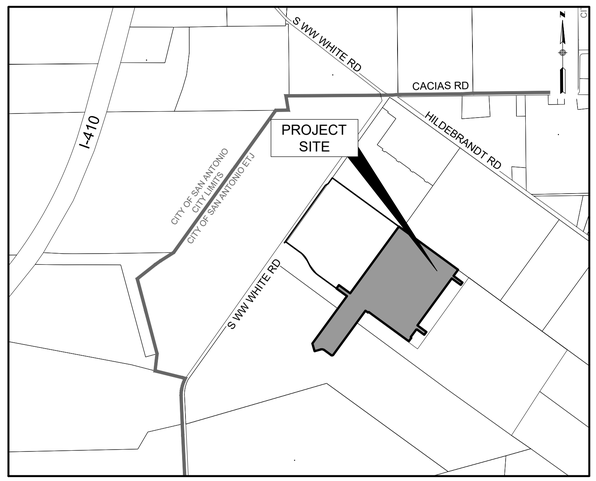
GRACE GARDENS SUBDIVISION UNIT 2

PAVING, DRAINAGE, WATER, AND WASTEWATER IMPROVEMENTS

LAND-PLAT-24-11800119

BEXAR COUNTY, TEXAS 78223



LOCATION MAP

(N.T.S.)

SUBMITTAL DATE: JANUARY 2025

GRACE GARDENS SUBDIVISION UNIT 2

SHEET NUMBER	SHEET DESCRIPTION
1.0	COVER
1.1	GENERAL NOTES
2.0	UTILITY LAYOUT SH1
2.1	UTILITY LAYOUT SH2
2.2	UTILITY LAYOUT SH3
2.3	UTILITY LAYOUT SH4
3.0	EXISTING DRAINAGE AREA MAP
3.1	PROPOSED DRAINAGE AREA MAP
3.2	ULTIMATE DRAINAGE AREA MAP
4.0	DRAIN 'A' P&P
4.1	DRAIN 'B' P&P
4.2	DRAIN 'C' P&P
4.3	DRAIN 'D' P&P
4.4	DRAIN 'E' P&P
4.5	DRAIN 'F' P&P
4.6	DRAINAGE DETAILS (SHEET 1 OF 3)
4.7	DRAINAGE DETAILS (SHEET 2 OF 3)
4.8	DRAINAGE DETAILS (SHEET 3 OF 3)
5.0	'MAGNOLIA G.' P&P 16+00 TO END
5.1	'GARDEN S.' P&P 16+00 TO END
5.2	'BLISSFUL M.' P&P 13+80.38 TO 25+00
5.3	'BLISSFUL M.' P&P 25+00 TO END
5.4	'RAINBOW VALLEY' P&P 1+00 TO END
5.5	'ALPINE ORCHARD' P&P 1+00 TO END
5.6	'BLOSSOM GROVE' P&P 1+00 TO END
5.7	'EMERALD VIEW' P&P 1+00 TO END
5.8	'HAZEL SKY' P&P 1+00 TO END
5.9	SIGNAGE PLAN
5.10	TRAFFIC SHEET 1 OF 2
5.11	TRAFFIC SHEET 2 OF 2
6.0	Grading Plan SH1
6.1	Grading Plan SH2
6.2	Grading Plan SH3
6.3	Grading Plan SH4
7.0	WATER COVER
7.1	WATER PLAN (SHEET 1 OF 4)
7.2	WATER PLAN (SHEET 2 OF 4)
7.3	WATER PLAN (SHEET 3 OF 4)
7.4	WATER PLAN (SHEET 4 OF 4)
8.0	WASTEWATER COVER
8.1	WASTEWATER LAYOUT (SHEET 1 OF 4)
8.2	WASTEWATER LAYOUT (SHEET 2 OF 4)
8.3	WASTEWATER LAYOUT (SHEET 3 OF 4)
8.4	WASTEWATER LAYOUT (SHEET 4 OF 4)
8.5	WWL 'A' STA 1+00 TO 10+50
8.6	WWL 'A' STA 10+50 TO 17+00
8.7	WWL 'A' STA 17+00 TO END
8.8	WWL 'B' STA 1+00 TO 10+50
8.9	WWL 'B' STA 10+50 TO END
8.10	WWL 'C' STA 1+00 TO 8+50
8.11	WWL 'C' STA 8+50 TO END
8.12	WWL 'D' STA 1+00 TO 10+50
8.13	WWL 'D' STA 10+50 TO END
8.14	WWL 'E' STA 1+00 TO END
8.15	WWL 'F' STA 1+00 TO END
8.16	WWL 'G' STA 1+00 TO END
8.17	WWL 'H' STA 1+00 TO END
8.18	UNIT 2 SERVICE LATERALS
8.19	UNIT 2 SERVICE LATERALS

PROPERTY DESCRIPTION

BEING A TOTAL OF 50.65 ACRES OUT OF:

BEING 2.84 ACRES OUT OF A 139.197 ACRE TRACT OF LAND OUT OF THE JUAN MONTES SURVEY NO. 6, ABSTRACT 11, COUNTY BLOCK 4007, BEXAR COUNTY, TEXAS, BEING A CALLED 139.65 ACRES OF LAND CONVEYED UNTO CAROLINE JANSZEN PFEIFER, ET AL. BY DEED EXECUTED MAY 27, 1986 AND RECORDED IN VOLUME 3761, PAGE 1412, OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY, TEXAS.

AND

BEING 38.86 ACRES OUT OF A 83.66 ACRE TRACT OF LAND OUT OF THE JUAN MONTEZ SURVEY NO. 6 ABSTRACT NO. 11, SITUATED IN THE CITY OF SAN ANTONIO, BEXAR COUNTY, TEXAS, AND BEING OUT OF A CALLED 139.197 ACRE TRACT OF LAND CONVEYED TO SA KOSTA BROWNE, LTD., A TEXAS LIMITED PARTNERSHIP DESCRIBED AND RECORDED IN DOC. NO. 20200153938, OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY TEXAS.

DEVELOPER: LENNAR HOMES
CONTACT: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 889-5516

ENGINEER: LJA ENGINEERING, INC.
9830 COLONNADE BLVD, SUITE 300
SAN ANTONIO, TEXAS 78230
CONTACT PERSON: RICK GRAY, PE
PHONE # (210) 503-2700
FAX # (210) 503-2749

SURVEYOR: LJA SURVEYING
9830 COLONNADE BLVD, SUITE 300
SAN ANTONIO, TEXAS 78230
CONTACT PERSON: GORDON ANDERSON
PHONE # (512) 439-4700

REVISIONS			
NO.	DESCRIPTION	BY	DATE

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

LJA JOB NO. SA173-0402-426

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

SHEET #: 1.0

LJA Engineering, Inc.

9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230

Phone 210.503.2700
LJA.COM
FRN-F-1386

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION JUNE 2008, OR LATEST.
2. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS, BUT NOT INCLUDED IN THE BID PROPOSAL. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED IN THE PAY ITEM TO WHICH IT RELATES.
3. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CONCRETE ISLANDS, STREET PAVING, CURBS, SHRUBS, BUSHES, EXISTING WOODEN FENCES, ORNAMENTAL STONE PLANTERS, OR DRIVEWAYS. (NO SEPARATE PAY ITEM).
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". THE CITY'S CONSTRUCTION INSPECTOR AND TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED.
6. IF THE NEED ARISES, ADDITIONAL BARRICADES AND DIRECTIONAL DEVICES MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.171 C.P.S. 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.
8. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
9. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY THE FOLLOWING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION OPERATION:

SAN ANTONIO WATER SYSTEM (SAWS)	233-2010
COSA DRAINAGE	207-8048
COSA SIGNAL OPERATIONS	207-7720 / 207-7765
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-344-8377
-CITY PUBLIC SERVICE ENERGY	
-SPECTRUM (TIME WARNER)	
-AT&T	
-MCI	

10. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED, BUT SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGES AND FOR THE MAINTENANCE AND PROTECTION OF THE EXISTING UTILITIES EVEN IF THEY ARE NOT SHOWN ON THE PLANS. LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION AND HE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME DURING CONSTRUCTION.
11. ALL WASTE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE HIS SOLE RESPONSIBILITY TO DISPOSE OF THIS MATERIAL OFF THE LIMITS OF THE PROJECT. NO WASTE MATERIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF EXISTING ARTIFICIAL OR NATURAL DRAINAGE.
12. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.
13. THE CONTRACTOR SHALL MAINTAIN ALL ADJOINING STREETS AND TRAVELED ROUTES FREE FROM SPILLED AND / OR TRACKED CONSTRUCTION MATERIALS AND / OR DEBRIS.
14. IF THE CONTRACTOR ENCOUNTERS ANY ARCHAEOLOGICAL DEPOSITS DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR MUST STOP EXCAVATION IMMEDIATELY, CONTACT THE CITY INSPECTOR, AND CALL THE CITY HISTORIC PRESERVATION OFFICE AT 207-7306 OR 207-3327 FOR AN ARCHAEOLOGICAL INVESTIGATION. THE CONTRACTOR CANNOT BEGIN EXCAVATION AGAIN WITHOUT WRITTEN PERMISSION FROM THE CITY. IF MORE THAN THREE (3) DAYS ARE REQUIRED FOR INVESTIGATION (NOT INCLUDING HOLIDAY AND WEEKENDS) AND IF THE CONTRACTOR IS UNABLE TO WORK IN OTHER AREAS, THEN THE CONTRACTOR WILL BE ALLOWED TO NEGOTIATE FOR ADDITIONAL CONSTRUCTION TIME UPON WRITTEN REQUEST WITHIN TEN (10) DAYS AFTER THE FIRST NOTICE TO THE CITY OF ARCHAEOLOGICAL INVESTIGATION FOR EACH EVENT. IF THE TIME REQUIRED FOR INVESTIGATION IS LESS THAN OR EQUAL TO THREE (3) DAYS FOR EACH EVENT, CONTRACT DURATION WILL NOT BE EXTENDED.
15. IF SUSPECTED CONTAMINATION IS ENCOUNTERED DURING CONSTRUCTION OPERATIONS, C.O.S.A. SHALL BE NOTIFIED IMMEDIATELY WHEN CONTAMINATED SOILS AND / OR GROUNDWATER ARE ENCOUNTERED AT LOCATIONS NOT IDENTIFIED IN THE PLANS. THE NOTIFICATION SHOULD INCLUDE THE STATION NUMBER, TYPE OF CONTAMINATED MEDIA, EVIDENCE OF CONTAMINATION AND MEASURES TAKEN TO CONTAIN THE CONTAMINATED MEDIA AND PREVENT PUBLIC ACCESS. THE CONTAMINATED SOIL AND / OR GROUNDWATER SHALL NOT BE REMOVED FROM THE LOCATION WITHOUT PRIOR C.O.S.A APPROVAL. THE CONTRACTOR MUST STOP THE EXCAVATION IMMEDIATELY AND CONTACT THE C.O.S.A INSPECTOR. THE CONTRACTOR CANNOT BEGIN EXCAVATION ACTIVITIES WITHOUT WRITTEN PERMISSION FROM THE CITY.
16. CONTRACTOR IS TO INCLUDE A MAILBOX POST BLOCKOUT FOR VACANT LOTS AND ALL RESIDENCES WHICH DO NOT HAVE MAILBOXES AT THE CURB. BLOCKOUTS ARE PROVIDED FOR FUTURE USE BY THE POST OFFICE.
17. CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA FACILITIES. THE CONTRACTOR MUST CONTACT VIA FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES OR ANY OTHER VIA FACILITIES THAT MAY BE PRESENT. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL (TELEPHONE NOS: (210) 362-2155 OR (210) 362-2096). THE CONTRACTOR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA. THE CONTRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO WORK AREA.

TREE PROTECTION AND PRESERVATION GENERAL NOTES

1. NO UTILITY OR STREET EXCAVATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
2. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION. DURING CONSTRUCTION ACTIVITY, AT LEAST A SIX-INCH LAYER OF COARSE MULCH SHALL BE PLACED AND MAINTAINED OVER THE ROOT PROTECTION ZONE (NO SEPARATE PAY ITEM).
3. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR FOR GUIDANCE.
4. ROOTS WILL BE CUT WITH A ROCK SAW OR BY HAND, NOT BY AN EXCAVATOR OR OTHER ROAD CONSTRUCTION EQUIPMENT.
5. ALL CURB AND SIDEWALK WORK SHALL USE ALTERNATIVE CONSTRUCTION METHODS TO MINIMIZE EXTENSIVE ROOT DAMAGE TO TREES (REFER TO DETAILS).
6. EXPOSED ROOTS SHALL BE COVERED AT THE END OF THE DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH, OR WET BURLAP.
7. NO EQUIPMENT, VEHICLES OR MATERIALS SHALL OPERATE OR BE STORED WITHIN THE ROOT PROTECTION ZONE OF ANY TREE NEAR THE PROJECT. ROOT PROTECTION ZONE IS 1 FOOT OF RADIUS PER INCH OF TREE'S DIAMETER. A 10-INCH DIAMETER TREE WOULD HAVE A 10 FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. OAK WOUNDS SHALL BE PAINTED OVER WITHIN 30 MINUTES TO PREVENT OAK WILT.
8. SAPLINGS, SHRUBS OR BUSHES TO BE CLEARED FROM THE PROTECTED ROOT ZONE AREA OF A LARGE TREE SHALL BE REMOVED BY HAND AS DESIGNATED BY THE INSPECTOR.
9. NO WIRES, NAILS OR OTHER MATERIAL MAY BE ATTACHED TO PROTECTED TREES.
10. TREES, TREE LIMBS, BUSHES AND SHRUBS LOCATED IN THE CITY STREET OR ALLEY RIGHT-OF-WAY OR PERMANENT EASEMENTS WHICH INTERFERE WITH PROPOSED CONSTRUCTION ACTIVITIES SHALL BE PROPERLY PRUNED FOLLOWING THE ANSI A-300 STANDARDS FOR PRUNING. ALL TREE PRUNING SHALL BE COMPLETED BY A CITY OF SAN ANTONIO TREE MAINTENANCE LICENSED CONTRACTOR (ARTICLE 21-171, CITY CODE) ONLY AFTER APPROVAL FROM THE CAPITAL PROJECTS MANAGEMENT THROUGH THE INSPECTOR.
11. NO EXCESSIVE TREE TRIMMING WILL BE PERMITTED.
12. ALL DEBRIS GENERATED BY THE PRUNING AND TRIMMING OF THE TREES AND / OR BUSHES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY (NO SEPARATE PAY ITEM).
13. TREES MUST BE MAINTAINED IN GOOD HEALTH THROUGHOUT THE CONSTRUCTION PROCESS. MAINTENANCE MAY INCLUDE, BUT NOT LIMITED TO: WATERING THE ROOT PROTECTION ZONE, WASHING FOLIAGE, FERTILIZATION, PRUNING, ADDITIONAL MULCH APPLICATIONS AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT.
14. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST. (210) 207-0278
15. TREES WHICH ARE DAMAGED OR LOST DUE TO THE CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE CITY'S SATISFACTION.
16. TREE PLANTING FOR MITIGATION OR ENHANCEMENT: ALL PLANTED TREES SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATION, FERTILIZING, PRUNING AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT. TREES THAT DIE WITHIN TWELVE (12) MONTHS SHALL BE REPLACED WITH A TREE OF EQUAL SIZE AND SPECIES.

ACCESSIBILITY REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS AT ALL TIMES TO LOCAL RESIDENCES AND BUSINESSES.
2. WHEN THE WORK REQUIRES THE EXCAVATION OF THE STREET AND THE REMOVAL OF THE EXISTING DRIVEWAY APPROACHES AND SIDEWALKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ALL-WEATHER ACCESS TO THE BUSINESSES AND RESIDENCES. THE TEMPORARY DRIVEWAY APPROACHES SHALL BE CONSTRUCTED WITH FLEXIBLE BASE OR GRAVEL MATERIAL AT NO SEPARATE COST TO THE CITY.
3. PRIOR TO INITIATING THE CONSTRUCTION OF NEW DRIVEWAY APPROACHES, THE CONTRACTOR SHALL GIVE ADVANCE WARNING IN PERSON, OR IN WRITING, OF AT LEAST 48 HOURS TO EACH RESIDENCE THAT WILL BE IMMEDIATELY AFFECTED, SO THAT ALTERNATE PLANS MAY BE MADE BY THE RESIDENTS.
4. FOR BUSINESSES WITH MORE THAN ONE DRIVEWAY, AT LEAST ONE DRIVEWAY SHALL REMAIN OPEN WHILE THE OTHER NEW DRIVEWAY APPROACHES ARE CONSTRUCTED. FOR BUSINESSES WITH ONLY ONE DRIVEWAY, THE NEW DRIVEWAY APPROACH SHALL BE CONSTRUCTED IN HALF WIDTHS, UNLESS A TEMPORARY ASPHALT DRIVEWAY IS FIRST INSTALLED AT NO SEPARATE COST TO THE CITY.

REVISED JULY 2017

SAWS CONSTRUCTION NOTES COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT

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.

WATER SECTION

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 565 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 565 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.

SEWER NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO SANITARY SEWER OVERFLOW (SSO) OCCURS AS A RESULT OF THEIR WORK. ALL CONTRACTOR PERSONNEL RESPONSIBLE FOR SSO PREVENTION AND CONTROL SHALL BE TRAINED ON PROPER RESPONSE. SHOULD AN SSO OCCUR, THE CONTRACTOR SHALL:
   A. IDENTIFY THE SOURCE OF THE SSO AND NOTIFY SAWS EMERGENCY OPERATIONS CENTER (EOC) IMMEDIATELY AT (210) 233-2014. PROVIDE THE ADDRESS OF THE SPILL AND AN ESTIMATED VOLUME OR FLOW.
   B. ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.
   C. CONTAIN SEWAGE FROM THE SSO TO THE EXTENT OF PREVENTING A POSSIBLE CONTAMINATION OF WATERWAYS.
   D. CLEAN UP SPILL SITE (RETURN CONTAINED SEWAGE TO THE COLLECTION SYSTEM IF POSSIBLE) AND PROPERLY DISPOSE OF CONTAMINATED SOIL/MATERIALS.
   E. CLEAN THE AFFECTED SEWER MAINS AND REMOVE ANY DEBRIS.
   F. MEET ALL POST-SSO REQUIREMENTS AS PER THE EPA CONSENT DECREE, INCLUDING LINE CLEANING AND TELEVISING THE AFFECTED SEWER MAINS (AT SAWS DIRECTION) WITHIN 24 HOURS.

SHOULD THE CONTRACTOR FAIL TO ADDRESS AN SSO IMMEDIATELY AND TO SAWS SATISFACTION, THEY WILL BE RESPONSIBLE FOR ALL COSTS INCURRED BY SAWS, INCLUDING ANY FINES FROM EPA, TCEQ AND/OR ANY OTHER FEDERAL, STATE OR LOCAL AGENCIES.

NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TCEQ AND SAWS.

