ECHTLE OFFSITE WATER MAIN

BEXAR COUNTY, TEXAS CIVIL CONSTRUCTION PLANS CONFORMED SET

US HWY 90 BEXAR COUNTY SITE

LOCATION MAP

PREPARED FOR:

STARLIGHT HOMES OF TEXAS, LLC.

17319 SAN PEDRO AVENUE, SUITE 140

SAN ANTONIO, TEXAS 78232

COVER SHEET GENERAL NOTES C1.00 **GENERAL NOTES** C1.01 SHEET INDEX C2.00 C2.01 WATER LINE EXTENSION - PLAN & PROFILE STA 1+00 TO STA 11+00 C2.02 WATER LINE EXTENSION - PLAN & PROFILE STA 11+00 TO STA 18+57.10 DETAILS C2.03 C2.04 DETAILS C4.00 TREE PRESERVATION PLAN TREE PRESERVATION PLAN

SHEET INDEX

SHEET DESCRIPTION

PLAN OF RECORD 08/01/2023

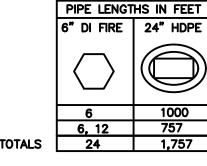
COMPLETION DATE: SAWS JOB NO .:

5/26/2023 21-1194

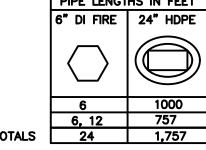
PLAN OF RECORD I HEREBY CERTIFY THAT THESE RECORD DOCUMENTS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND WERE PREPARED UNDER MY SUPERVISION

PROVIDED TO PAPE-DAWSON ENGINEERS BY THE CONTRACTOR. PAPE-DAWSON ENGINEERS HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

THESE DOCUMENTS CONFORM TO CONSTRUCTION RECORD DOCUMENTS AND HAS BEEN PREPARED USING RECORD DOCUMENTS PREPARED AND PROVIDED BY THE CONTRACTOR, ISSUED ADDENDA, APPROVED CHANGE ORDERS FROM THE OWNER AND RESPONSES TO RFI'S PROVIDED TO THE CONTRACTOR. THE COMPLETENESS AND ACCURACY OF THE RECORD DOCUMENTS PROVIDED BY THE CONTRACTOR HAS NOT BEEN VALIDATED OR CONFIRMED



AS-BUILT/PLAN OF RECORD SAWS JOB NO: 21-1194 MILLER BROS. ULISES LOPEZ INSPECTOR: COMPLETE DATE: 5/26/2023 MATERIALS NOTE JM EAGLE BUTTERFLY VALVES: DEZURIK



AUGUST 2022



TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800



VATER		PZ 9
Developer's Name: STARLIG	HT HOMES OF TEXAS, LLC	
Address: 17319 SAN PEDR	O AVE, SUITE 140	
City: SAN ANTONIO	State:TEXAS	ZIP <u>: 78232</u>
Phone# <u>(210)</u> 889-5516	FAX <u>#</u>	
SAWS Block Map# 74552	Total EDU's_0 1757 LF 24" HDPE (DR 11) D	Total Acreage <u>0</u> PS
Total Linear Footage of Pi	pe: WATER MAIN	_Plat No
Number of Lots 0	SAWS JOB NO. 21	-1194

SHEET NO.

FIRE HYDRANTS: AVK

GENERAL CONSTRUCTION

- 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 CONSTRUCTION".

UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.

- E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).
- 2. THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS/CONSTSPECS/CONSTSPECS_2020/INDEX.CFM.
- 3. THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-3500 (DURING REGULAR WORKING HOURS), AND PROVIDE NOTIFICATION PROCEDURES THE CONTRACTOR WILL USE TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS TWO (2) WEEKS PRIOR TO EXCAVATION. OUTSIDE OF REGULAR SAWS WORKING HOURS THE SAWS EOC SHOULD BE CONTACTED AT 210-704-7297.
- 4. IF NECESSARY, CONTRACTOR WILL COORDINATE USE OF SAWS PREMISES AT NO ADDITIONAL COST TO SAWS. SUCH EFFORTS INCLUDE, BUT ARE NOT LIMITED TO, OBTAINING SECURITY IDENTIFICATION BADGES REQUIRED FOR ACCESS TO SAWS FACILITIES.
- 5. LOCATIONS 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 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 PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. AS—BUILTS FOR SAWS INFRASTRUCTURE CAN BE OBTAINED AT WEBSITE BELOW. CONTRACTOR SHALL COORDINATE PHYSICAL LOCATES FOR SAWS INFRASTRUCTURE THROUGH THE SAWS INSPECTOR. 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:

SAN ANTONIO WATER SYSTEM:

- REQUEST AS-BUILTS: HTTP://WWW.SAWS.ORG/SERVICE/LOCATES-SERVICE/
- COSA DRAINAGE (210) 206-8433
- COSA TRAFFIC SIGNAL OPERATIONS (210) 207-7720
- 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 AS A RESULT OF DAMAGES DONE BY THE PROJECT'S CONSTRUCTION.
- 8. CONTRACTOR SHALL NOT MAKE USE OF DUMPSTERS OR WASTE BINS THAT ARE INTENDED TO SERVE RESIDENTS AND/OR BUSINESSES.
- 9. 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.
- 10. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
- 11. ALL WORK WITHIN THE 100-YEAR FLOODPLAIN SHALL BE DONE IN ACCORDANCE WITH FLOODPLAIN DEVELOPMENT PERMIT.
- 12. ANY WORK COMPLETED WITHOUT PRIOR WRITTEN AUTHORIZATION WHICH IS NOT INCLUDED IN THESE PLANS AND SPECIFICATIONS WILL NOT BE COMPENSATED BUT THE SAN ANTONIO WATER SYSTEM.
- 13. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS.
- 14. WEEKEND WORK: CONTRACTORS ARE REQUIRED TO SUBMIT REQUEST TO THE SAWS INSPECTION CONSTRUCTION DEPARTMENT BY 12:00PM ON THE WEDNESDAY PRIOR TO THE WEEKEND BEING REQUESTED. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
- 15. ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION AT NO COST TO SAWS.
- 16. PRE CON SITE VIDEO: BEFORE THE START OF ANY CONSTRUCTION. THE SITE MUST BE VIDEO RECORDED BY THE CONTRACTOR WITH ONE COPY SUBMITTED TO SAWS INSPECTIONS. A PRE-SITE VIDEO WILL PROVIDE ACCURATE DOCUMENTATION OF THE EXISTING CONDITIONS (NPSI).

- 17. POWER POLE BRACING: CONTRACTORS SHOULD BE ADVISED THAT THERE ARE EXISTING OVERHEAD UTILITY POLES ALONG THE PROJECT CORRIDOR. CONTRACTORS SHOULD FURTHER BE ADVISED THAT IF THE DISTANCE FROM THE OUTSIDE FACE OF A UTILITY TRENCH TO THE FACE OF A UTILITY POLE IS SUBJECT TO BRACING, BASED ON A DETERMINATION MADE BY UTILITY POLE OWNER. COSTS INCURRED BY CONTRACTOR FOR BRACING OF THESE UTILITY POLES IS SUBSIDIARY TO THAT RESPECTIVE UTILITY COMPANY'S WORK. IT IS ADVISABLE FOR THE CONTRACTOR TO REVIEW THE CONSTRUCTION DOCUMENTS, AND VISIT THE CONSTRUCTION SITE TO DETERMINE POTENTIAL IMPACTS.
- 18. <u>CONSTRUCTION SEQUENCING</u>: IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO SCHEDULE SEQUENCING FOR REMOVAL AND INSTALLATION OF EXISTING AND PROPOSED SAWS UTILITIES IN CONJUNCTION WITH GENERAL PROJECT CONSTRUCTION. SEQUENCE OF CONSTRUCTION ACTIVITIES SHALL BE CONSIDERED IN ORDER TO MINIMIZE THE EXTENT AND DURATION OF DISTURBANCES.
- 19. CONTRACTOR SHALL COMPLY WITH APPLICABLE REGULATIONS INCLUDING, BUT NOT LIMITED TO, THOSE OVERSEEN BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA INFORMATION AND RELATED MATERIALS MAY BE OBTAINED AT HTTPS://www.osha.gov/ or at the osha san antonio office LOCATED AT FOUNTAINHEAD TOWER, SUITE 605 8200 W. INTERSTATE 10 SAN ANTONIO, TX 78230 WHICH IS ALSO REACHABLE BY PHONE AT (210) 472-5040.
- 20. TRENCH EXCAVATION SAFETY PROTECTION: CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREAS IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND.OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND.OR CONTRACTOR; SINDEPENDENTLY 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.

