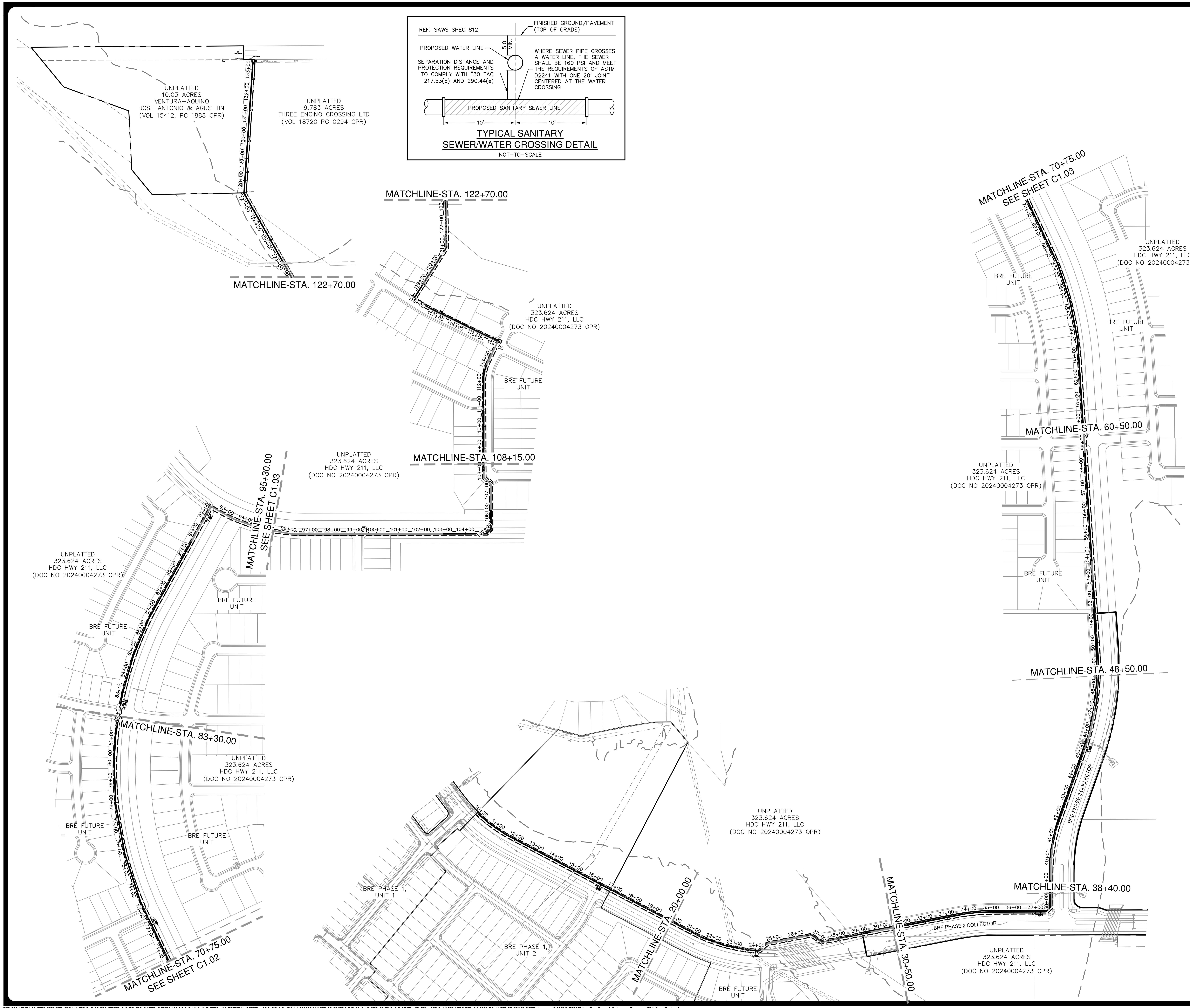
WATER (SAWS PRESSURE ZONE 1080)

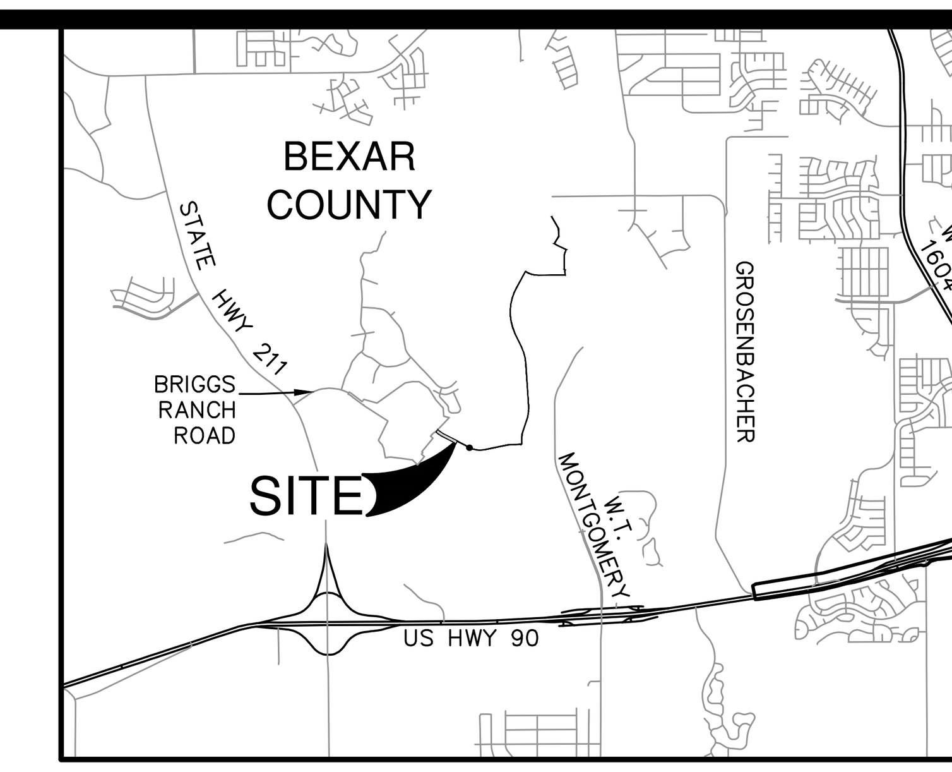
Developer's Name: HDC HWY 211, LLC
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# 076564, 076566 Total EDU's 0 Total Acreage 17.18
074564, 074566
Total Linear Footage of Pipe: 12,344 LF - 16" PIPE Plat No. -
Number of Lots - SAWS JOB NO. 25-1069

SHEET C0.00

PD JOB NO. 11412-17 BRE PHASE 1, 16 INCH WATER MAIN

Date: Jul 22, 2025, 1:13pm User ID: jpoell
File: P:\114\12\17\Design\Civil\CV11412.17.dwg





LOCATION MAP

NOT-TO-SCALE

IMPORTANT

CONTRACTOR TO COORDINATE CONSTRUCTION OF 16" WATER LINE CONSTRUCTION WITH CONSTRUCTION OF BRE PHASE 2 COLLECTOR. ROUGH EARTHWORK TO BE COMPLETED PRIOR TO INSTALLATION OF WATER LINE. PROPOSED WATER LINE TO BE INSTALLED 5' BELOW FINISHED GRADE UNLESS OTHERWISE NOTED.

⊕ JOINT RESTRAINT NOTE:

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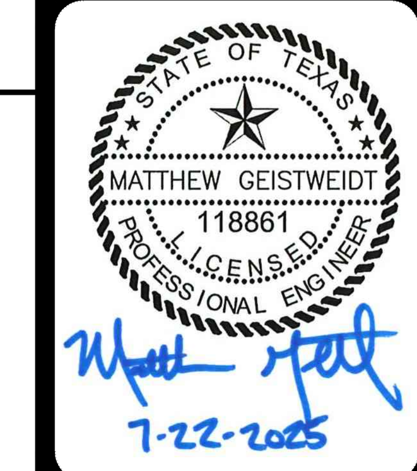
NO.	REVISION	DATE



PAPE-DAWSON

2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN

SAN ANTONIO, TEXAS

16 INCH WATER DISTRIBUTION PLAN OVERALL & SHEET INDEX PLAN

PLAT NO. -
JOB NO. 11412-17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C1.00

