

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. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED BY THE DEVELOPER'S ENGINEER. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE JOINT RESTRAINTS WITH THE DEVELOPER'S ENGINEER.

PROPOSED WATER MAIN IS WITHIN PRESSURE ZONE 5



MATCHLINE STA 21+00
SEE SHEET C3.02

DESCRIPTION	UNIT	QTY
Trench Excavation Protection	LF	1000
16" PVC C900 Class 235 (Open Cut)	LF	1000
16" Gate Valve (MJ) with 6" Valve Box, Complete	EA	1
Air Release Valve Assembly	EA	2
Fire Hydrant Assembly	EA	2
Revegetation	SY	1778

Pipe Restraint Length Calculator
Source: EBAA Iron, Restraint Length Calculator v 7.1.2

Assumptions Soil Type CH Safety Factor 1.5 to 1.0 Trench Type 5 Depth of Bury 5 FT Test Pressure 150 PSI		16" Waterline Horizontal Bends	
		11.25 Degrees	4
		22.5 Degrees	7
		45 Degrees	13
		90 Degrees	32
		Misc. Fittings	
		12"x16" Reducer	37
		16"x16" Tee	87
		Valve	87
		Vertical Bends	
		11.25 Degrees	4

PROPERTY LINE

EXISTING WATER

EXISTING SEWER

PROPOSED WATER

EXISTING FENCE

20' WATER EASEMENT

EXISTING CONTOURS

GATE VALVE

DRIVEWAY

TREES TO REMAIN

TREES TO BE REMOVED

FIRE HYDRANT

W

SS

MANHOLE

FIRE HYDRANT

W

1035'

CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING UNDER
"HIGH VOLTAGE TRANSMISSION LINES". A WORKING HEIGHT OF 30' FROM
GROUND ELEVATION WILL BE OBSERVED WHEN WORKING UNDER THE HIGH
VOLTAGE LINE. COORDINATE ALL WORK WITH THE LOCAL UTILITY PROVIDER

THE CONTRACTOR SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE THE INFORMATION IS NOT BASED ON RECORDS, THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, GAS, CABLE, AND FIBER OPTIC LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. THE CONTRACTOR MUST CONTACT 1-800-DIG-TESS TO REQUEST A CALL TO ADJUST THE LOCATION OF ANY LINES. THE CONTRACTOR MUST REQUEST ANY EXCAVATION AND/OR START-UP OF CONSTRUCTION TO OCCUR AFTER FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES (WHETHER SHOWN ON PLANS OR NOT) WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. ANY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE REPAIR SHALL BE AT CONTRACTORS SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

2. NO VALVES, HYDRANTS, ETC. SHALL BE CONSTRUCTED WITHIN CURBS, SIDEWALKS, OR DRIVEWAYS.

3. ALL UTILITY TRENCHES SHALL BE PRIOR TO STREETS.

4. HIS PROJECT INCLUDES UTILITY INSTALLATION GREATER THAN 5-FEET IN DEPTH, DEEP TRENCHES POSE COMPACTION TESTING AND RECORDING OF UTILITY TRENCHES. COMPACTION TESTING FOR UTILITY COMPACTION MAY NOT BE ACHIEVABLE. A UTILITY COMPACTION PLAN WILL BE REQUIRED AND MUST BE SUBMITTED FOR APPROVAL TO THE CITY OF NEW BRAUNFELS.

5. UTILITY TRENCH COMPACTION--ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT/SIDEWALK SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER. THE TECHNIQUE OF UTILITY FILL MATERIAL SHALL BE PAVED TO A UNIFORM 12" TO EXCEED TWELVE INCHES (12") LOOSE. DETERMINE THE MAXIMUM LIFT THICKNESS BASED ON THE ABILITY OF THE COMPACTING OPERATING EQUIPMENT TO COMPACT THE MATERIAL TO THE REQUIRED DENSITY. A LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH THE STANDARD METHOD OF TESTS.

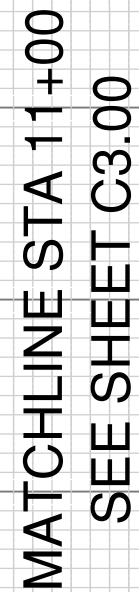
6. NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF NEW BRAUNFELS.

7. TESTS SHALL BE TAKEN EVERY 200 LF FOR EACH LIFT AND EVERY OTHER SERVICE LINE. UPON COMPLETION OF TESTING THE GEOTECHNICAL ENGINEER SHALL SIGN AND DATE THE TEST REPORT.

8. INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN ACCORDING TO THE CITY OF NEW BRAUNFELS SPECIFICATIONS.

9. TESTS MAY BE REQUESTED BY THE CITY OF NEW BRAUNFELS

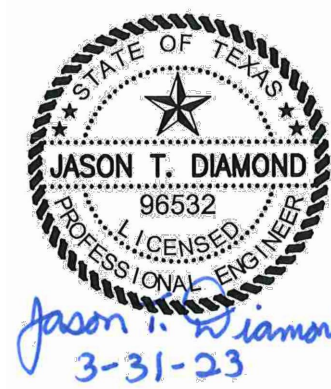
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED
EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/
EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY
REVISIONS THEREOF, SIGNIFYING THE CONSULTANT'S REVIEW OF THE
INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO
IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION
SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED
HEREIN. THE CONSULTANT'S REVIEW SHALL NOT IMPLY A GUARANTEE
THAT THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR
ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH
AT LEAST A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS.
THE CONSULTANT SHALL NOT BE RESPONSIBLE FOR TRENCH EXCAVATION
SAFETY PROGRAMS, SYSTEMS, PROGRAMS AND/OR PROCEDURES THAT THE
RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A
TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS
FOR TRENCH EXCAVATIONS. THE ACTIVITIES OF INDIVIDUALS WORKING
ON AND AROUND TRENCH EXCAVATIONS SHALL BE THE RESPONSIBILITY



MATCHLINE STA 16+50
SEE THIS SHEET

MATCHLINE STA 16+
SEE THIS SHEET

MATCHLINE STA 21+00
SEE SHEET C3.02



**PAPE-DAWSON
ENGINEERS**

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

VERAMENDI OFFSITE WATER LINE
NEW BRAUNFELS, TEXAS

WATER MAIN PLAN AND PROFILE
STA 11+00 TO STA 21+00 00

PLAT NO. _____
JOB NO. 30001-46
DATE MARCH 2023
DESIGNER CN
CHECKED MP DRAWN F
SHEET C3.01

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 THE DEVELOPER'S ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE JOINT RESTRAINTS WITH THE DEVELOPER'S ENGINEER.

NBU PRESSURE ZONE:

PROPOSED WATER MAIN IS WITHIN PRESSURE ZONE 5

MATCHLINE STA 21+00
SEE SHEET C3.01

MATCHLINE STA 31+00
SEE SHEET C3.03

16" WATERMAIN
STA 21+00.00 TO STA 31+00.00

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

QUANTITY TABLE		
DESCRIPTION	UNIT	QTY
Trench Excavation Protection	LF	1000
16" PVC C900 Class 235 (Open Cut)	LF	1000
16" Gate Valve (M) with 6" Valve Box, Complete	EA	1
Air Release Valve Assembly	EA	1
Drain Valve Assembly	EA	1
Fire Hydrant Assembly	EA	2
Concrete Encasement	CY	68
Revegetation	SY	1778

Pipe Restraint Length Calculator

Source: EBAA Iron, Restraint Length Calculator v 7.1.2

16" Waterline		
Horizontal Bends		
11.25 Degrees	4	
22.5 Degrees	7	
45 Degrees	13	
90 Degrees	32	
Misc. Fittings		
12"X16" Reducer	37	
16"X16" Tee	87	
Valve	87	
Vertical Bends		
11.25 Degrees	4	

WATER LEGEND

PROPERTY LINE	---
EXISTING WATER	---
EXISTING SEWER	---
PROPOSED WATER	---
EXISTING FENCE	---
20' WATER EASEMENT	---
EXISTING CONTOURS	---
GATE VALVE	---
DRIVEWAY	---
TREES TO REMAIN	---
TREES TO BE REMOVED	---

CAUTION OVERHEAD UTILITIES

CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING UNDER "HIGH VOLTAGE TRANSMISSION LINES". WORKING HEIGHT OF 30' FROM GROUND ELEVATION WILL BE OBSERVED WHEN WORKING UNDER THE HIGH VOLTAGE LINE. COORDINATE ALL WORK WITH THE LOCAL UTILITY PROVIDER.

CAUTION UNDERGROUND UTILITIES

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL, DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. THE CONTRACTOR MUST CONTACT 1-800-DIG-TESS AND CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION AND/OR START OF CONSTRUCTION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES (WHETHER SHOWN ON PLANS OR NOT) WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO 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.

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.
- HIS PROJECT INCLUDES UTILITY INSTALLATION 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 UNIFORMLY 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.

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 OR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYER 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	
NO.	
REVISION	



PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008860

VERAMENDI OFFSITE WATER LINE
NEW BRAUNFELS, TEXAS

WATER MAIN PLAN AND PROFILE
STA 21+00.00 TO STA 31+00.00

PLAT NO.	
JOB NO.	30001-46
DATE	MARCH 2023
DRAWN	CN
CHECKED	MP
DRAWN	RJ
SHEET	C3.02

XXXXXXXXXX