WATER SECTION

- 21. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION AND/OR SAWS PRODUCTION GROUPS AT LEAST TWO WEEKS OR MORE 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. SAWS PRODUCTION CONTROL CENTER 210-233-2016.
- 22. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOS—CONTAINING MATERIAL (ACM), MAYBE 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, PAYMENT FOR SUCH WORK IS TO BE MADE UNDER ITEM NO. 3000, "HANDLING ASBESTOS CEMENT PIPE".
- 23. <u>VALVE REMOVAL</u>: 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)

ADDITIONAL WATER NOTES

- 1. <u>LEAD FREE FIRE HYDRANTS:</u>
 "SAWS REQUIRES GCPS AND COUNTER PERMITS TO USE LEAD FREE (< 0.25% LEAD) FIRE HYDRANTS."
- 2. 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.
- 3. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS, TAPS AND LENGTH OF SERVICE CONNECTIONS.
- 4. 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.
- 5. 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).
- 6. FIRE HYDRANTS SHALL BE PLACED NO FURTHER THAN 7' AND NO CLOSER THAN 1' FROM FACE OF CURB.

MISCELLANEOUS NOTES

- 1. ALL FENCING, SIGNS AND ANY OTHER IMPROVEMENTS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED TO ITS ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE OWNER.
- 2. ALL PIPE FITTINGS AND PIPE RESTRAINTS SHALL BE CONSIDERED SUBSIDIARY TO THE WATER MAIN PIPE UNIT PRICE.
- 3. CONTRACTOR SHALL REPAIR OR REPLACE ANY ADJACENT CURB, PAVEMENT.

PAVEMENT MARKINGS, FENCES, ETC. DAMAGED BY CONSTRUCTION TO THE PRE-EXISTING CONDITIONS, AT CONTRACTOR'S EXPENSE.

4. <u>SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER:</u>
ATTENTION CONTRACTORS:

ALL SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER, RECYCLED WATER, PETROLEUM PRODUCTS, OR CHEMICALS MUST BE REPORTED IMMEDIATELY TO THE SAWS INSPECTOR ASSIGNED TO YOUR COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP). THIS REQUIREMENT APPLIES TO EVERY SPILL, OVERFLOW, OR DISCHARGE — REGARDLESS OF SIZE. YOUR COMPLIANCE WILL ENABLE SAWS TO FULFILL REGULATORY REPORTING REQUIREMENTS.

- 5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTROL SEWER FLOWS SO THAT A SPILL OVERFLOW, OR DISCHARGE DOES NOT OCCUR. IN THE EVENT THAT A SPILL, OVERFLOW, OR DISCHARGE OCCURS, THE CONTRACTOR MAY LIABLE FOR:
- A. ALL FINES, PENALTIES, OR OTHER COSTS ASSESSED TO OR AGAINST SAWS BY ANY STATE, FEDERAL, OR OTHER GOVERNMENTAL AGENCY.
- B. SAWS STAFF AND MATERIAL COSTS TO RESPOND TO THE SPILL, OVERFLOW, OR DISCHARGE, OR TO MITIGATE THE EFFECTS OF THE SPILL, OVERFLOW, OR DISCHARGE, OR TO SUPPORT THE CLEANUP EFFORT.
- C. ALL DAMAGES CAUSED TO SAWS, OR ANY OTHER PERSONS OR ENTITIES THAT RESULT FROM THE SPILL, OVERFLOW OR DISCHARGE.
- 5. FIRE HYDRANTS SHALL BE PAINTED WITH APPROPRIATE SAWS COLORS.
- 6. 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.
- 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 TO PROVIDE A PAD FOR HIS EQUIPMENT.
- 8. 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.

CPS ENERGY GAS VALVES AND

OVERHEAD POWER LINE NOTES

- 1. CALL CPS LOCATOR AT 978-3500 72 HOURS BEFORE BEGINNING ANY EXCAVATION.
- 2. DUE TO FEDERAL REGULATION TITLE 49, PART 192.181, CPS ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
- 3. 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 CPS ENERGY.

HAULING AND STORAGE

• HAULING AND/OR TEMPORARY STORAGE OF EQUIPMENT AND MATERIALS MAY BE NECESSARY, INCLUDING EXCAVATED MATERIAL AND SPOILS. CONTRACTOR SHALL INCLUDE IN HIS BID PRICE ALL COSTS ASSOCIATED WITH HAULING AND OFF-SITE STORAGE OF ALL MATERIALS AND/OR EQUIPMENT.

PLAN OF RECORD 08/01/2023

5/26/2023

21-1194

COMPLETION DATE: SAWS JOB NO.:

PLAN OF RECORD

I HEREBY CERTIFY THAT THESE RECORD DOCUMENTS ARE
TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND
WERE PREPARED UNDER MY SUPERVISION

NOTE: INFORMATION FOR PLAN OF RECORD DRAWING WAS PROVIDED TO PAPE-DAWSON ENGINEERS BY THE CONTRACTOR. PAPE-DAWSON ENGINEERS HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS

THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

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PAPE-DAWSON
ENGINEERS

O I AUSTIN I HOUSTON I FORT WORTH I DALLAS

E OFFSITE WATER MAIN BEXAR COUNTY, TEXAS

WATER PZ 950W

__SAWS JOB NO.__21-1194

Developer's Name: STARLIGHT	HOMES OF TEXAS, LLC	
Address: 17319 SAN PEDRO	AVE, SUITE 140	
City: SAN ANTONIO	State: TEXAS	ZIP: 78232
Phone# <u>(210)</u> 889-5516	FAX#	
SAWS Block Map#_74552	Total EDU's_0	Total Acresse 0
Total Linear Footage of Pipe:	1757 LF 24" HDPE (DR 11) DIP	

PLAT NO. ______

JOB NO. _____12994-04

DATE ______ MAY 2022

DESIGNER _____ CD

CHECKED __MP __DRAWN __CN

SHEET ______ C1.00

CONTINUENT HAS DEEN BRONDED FORM MATERIAL THAT WAS STORED AND AND THAN CHARLED FOR THE CONCILL TANT'S ORIGINAL STORED AND AND SEAL ACROSS ACCOUNT.

- ALL SHOP DRAWINGS AND SUBMITTALS REQUIRED FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- 2. ALL AREAS WITHIN THE RIGHT-OF-WAY AND THE WATER LINE EASEMENT THAT ARE NECESSARY FOR INSTALLATION OF THE PROPOSED WATER LINE ARE TO BE CLEARED EXCEPT AS OTHERWISE NOTED ON THE PLANS AND/OR AS DIRECTED IN THE CONTRACT DOCUMENTS SPECIAL CONSTRUCTION CONDITIONS. CONTRACTOR SHALL REMOVE TREES WITHIN THE RIGHT-OF-WAY AND WATER LINE EASEMENT ONLY AS NECESSARY, FOR INSTALLATION OF THE PROPOSED WATER LINE. NO HERITAGE TREES SHALL BE REMOVED. OTHERWISE ALL TREES WITHIN 15-FEET OF THE WORK SHALL BE PROTECTED, SEE TREE PROTECTION NOTES AND DETAILS.
- 3. PI'S AND PVI'S MAY BE SHOWN FOR PIPE JOINT DEFLECTION. JOINT DEFLECTION SHALL BE AS PER THE PIPE MANUFACTURER'S RECOMMENDATIONS, AND LIMITED TO SAWS MAXIMUM ALLOWABLE DEFLECTION ANGLES.
- CONTRACTOR SHALL NOTIFY AND COORDINATE WITH LANDOWNER(S) PRIOR TO ENTERING ANY PROPERTY OUTSIDE THE COUNTY RIGHT-OF-WAY 14 DAYS IN ADVANCE AND AGAIN 72 HOURS PRIOR TO CONSTRUCTION ON PRIVATE PROPERTY.
- CONTRACTOR SHALL REMOVE AND REPLACE, TO AS GOOD OR BETTER CONDITION THAN EXISTING, ANY CROSS FENCING LOCATED WITHIN THE WATER LINE EASEMENT AS NECESSARY FOR INSTALLATION OF THE PROPOSED WATER MAIN. N.S.P.I.
- 6. VALVE BOXES SHALL BE INSTALLED SO THAT THE VALVE OPERATING NUT IS CENTERED IN THE BOX. VALVES INSTALLED ON SLOPING TERRAIN SHALL HAVE THE VALVE BOX INSTALLED PERPENDICULAR TO THE VALVE WITH THE OPERATING NUT CENTERED IN THE BOX IN ORDER TO ALLOW THE VALVE WRENCH EASY ACCESS TO THE VALVE OPERATING NUT.
- CONTRACTOR SHALL NOT OPERATE ANY EXISTING WATER VALVES WITHIN THE SAWS SYSTEM. NOTIFYING & OBTAINING ASSISTANCE FROM THE SAWS STAFF IS REQUIRED.
- 8. CONTRACTOR SHALL REFER TO THE CONTRACT DOCUMENTS SPECIAL CONSTRUCTION CONDITIONS FOR ADDITIONAL INFORMATION REGARDING WORK ASSOCIATED WITH THIS PROJECT.
- 9. 24" C900 PVC PIPE SHALL BE CLASS 235 (DR 18). ALL PIPE, FITTINGS AND VALVES SHALL MEET SAWS STANDARDS.
- 10. HAUL OFF OF EXCAVATED MATERIAL SHALL BE INCLUDED AS PART OF THE PIPE INSTALLATION LINE ITEM BID PRICE.