2. IF BYPASS PUMPING IS REQUIRED, THE CONTRACTOR SHALL PERFORM SUCH WORK IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION FOR WATER AND SANITARY SEWER CONSTRUCTION, ITEM NO. 864, "BYPASS PUMPING".
3. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING FORCE MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973 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.
4. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241, TAC 217.53 AND TCEQ 290.44(E)(4)(B). CONTRACTOR SHALL CENTER A 20' JOINT OF 160 PSI PRESSURE RATED PVC AT THE PROPOSED WATER CROSSING.
5. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALLOWANCES AND ADJUSTMENTS FOR TOP OF MANHOLES TO MATCH THE FINISHED GRADE OF THE PROJECT'S IMPROVEMENTS. (NSPI)
6. SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER: ALL SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER, RECYCLED WATER, PETROLEUM PRODUCTS, OR CHEMICALS MUST BE REPORTED IMMEDIATELY TO THE SAWS INSPECTOR ASSIGNED TO THE COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP). THIS REQUIREMENT APPLIES TO EVERY SPILL, OVERFLOW, OR DISCHARGE REGARDLESS OF SIZE.
7. MANHOLE AND ALL PIPE TESTING (INCLUDING THE TV INSPECTION) MUST BE PERFORMED AND PASSED PRIOR TO FINAL FIELD ACCEPTANCE BY SAWS CONSTRUCTION INSPECTION DIVISION, AS PER THE SAWS SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION.
8. ALL PVC PIPE OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH WITH MINIMUM PIPE STIFFNESS OF 115 PSI.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119

GENERAL NOTES

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_General Notes.dwg

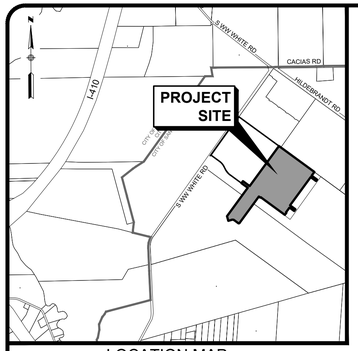
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER:
SA173-0402-426

SHEET NO.
1.1

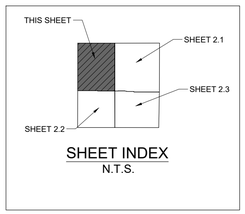
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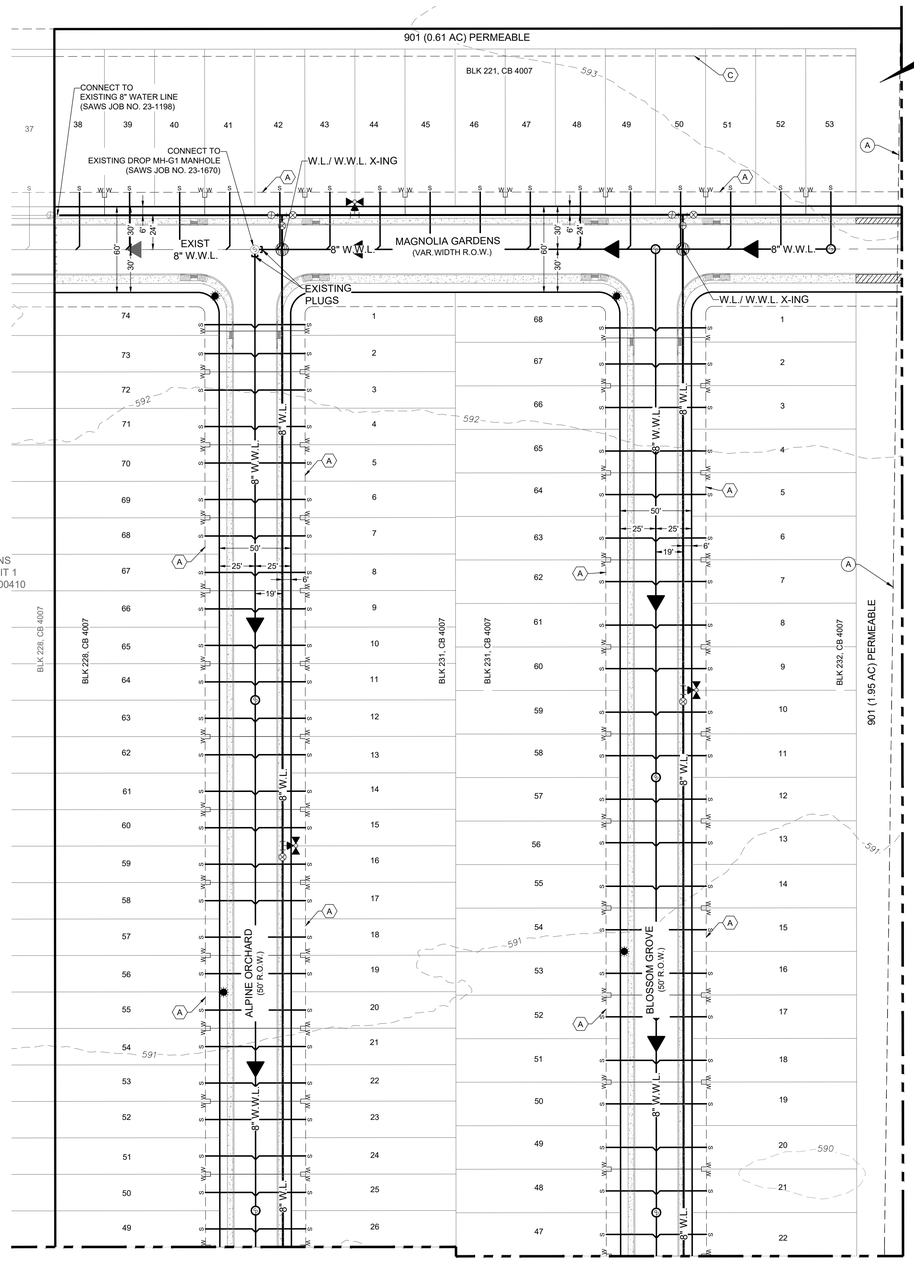
LOCATION MAP
N.T.S.

GENERAL NOTES

1. FIRE HYDRANT SHALL BE LOCATED BEHIND SIDEWALK IN ACCORDANCE WITH THE FIRE HYDRANT INSTALLATION DETAIL DD-834-01.
2. CONTRACTOR TO FIELD VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
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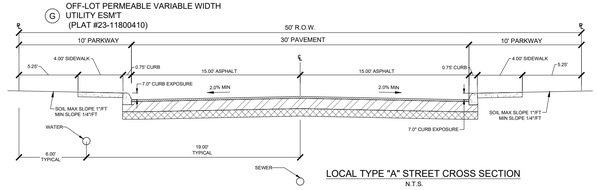


SHEET INDEX
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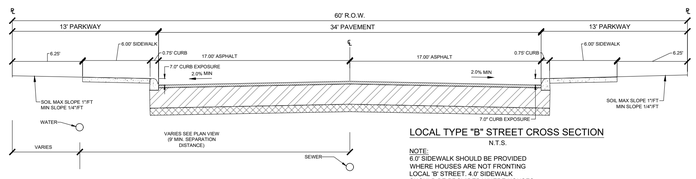


CAUTION: EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!

- (A) 10' G.E.T.CA. ESM'T
- (B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
- (C) 5' G.E.T.CA. ESM'T
- (D) 1' V.N.A.E.
- (A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
- (B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
- (C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
- (D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
- (E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
- (F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
- (G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

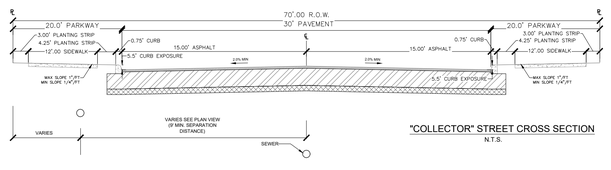


LOCAL TYPE "A" STREET CROSS SECTION
N.T.S.



LOCAL TYPE "B" STREET CROSS SECTION
N.T.S.

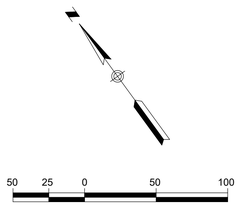
NOTE:
6.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE NOT FRONTING LOCAL 'B' STREET. 4.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE FRONTING LOCAL 'B' STREET.



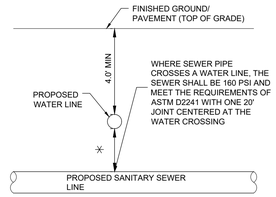
"COLLECTOR" STREET CROSS SECTION
N.T.S.

LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8" WW	8" WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
c/o	c/o	SANITARY SEWER LATERAL CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
		TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE
V.N.A.E.		VEHICULAR NON-ACCESS ESM'T.



SCALE IN FEET
SCALE: 1"=50'



* SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
UTILITY LAYOUT (SHEET 1 OF 4)

NO.	DESCRIPTION	BY	DATE

DATE: 9/6/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: sh_Utility Layout.dwg

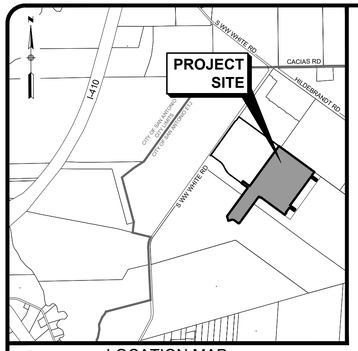
STATE OF TEXAS
RICHARD W. GRAY III
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01/15/2025

LJA Engineering, Inc.
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Phone 210.503.2700
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TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 2.0

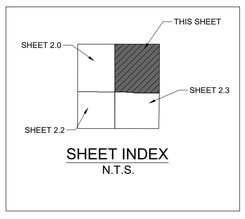
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LOCATION MAP
N.T.S.