Date: July 22, 2025, 10:40 AM — User ID: dmorris
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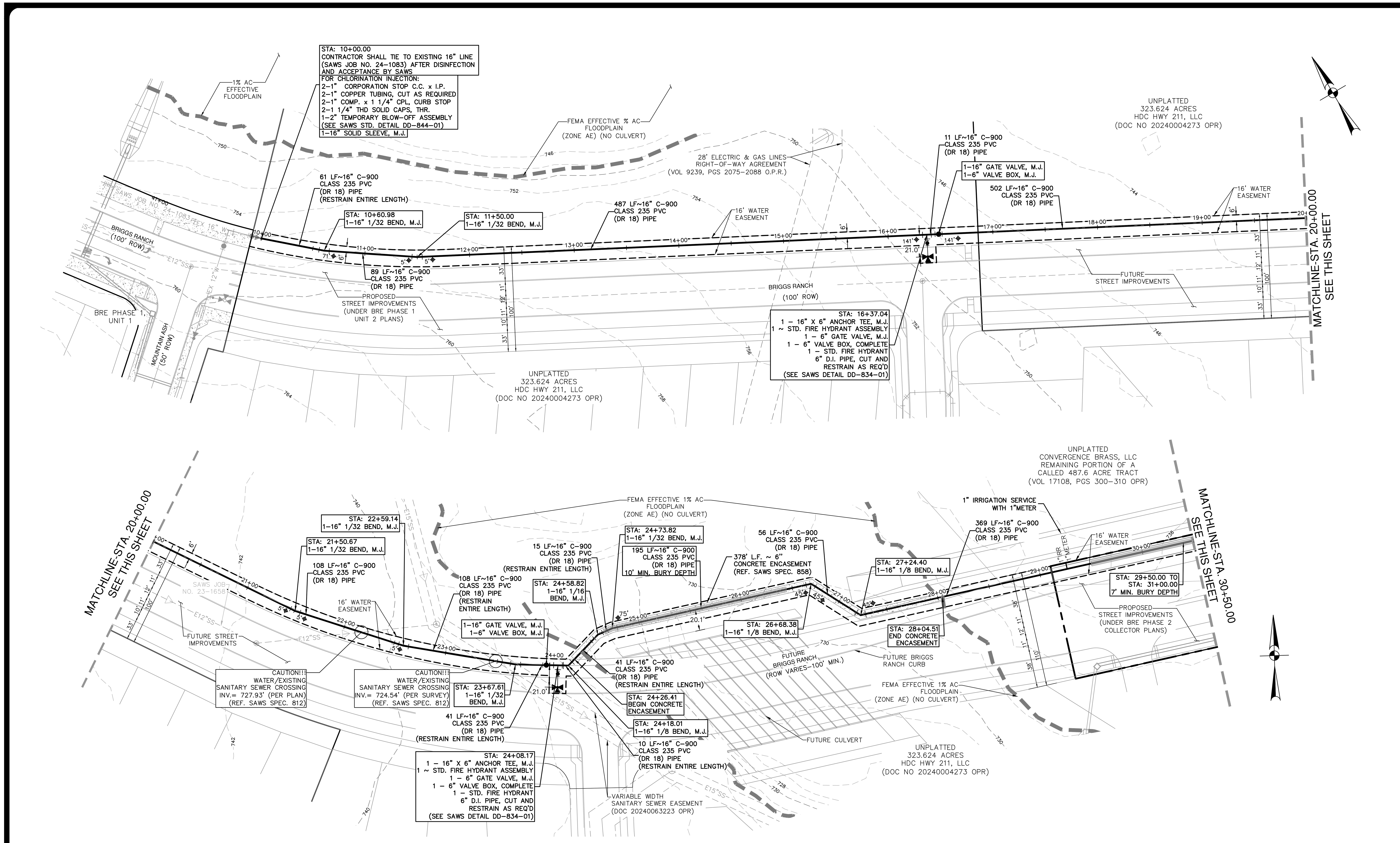
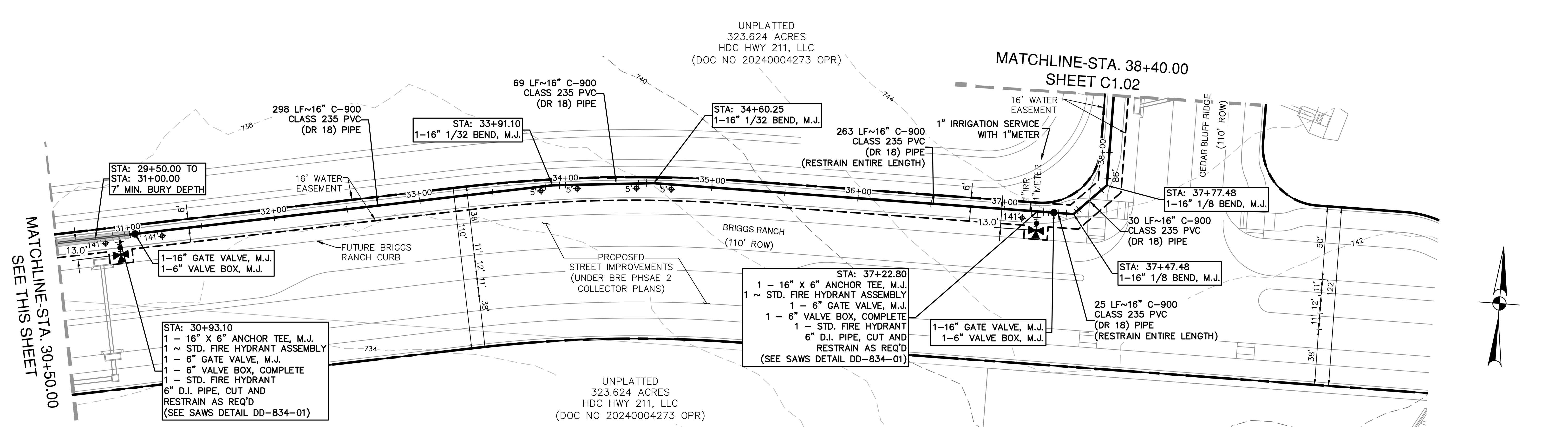
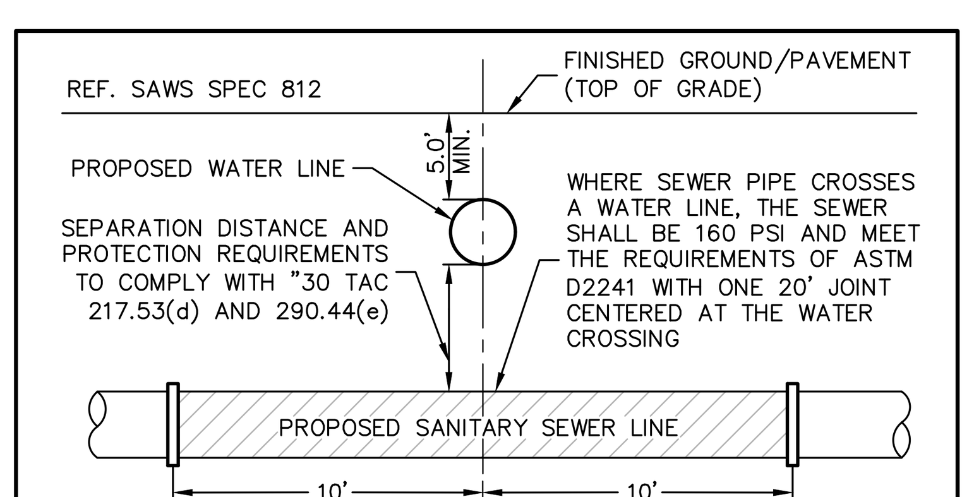
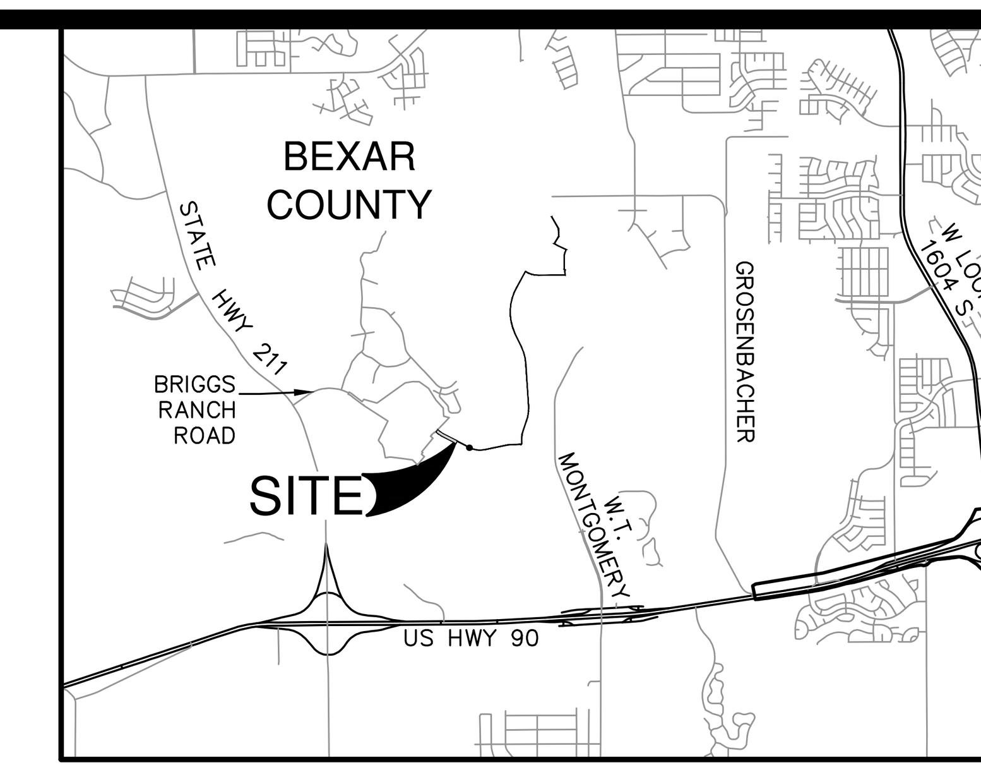






TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

WATER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER
- PROPOSED WATER
- SPECIFIED BURY DEPTH BELOW FINISHED GROUND (SEE PLAN)

IMPORTANT

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NO.	REVISION	DATE

STATE OF TEXAS
MATTHEW GEISTWEIDT
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LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE-DAWSON

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN

SAN ANTONIO, TEXAS

16 INCH WATER DISTRIBUTION PLAN
(STA. 10+00.00 TO STA. 38+40.00)

PLAT NO. -
JOB NO. 11412-17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C1.01

Date: July 22, 2025, 10:41 AM – User ID: dmorris
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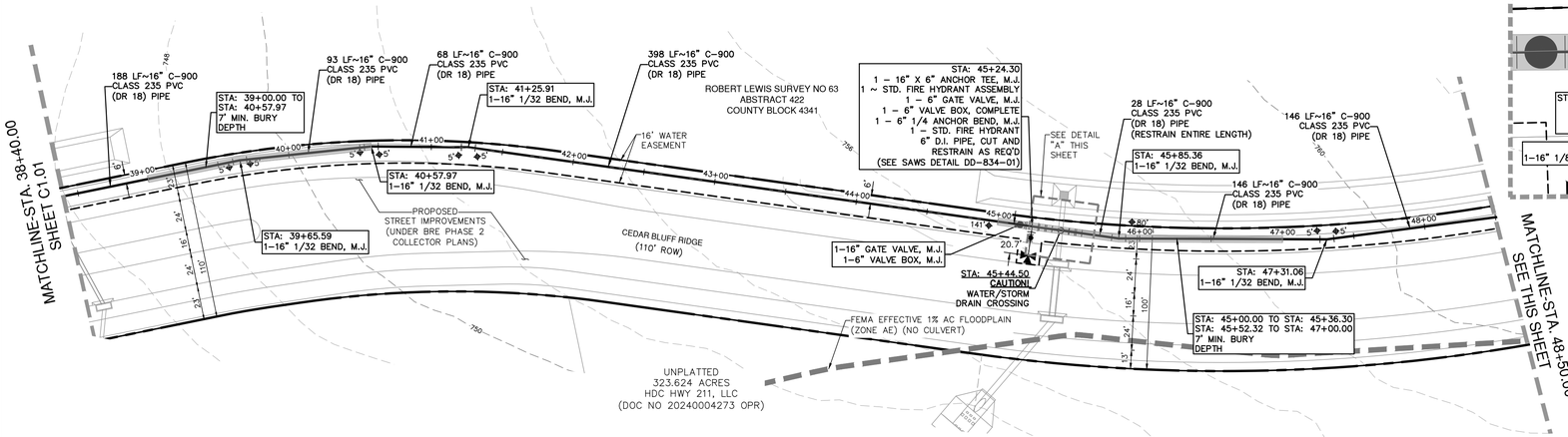
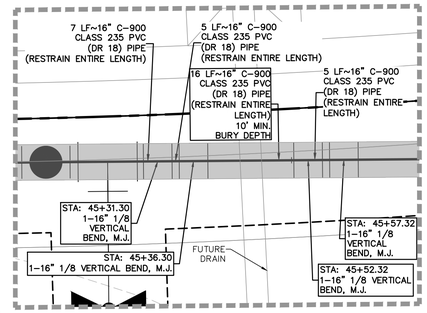
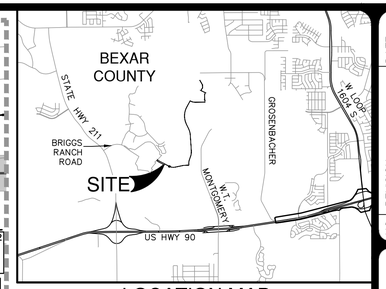




DETAIL "A"

SCALE 1" = 10'



LOCATION MAP

NOT-TO-SCALE

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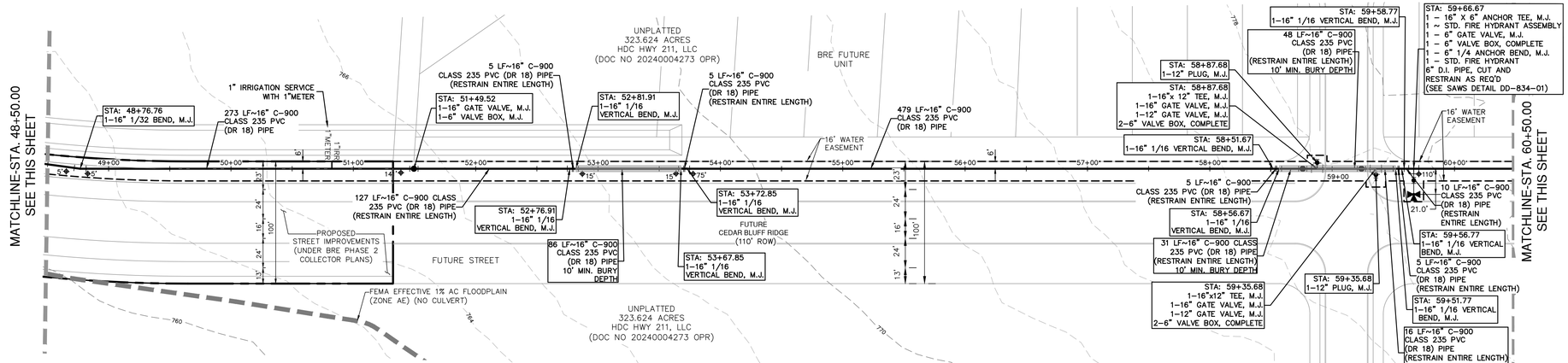
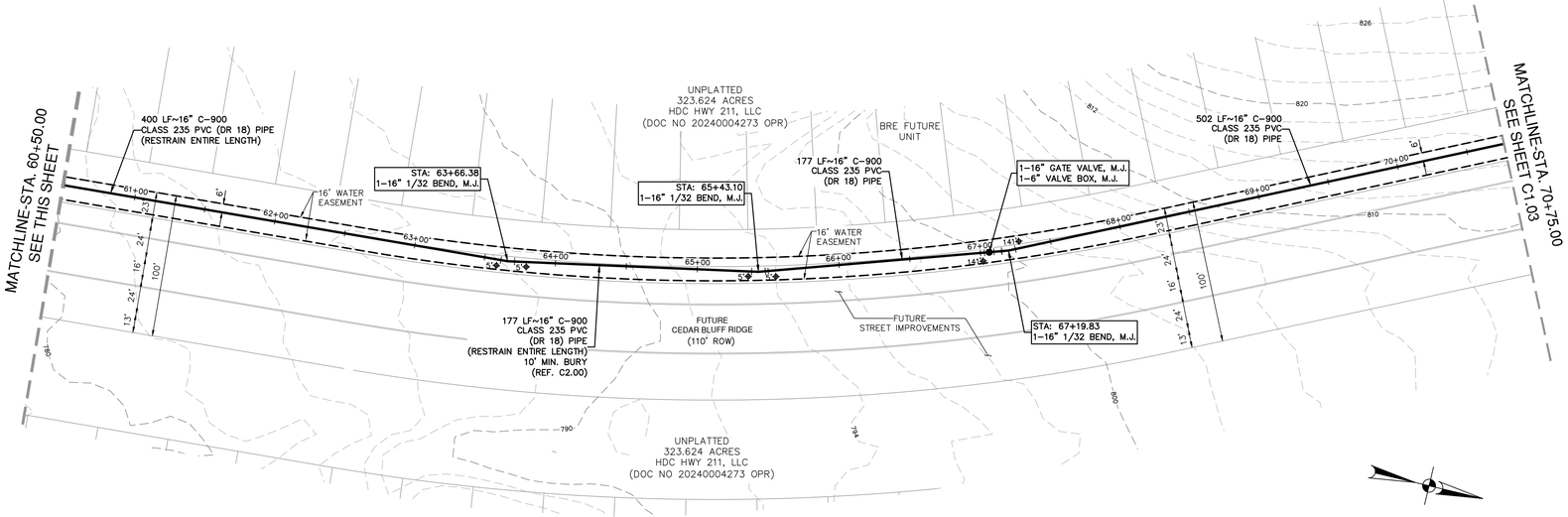




