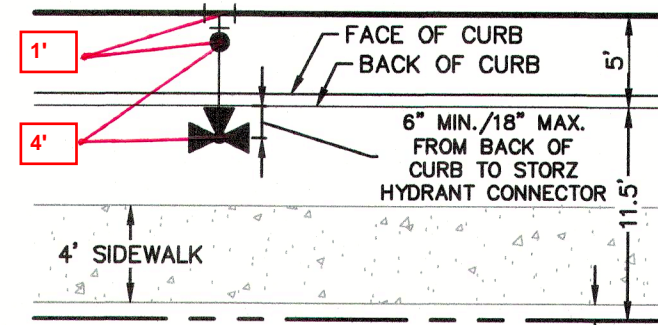


**CAUTION!!!:**  
THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. ONLY ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT SHALL BE REPAIRED BY THE CONTRACTOR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

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

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



**FIRE HYDRANT DETAIL**  
NOT-TO-SCALE

ITEM	UNIT	QUANTITY
8" WATER LINE	LF	537
1" SINGLE SERVICE & 5/8" METER	EA	9
1" IRRIGATION SERVICE METER	EA	X
LUES	EA	9
FIRE HYDRANT	EA	1
6" GATE VALVE	EA	1
8" GATE VALVE	EA	2

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

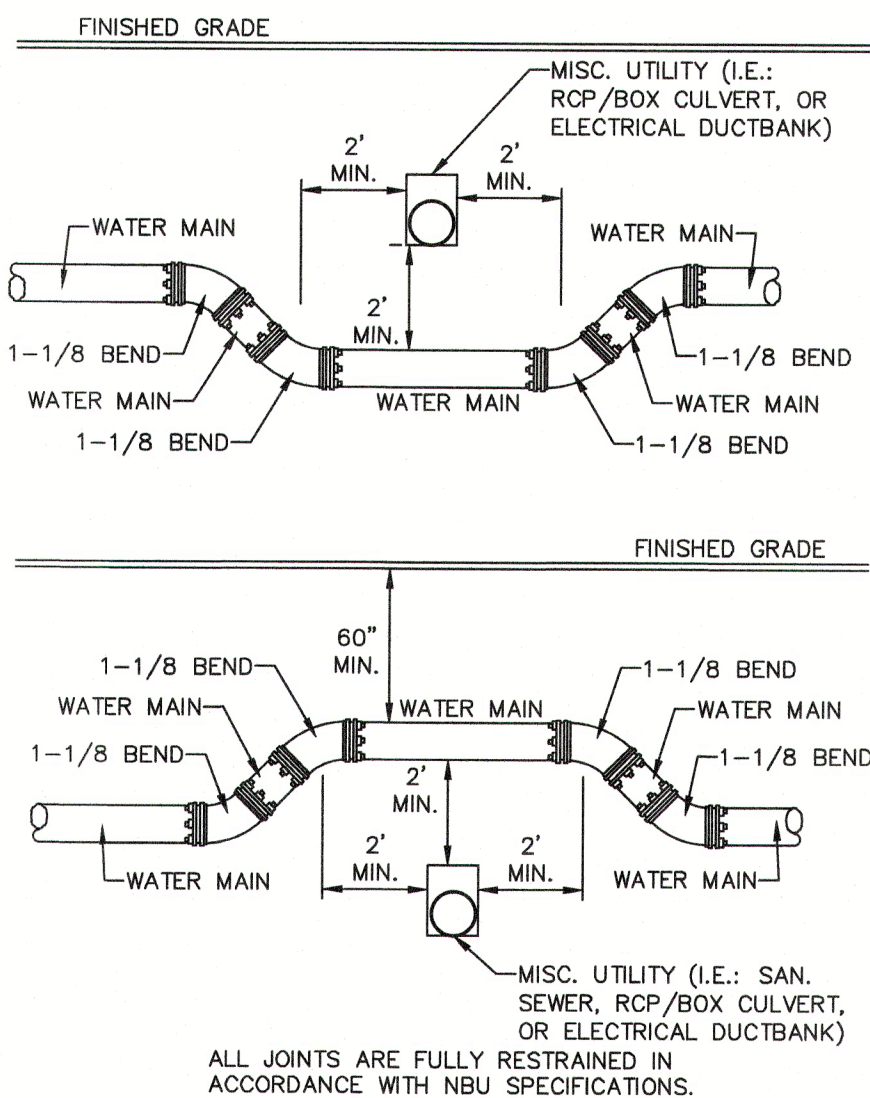
Assumptions:  
Soil Type: CH Safety Factor: 1.5 to 1.0 Trench Type: 5 Depth of Bury: 4 ft Test Pressure: 200 psi