GENERAL NOTES

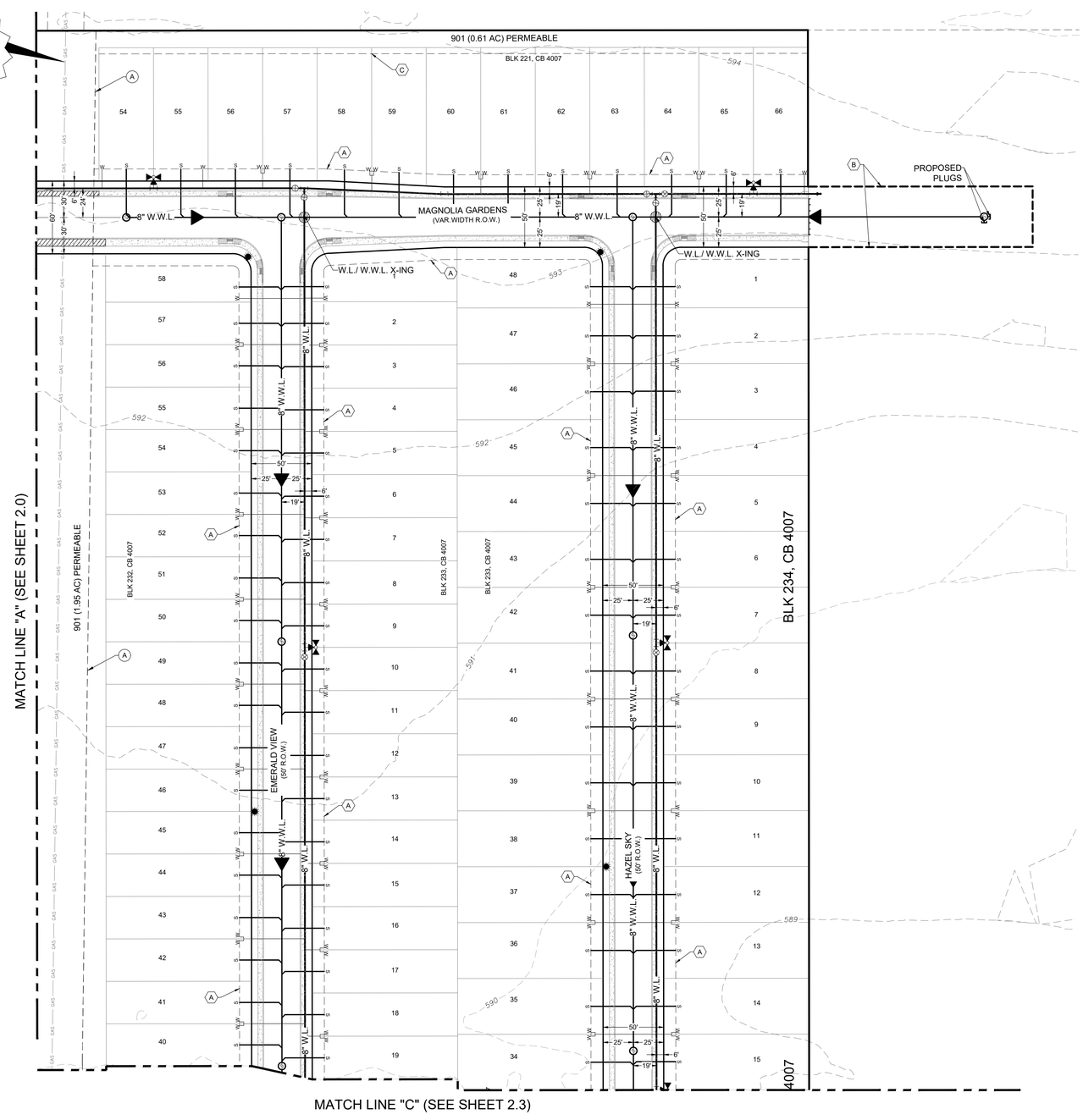
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SHEET INDEX
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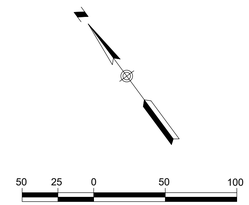
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  DRAINAGE EASEMENT
  (PLAT #23-11800410)
- (D) OFF-LOT 15' GRADING EASEMENT
  (PLAT #23-11800410)
- (E) 10' G.E.T.CA. ESM'T
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- (F) OFF-LOT DRAINAGE ACCESS ESM'T
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CAUTION: EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!

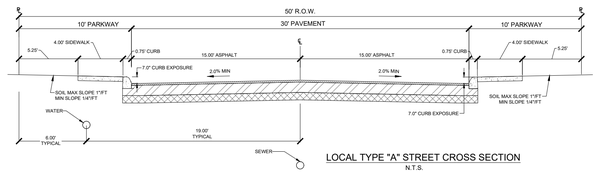


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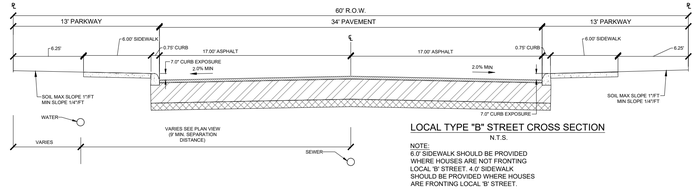
PROPOSED	EXISTING	
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		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
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		FIRE HYDRANT
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		STREET LIGHT (250 WATT LED)
		GUY WIRE
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SCALE IN FEET
SCALE: 1"=50'

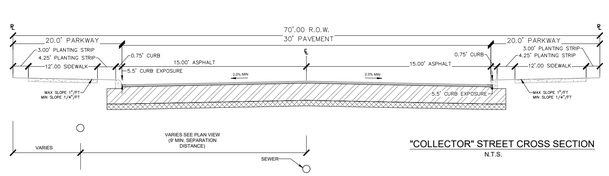


LOCAL TYPE "A" STREET CROSS SECTION
N.T.S.

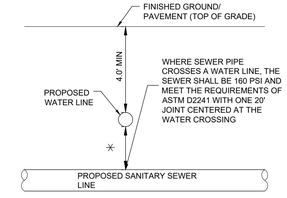


LOCAL TYPE "B" STREET CROSS SECTION
N.T.S.

NOTE:
6.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE NOT FRONTING LOCAL 'B' STREET. 4.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE FRONTING LOCAL 'B' STREET.



"COLLECTOR" STREET CROSS SECTION
N.T.S.



* SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
UTILITY LAYOUT (SHEET 2 OF 4)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Utility Layout.dwg

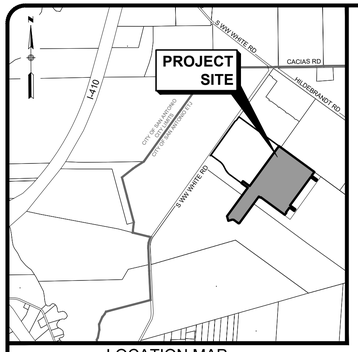
STATE OF TEXAS
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01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
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TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 2.1

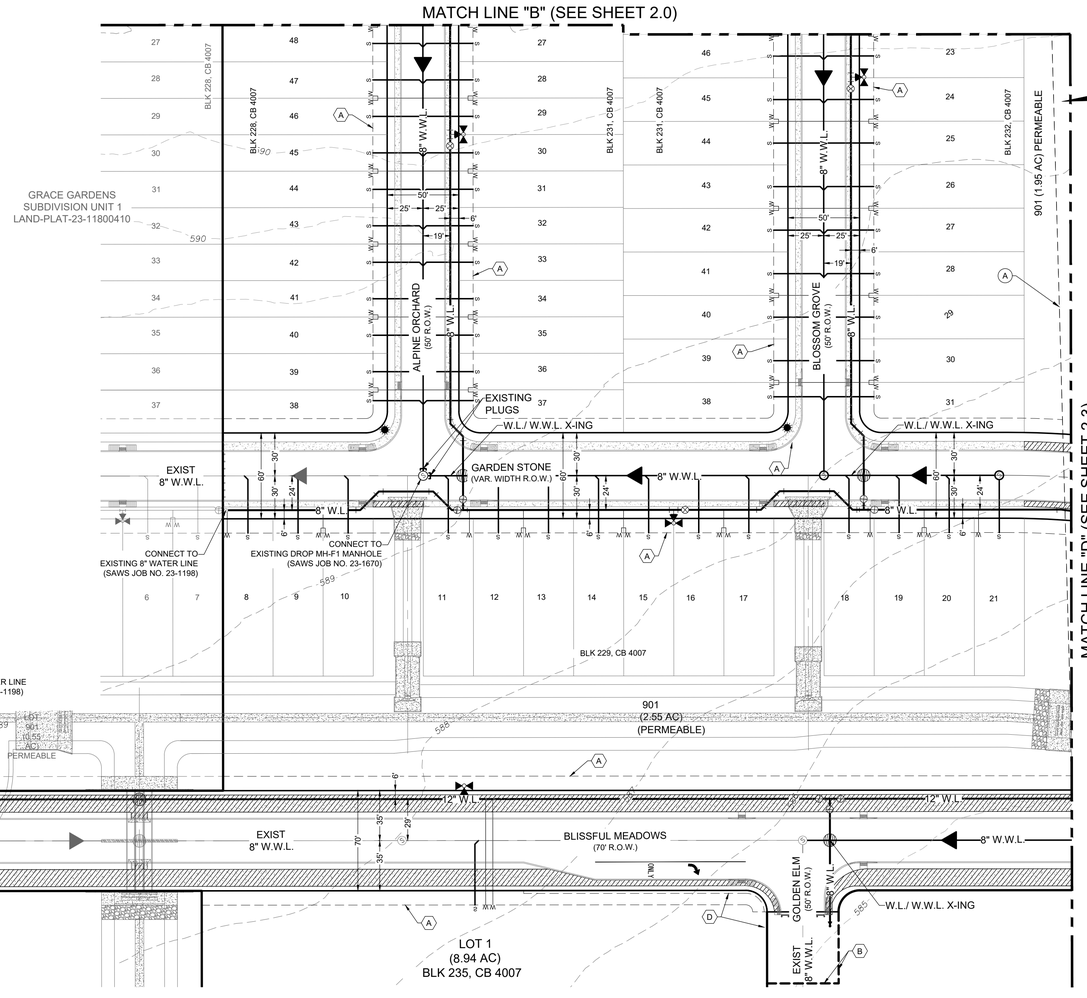
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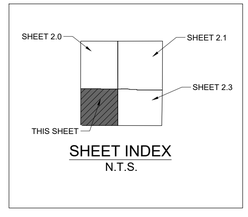


LOCATION MAP
N.T.S.