WATER LEGEND

PROJECT LIMITS

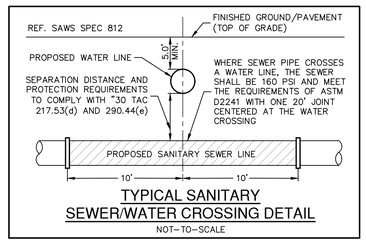
EXISTING WATER — FIRE HYDRANT

EXISTING SEWER — MANHOLE

PROPOSED SEWER

PROPOSED WATER — FIRE HYDRANT

SPECIFIED BURY DEPTH BELOW FINISHED GROUND (SEE PLAN)



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NO.	REVISION	DATE

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BRE PHASE 1-16 INCH WATER MAIN

SAN ANTONIO, TEXAS

16 INCH WATER DISTRIBUTION PLAN
(STA. 38+40.00 TO STA. 70+75.00)

PLAT NO.	-
JOB NO.	11412-17
DATE	MAY 2025
DESIGNER	SSC
CHECKED	SSC DRAWN JZD
SHEET	C1.02

Date: July 22, 2025, 10:42 AM - User ID: dmorris
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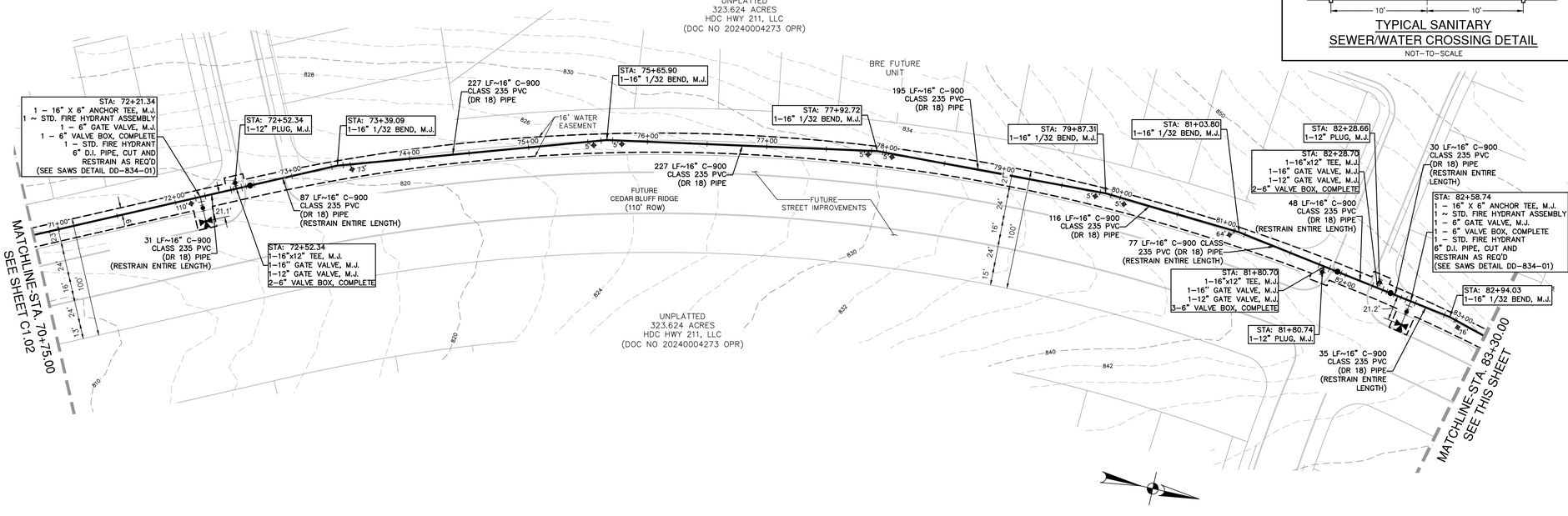
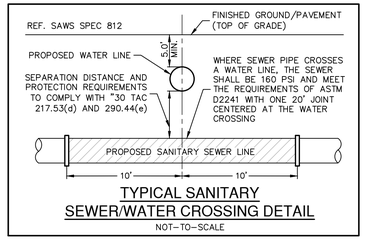
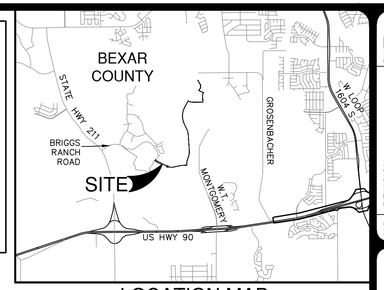




TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT–TO–SCALE



LOCATION MAP

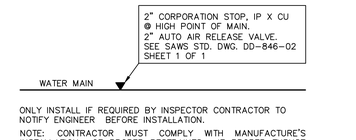
NOT–TO–SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

WATER LEGEND

- PROJECT LIMITS
- EXISTING WATER — W — FIRE HYDRANT
- EXISTING SEWER — SS — MANHOLE
- PROPOSED SEWER — SS —
- PROPOSED WATER — W — FIRE HYDRANT
- SPECIFIED BURY DEPTH BELOW FINISHED GROUND (SEE PLAN)



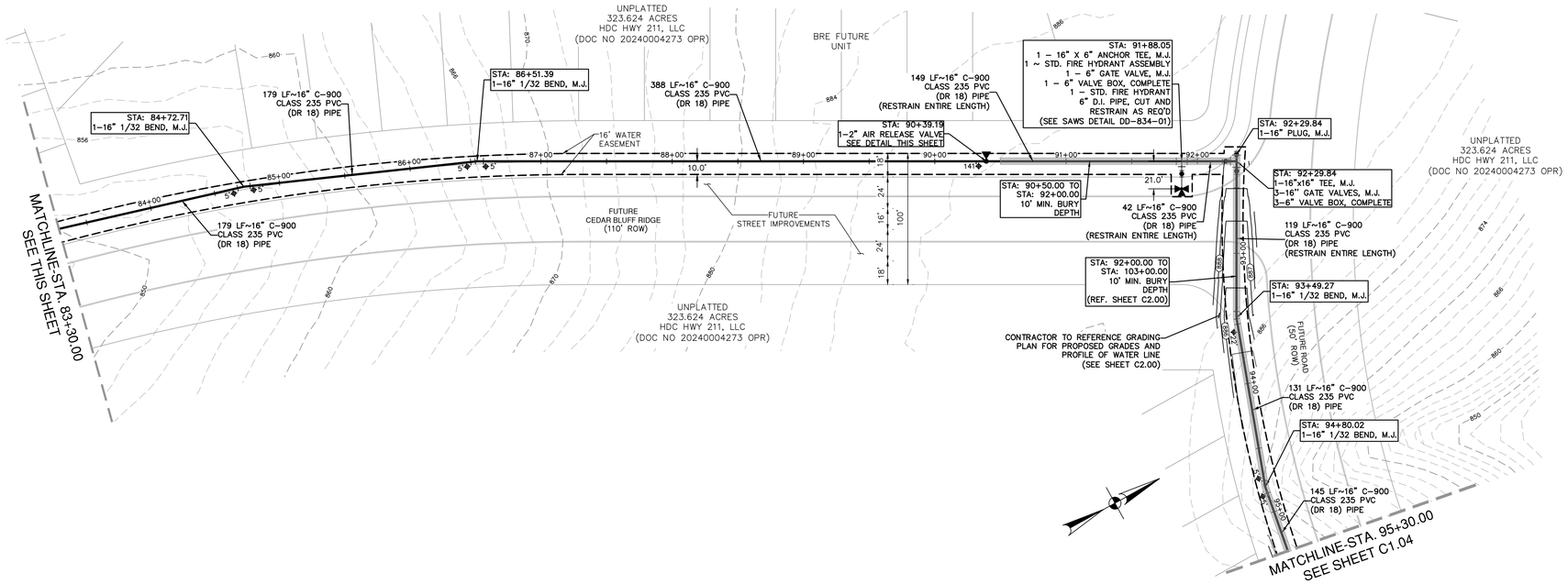
ONLY INSTALL IF REQUIRED BY INSPECTOR CONTRACTOR TO NOTIFY ENGINEER BEFORE INSTALLATION.

NOTE: CONTRACTOR MUST COMPLY WITH MANUFACTURE'S INSTALLATION OF PROPER RESTRAINTS. IF PROPER THRUST BLOCKING IS NOT INSTALLED, CONTRACTOR MUST INSTALL JOINT RESTRAINTS PER MANUFACTURER'S SPECIFICATION.

* DOUBLE NUT ALL RESTRAINING BOLTS.
* ANY TYPE OF JOINT RESTRAINT MUST BE BI–DIRECTIONAL.

2" AIR RELEASE VALVE DETAIL

NOT–TO–SCALE



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(STA. 70+75.00 TO STA. 95+30.00)

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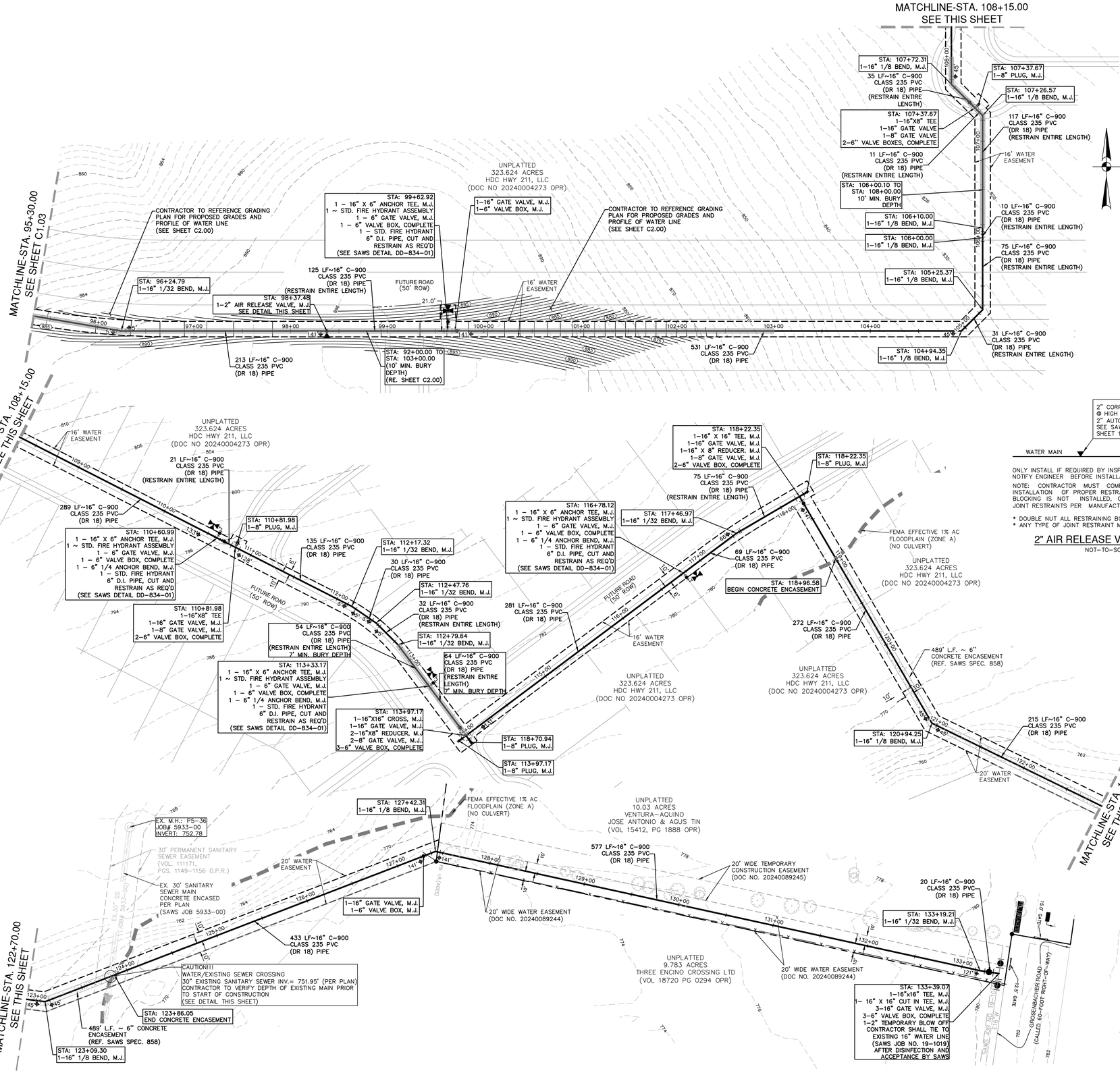
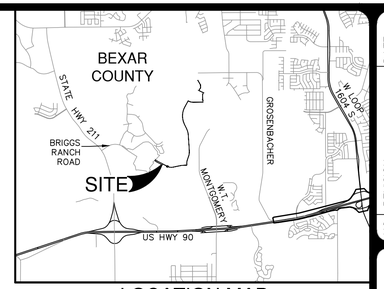




LOCATION MAP
NOT–TO–SCALE

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

WATER LEGEND

PROJECT LIMITS
EXISTING WATER — W — FIRE HYDRANT
EXISTING SEWER — SS — MANHOLE
PROPOSED SEWER — SS — MANHOLE
PROPOSED WATER — W — FIRE HYDRANT
SPECIFIED BURY DEPTH BELOW FINISHED GROUND (SEE PLAN)

2" CORPORATION STOP, IP X CU @ HIGH POINT OF MAIN.
2" AUTO AIR RELEASE VALVE. SEE SAWS STD. DWG. DD–846–02 SHEET 1 OF 1

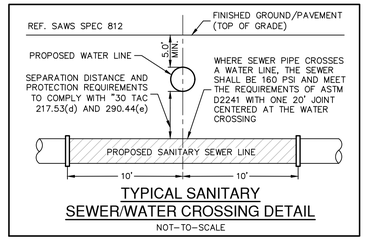
WATER MAIN

ONLY INSTALL IF REQUIRED BY INSPECTOR CONTRACTOR TO NOTIFY ENGINEER BEFORE INSTALLATION.