STORM WATER PROTECTION AND EROSION CONTROL

NOTES

- CONTRACTOR SHALL PREPARE A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND SUBMIT IT TO THE ENGINEER AND SAWS FOR REVIEW AND APPROVAL. THE CONTRACTOR IS RESPONSIBLE FOR THE SUBMITTAL OF THE SWPPP PLAN TO BEXAR COUNTY AS PART OF THEIR ROW PERMIT SUBMITTAL REQUIREMENT.
- CONTRACTOR SHALL INSTALL STORM WATER POLLUTION PREVENTION STRUCTURES INCLUDING BUT NOT LIMITED TO, SILT FENCING AND/OR ROCK BERMS IN ALL AREAS TO BE IMPACTED BY CURRENT AND ONGOING CONSTRUCTION AND MAINTAIN SUCH STRUCTURES UNTIL SUITABLE GROUNDCOVER/REVEGETATION IS ACCEPTED. ALL STORM WATER POLLUTION PREVENTION STRUCTURES SHALL BE CONSTRUCTED WITHIN THE COUNTY RIGHT-OF-WAY AND WATER LINE EASEMENTS. ANY FEATURES ON THE PLANS SHOWN OUTSIDE THESE AREAS ARE SHOWN FOR VISUAL CLARITY ONLY.
- 3. THE LOCATION OF ANY BEST MANAGEMENT PRACTICES (B.M.P.'S) SUCH AS SILT FENCING, ROCK BERMS. STABILIZED CONSTRUCTION ENTRANCE/EXIT. ETC. THAT MAY BE SHOWN ON THESE PLANS ARE SUBJECT TO FIELD VERIFICATION. CONTRACTOR SHALL ADJUST THE LOCATIONS OF B.M.P.'S TO BEST ACCOMMODATE THE CONDITIONS AND TOPOGRAPHY ENCOUNTERED DURING CONSTRUCTION. QUESTIONS REGARDING THE PLACEMENT AND/OR CHANGES CONCERNING B.M.P.'S SHALL BE REFERRED TO THE OWNER AND THE COUNTY. THE CONTRACTOR IS TO ENSURE THAT SEDIMENTATION AND EROSION WILL BE CONTAINED WITHIN THE PROJECT WORK AREAS AND KEPT OFF ROADWAYS AND ADJACENT PROPERTIES AND OUT OF DRAINAGE CHANNELS AND WATER COURSES.

TREE PROTECTION NOTES

- CONTRACTOR TO PROTECT ALL TREES WHEREVER POSSIBLE. DAMAGE TO TREES IDENTIFIED TO BE PROTECTED WILL BE MITIGATED AT THE CONTRACTOR'S SOLE EXPENSE. ALSO, ALL WORK IN PUBLIC RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH THE CONTROLLING ENTITIES STANDARDS, SPECIFICATIONS AND PERMIT REQUIREMENTS.
- 2. PROTECT EXISTING TREES SIX INCH (6") DIAMETER AND LARGER. ALL TREES TO BE PRESERVED AS PART OF THE PROJECT SHALL BE PROTECTED AGAINST INJURY OR DAMAGE, INCLUDING CUTTING, SOIL COMPACTION, BREAKING OR SKINNING OF ROOTS, TRUNKS, OR BRANCHES DURING CONSTRUCTION OPERATIONS BY FENCING AS DESCRIBED BELOW. THE TREE PROTECTION SHALL BE PLACED BEFORE ANY EXCAVATION OR GRADING IS BEGUN AND MAINTAINED FOR THE DURATION OF THE CONSTRUCTION WORK. PROTECTION WILL ENCOMPASS THE ROOT PROTECTION ZONE WHICH WILL BE AT MINIMUM ONE FOOT (1.0') RADIUS PER INCH DIAMETER OF THE TREE TRUNK AT 4.5' ABOVE GROUND. NO MATERIAL SHALL BE STORED OR CONSTRUCTION OPERATION SHALL BE CARRIED ON WITHIN THE TREE PROTECTION FENCING, UNLESS AUTHORIZED BY THE OWNER. THE PROTECTION SHALL REMAIN UNTIL ALL WORK IS COMPLETED. TREE PROTECTION SHALL BE INCLUDED IN BASE BID.

TRAFFIC CONTROL NOTE

CONTRACTOR SHALL PREPARE AND SUBMIT A TRAFFIC CONTROL PLAN TO BEXAR COUNTY FOR REVIEW AND APPROVAL. NECESSARY TRAFFIC CONTROL, DETOUR ROUTING AROUND WORK ACTIVITIES, MAINTENANCE OF DETOUR SIGNS AND FLAGMEN ARE THE CONTRACTOR'S RESPONSIBILITY. UNLESS DIRECTED OTHERWISE, THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE OPEN TRAFFIC LANE (MINIMUM 12 FEET WIDE). CONTROLLED WITH FLAGMEN. DURING WORKING HOURS. DURING ALL NON-WORKING HOURS A MINIMUM OF TWO TRAFFIC LANES (EACH A MINIMUM 12 FEET WIDE) SHALL BE OPEN TO TRAFFIC. CONTRACTOR WILL FURNISH AND MAINTAIN ALL REQUIRED TRAFFIC CONTROL DEVICES PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), TO PROPERLY WARN, GUIDE AND CONTROL TRAFFIC AT ALL TIMES THROUGHOUT CONSTRUCTION.

UNDERGROUND TELEPHONE/COMMUNICATION LINES NOTE

• THE EXISTENCE AND LOCATION OF UNDERGROUND CABLE AS SHOWN ON THESE PLANS HAS BEEN TAKEN FROM THE BEST INFORMATION AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. CONTRACTOR SHALL CONTACT THE TELEPHONE/COMMUNICATION COMPANY CABLE LOCATOR 48 HOURS PRIOR TO EXCAVATION AT 1-800-545-6005. CONTRACTOR SHALL PROTECT AND (AS NECESSARY) INSTALL SHORING FOR TELEPHONE COMPANY FACILITIES DURING CONSTRUCTION.

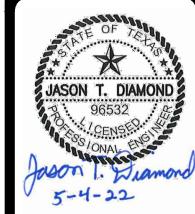
EXISTING IMPROVEMENTS

• ALL EXISTING IMPROVEMENTS WITHIN THE PROJECT AREA, WHICH ARE NOT COVERED UNDER THE UNIT PRICE BID PROPOSAL, SHALL BE PROTECTED OR REMOVED AND REPLACED TO EXISTING CONDITION OR BETTER AT NO ADDITIONAL COST TO THE OWNER.

BEXAR COUNTY FLOODPLAIN GENERAL CONSTRUCTION

NOTE

• NO CONSTRUCTION AND/OR WASTE MATERIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF EXISTING NATURAL DRAINAGE OR PLACED WITHIN THE LIMITS OF EXISTING FLOODPLAIN.



80

PAPE-DAWS

PLAN OF RECORD 08/01/2023

COMPLETION DATE: SAWS JOB NO .:

5/26/2023 21-1194

PLAN OF RECORD I HEREBY CERTIFY THAT THESE RECORD DOCUMENTS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND WERE PREPARED UNDER MY SUPERVISION

ODE: INFORMATION FOR PLAN OF RECORD DRAWING WAS PROVIDED TO PAPE-DAWSON ENGINEERS BY THE CONTRACTOR, PAPE-DAWSON ENGINEERS HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY

ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED

HEREIN AS A RESULT.