GENERAL NOTES

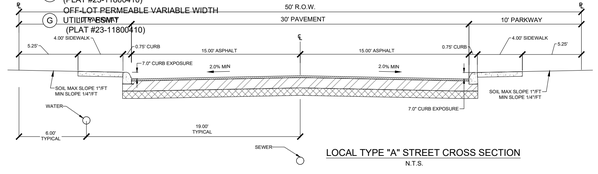
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7. CONTRACTOR SHALL VERIFY GRAVITY INVERTS PRIOR TO CONSTRUCTION AND NOTIFY CIVIL ENGINEER IN WRITING OF ANY DISCREPANCIES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL UTILITY TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PREFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTER, 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.
9. CONTRACTOR TO REFERENCE MOST CURRENT SAWS DETAILS & SPECIFICATIONS. FOR SEWER MANHOLES REFERENCE SAWS STANDARD SPECIFICATION ITEM NO. 852.
10. PROJECT DESIGNED IN TX8-SCF GRID. CONVERSION FACTOR TO SURFACE = 1.00017
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.



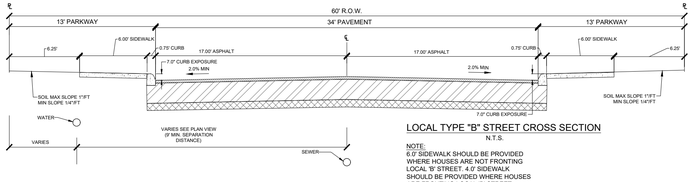


SHEET INDEX
N.T.S.

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
ENTERPRISE GAS LINE EASEMENT (A) (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
OFF-LOT VARIABLE WIDTH PRIVATE (C) DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
OFF-LOT PERMEABLE VARIABLE WIDTH (G) UTILITY ESM'T (PLAT #23-11800410)

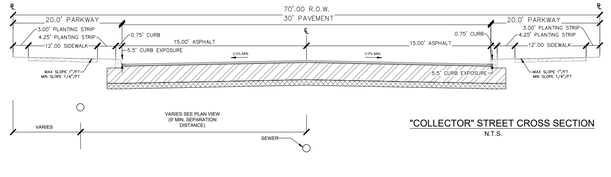


LOCAL TYPE "A" STREET CROSS SECTION
N.T.S.

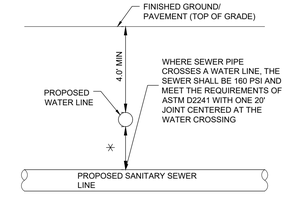


LOCAL TYPE "B" STREET CROSS SECTION
N.T.S.

NOTE:
6.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE NOT FRONTING LOCAL 'B' STREET. 4.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE FRONTING LOCAL 'B' STREET.



"COLLECTOR" STREET CROSS SECTION
N.T.S.



* SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8" WW	8" WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE
V.N.A.E.		VEHICULAR NON-ACCESS ESM'T.

SCALE IN FEET
SCALE: 1"=50'

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
UTILITY LAYOUT (SHEET 3 OF 4)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: gs_Utility Layout.dwg

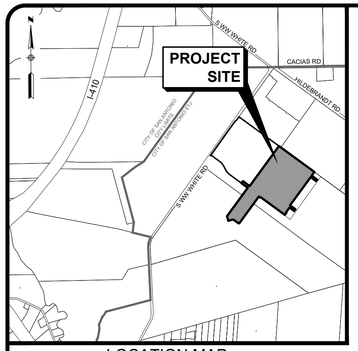
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 2.2

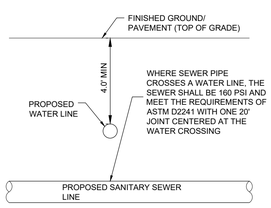
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Plot Date/Time: Jan 15, 25 - 10:22:44



LOCATION MAP
N.T.S.

GENERAL NOTES

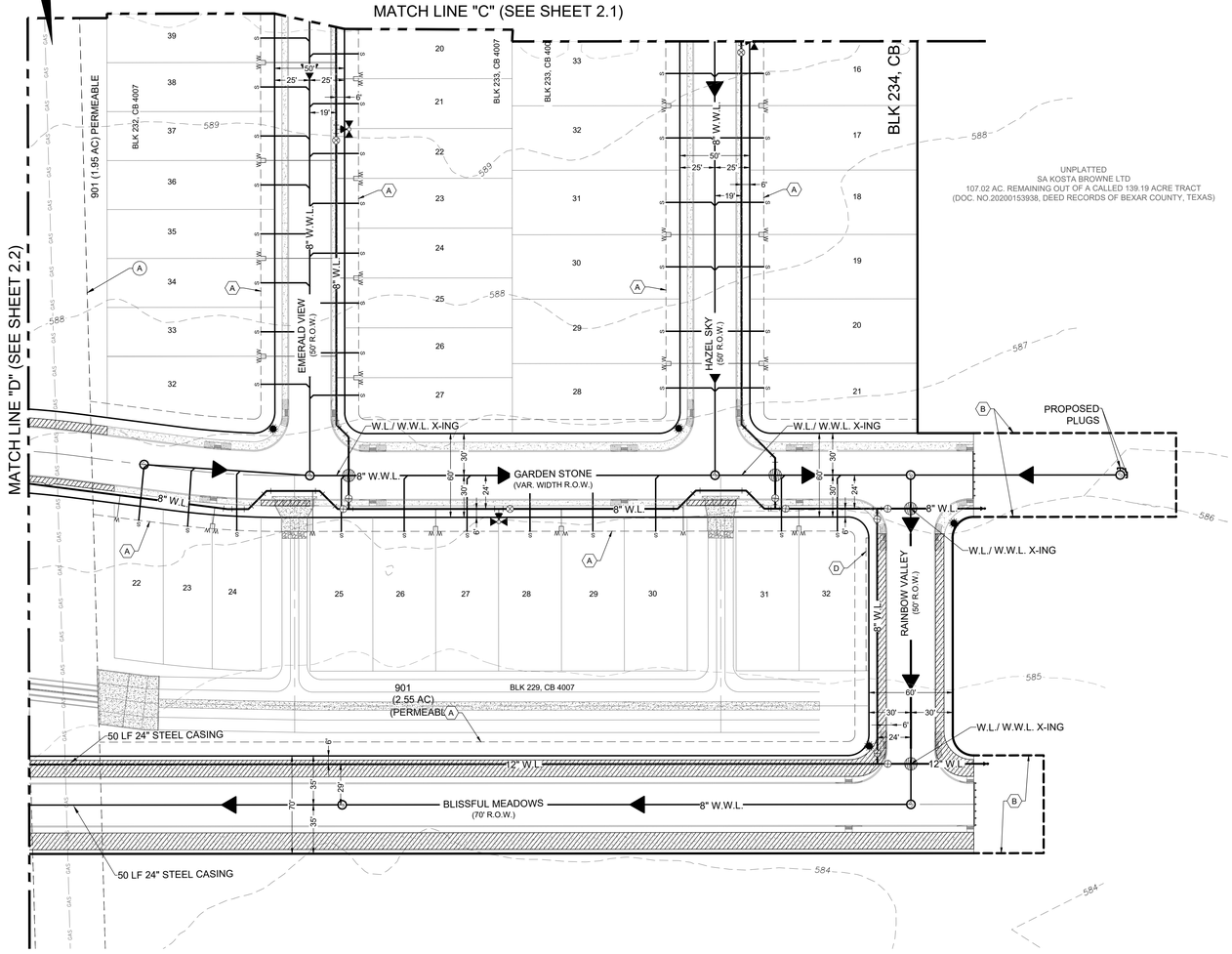
1. FIRE HYDRANT SHALL BE LOCATED BEHIND SIDEWALK IN ACCORDANCE WITH THE FIRE HYDRANT INSTALLATION DETAIL DD-834-01.
2. CONTRACTOR TO FIELD VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
3. ALL VALVES SHALL READ "OPEN RIGHT".
4. ALL FIRE HYDRANTS SHALL BE PAINTED APPROPRIATE SAWS COLORS.
5. FIRE HYDRANTS AND VALVE BOXES TO BE RAISED TO THE PROPOSED TOP OF PAVEMENT OR GROUND ELEVATION.
6. ALL WATER PIPE TO BE C-900, DR-18, CLASS 150 UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL VERIFY GRAVITY INVERTS PRIOR TO CONSTRUCTION AND NOTIFY CIVIL ENGINEER IN WRITING OF ANY DISCREPANCIES.
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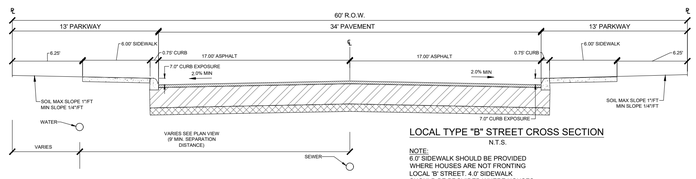
TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

CAUTION: EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!