NOTE: CONTRACTOR MUST COMPLY WITH MANUFACTURE'S INSTALLATION OF PROPER RESTRAINTS. IF PROPER THRUST BLOCKING IS NOT INSTALLED, CONTRACTOR MUST INSTALL JOINT RESTRAINTS PER MANUFACTURER'S SPECIFICATION.

* DOUBLE NUT ALL RESTRAINING BOLTS.
* ANY TYPE OF JOINT RESTRAINT MUST BE BI–DIRECTIONAL.

2" AIR RELEASE VALVE DETAIL
NOT–TO–SCALE



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

IMPORTANT

CONTRACTOR TO COORDINATE CONSTRUCTION OF 16" WATER LINE CONSTRUCTION WITH CONSTRUCTION OF BRE PHASE 2 COLLECTOR, ROUGH EARTHWORK TO BE COMPLETED PRIOR TO INSTALLATION OF WATER LINE. PROPOSED WATER LINE TO BE INSTALLED 5' BELOW FINISHED GRADE UNLESS OTHERWISE NOTED.

⊕ JOINT RESTRAINT NOTE:

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

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.

ROW PERMIT NOTE:

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHTS–OF–WAY.

WATER (SAWS PRESSURE ZONE 1080)

Developer's Name: HDC HWY 211, LLC
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838–6784 FAX#
SAWS Block Map# 074564, 074566, 076564, 076566 Total EDU's 0 Total Acreage 17.18
Total Linear Footage of Pipe: 12,344 LF – 16" PIPE Plat No. –
Number of Lots – SAWS JOB NO. 25–1069

NO.	REVISION	DATE

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

16 INCH WATER DISTRIBUTION PLAN
(STA. 90+30.00 TO END)

PLAT NO. –
JOB NO. 11412–17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C1.04

Date: July 22, 2025, 10:43 AM — User ID: dmorris
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SAWS CONSTRUCTION NOTES

(LAST REVISED JANUARY 2022)

SAWS GENERAL SECTION

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE:

   A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM", TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART 1 CHAPTER 217 AND "PUBLIC DRINKING WATER", TAC TITLE 30 PART 1 CHAPTER 290.
   B. CURRENT TXDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE";
   C. CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION";
   D. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION";
   E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).

2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP) FROM THE CONSULTANT AND HAS BEEN NOTIFIED BY SAWS CONSTRUCTION INSPECTION DIVISION TO PROCEED WITH THE WORK AND HAS ARRANGED A MEETING WITH THE INSPECTOR AND CONSULTANT FOR THE WORK REQUIREMENTS. WORK COMPLETED BY THE CONTRACTOR WITHOUT AN APPROVED COUNTER PERMIT AND/OR A GCP WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTORS AND/OR THE DEVELOPER.

3. THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.

4. THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973, ON NOTIFICATION PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY WORK.

5. LOCATION AND DEPTH OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO SAWS.

6. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES AT LEAST 1-2 WEEKS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. PLEASE ALLOW UP TO 7 BUSINESS DAYS FOR LOCATES REQUESTING PIPE LOCATION MARKERS ON SAWS FACILITIES. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:

   - SAWS UTILITY LOCATES: HTTP://WWW.SAWS.ORG/SERVICE/LOCATES
   - COSA DRAINAGE (210) 207-0724 OR (210) 207-6026
   - COSA TRAFFIC SIGNAL OPERATIONS (210) 206-8480
   - COSA TRAFFIC SIGNAL DAMAGES (210) 207-3951
   - TEXAS STATE WIDE ONE CALL LOCATOR 1-800-545-6005 OR 811

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.

8. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.

9. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.

10. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.

11. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

    ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.

12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

13. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

SAWS WATER NOTES

1. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.

   - FOR WATER MAINS 12" OR HIGHER: SAWS EMERGENCY OPERATIONS CENTER (210) 233-2014

2. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOS- CONTAINING MATERIAL (ACM), MAY BE LOCATED WITHIN THE PROJECT LIMITS. SPECIAL WASTE MANAGEMENT PROCEDURES AND HEALTH AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS. SUCH WORK IS TO BE MADE UNDER SPECIAL SPECIFICATION ITEM NO. 3000, "SPECIAL SPECIFICATION FOR HANDLING ASBESTOS CEMENT PIPE".

3. VALVE REMOVAL: WHERE THE CONTRACTOR IS TO ABANDON A WATER MAIN, THE CONTROL VALVE LOCATED ON THE ABANDONING BRANCH WILL BE REMOVED AND REPLACED WITH A CAP/PLUG. (NSPI)

4. SUITABLE ANCHORAGE/THRUST BLOCKING OR JOINT RESTRAINT SHALL BE PROVIDED AT ALL OF THE FOLLOWING MAIN LOCATIONS: DEAD ENDS, PLUGS, CAPS, TEES, CROSSES, VALVES, AND BENDS, IN ACCORDANCE WITH THE STANDARD DRAWINGS DD-839 SERIES AND ITEM NO. 839, IN THE SAWS STANDARD SPECIFICATIONS FOR CONSTRUCTION.

5. ALL VALVES SHALL READ "OPEN RIGHT".

6. PRVS REQUIRED: CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 895 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 895 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF *PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. *NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).

7. PIPE DISINFECTION WITH DRY HTH FOR PROJECTS LESS THAN 800 LINEAR FEET. (ITEM NO. 847.3): MAINS SHALL BE DISINFECTED WITH DRY HTH WHERE SHOWN IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE INSPECTOR, AND SHALL NOT EXCEED A TOTAL LENGTH OF 800 FEET. THIS METHOD OF DISINFECTION WILL ALSO BE FOLLOWED FOR MAIN REPAIRS. THE CONTRACTOR SHALL UTILIZE ALL APPROPRIATE SAFETY MEASURE TO PROTECT HIS PERSONNEL DURING DISINFECTION OPERATIONS.

8. BACKFLOW PREVENTION DEVICES:

   - ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS ARE REQUIRED TO HAVE BACKFLOW PREVENTION DEVICES.
   - ALL COMMERCIAL BACKFLOW PREVENTION DEVICES MUST BE APPROVED BY SAWS PRIOR TO INSTALLATION.

9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, AND SAWS HAS RELEASED THE MAIN FOR TIE-IN AND USE.

10. DIVISION VALVES: DIVISION VALVES SHOWN ON PLANS OR NOT SHOWN ON PLANS BUT FOUND IN THE FIELD SHALL ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF AND ONLY WITH PRIOR WRITTEN APPROVAL OF THE SAWS DIRECTOR OF PRODUCTION AND OPERATIONS AND PROPER COORDINATION WITH ALL SAWS DEPARTMENTS. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE INSPECTOR A MINIMUM OF TWO WEEKS IN ADVANCE TO START THE COORDINATION PROCESS AND WILL BE INFORMED BY THE INSPECTOR WHEN THE DIVISION VALVE WILL BE OPERATED BY THE SAWS DISTRIBUTION AND COLLECTION STAFF. THE DIVISION VALVE CAN ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF MEMBER NOT THE INSPECTOR OR THE CONTRACTOR. OPERATION OF A DIVISION VALVE WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE SAWS DISTRIBUTION AND COLLECTION STAFF WILL CONSTITUTE A MATERIAL BREACH OF ANY WRITTEN SAWS CONTRACT OR PERMIT IN ADDITION TO SUBJECTING THE CONTRACTOR TO LIABILITY FOR ANY AND ALL FINES, FEES, OR OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, THAT MAY ARISE FROM OR BE CAUSED BY THE OPERATION OF THE VALVE WITHOUT PRIOR WRITTEN PERMISSION. PLEASE BE INFORMED THAT THE APPROVAL OF THE OPERATION OR OPENING OR CLOSING OF A DIVISION VALVE CAN TAKE SEVERAL WEEKS FOR APPROVAL. DIVISION VALVES WILL ALSO HAVE A VALVE LID LABELED DIVISION VALVE AND A LOCKING MECHANISM INSTALLED WITH A KEY. THE LOCK AND KEY MECHANISM WILL BE PAID FOR BY THE CONTRACTOR BUT WILL BE INSTALLED BY SAWS DISTRIBUTION AND COLLECTION STAFF.

PROJECT WATER NOTES

1. MACHINE CHLORINATION BY THE S.A.W.S.
2. ALL 8", 12" AND 16" PIPE SHALL BE P.V.C. C-900 CLASS 235 DR 18.
3. ALL MAINS SHALL BE HYDROSTATICALLY TESTED BY THE CONTRACTOR, AS PROVIDED FOR IN THE SPECIAL CONDITIONS.
4. THE WATER LINES WILL BE SET FROM THE STREET HUBS BEFORE THIS CONTRACT BEGINS. STREET CUT SHEETS WILL BE SUPPLIED TO THE CONTRACTOR. THERE SHOULD BE NO ADDITIONAL STAKES REQUIRED, AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE SITE AND VERIFY THAT ALL STAKES REQUIRED FOR HIS WORK ARE IN PLACE AT THE TIME THE CONSTRUCTION BEGINS. IF ANY STAKES ARE MISSING THE ENGINEER SHOULD BE NOTIFIED IMMEDIATELY. AFTER CONSTRUCTION BEGINS, ALL CONSTRUCTION STAKES, MARKS, ETC., SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR, AND IN CASE OF DESTRUCTION OR REMOVAL BY THE CONTRACTOR, HIS EMPLOYEE OR ANY OTHER MEANS, SUCH STAKES, MARKS, ETC., SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS, TAPS AND LENGTH OF SERVICE CONNECTIONS.
6. THE LOT CORNERS WILL BE SET BY THE ENGINEER FOR INSTALLATION OF ALL WATER SERVICES. THESE LOT CORNERS SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR SO THE METER BOXES CAN BE SET IN PHASE II. ANY LOT CORNER DESTROYED OR REMOVED BY THE CONTRACTOR, HIS EMPLOYEES, OR BY ANY OTHER MEANS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
7. STREETS WILL HAVE BEEN EXCAVATED DOWN TO SUBGRADE AND THE PARKWAY WILL BE CUT DOWN TO TOP OF CURB BY THE STREET CONTRACTOR, PRIOR TO CONSTRUCTION OF THE WATER MAINS. IT WILL BE THE UTILITY CONTRACTOR'S RESPONSIBILITY TO PROVIDE A PAD FOR HIS EQUIPMENT.
8. WATER METER BOXES IF APPLICABLE SHALL BE INSTALLED NINE FEET FROM FACE OF CURB TO CENTER OF THE METER BOX.
9. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
10. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED AND THE S.A.W.S. RELEASES THE MAIN FOR TIE-IN AND USE.
11. UNIT PRICE BID FOR "STANDARD FIRE HYDRANT ASSEMBLY" SHALL INCLUDE FIRE HYDRANT, 6-INCH GATE VALVE AND 6-INCH VALVE BOX COMPLETE, ANCHOR BEND, AND ALL 6-INCH DI PIPE REQUIRED (DI PIPE REQUIRED SHALL INCLUDE ALL PIPE FROM THE TEE ON THE MAIN LINE TO THE FIRE HYDRANT).
12. WHEN SEWER LINES ARE INSTALLED IN THE VICINITY OF WATER MAINS, SUCH INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS" (1988 OR ANY REVISIONS THERETO).
13. A CLEAR SPACE SHALL BE PROVIDED AROUND ALL FIRE HYDRANTS. THIS AREA SHOULD HAVE A MINIMUM DIAMETER OF 3.0' AND BE CLEAN OF VERTICAL OBSTRUCTIONS, VALVES, AND METER BOXES.
14. SAWS REQUIRES LEAD FREE (< 0.25%) FIRE HYDRANTS.
15. UNLESS OTHERWISE NOTED ALL SERVICES SHALL BE 3/4" WITH 5/8" METER.