WA Y TE -SITE

MAIN

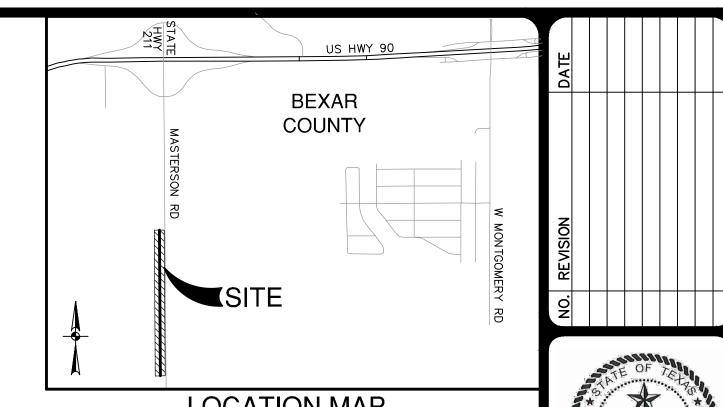
TER

	HT HOMES OF TEXAS, LLC	
Address: 17319 SAN PEDRO	D AVE, SUITE 140	
City: SAN ANTONIO	State: TEXAS	ZIP <u>: 78232</u>
Phone# (210) 889-5516	FAX#	
SAWS Block Map# 74552	Total EDU's <u>0</u> 1757 LF 24" HDPE (DR 11) DIPS	Total Acreage 0
Total Linear Footage of Pip		lat No. ——

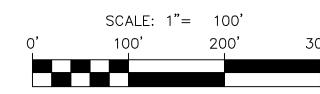
PZ 950W PLAT NO. JOB NO. 12994-04 DESIGNER CHECKED MP DRAWN CN

CD

C1.01







PLAN OF RECORD 08/01/2023 24.96 ACRES OWNER: WPGL LLC (VOL. 18135 PGS. 2421 O.P.R.)

- EXISTING STRUCTURES

14.06 ACRES
OWNER: LENNAR HOMES OF TEXAS LAND &
CONSTRUCTION LTD
CB 5752 BLK 0 LOT 22

COMPLETION DATE: SAWS JOB NO.:

5/26/2023 21-1194

TER MAIN EXAS

E OFFSITE WA'BEXAR COUNTY, TE

PLAT NO.

DESIGNER

JOB NO. 12994-04

CHECKED MP DRAWN CN

MAY 2022

C2.00

CD

PLAN OF RECORD

I HEREBY CERTIFY THAT THESE RECORD DOCUMENTS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND WERE PREPARED UNDER MY SUPERVISION

NOTE: INFORMATION FOR PLAN OF RECORD DRAWING WAS PROVIDED TO PAPE-DAWSON ENGINEERS BY THE CONTRACTOR. PAPE-DAWSON ENGINEERS HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY

ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

WATER

PZ 950W

Developer's Name: STARLIGHT HOMES OF TEXAS, LLC
Address: 17319 SAN PEDRO AVE, SUITE 140
City: SAN ANTONIO State: TEXAS ZIP; 78232
Phone# <u>(210)</u> 889-5516 FAX#
SAWS Block Map# 74552Total EDU's_0 Total Acreage_0 1757 LF 24" HDPE (DR 11) DIPS
Total Linear Footage of Pipe: <u>WATER MAIN</u> Plat No. ——
Number of Lots 0 SAWS JOB NO 21-1194

5-4-22 TREE PROTECTION NOTE CONTRACTOR TO SHEETS C4.00 & C4.01 FOR TREE REMOVAL AND PRESERVATION REQUIREMENTS DURING CONSTRUCTION.

655.86 ACRES OWNER: U-BAR RANCH (VOL. 7423 PG. 2059 O.P.R.)

HORIZONTAL AND VERTICAL CONTROL POINTS Point # Northing Easting Elevation Full Description

1 | 13,678,051.33 | 2,043,688.95 | 695.84 | SET I.R. REDCAP (TRAV) 2 | 13,678,392.47 | 2,043,702.25 | 691.07 | SET I.R. REDCAP (TRAV)

3 | 13,678,439.12 | 2,043,736.79 | 690.88 | SET I.R. REDCAP (TRAV)

4 | 13,678,782.75 | 2,043,741.08 | 695.09 | SET I.R. REDCAP (TRAV)

	OVERALL QUANTITY TABLE		
ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY
520	REVEGETATION	LS	1
540	TEMPORARY EROSION, SEDIMENTATION AND WATER POLLUTION PREVENTION AND CONTROL	LS	1
550	TRENCH EXCAVATION SAFETY PROTECTION	LF	1757
815	24-INCH HDPE PIPE (DR 11 DIPS)	LF	1757
828	8" GATE VALVE (MJ) WITH 6" VALVE BOX, COMPLETE	EA	1
828	12" GATE VALVE (MJ) WITH 6" VALVE BOX, COMPLETE	EA	2
828	16" GATE VALVE (MJ) WITH 6" VALVE BOX, COMPLETE	EA	1
830	24" BUTTERFLY VALVE (FLG) WITH 6" VALVE BOX, COMPLETE	EA	6
834	STD. FIRE HYDRANT ASSEMBLY	EA	3
841	HYDROSTATIC TESTING	LS	1
842	24" WATER TIE-IN	EA	1
844	2" TEMPORARY BLOW-OFF ASSEMBLY	EA	2
844	4" TEMPORARY BLOW-OFF ASSEMBLY	EA	1
844	4" PERMANENT BLOW-OFF ASSEMBLY	EA	1
858	CONCRETE ENCASEMENT	CY	70
100	MOBILIZATION	LS	1
101	PREPARATION OF RIGHT-OF-WAY	LS	1

73.536 ACRES
OWNER: ARROYO CAP II-2, LLC
(DOC. 20210342408 O.P.R.)

SIRCTV 695.09

RIGHT-OF-WAY -

191.86 ACRES OWNER: ESPINO GILBERTO ETAL (VOL. 4223 PGS. 327–328 O.P.R.)

MASTERSON ROAD

(100' R.O.W.)

- FUTURE 8" PVC WATER MAIN 🌙 (SAWS JOB NO. 21-1257)

SHEET 2.02

16' WATER LINE EASEMENT DOC NO. 20220074856

SIRCTY

690.88

FUTURE 16" PVC WATER MAIN

PROPOSED 24" HDPE DR -11 DIPS WATER MAIN

- 20' TEMPORARY

CONSTRUCTION EASEMENT (P22-015T)

100-YEAR — FLOODPLAIN LIMITS

(SAWS JOB NO. 21-1257)

47.332 ACRES OWNER: STARLIGHT HOMES, LLC

(DOC. 20210342406 O.P.R.)

FUTURE 12" PVC WATER MAIN —

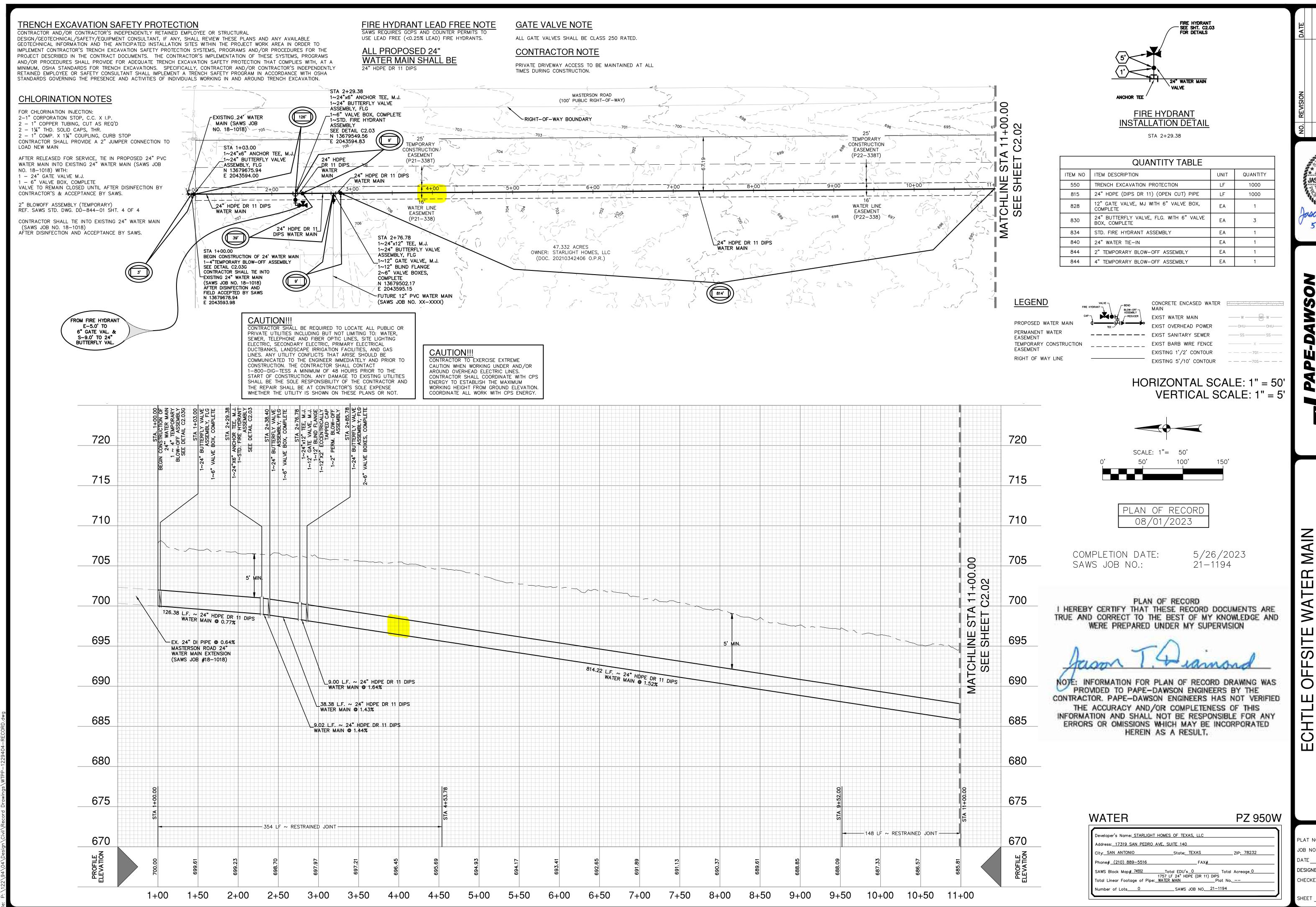
(SAWS JOB NO. XX-XXXX)