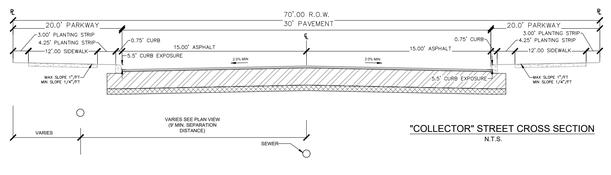


LOCAL TYPE "A" STREET CROSS SECTION
N.T.S.



LOCAL TYPE "B" STREET CROSS SECTION
N.T.S.

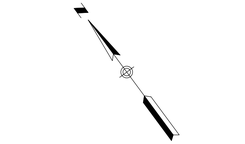
NOTE:
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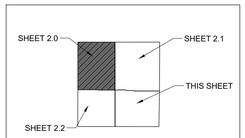
"COLLECTOR" STREET CROSS SECTION
N.T.S.

LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8" WW	8" WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE
V.N.A.E.		VEHICULAR NON-ACCESS ESM'T.



SCALE IN FEET
SCALE: 1"=50'



SHEET INDEX
N.T.S.

- (A) 10' G.E.T.CA. ESM'T
- (B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
- (C) 5' G.E.T.CA. ESM'T
- (D) 1' V.N.A.E.
- (A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
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- (C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
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- (G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
UTILITY LAYOUT (SHEET 3 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
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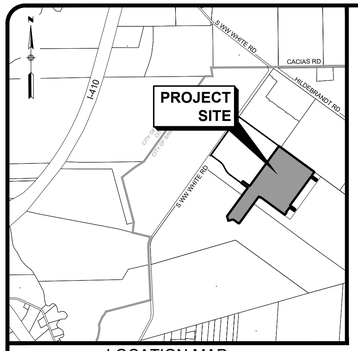
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 2.3

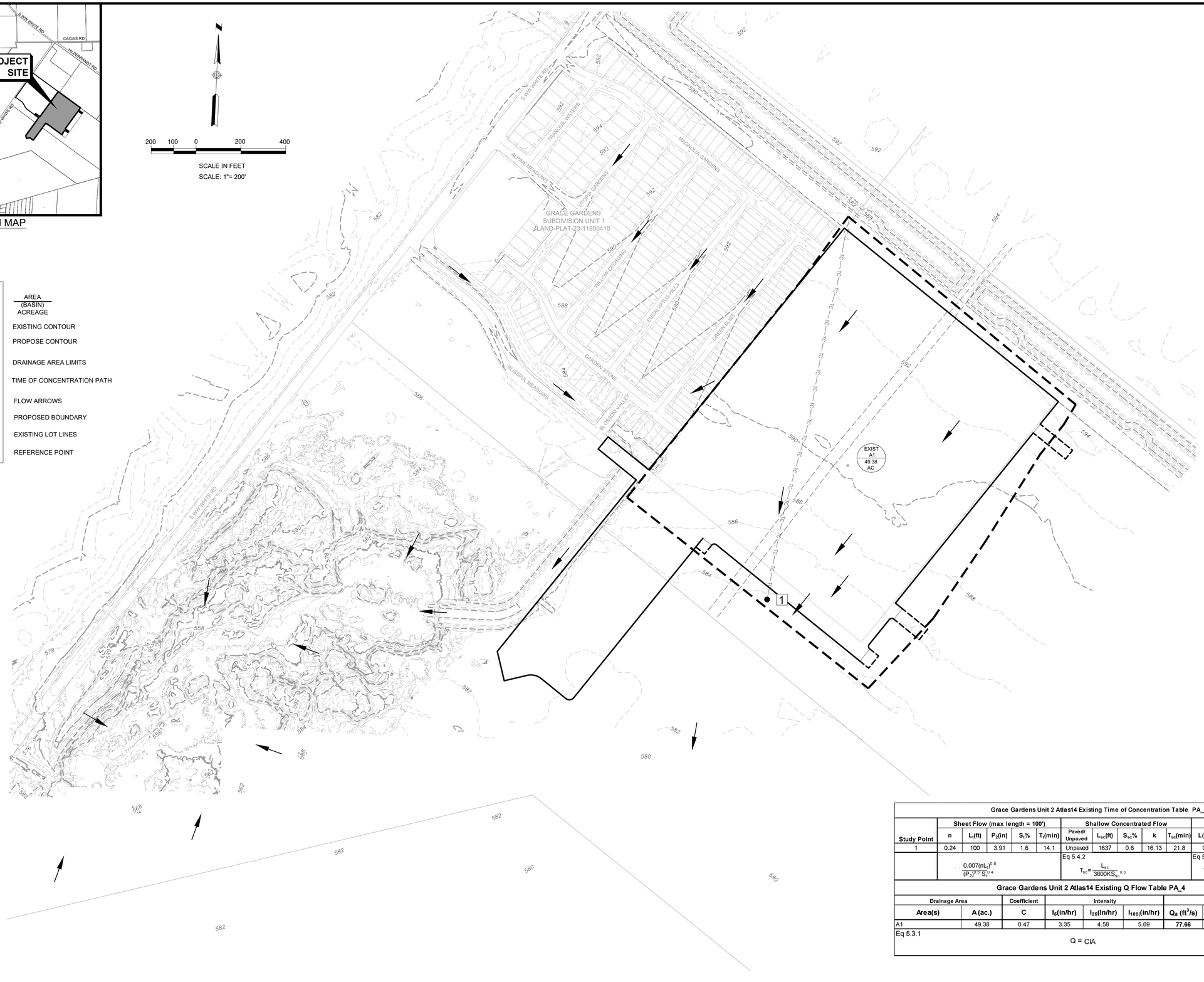
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Last Modified: Jan 02, 25 - 15:25
Plot Date/Time: Jan 15, 25 - 12:23:27



LOCATION MAP

LEGEND

A / X.X	AREA (BASIN) ACREAGE
740	EXISTING CONTOUR
620	PROPOSE CONTOUR
	DRAINAGE AREA LIMITS
TC — TC	TIME OF CONCENTRATION PATH
	FLOW ARROWS
	PROPOSED BOUNDARY
	EXISTING LOT LINES
A	REFERENCE POINT



Grace Gardens Unit 2 Atlas14 Existing Time of Concentration Table PA_4

Study Point	Sheet Flow (max length = 100') n	L_s(ft)	P_2(in)	S_s%	T_t(min)	Shallow Concentrated Flow Paved/ Unpaved	L_{sc}(ft)	S_{sc}%	k	T_{sc}(min)	Channel Flow L(ft)	V(ft/sec)	T_{ch}(min)	Total T_c(min)
1	0.24	100	3.91	1.6	14.1	Unpaved	1637	0.6	16.13	21.8	0	4	0.0	**35.95**
	$T_t = \frac{0.007(nL_s)^{0.8}}{(P_2)^{0.5}\, S_s^{0.4}}$					Eq 5.4.2 $T_{sc} = \frac{L_{sc}}{3600KS_{sc}^{0.5}}$					Eq 5.4.3 $T_{ch} = \frac{L_{ch}}{3600 * V}$			Eq 5.4 $T_t+T_{sc}+T_{ch}$

Grace Gardens Unit 2 Atlas14 Existing Q Flow Table PA_4

Drainage Area Area(s)	A (ac.)	Coefficient C	Intensity I_5(in/hr)	I_{25}(in/hr)	I_{100}(in/hr)	Flow Q_5 (ft³/s)	Q_{25}(ft³/s)	Q_{100}(ft³/s)
A1	49.38	0.47	3.35	4.58	5.69	**77.66**	**106.41**	**131.97**
Eq 5.3.1	Q = CIA							

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
EXISTING DRAINAGE AREA MAP

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: sht_Existing DMAP.dwg

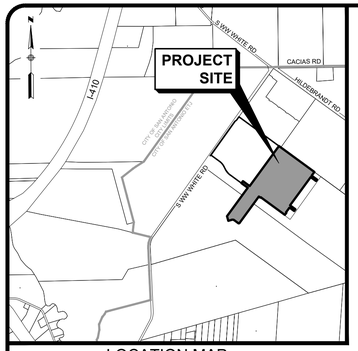
STATE OF TEXAS
RICHARD W. GRAY III
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01/15/2025

LJA Engineering, Inc.
Phone 210.503.2700
LJA.COM
TBPE No. F-1386
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230