Minimum Restraint Lengths in Feet

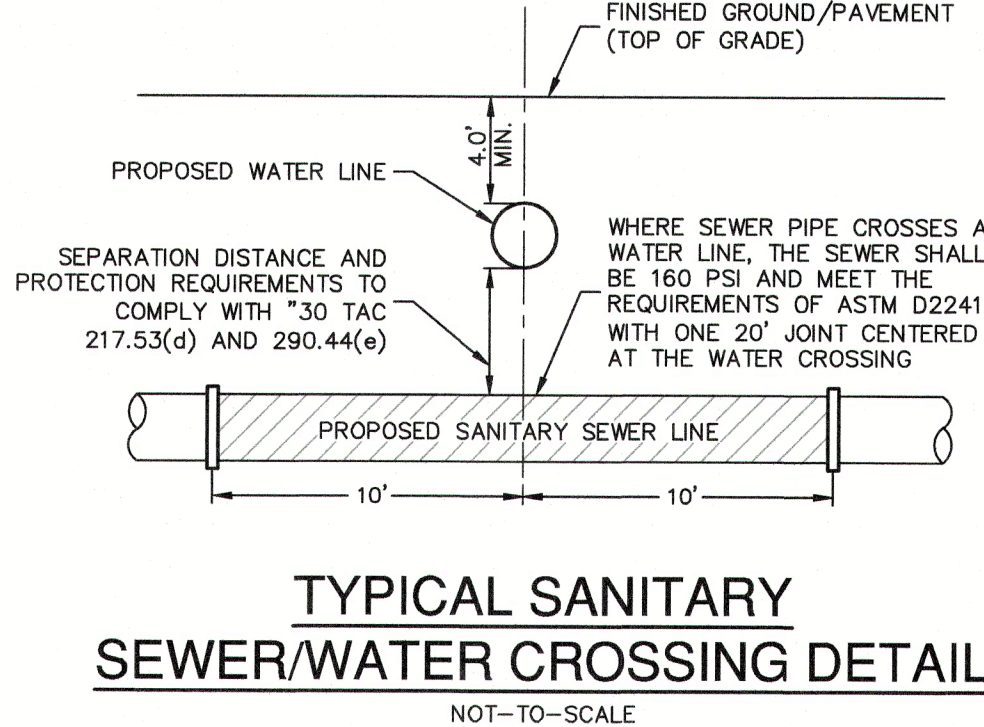
Horizontal Bends	8" Waterline	
	Main	Branch
11.25 Degrees	3	
22.5 Degrees	6	
45 Degrees	12	

Misc. Fittings	8" Waterline	
	Main	Branch
8"x6" Tee	59 (6" Branch)	
8"x8" Tee	78	
12"x6" Tee		78
12"x8" Tee		78
Dead End/ Gate Valve	78	78

Vertical Bends (assumes low side depth of 10')	8" Waterline	
	High Side	Low Side
11.25 Degrees	8	2
22.5 Degrees	16	3
45 Degrees	32	5