PROPOSED 24" HDPE DR 11 DIPS WATER MAIN -

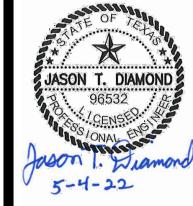
20' TEMPORARY CONSTRUCTION EASEMENT (P22-338T)

SHEET C2.01

16' WATER LINE EASEMENT TOOC NO. 20220074858



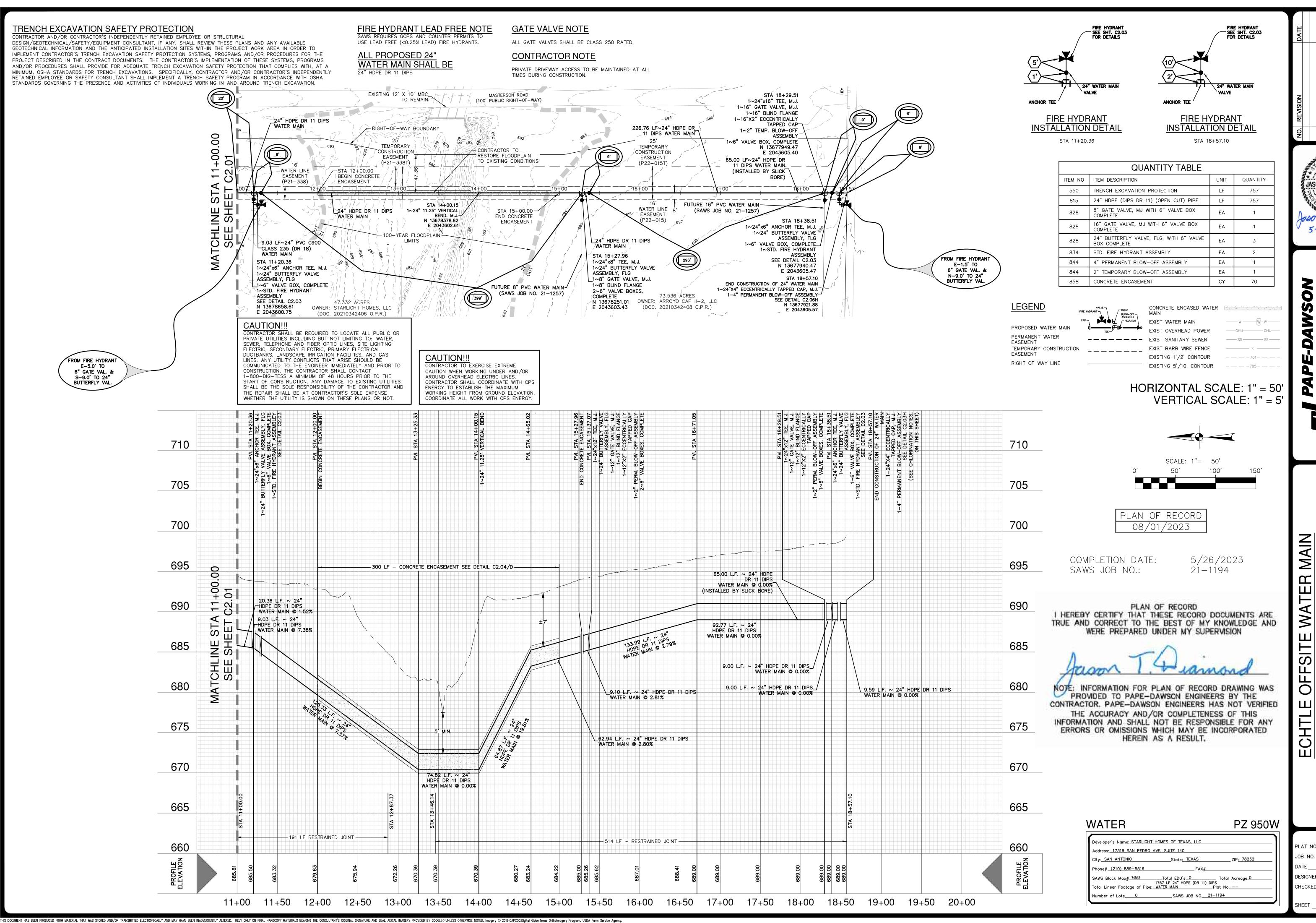
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SS

PROFILE -00 -AN AND STA 11+(MAIN PL 0+00 TO

AT NO. 12994-04 MAY 2022 DESIGNER CHECKED MP DRAWN CN C2.01 SHEET



JASON T. DIAMONI 5-4-22

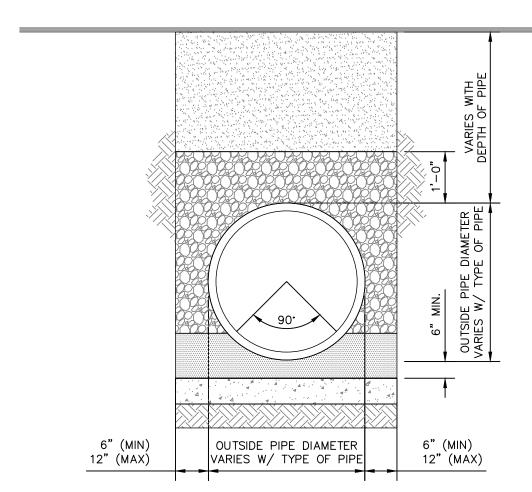
50

AND PROF , 18+57.10 MAIN PI +00 TO

LAT NO. OB NO. 12994-04 MAY 2022 CD

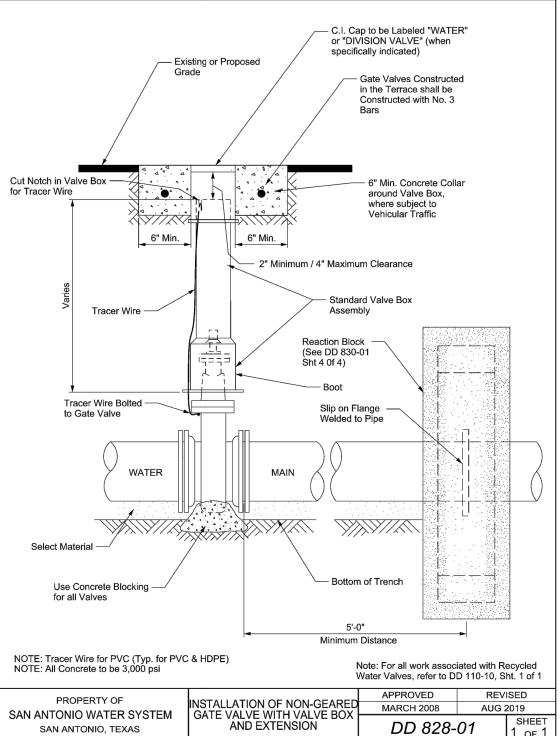
DESIGNER CHECKED<u>MP</u> DRAWN<u>CN</u> SHEET **C2.02**