JOB NUMBER: SA173-0402-426

SHEET NO. **3.0**

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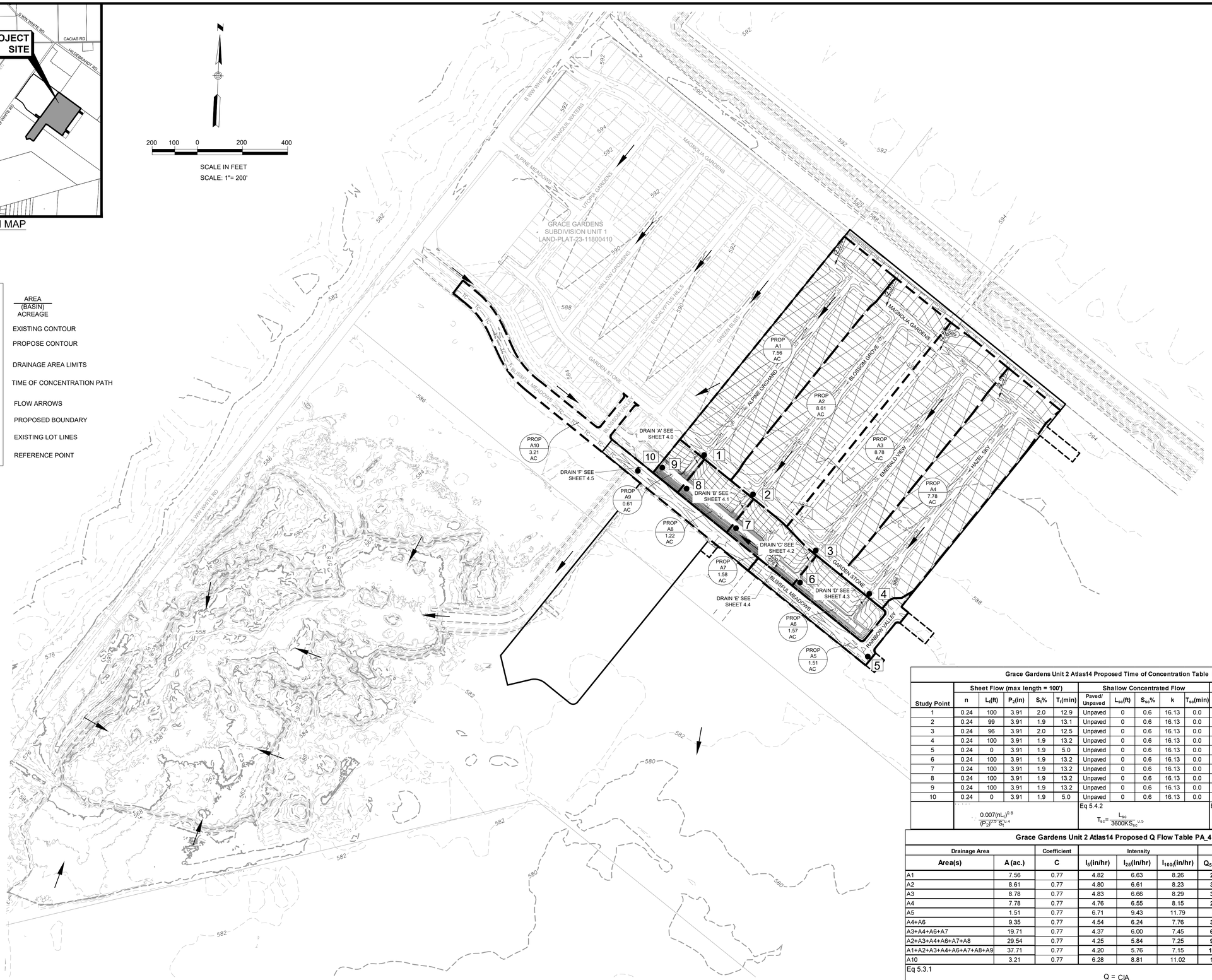
LOCATION MAP

200 100 0 200 400

SCALE IN FEET
SCALE: 1"= 200'

LEGEND

A / X.X	AREA (BASIN) ACREAGE
740	EXISTING CONTOUR
620	PROPOSE CONTOUR
	DRAINAGE AREA LIMITS
TC — TC	TIME OF CONCENTRATION PATH
	FLOW ARROWS
	PROPOSED BOUNDARY
	EXISTING LOT LINES
A	REFERENCE POINT



Grace Gardens Unit 2 Atlas14 Proposed Time of Concentration Table PA_4

Study Point	Sheet Flow (max length = 100') n	L_f(ft)	P_2(in)	S_f%	T_f(min)	Shallow Concentrated Flow Paved/ Unpaved	L_{sc}(ft)	S_{sc}%	k	T_{sc}(min)	Channel Flow L(ft)	V(ft/sec)	T_{ch}(min)	Total T_c(min)
1	0.24	100	3.91	2.0	12.9	Unpaved	0	0.6	16.13	0.0	1133	4	4.7	**17.63**
2	0.24	99	3.91	1.9	13.1	Unpaved	0	0.6	16.13	0.0	1121	4	4.7	**17.74**
3	0.24	96	3.91	2.0	12.5	Unpaved	0	0.6	16.13	0.0	1204	4	5.0	**17.51**
4	0.24	100	3.91	1.9	13.2	Unpaved	0	0.6	16.13	0.0	1173	4	4.9	**18.06**
5	0.24	0	3.91	1.9	5.0	Unpaved	0	0.6	16.13	0.0	754	4	3.1	**8.14**
6	0.24	100	3.91	1.9	13.2	Unpaved	0	0.6	16.13	0.0	1590	4	6.6	**19.80**
7	0.24	100	3.91	1.9	13.2	Unpaved	0	0.6	16.13	0.0	1965	4	8.2	**21.36**
8	0.24	100	3.91	1.9	13.2	Unpaved	0	0.6	16.13	0.0	2245	4	9.4	**22.53**
9	0.24	100	3.91	1.9	13.2	Unpaved	0	0.6	16.13	0.0	2385	4	9.9	**23.11**
10	0.24	0	3.91	1.9	5.0	Unpaved	0	0.6	16.13	0.0	1162	4	4.8	**9.84**
	$\frac{0.007(nL_f)^{0.8}}{(P_2)^{0.5} S_f^{0.4}}$					Eq 5.4.2 $T_{sc}=\frac{L_{sc}}{3600KS_{sc}^{0.5}}$					Eq 5.4.3 $T_{ch}=\frac{L_{ch}}{3600 * V}$			Eq 5.4 $T_f+T_{sc}+T_{ch}$

Grace Gardens Unit 2 Atlas14 Proposed Q Flow Table PA_4

Drainage Area Area(s)	A (ac.)	Coefficient C	Intensity I_5(in/hr)	I_{25}(in/hr)	I_{100}(in/hr)	Flow Q_5 (ft³/s)	Q_{25}(ft³/s)	Q_{100}(ft³/s)
A1	7.56	0.77	4.82	6.63	8.26	**28.04**	**38.62**	**48.06**
A2	8.61	0.77	4.80	6.61	8.23	**31.83**	**43.83**	**54.55**
A3	8.78	0.77	4.83	6.66	8.29	**32.68**	**45.01**	**56.03**
A4	7.78	0.77	4.76	6.55	8.15	**28.49**	**39.22**	**48.80**
A5	1.51	0.77	6.71	9.43	11.79	**7.80**	**10.96**	**13.71**
A4+A6	9.35	0.77	4.54	6.24	7.76	**32.67**	**44.92**	**55.84**
A3+A4+A6+A7	19.71	0.77	4.37	6.00	7.45	**66.28**	**91.03**	**113.08**
A2+A3+A4+A6+A7+A8	29.54	0.77	4.25	5.84	7.25	**96.72**	**132.74**	**164.83**
A1+A2+A3+A4+A6+A7+A8+A9	37.71	0.77	4.20	5.76	7.15	**121.89**	**167.22**	**207.61**
A10	3.21	0.77	6.28	8.81	11.02	**15.52**	**21.79**	**27.23**

Eq 5.3.1

$Q = CIA$

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
PROPOSED DRAINAGE AREA MAP

REVISIONS NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Proposed DrnAP.dwg

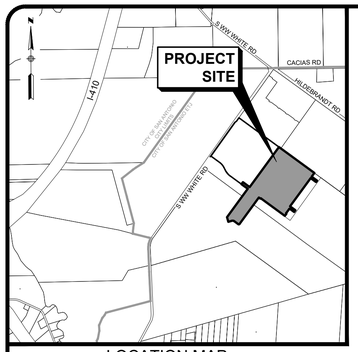
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LJA.COM
TBPE No. F-1386

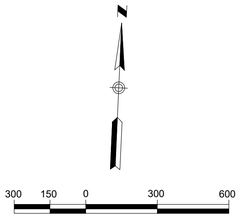
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Last Modified: Jan. 10, 24 - 14:20
Plot Date/Time: Jan. 15, 25 - 17:24:43