WATER (SAWS PRESSURE ZONE 1080)

Developer's Name: HDC HWY 211, LLC
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone#: (210) 838-6784 FAX#:
SAWS Block Map# 076564, 074566, 076566 Total EDU's: 0 Total Acreage: 17.18
Total Linear Footage of Pipe: 12,344 LF - 16" PIPE Plat No.: -
Number of Lots: - SAWS JOB NO.: 25-1069

NO.	REVISION	DATE

STATE OF TEXAS
MATTHEW GEISTWEIDT
118867
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN

SAN ANTONIO, TEXAS

16 INCH WATER DISTRIBUTION NOTES

PLAT NO. -
JOB NO. 11412-17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C1.10

Date: July 22, 2025, 10:43 AM - User ID: dmorris
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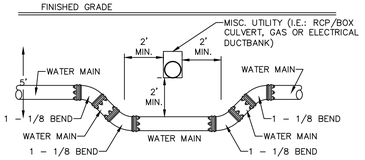

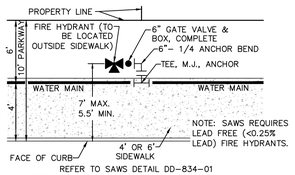

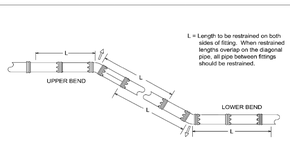

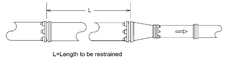

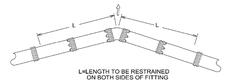

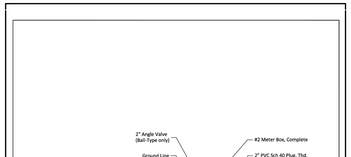

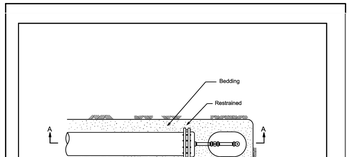

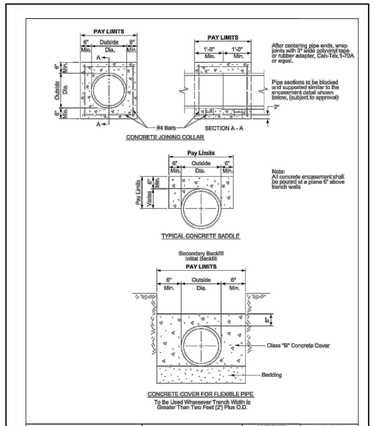

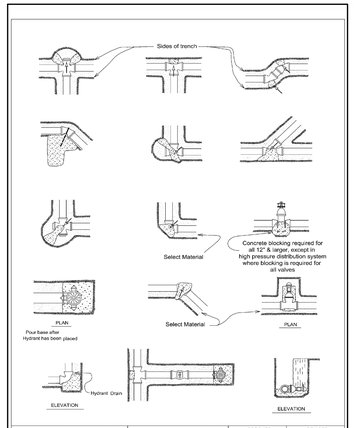

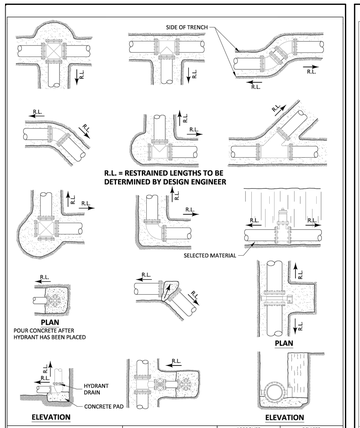

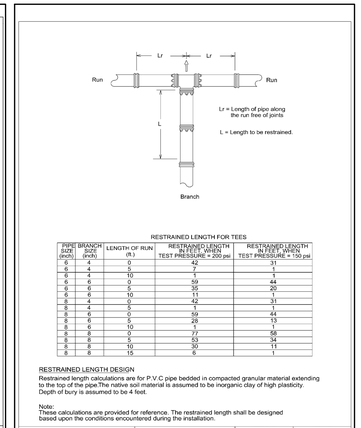

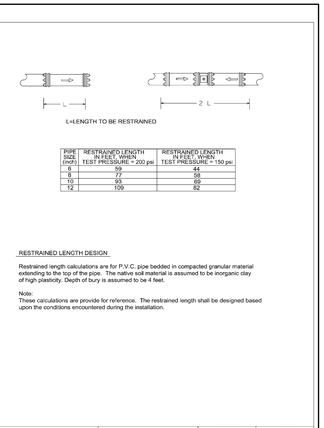

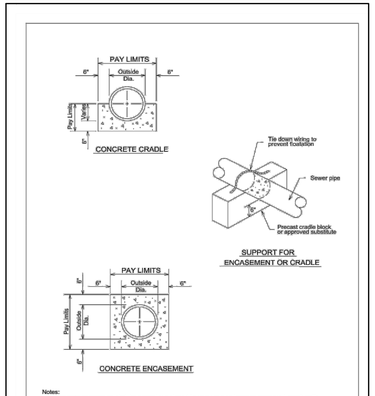

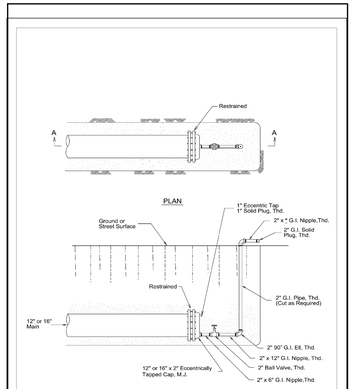

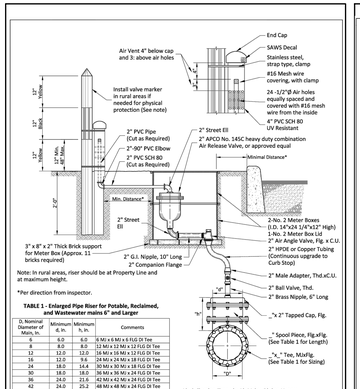

ALL JOINTS ARE FULLY RESTRAINED IN ACCORDANCE WITH SAWS SPECIFICATION TABLE DD–839–06.

TYPICAL UTILITY/WATER CROSSING DETAIL

NOT–TO–SCALE

NOTE: SAWS REQUIRES LEAD FREE (<0.25% LEAD) FIRE HYDRANTS.

REFER TO SAWS DETAIL DD–834–01

FIRE HYDRANT INSTALLATION

NOT–TO–SCALE

PIPE SIZE (inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IIN FEET TEST PRESSURE = 200 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200psi	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi
6	45	5	24	8	18	6
6	22.5	5	12	4	9	3
6	11.25	5	6	2	4	1
6	45	10	24	5	18	4
6	22.5	10	12	2	9	2
6	11.25	10	6	1	4	1
8	45	5	32	11	24	8
8	22.5	5	15	5	11	4
8	11.25	5	8	3	6	2
8	45	10	32	7	24	5
8	22.5	10	15	3	11	2
8	11.25	10	8	2	6	1
12	45	5	45	16	34	12
12	22.5	5	22	7	16	6
12	11.25	5	11	4	8	3
12	45	10	45	10	34	7
12	22.5	10	22	5	16	3
12	11.25	10	11	2	8	2

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
RESTRAINED LENGTHS VERTICAL OFFSETS
APPROVED MARCH 2008
REVISED AUG 2019
DD-839-06
SHEET 1 OF 1

L=Length to be restrained

PIPE SIZE (inch)	SMALL SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	30	23
8	4	55	42
8	6	32	24
12	4	95	71
12	6	80	60
12	8	58	43

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. Th restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
RESTRAINED LENGTHS FOR REDUCERS
APPROVED MARCH 2008
REVISED AUG 2019
DD-839-07
SHEET 1 OF 1

L=LENGTH TO BE RESTRAINED ON BOTH SIDES OF FITTING

PIPE SIZE (inch)	BEND ANGLE (deg)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	90	23	17
6	45	9	7
6	22.5	5	3
6	11.25	2	2
8	90	30	22
8	45	12	9
8	22.5	6	4
8	11.25	3	2
12	90	43	32
12	45	18	13
12	22.5	8	6
12	11.25	4	3

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
RESTRAINED LENGTHS FOR HORIZONTAL BENDS
APPROVED MARCH 2008
REVISED AUG 2019
DD-839-08
SHEET 1 OF 1

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* Cut to fit in meter box

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS
APPROVED MARCH 2008
REVISED AUG 2019
DD-844-02
SHEET 3 OF 5

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* Cut to fit in meter box.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
2" PERMANENT BLOW-OFF ASSEMBLY ON 12" & 16" MAINS
APPROVED MARCH 2008
REVISED MAY 2013
DD-844-02
SHEET 1 OF 5

CONCRETE COVER FOR FLEXIBLE PIPE
To Be Used Whereever Trench Width is Greater Than Two Feet (2') Plus O.D.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
TYPICAL CONCRETE DETAILS
APPROVED MARCH 2008
REVISED AUG 2019
DD 858-02
SHEET 1 OF 1

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
THRUST BLOCKS FOR FITTINGS (WATER ONLY)
APPROVED March 2008
REVISED AUG 2019
DD-839-01
SHEET 1 OF 2

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
JOINT RESTRAINTS FOR FITTINGS (WATER ONLY)
APPROVED March 2008
REVISED December 2019
DD-839-01
SHEET 2 OF 2

Lr = Length of pipe along the run free of joints

L = Length to be restrained.

RESTRAINED LENGTH FOR TEES

PIPE SIZE (inch)	BRANCH SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	0	42	31
6	4	5	7	1
6	4	10	1	1
6	6	0	59	44
6	6	5	35	20
6	6	10	11	1
8	4	0	42	31
8	4	5	1	1
8	6	0	59	44
8	6	5	28	13
8	6	10	1	1
8	8	0	77	58
8	8	5	53	34
8	8	10	30	11
8	8	15	6	1

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe.The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
RESTRAINED LENGTHS FOR TEES
APPROVED March 2008
REVISED AUG 2019
DD-839-04
SHEET 1 OF 2

RESTRAINED LENGTH FOR TEES (Cont'd)

PIPE SIZE (inch)	BRANCH SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
12	4	0	42	31
12	4	5	1	1
12	6	0	59	44
12	6	5	13	1
12	6	10	1	1
12	8	0	77	58
12	8	5	42	23
12	8	10	7	1
12	8	15	1	1
12	12	0	109	82
12	12	5	86	59
12	12	10	63	35
12	12	15	39	12

RESTRAINED LENGTH DESIGN
Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe.The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
RESTRAINED LENGTHS FOR TEES
APPROVED MARCH 2008
REVISED AUG 2019
DD-839-04
SHEET 2 OF 2

L=LENGTH TO BE RESTRAINED

PIPE SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	59	44
8	77	58
10	93	69
12	109	82

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provide for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
RESTRAINED LENGTHS FOR DEAD ENDS / INLINE VALVES
APPROVED MARCH 2008
REVISED AUG 2019
DD-839-05
SHEET 1 OF 1

Notes:
1) All concrete encasement shall be poured at a plane 6" above the pipe between excavated trench walls.
2) All sewer pipe with less than 3' of cover to subgrade shall be concrete encased.
3) All Force mains shall be provided with thrust blocks, where changes in direction occur, at Tees, Bends, Crosses, changes in size, stops, or as directed by SAWS.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
TYPICAL CONCRETE ENCASEMENT DETAILS
APPROVED March 2008
REVISED AUG 2019
DD-858-01
SHEET 1 OF 1

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* Cut as required to extend beyond excavation.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
2" TEMPORARY BLOW-OFF ASSEMBLY ON 12" & 16" MAINS
APPROVED March 2008
REVISED AUG 2019
DD-844-01
SHEET 2 OF 4

Note: In rural areas, riser should be at Property Line and at maximum height.

*Per direction from inspector.

TABLE 1 - Enlarged Pipe Riser for Potable, Reclaimed, and Wastewater mains 6" and Larger

D, Nominal Diameter of Main, In.	Minimum d, in.	Minimum h, in.	Comments
6	6.0	6.0	6 MJ x 6 MJ x 6 FLG DI Tee
8	8.0	8.0	12 MJ x 12 MJ x 12 FLG DI Tee
12	12.0	12.0	16 MJ x 16 MJ x 12 FLG DI Tee
16	12.0	9.6	24 MJ x 24 MJ x 18 FLG DI Tee
24	18.0	14.4	30 MJ x 30 MJ x 18 FLG DI Tee
30	18.0	18.0	36 MJ x 36 MJ x 24 FLG DI Tee
36	24.0	21.6	42 MJ x 42 MJ x 24 FLG DI Tee
42	24.0	25.2	48 MJ x 48 MJ x 24 FLG DI Tee
48	24.0	28.8	Welded-on FLG Outlet
54	30.0	32.4	Welded-on FLG Outlet
60	36.0	36.0	Welded-on FLG Outlet
66	24.0	23.1	Welded-on FLG Outlet
72	24.0	25.2	Welded-on FLG Outlet

Air Collection Traps in Air Valve Piping Notes:
1. Dimensions derived from AWWA Manual 2nd Edition: Chapter 6 M51 Air Valves: Air-Release, Air/Vacuum & Combination

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
INSTALLATION OF 2" AIR RELEASE VALVE
APPROVED March 2008
REVISED August 2019
DD-846-02
SHEET 1 OF 1

NOTE:
Use:
(A) Anchoring Tee with M.J. Fitting or M.J. Valve
(B) Std. M.J. Tee with Anchoring Coupling or Anchoring Fitting
NOTE:
Polywrap Below Ground

NOTE: Operation of Hydrant shall be Full Opened or Full Closed Throttleling is Prohibited.

* Resilient Seat

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
FIRE HYDRANT INSTALLATION (JOINT RESTRAINT)
APPROVED MAY 2013
REVISED AUG 2019
DD-834-01
SHEET 1 OF 3

NOTE: Operation of Hydrant shall be Full Opened or Full Closed Throttleling is Prohibited.