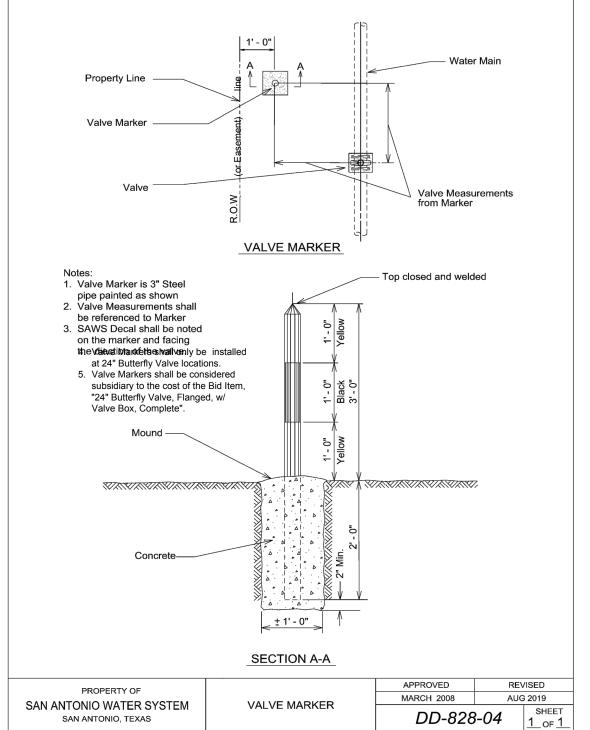
- 1. DEPTH OF GRAVEL SUBGRADE FILLER TO BE DETERMINED IN FIELD BY OWNER IN CONDITIONS WHERE TRENCH BOTTOM IS UNSTABLE
- 2. BEDDING SHALL HAVE A MINIMUM THICKNESS OF 6-INCHES BELOW OUTSIDE DIAMETER OF PIPE AND BE PLACED AND SHAPED TO CONFORM TO PIPE BARREL AND BELL OR FLANGES SUCH THAT THE ENTIRE LENGTH OF THE BARREL IS SUPPORTED BY THE BEDDING MATERIAL, NO SEPARATE PAY ITEM (NSPI).
- 3. INITIAL BACKFILL TO BE A MINIMUM OF 1—FOOT ABOVE OUTSIDE DIAMETER OF PIPE PLACED WITH A TEMPORARY SHIELD OVER THE PIPE TO PROTECT THE PIPE COATING AND/OR POLYWRAP, NO SEPARATE PAY ITEM (NSPI).
- 4. ALL BEDDING OR GRAVEL SUBGRADE FILLER IF USED TO BE PLACED ON UNDISTURBED
- 5. CONTRACTOR SHALL INCORPORATE THE USE OF A TRENCH BOX OR OTHER ACCEPTABLE SAFETY SYSTEM IN ANY TRENCH THAT EXCEEDS FIVE (5) FEET IN
- 6. ALL BACKFILL SHALL BE COMPACTED TO 98% OF THE MAXIMUM DRY DENSITY OR DETERMINED BY TXDOT TEST METHOD TEX-113E.



NSP = NO SEPARATE PAY ITEM

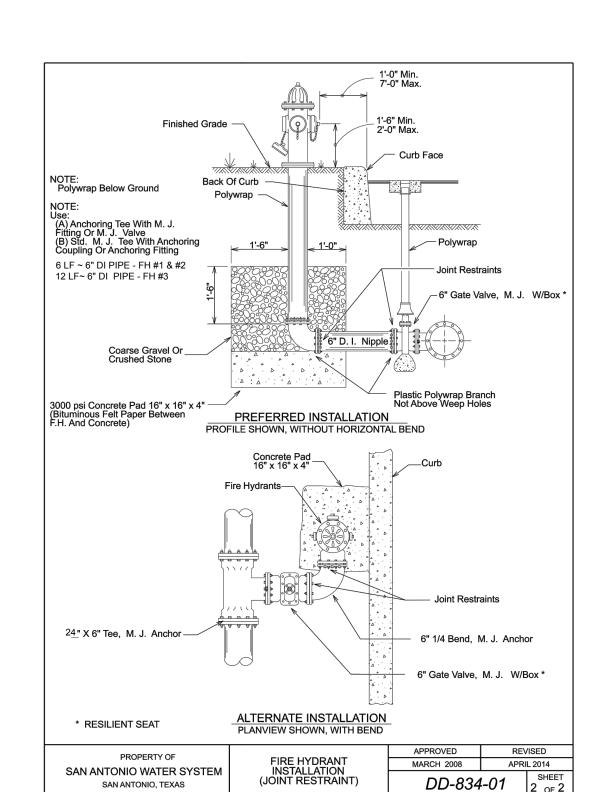
TYPICAL TRENCH INSTALLATION DETAIL



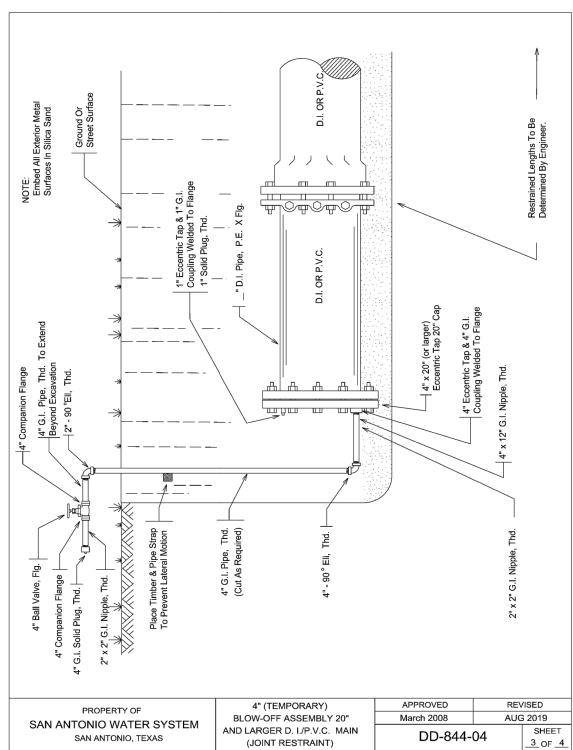


INSTLLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION, COMPLETE N.T.S.

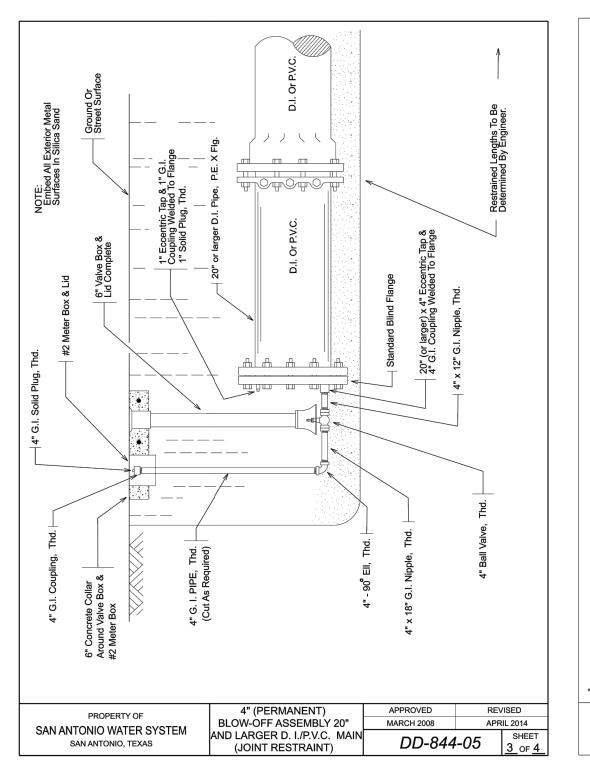
VALVE MARKER ASSEMBLY, COMPLETE N.T.S.



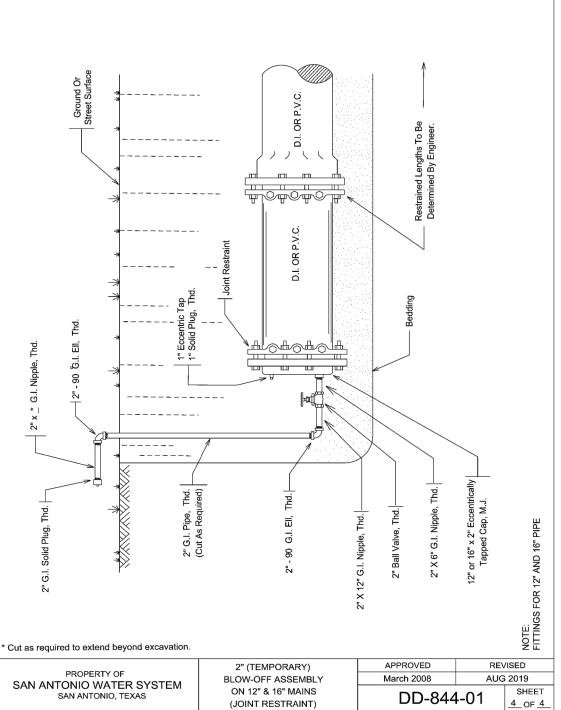
FIRE HYDRANT INSTALLATION (JOINT RESTRAINT), COMPLETE C2.03



4" TEMPORARY BLOW-OFF ASSEMBLY 20" AND LARGER D.I./P.V.C. MAIN (JOINT RESTRAINT), COMPLETE



4" PERMANENT BLOW-OFF ASSEMBLY 20" AND LARGER D.I./P.V.C. MAIN (JOINT RESTRAINT), COMPLETE N.T.S.