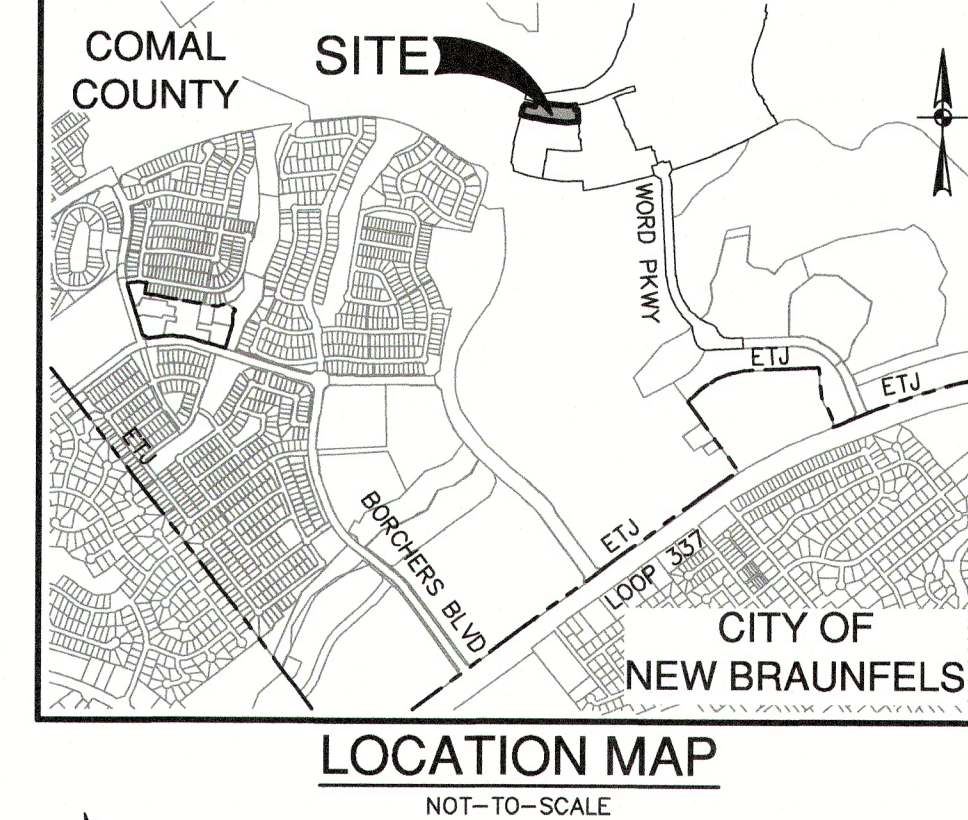


**TYPICAL UTILITY/WATER CROSSING DETAIL**  
NOT-TO-SCALE

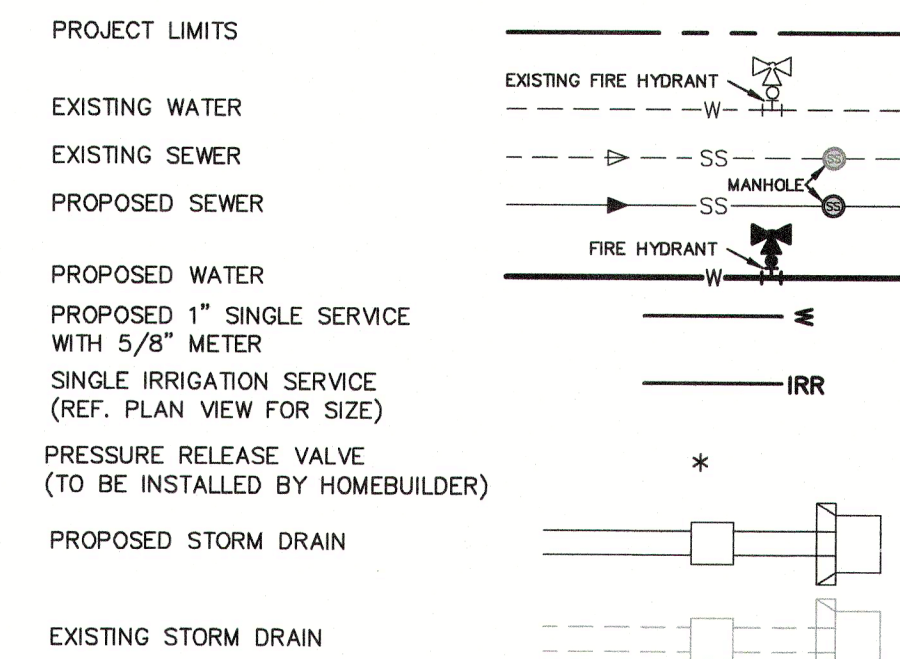


**TYPICAL SANITARY SEWER/WATER CROSSING DETAIL**  
NOT-TO-SCALE

- FOR CHLORINATION INJECTION
  - 2 - 1" CORPORATION STOP, C.C.X.I.P
  - 1 - 1" COPPER TUBING, CUT AS REQUIRED
  - 2 - 1" COMP. 1/4" COUPLING, CORP. STOP
  - 2 - 1/4" THD. SOLID CAPS, THR.
- 8" VALVE SHALL REMAIN CLOSED UNTIL NEW MAINS HAVE BEEN DISINFECTED BY CONTRACTOR AND ACCEPTED BY NBU
- CONTRACTOR SHALL CUT THE PROPOSED 8" MAIN TO EXISTING 8" PVC C-900 DR 18" MAIN AFTER DISINFECTED BY CONTRACTOR AND ACCEPTANCE BY NBU
- 2" TEMPORARY BLOWOFF ASSEMBLY
- 2" PERMANENT BLOWOFF ASSEMBLY (SEE NBU ST. DETAIL 253)
- 1-8" GATE VALVE, M.J.
- 1-8" VALVE BOX, COMPLETE.