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
FIRE HYDRANT WITH OFFSET
APPROVED MAY 2013
REVISED AUG 2019
DD-834-01
SHEET 2 OF 3

NOTE: Operation of Hydrant shall be Full Opened or Full Closed Throttleling is Prohibited.

NOTE: No Extensions Allowed

PROPERTY OF
SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS
FIRE HYDRANT WITH MAIN GREATER THAN 6 FOOT DEPTH
APPROVED MAY 2013
REVISED AUG 2019
DD-834-01
SHEET 3 OF 3

WATER (SAWS PRESSURE ZONE 1080)

Developer's Name: HDC HWY 211, LLC
Address: 100 NE LOOP 410, SUITE 1080
City: SAN ANTONIO State: TEXAS ZIP: 78216
Phone# (210) 838-6784 FAX#
SAWS Block Map# 074564, 074566 076564, 076566 Total EDU's 0 Total Acreage 17.18
Total Linear Footage of Pipe: 12,344 LF – 16" PIPE Plat No. –
Number of Lots – SAWS JOB NO. 25–1069

NO.	REVISION	DATE

MATTHEW GEISTWEIDT
118861
7-22-2025

PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

16 INCH WATER DISTRIBUTION DETAILS

PLAT NO. -
JOB NO. 11412–17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C1.20

Date: July 22, 2025, 10:44 AM – User ID: dmorris
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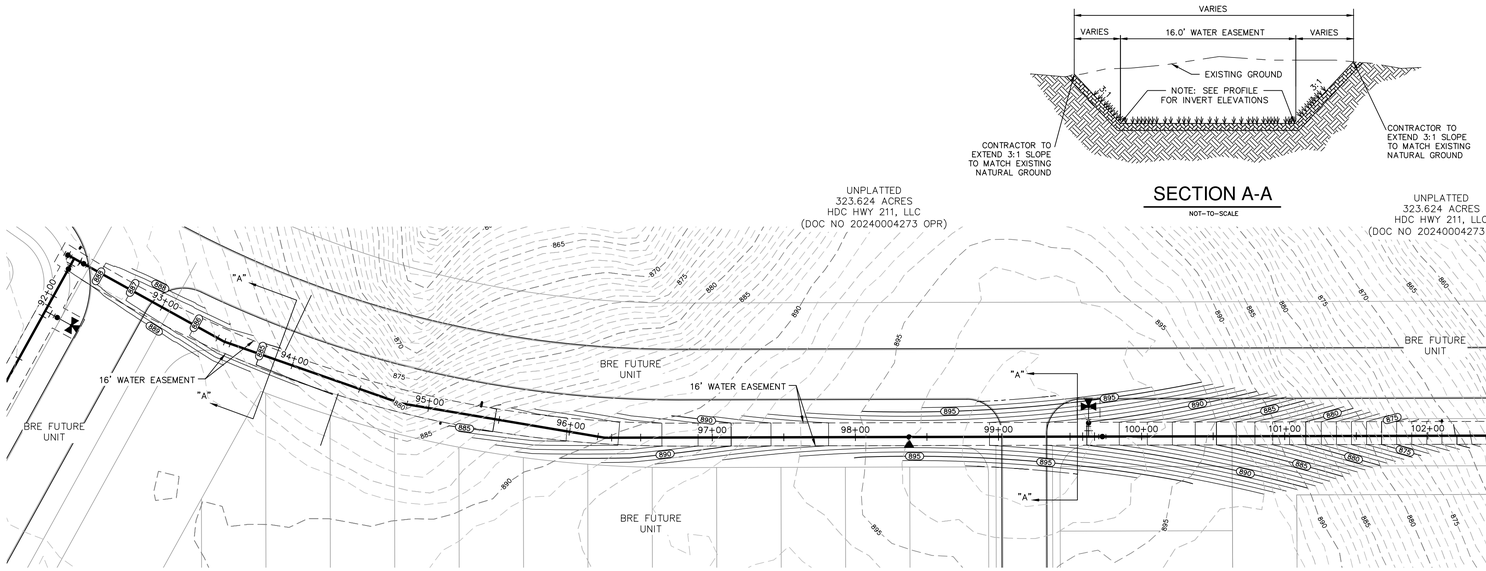
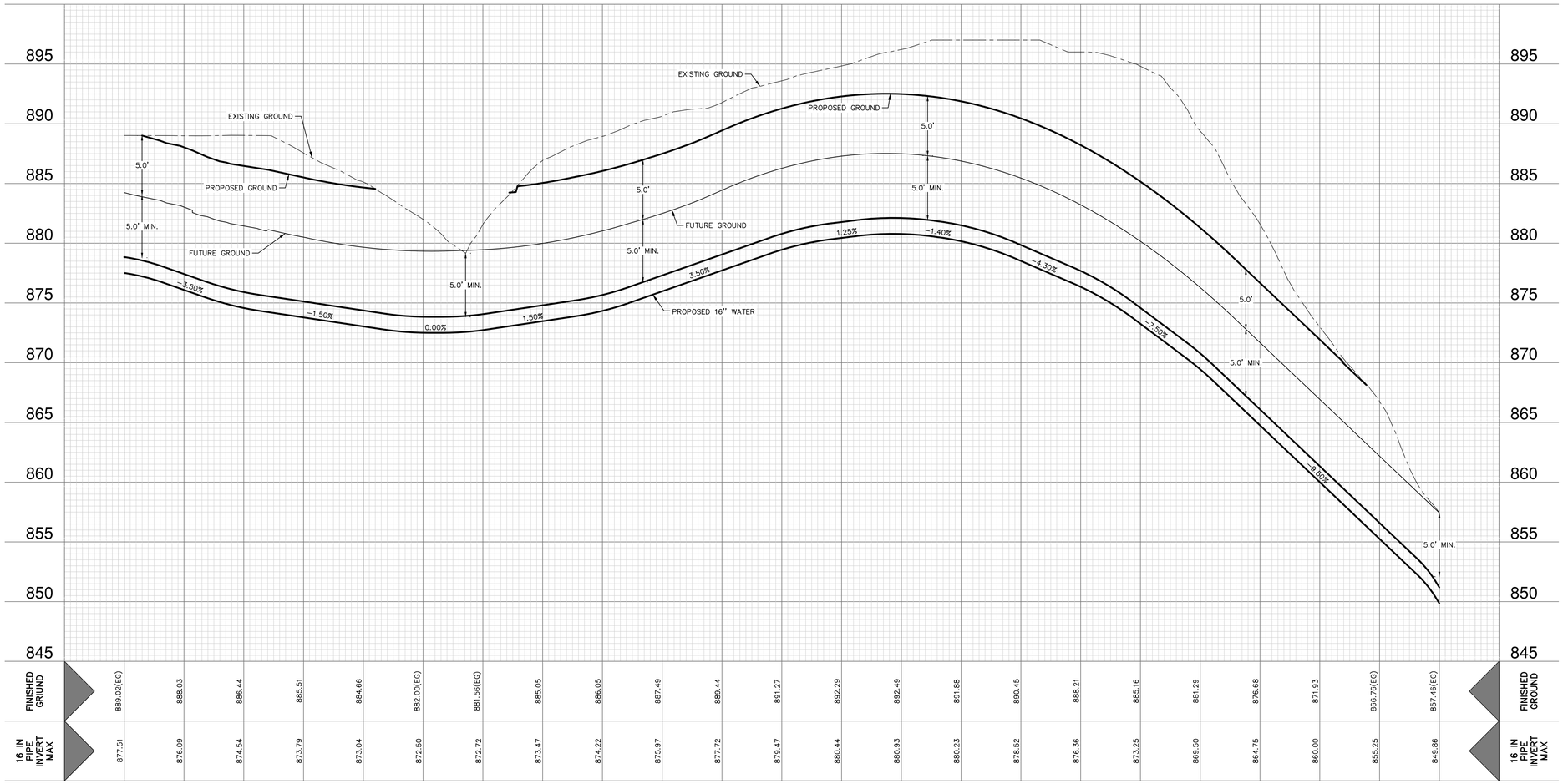
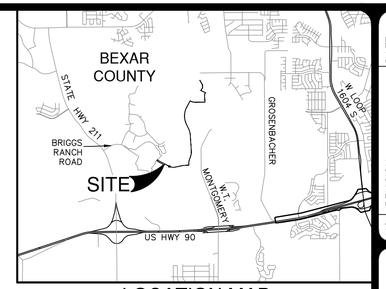


PROPOSED 16" WATER LINE
STA. 92+00.00 TO 103+00.00

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





LOCATION MAP
NOT-TO-SCALE

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

GRADING LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR 976
- PROPOSED CONTOUR 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)

GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).

2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.

5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.

6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.

8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OFF SITE THOSE MATERIALS NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPINGS AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.

9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.

10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS (USE OF SILT FENCES, ETC.) TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPERTY, STREETS, OR DRAINAGE WAYS. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS WHICH WASHES OFFSITE OR INTO EXISTING STORM DRAIN SYSTEMS. (SEE SWPPP PLANS & TPDES BOOK).

11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HEREON WITHIN +/– ONE–TENTH (0.10) FOOT.

12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE SHOWN.

13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING SITE AND PROPOSED IMPROVEMENTS.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).

15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN WORKING NEAR UTILITIES, GAS LINES, SEWER, OR EXISTING APPURTENANCES. PRIOR TO PERFORMING ANY EXCAVATION, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND ASSURE HIMSELF THAT ALL UTILITIES HAVE BEEN ADEQUATELY LOCATED AND IDENTIFIED. THE ENGINEER SHALL BE NOTIFIED IF ANY UTILITY CONFLICTS ARE DISCOVERED.

16. UTILITIES SHOWN ON THE PLANS ARE FROM INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION AND 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 CONTRACTORS RESPONSIBILITY TO REPAIR, AT HIS OWN EXPENSE.

17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.

18. FOR FILL PLACEMENT ON HILL SIDES OR STEEP SLOPE AREAS, THE CONTRACTOR SHALL REFERENCE THE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTIONS REGARDING BENCHING.

19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT–OF–WAY WITHOUT A PERMIT.

NO.	REVISION	DATE

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

16 INCH WATER GRADING & PROFILE DETAIL

PLAT NO. -
JOB NO. 11412–17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C2.00

Date: July 22, 2025, 10:45 AM – User ID: dmorris
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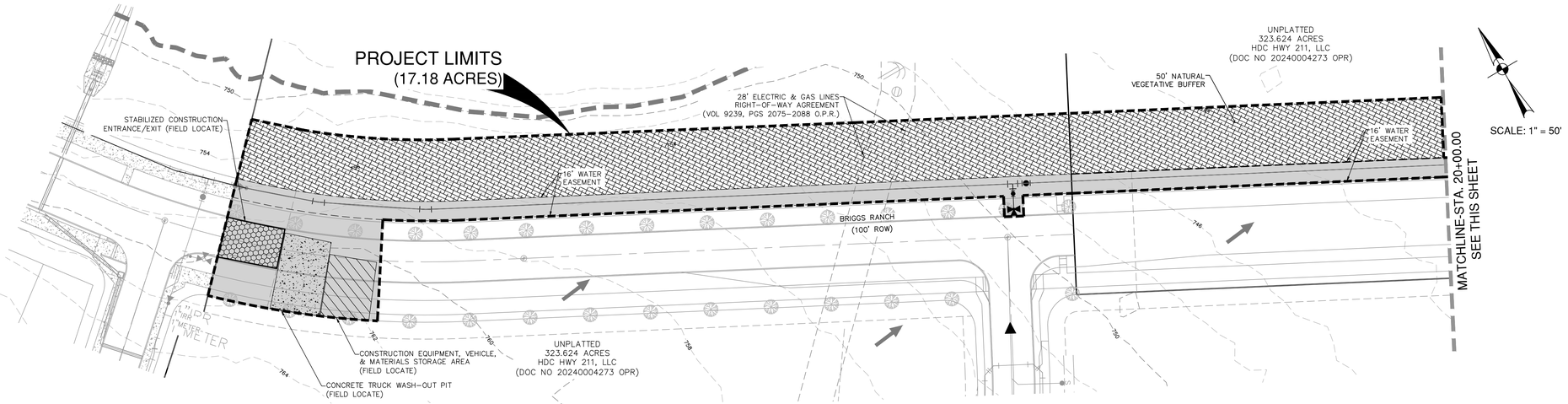