2" TEMPORARY BLOW-OFF ASSEMBLY 12" AND 16" D.I./P.V.C. MAIN (JOINT RESTRAINT), COMPLETE

5-4-22

PLAN OF RECORD 08/01/2023

COMPLETION DATE: SAWS JOB NO.:

5/26/2023 21-1194

PLAN OF RECORD I HEREBY CERTIFY THAT THESE RECORD DOCUMENTS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND WERE PREPARED UNDER MY SUPERVISION

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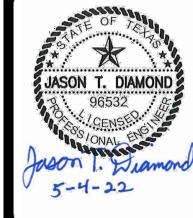
HEREIN AS A RESULT.

MAIN

DETAILS

JOB NO. 12994-04 MAY 2022 DESIGNER CD CHECKED MP DRAWN CN C2.03

c lu double water access a



PLAN OF RECORD 08/01/2023

COMPLETION DATE: SAWS JOB NO.:

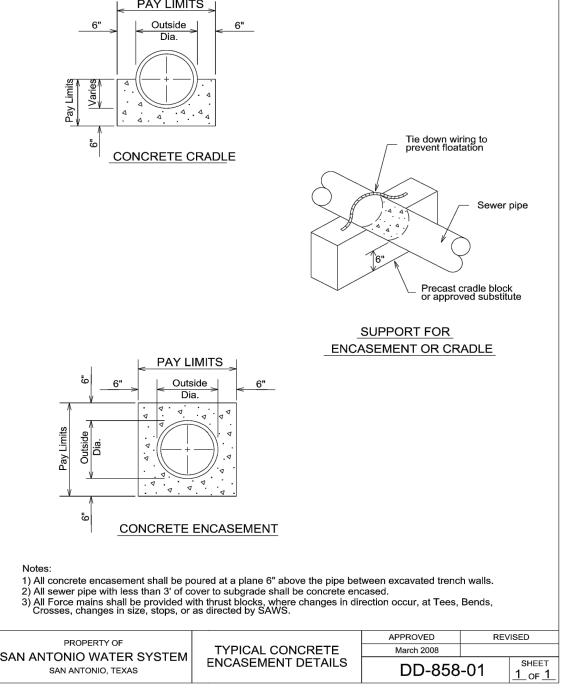
5/26/2023 21-1194

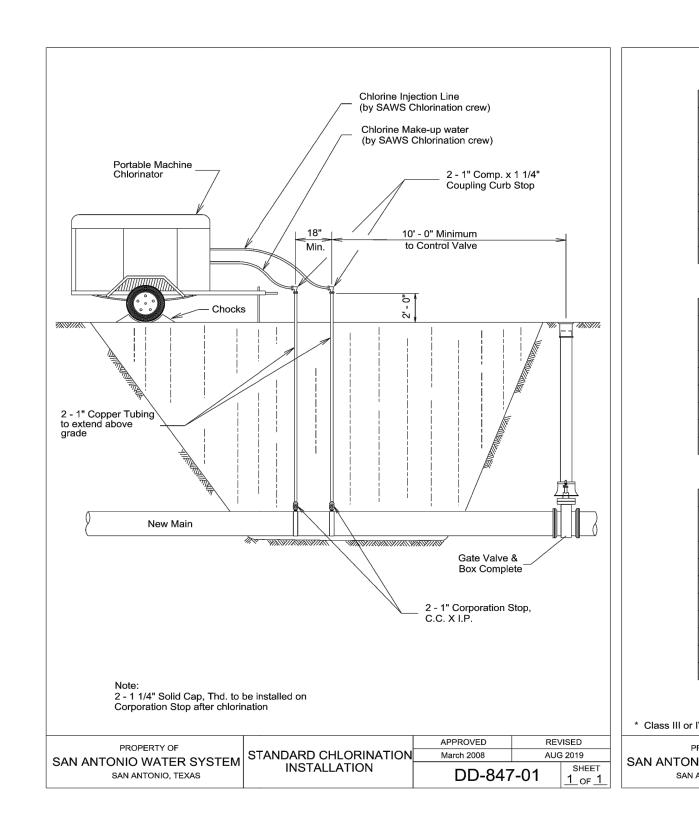
PLAN OF RECORD I HEREBY CERTIFY THAT THESE RECORD DOCUMENTS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND WERE PREPARED UNDER MY SUPERVISION

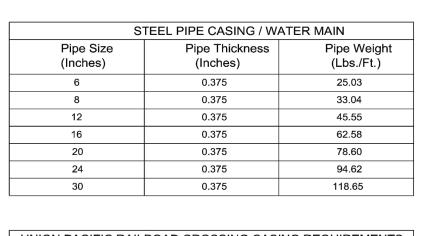
TE: INFORMATION FOR PLAN OF RECORD DRAWING WAS PROVIDED TO PAPE-DAWSON ENGINEERS BY THE CONTRACTOR. PAPE-DAWSON ENGINEERS HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY

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HEREIN AS A RESULT.

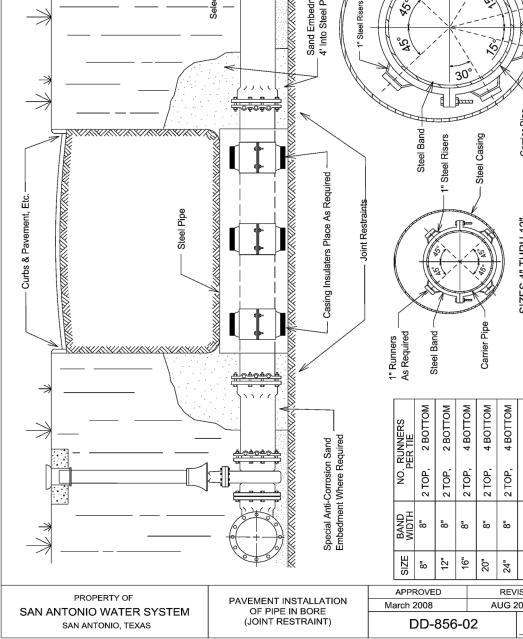


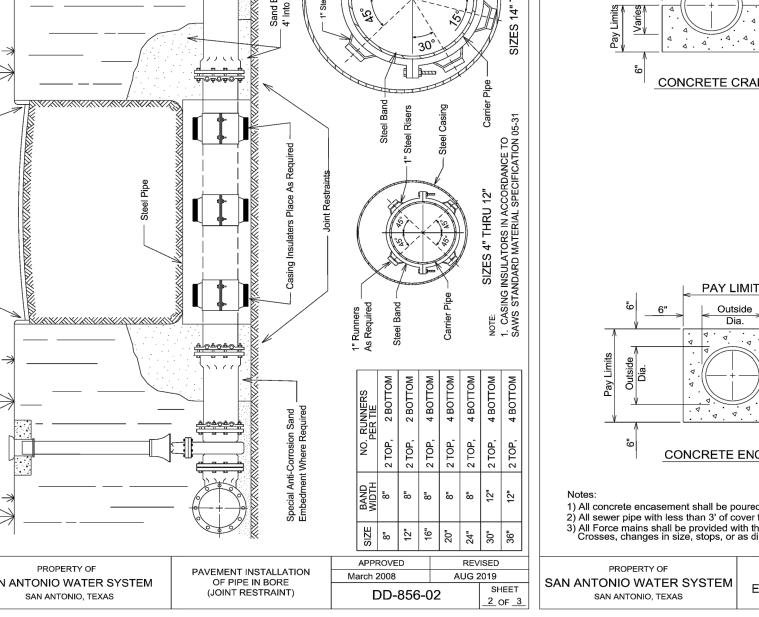


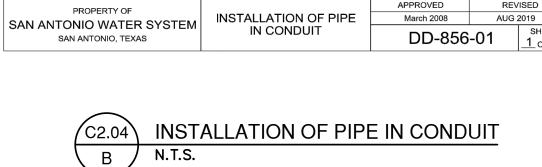


UNION PACIFIC RAIL	ROAD CROSSING CAS	ING REQUIREMENTS
Nom. Dia. Steel Conduit (Inches)	Steel Pipe Thickness (Inches)	Pipe Weight (Lbs./Ft.)
18	0.375	70.59
24	0.438	110.22
30	0.50	157.53
36	0.562	212.70
42	0.625	276.18
48	0.625	316.53