**WATER LEGEND**



**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.

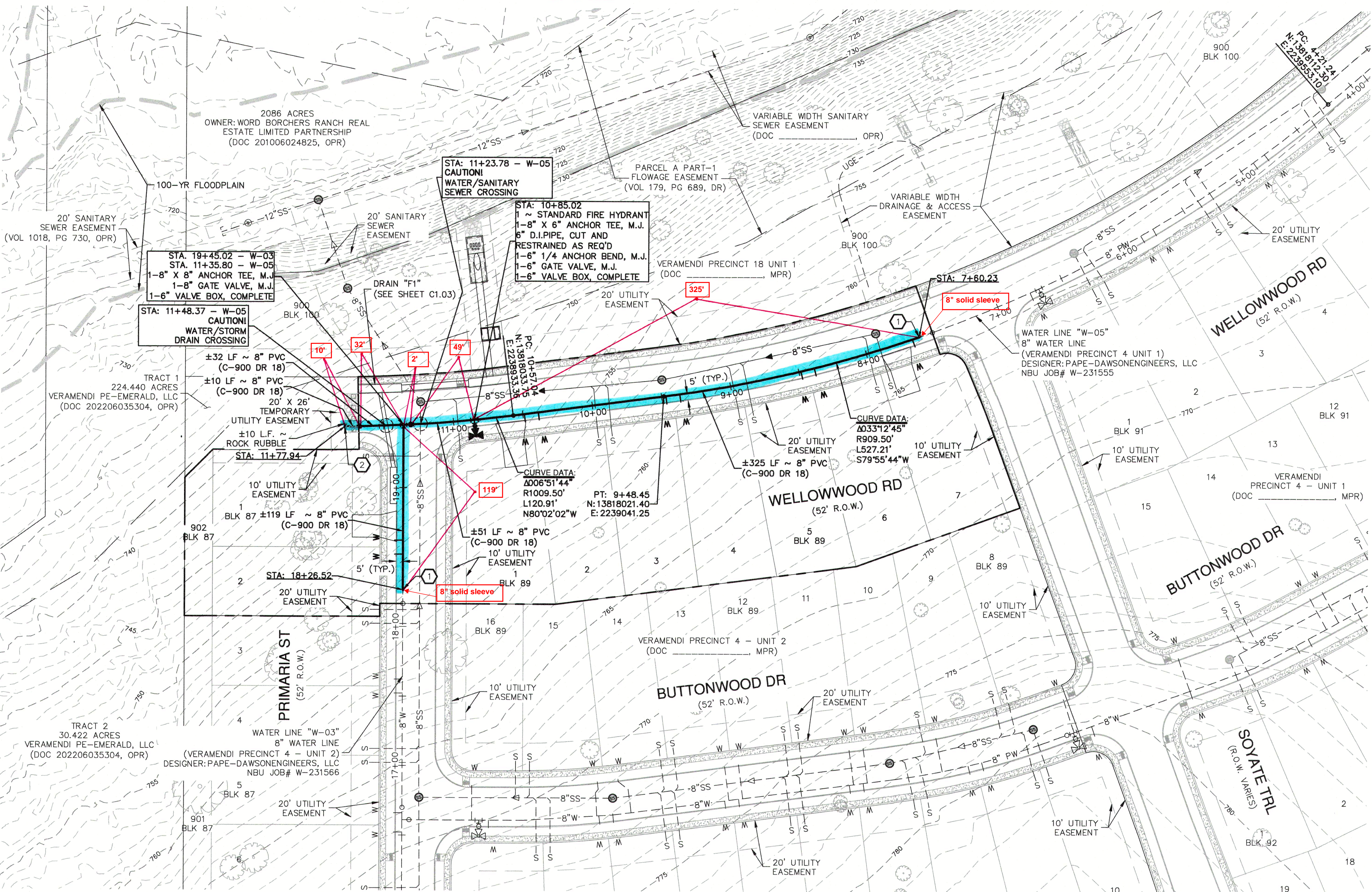
**NOTE:**  
1. ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS SHALL HAVE A REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (R/P) INSTALLED PRIOR TO PLACEMENT OF METER. ALL NEW FACILITIES ARE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THE LATEST NBU BACKFLOW POLICY.  
2. ALL GATE VALVES 16" AND SMALLER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

**CITY OF NEW BRAUNFELS NOTES**

- 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. DUE TO THE CHALLENGES OF TRENCHING 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 CONFLICT 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 ANTIQIATED 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 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.



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REVISION: \_\_\_\_\_

**PAPE-DAWSON ENGINEERS**  
1672 INDEPENDENCE DR. STE. 102 | NEW BRAUNFELS, TX 78121 | 830.692.5933  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1028800

**VERAMENDI PRECINCT 4 - UNIT 3**  
NEW BRAUNFELS, TEXAS  
OVERALL WATER DISTRIBUTION PLAN

PLAT NO. \_\_\_\_\_  
JOB NO. 30001-65  
DATE 10-09-2023  
DESIGNER GDL  
CHECKED DRAWN CA  
SHEET **C4.00**

FOR PERMIT