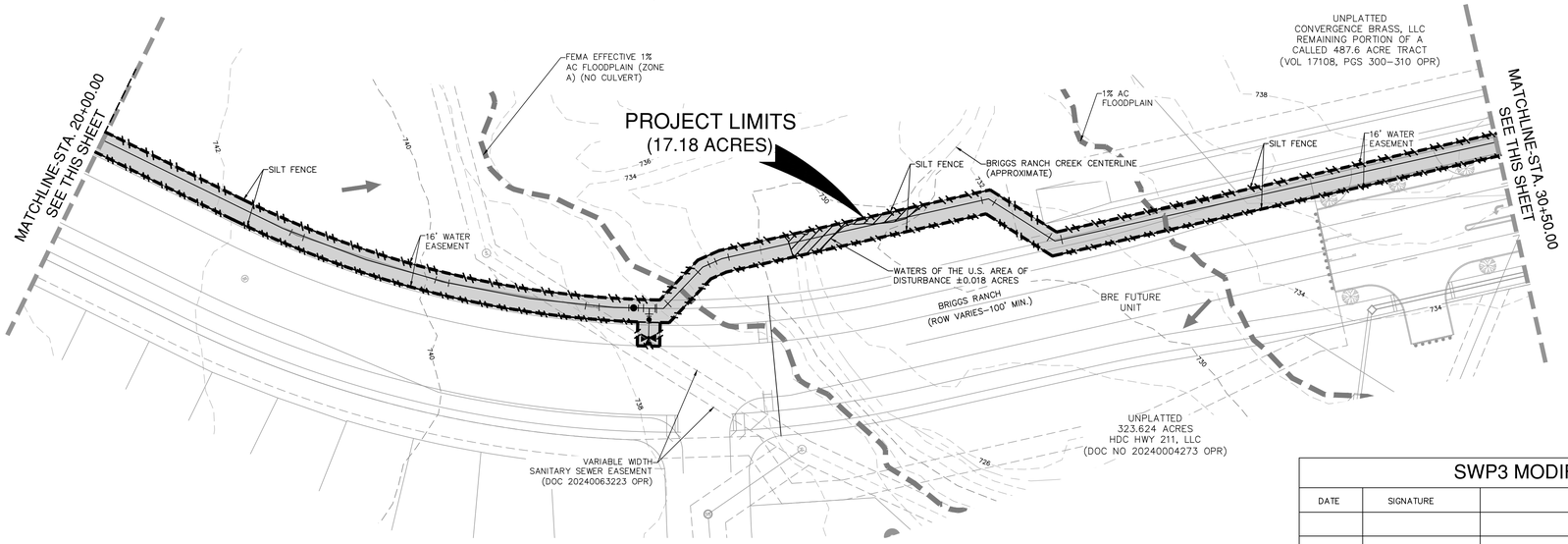

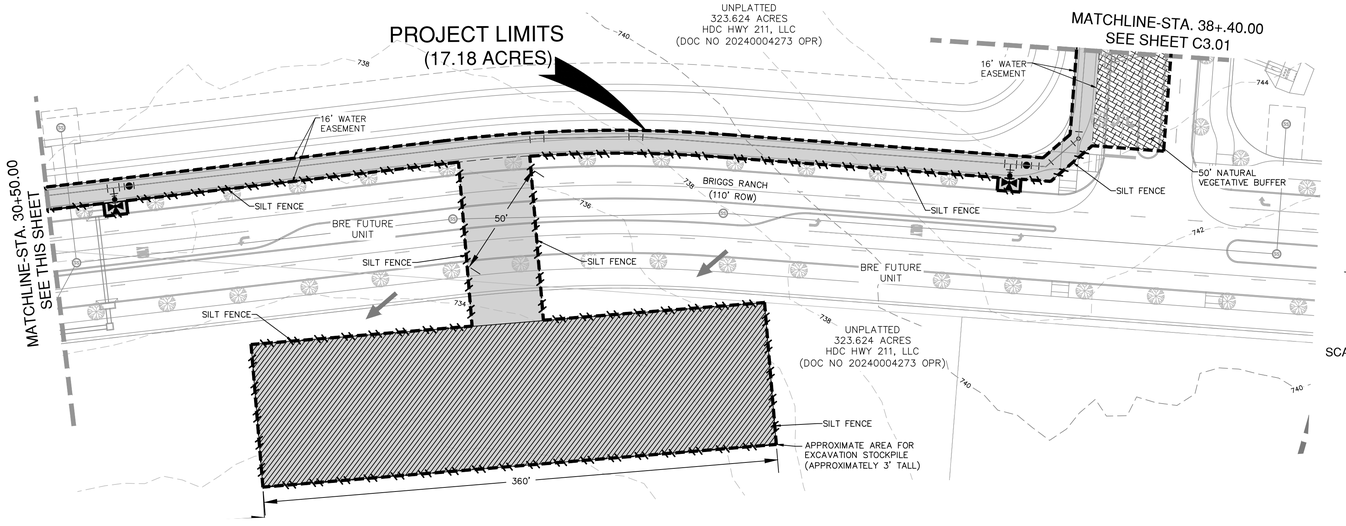

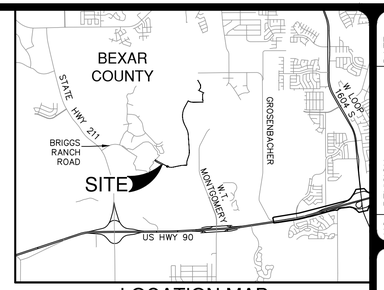

LOCATION MAP
NOT-TO-SCALE

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

SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR 976
- PROPOSED CONTOUR 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM (TO BE REMOVED POST CONSTRUCTION)
- GRAVEL FILTER BAGS
- GRAVEL BAG BERM (CAN BE REMOVED ONCE CHANNEL IS STABILIZED OR RIP-RAP IS IN PLACE)
- LIMITS OF DISTURBED AREA (6.56 ACRES)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- 50' NATURAL VEGETATIVE BUFFER

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

2. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.

3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.

4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.

5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

6. FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.

7. 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.

8. 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.

9. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.

10. 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.

11. 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.

12. 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.

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SWP3 MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

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EXHIBIT 2

DATE
NO. REVISION

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

STORM WATER POLLUTION PREVENTION PLAN
SHEET (1 OF 4)

PLAT NO. -
JOB NO. 11412-17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C3.00

Date: July 22, 2025, 10:47 AM — User ID: dmorris
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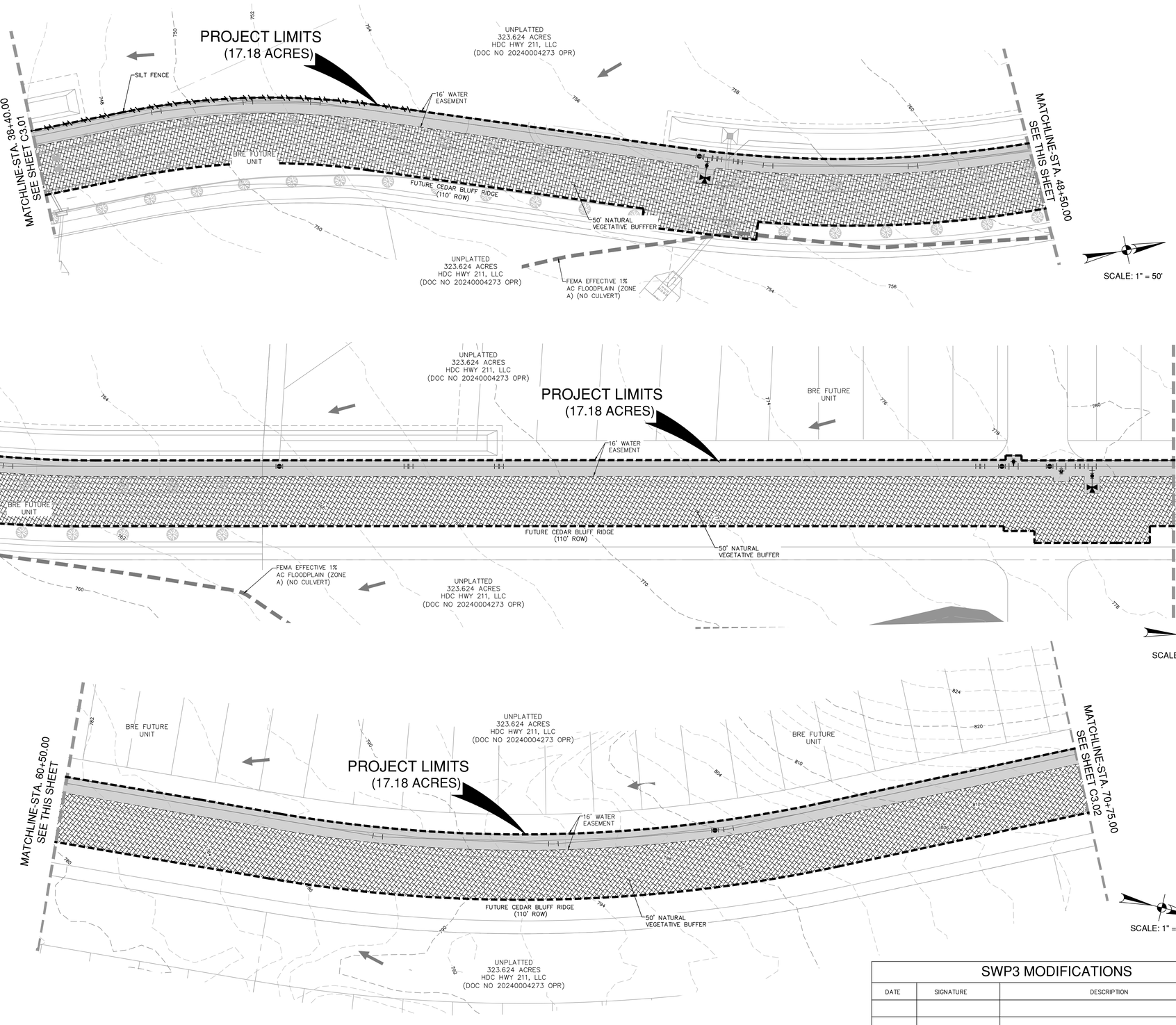

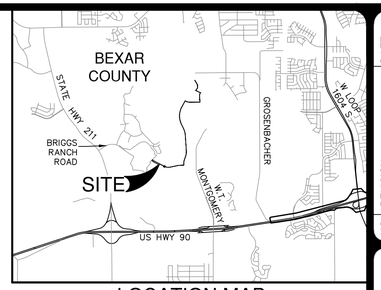

LOCATION MAP
NOT-TO-SCALE

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

SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR (976)
- PROPOSED CONTOUR (970)
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM (TO BE REMOVED POST CONSTRUCTION)
- GRAVEL FILTER BAGS
- GRAVEL BAG BERM (CAN BE REMOVED ONCE CHANNEL IS STABILIZED OR RIP-RAP IS IN PLACE)
- LIMITS OF DISTURBED AREA (6.56 ACRES)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- 50' NATURAL VEGETATIVE BUFFER

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

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7. 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.

8. 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.

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PAPE-DAWSON
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TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

STORM WATER POLLUTION PREVENTION PLAN
(SHEET 2 OF 4)

PLAT NO. -
JOB NO. 11412-17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C3.01

Date: July 22, 2025, 10:48 AM — User ID: dmorris
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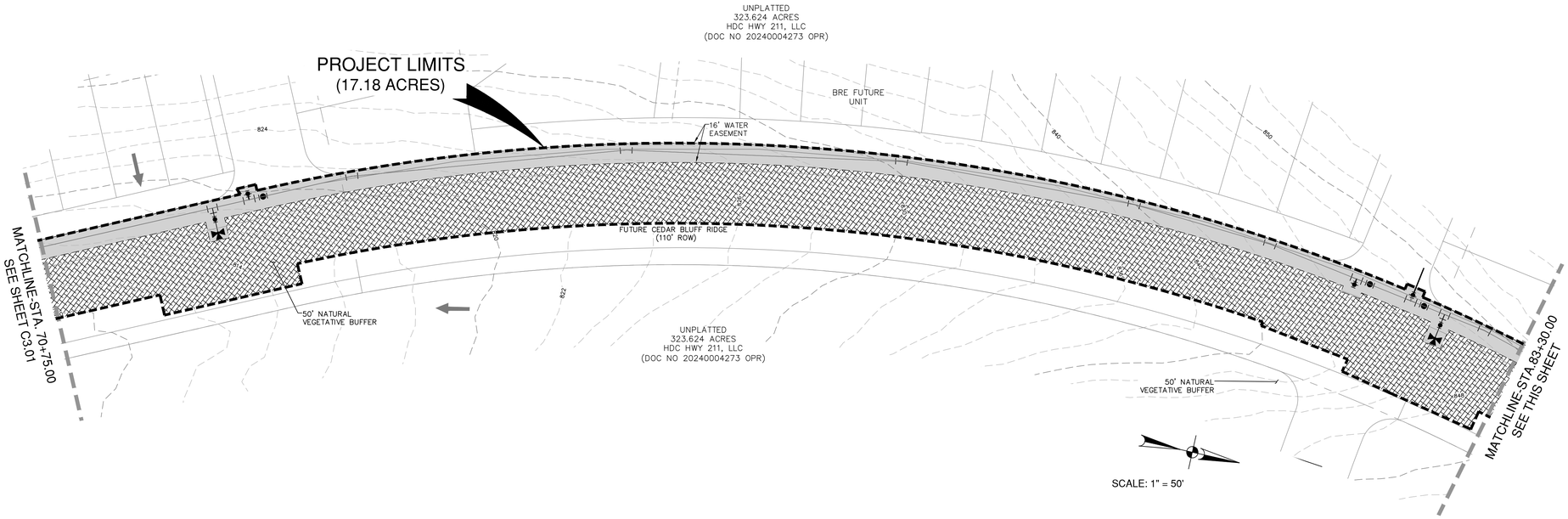