Water Main Size (Inches)	Nom. Dia. RCP* Or Steel (Inches)	Steel Pipe Thickness (Inches)	Pipe Weight (Lbs./Ft.)
6	18	0.375	70.59
8	24	0.375	94.62
12	24	0.375	94.62
16	30	0.375	118.65
20	36	0.438	166.19
24	42	0.438	194.02
30	48	0.50	259.02
36	54	0.50	291.07







I. JOINT RESTRAINT LENGTHS WERE CALCULATED USING THE EBAA

IRON, INC. RESTRAINT LENGTH CALCULATOR PROGRAM (VERSION

JOINT RESTRAINT NOTES



→ INDICATES DIRECTION OF

L = LENGTH TO BE RESTRAINED

RESTRAINED LENGTH

FOR DEAD ENDS AND VALVES

FLUID FLOW

DEAD END —

→ **||| →**

C2.04

FORCE RESULTING FROM

– VALVE



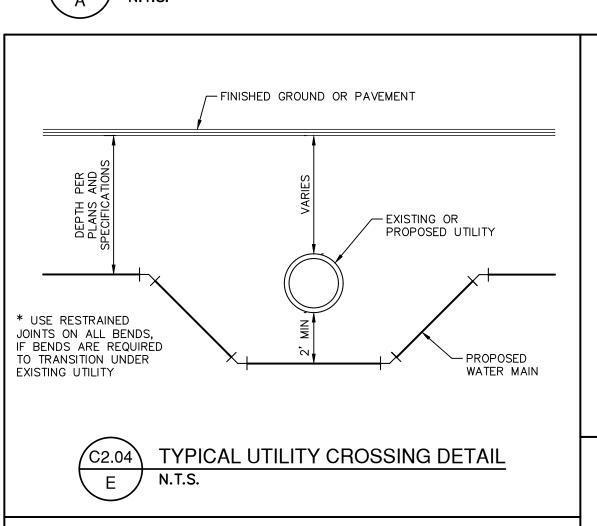
PROJECT NAME FIRST LINE

PROJECT NAME SECOND LINE

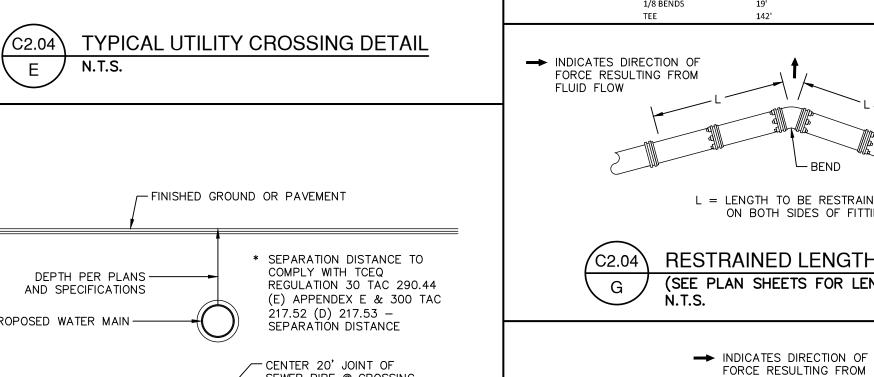
Engineer: Engineering Firm Name Contractor: Contractor Name

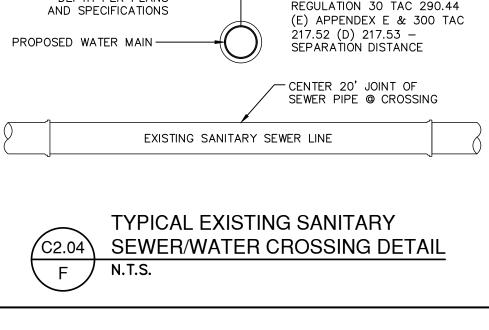
Cost: **\$1,234,567**

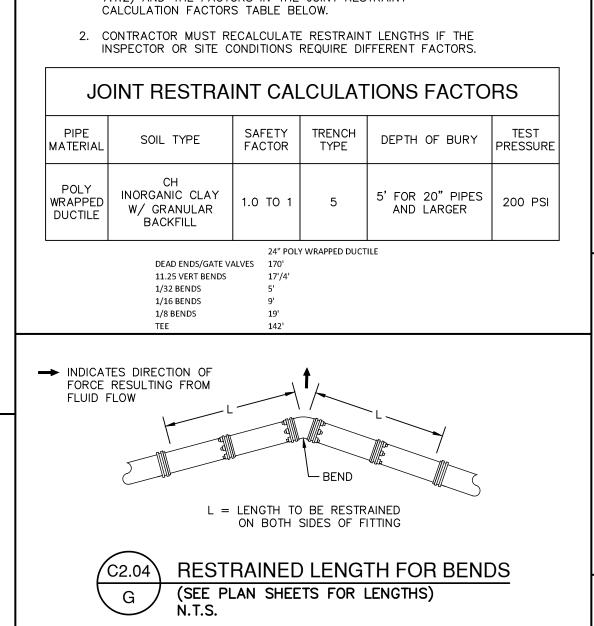
Job No. 12-3456



STANDARD CHLORINATION INSTALLATION







FLUID FLOW

C2.04

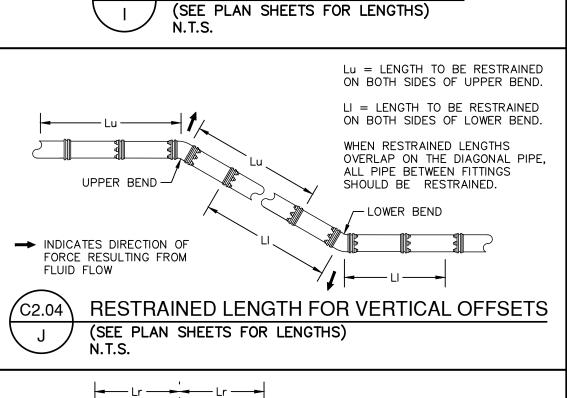
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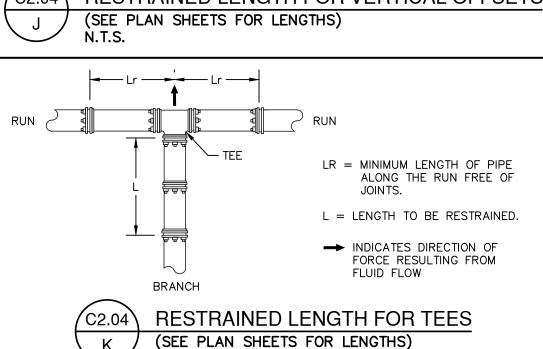
L = LENGTH TO BE RESTRAINED

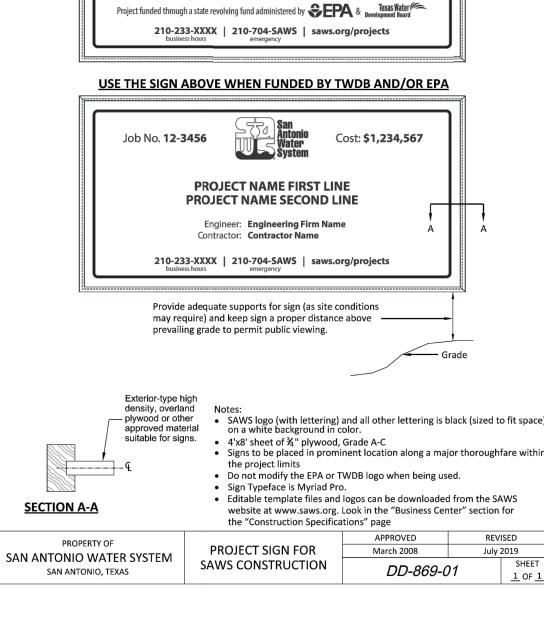
(SEE PLAN SHEETS FOR LENGTHS)

RESTRAINED LENGTH FOR REDUCERS

– REDUCER







$\widehat{C2.04}$	PROJECT SIGN FOR SAWS CONSTRUCTION
L	

PLAT NO. JOB NO. 12994-04 MAY 2022 DESIGNER ____ CHECKED MP DRAWN CN

c lu double water access a

MAN

C2.04