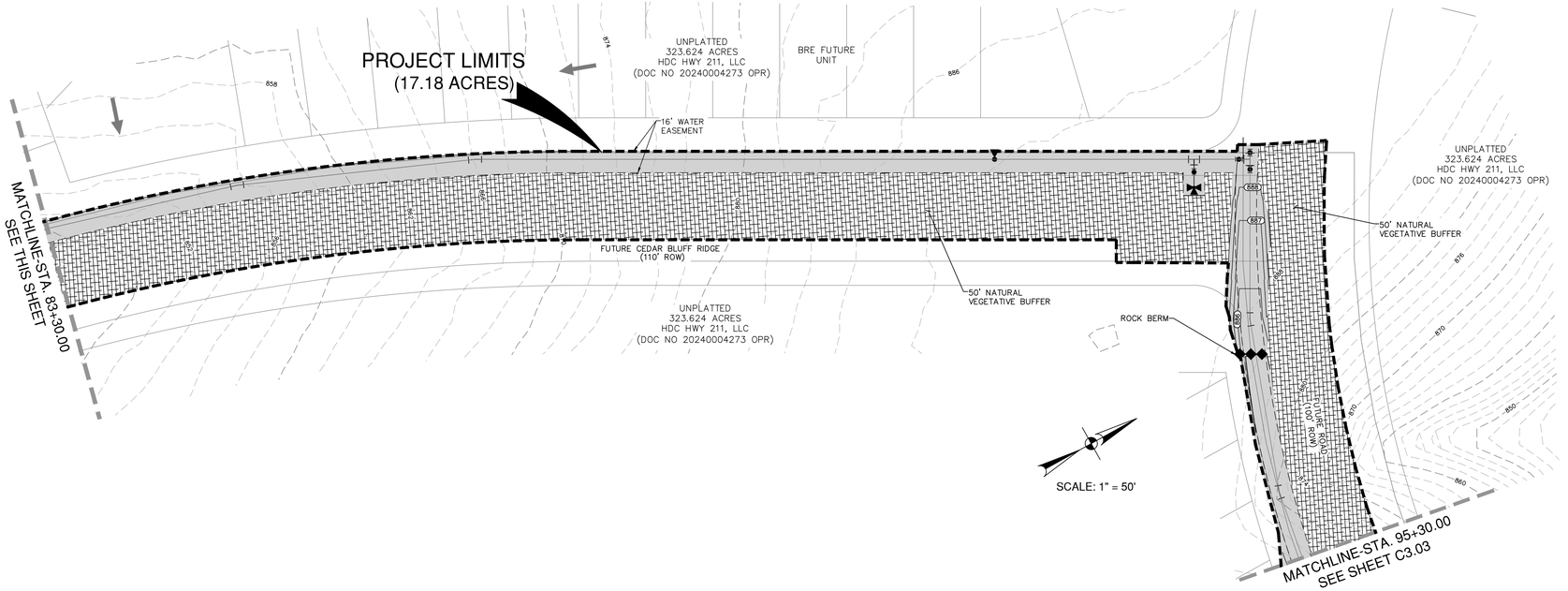

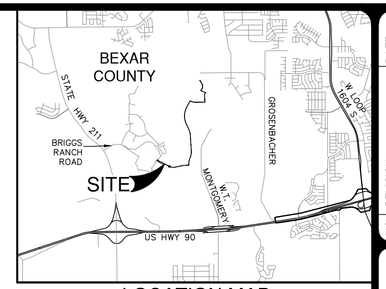

LOCATION MAP

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STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

STORM WATER POLLUTION PREVENTION PLAN
(SHEET 3 OF 4)

PLAT NO. -
JOB NO. 11412-17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C3.02

Date: July 22, 2025, 10:48 AM — User ID: dmorris
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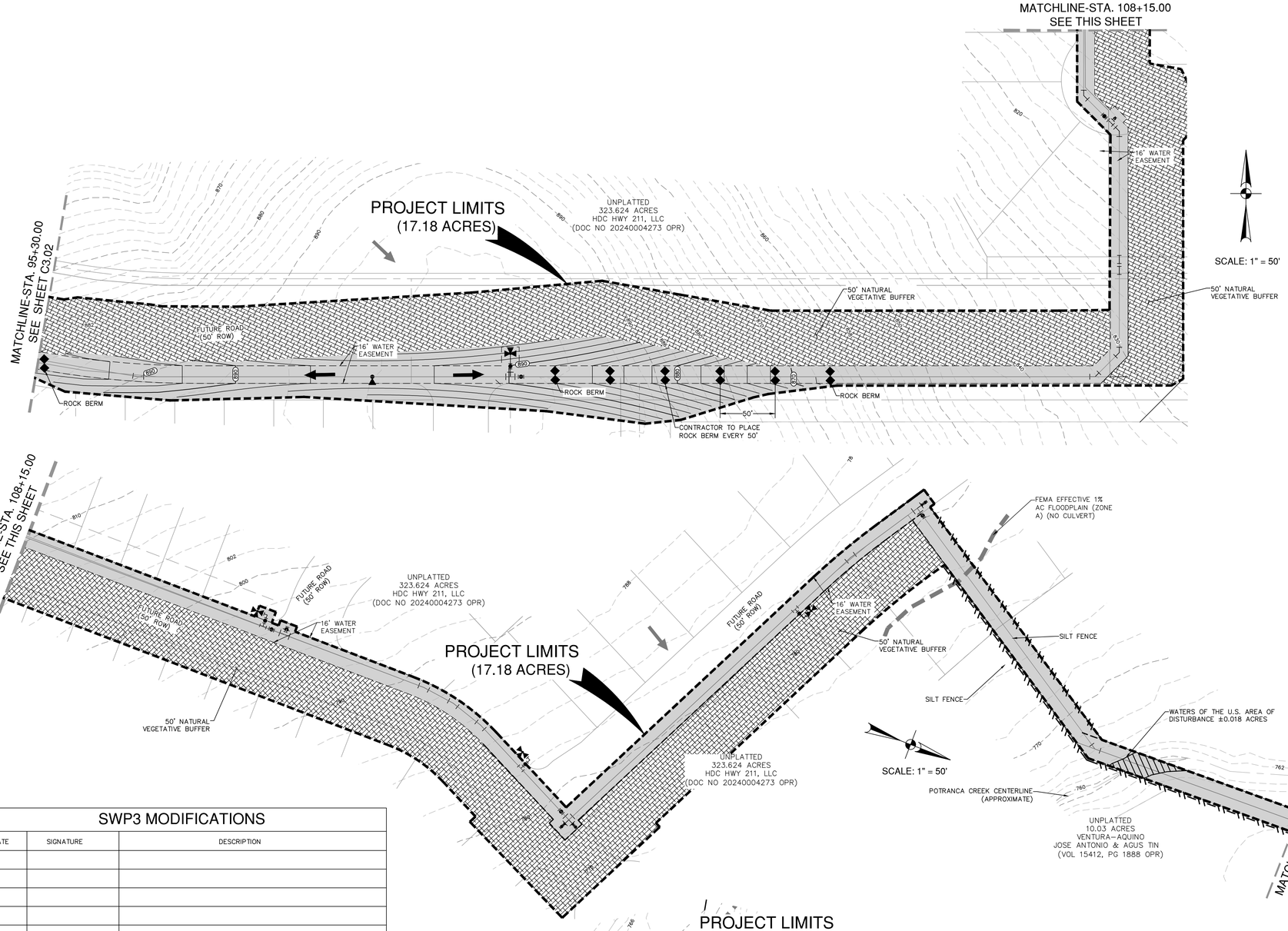

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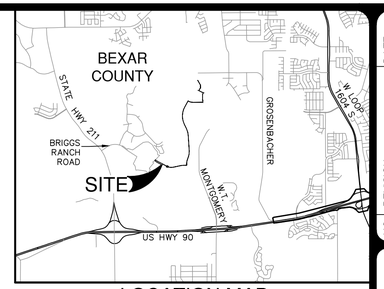

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STATE OF TEXAS
MATTHEW GEISTWEIDT
118881
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE-DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

STORM WATER POLLUTION PREVENTION PLAN
(SHEET 4 OF 4)

PLAT NO. -
JOB NO. 11412-17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C3.03

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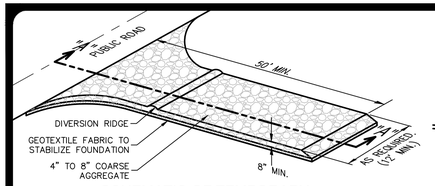
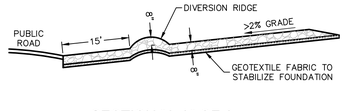


SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT



SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

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/YD², A MULLEN BURST RATING OF 140 LB/IN², 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 OBJECTIONABLE 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.

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.

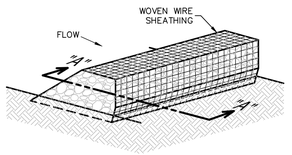
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

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.

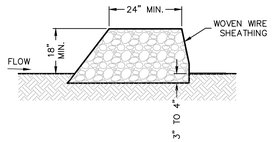
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE



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 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.

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.

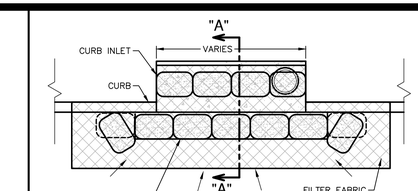
COMMON TROUBLE POINTS

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

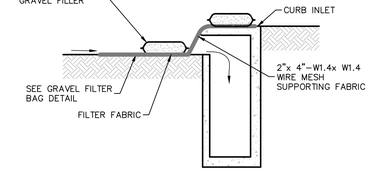
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL

NOT–TO–SCALE



PLAN VIEW



SECTION "A-A"

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 CLIPS 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. 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.

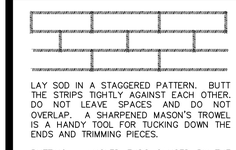
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

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.

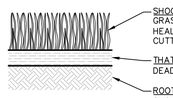
BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT–TO–SCALE



LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

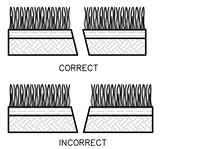


APPEARANCE OF GOOD SOD

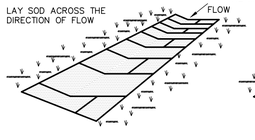
NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

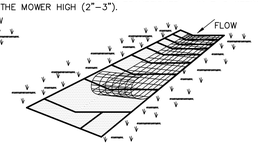
2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

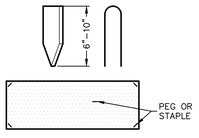
3. MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").



SOD INSTALLATION







USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

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 SOIL 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.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2–3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

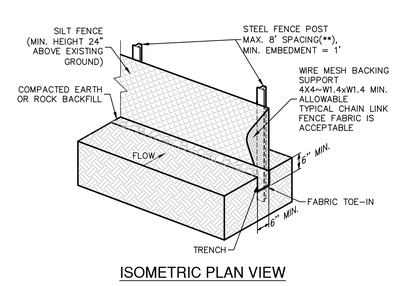
INSPECTION AND MAINTENANCE GUIDELINES

1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

SOD INSTALLATION DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW

**STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST 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. (RG–348, SECTION 1.4.3)

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/IN2, 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 BRINDELL 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.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN–SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3–FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS

1. FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES).

4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECT ALL FENCING WEEKLY.

2. REMOVE SEDIMENT WHEN BUILDUP APPROACHES 6 INCHES, BUT NOT TO EXCEED 50% OF HEIGHT.

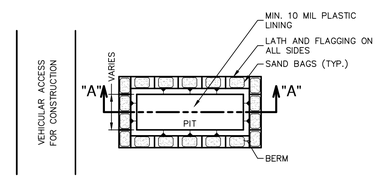
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

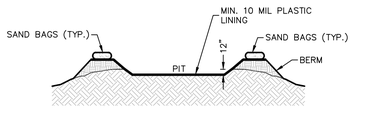
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT–TO–SCALE



PLAN VIEW



SECTION "A-A"

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

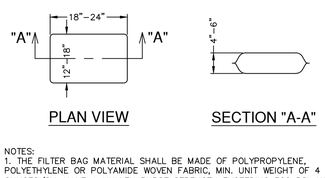
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

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



PLAN VIEW

SECTION "A-A"

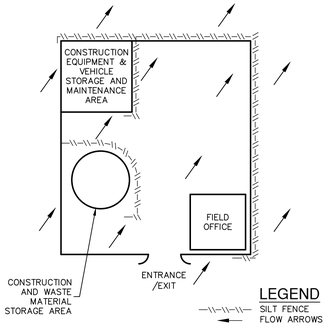
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

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

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 3

NO.	REVISION	DATE

STATE OF TEXAS
MATTHEW GEISTWEIDT
118861
LICENSED
PROFESSIONAL ENGINEER
7-22-2025

PAPE–DAWSON
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

BRE PHASE 1-16 INCH WATER MAIN
SAN ANTONIO, TEXAS

STORMWATER POLLUTION PREVENTION PLAN DETAILS

PLAT NO. –
JOB NO. 11412–17
DATE MAY 2025
DESIGNER SSC
CHECKED SSC DRAWN JZD
SHEET C3.10

Date: July 22, 2025, 10:49 AM – User ID: dmorris
File: p:\1141217\Design\civil\SWPPP–DT1141217–16INCH.dwg