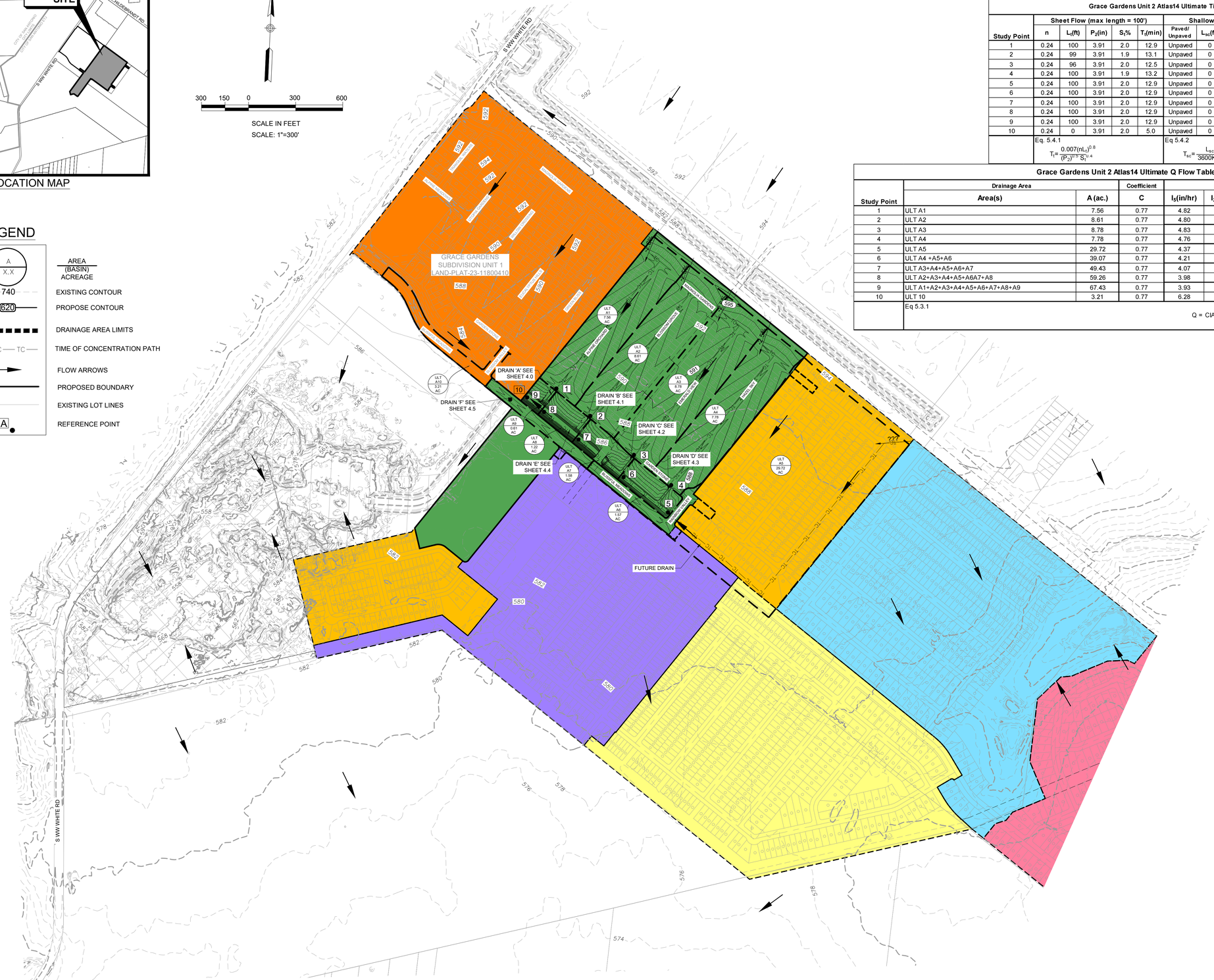


LOCATION MAP



LEGEND

A / X.X (BASIN) / ACREAGE	AREA
740	EXISTING CONTOUR
620	PROPOSE CONTOUR
	DRAINAGE AREA LIMITS
TC — TC	TIME OF CONCENTRATION PATH
	FLOW ARROWS
	PROPOSED BOUNDARY
	EXISTING LOT LINES
A	REFERENCE POINT



Grace Gardens Unit 2 Atlas14 Ultimate Time of Concentration Table PA_4

Study Point	Sheet Flow (max length = 100') n	L_t(ft)	P_2(in)	S_t%	T_t(min)	Shallow Concentrated Flow Paved/Unpaved	L_{sc}(ft)	S_{sc}%	k	T_{sc}(min)	Channel Flow L(ft)	V(ft/sec)	T_{ch}(min)	Total T_c(min)
1	0.24	100	3.91	2.0	12.9	Unpaved	0	1.9	16.13	0.0	1133	4	4.7	**17.63**
2	0.24	99	3.91	1.9	13.1	Unpaved	0	0.5	16.13	0.0	1121	4	4.7	**17.74**
3	0.24	96	3.91	2.0	12.5	Unpaved	0	1.9	16.13	0.0	1204	4	5.0	**17.51**
4	0.24	100	3.91	1.9	13.2	Unpaved	0	0.5	16.13	0.0	1173	4	4.9	**18.06**
5	0.24	100	3.91	2.0	12.9	Unpaved	0	1.9	16.13	0.0	2030	4	8.5	**21.37**
6	0.24	100	3.91	2.0	12.9	Unpaved	0	0.5	16.13	0.0	2420	4	10.1	**22.99**
7	0.24	100	3.91	2.0	12.9	Unpaved	0	0.5	16.13	0.0	2794	4	11.6	**24.55**
8	0.24	100	3.91	2.0	12.9	Unpaved	0	0.5	16.13	0.0	3074	4	12.8	**25.72**
9	0.24	100	3.91	2.0	12.9	Unpaved	0	1.9	16.13	0.0	3214	4	13.4	**26.30**
10	0.24	0	3.91	2.0	5.0	Unpaved	0	0.5	16.13	0.0	1162	4	4.8	**9.84**
	Eq. 5.4.1 $T_t=\frac{0.007(nL_t)^{0.8}}{(P_2)^{0.5}S_t^{0.4}}$					Eq 5.4.2 $T_{sc}=\frac{L_{sc}}{3600KS_{sc}^{0.5}}$					Eq 5.4.3 $T_{ch}=\frac{L_{ch}}{3600*V}$			Eq 5.4 $T_t+T_{sc}+T_{ch}$

Grace Gardens Unit 2 Atlas14 Ultimate Q Flow Table PA_4

Study Point	Drainage Area Area(s)	A (ac.)	Coefficient C	Intensity I_5(in/hr)	I_{25}(In/hr)	I_{100}(in/hr)	Flow Q_5 (ft³/s)	Q_{25}(ft³/s)	Q_{100}(ft³/s)
1	ULT A1	7.56	0.77	4.82	6.63	8.26	**28.04**	**38.62**	**48.06**
2	ULT A2	8.61	0.77	4.80	6.61	8.23	**31.83**	**43.83**	**54.55**
3	ULT A3	8.78	0.77	4.83	6.66	8.29	**32.68**	**45.01**	**56.03**
4	ULT A4	7.78	0.77	4.76	6.55	8.15	**28.49**	**39.22**	**48.80**
5	ULT A5	29.72	0.77	4.37	6.00	7.45	**99.94**	**137.25**	**170.50**
6	ULT A4 +A5+A6	39.07	0.77	4.21	5.77	7.17	**126.61**	**173.71**	**215.67**
7	ULT A3+A4+A5+A6+A7	49.43	0.77	4.07	5.58	6.93	**155.02**	**212.56**	**263.79**
8	ULT A2+A3+A4+A5+A6A7+A8	59.26	0.77	3.98	5.45	6.77	**181.57**	**248.85**	**308.75**
9	ULT A1+A2+A3+A4+A5+A6+A7+A8+A9	67.43	0.77	3.93	5.39	6.69	**204.28**	**279.94**	**347.28**
10	ULT 10	3.21	0.77	6.28	8.81	11.02	**15.52**	**21.79**	**27.23**
	Eq 5.3.1 $Q = CIA$								

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
ULTIMATE DRAINAGE AREA MAP

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Ultimate DMAP.dwg

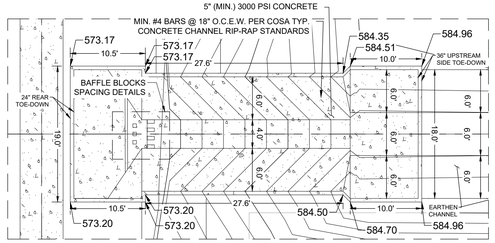
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

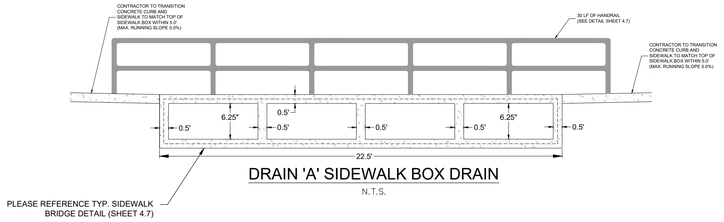
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Plot Date/Time: Jan 15, 25 - 11:24:06



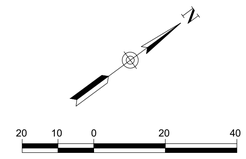
RIP-RAP BLOW UP DETAIL

1" = 10'



DRAIN 'A' SIDEWALK BOX DRAIN

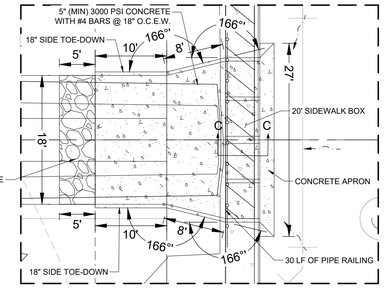
N.T.S.



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

LEGEND

800	PROPOSED CONTOUR
2%	FLOW ARROW
	GRASSED DRAIN FLOW
	PROPOSED STREET GRADE
	EXISTING GROUND LEFT
	EXISTING GROUND CENTERLINE
	EXISTING GROUND RIGHT
	SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)
G,E,T,CA	GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
BSL	BUILDING SETBACK LINE
ESM'T.	EASEMENT
LT.	LEFT
RT.	RIGHT



DETAIL 'A'

N.T.S.

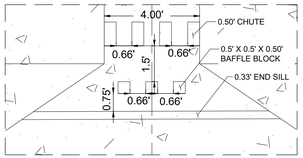
GENERAL NOTES:

1. ALL CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 4 ROUND BARS @ 18 INCHES ON CENTER EACH WAY. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3000) POUNDS PER SQUARE INCH IN TWENTY EIGHT (28) DAYS. THE DEPTH OF ALL TOEDOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES OF SIDE SLOPES.
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
3. REFER TO SHEETS 4.6 - 4.8 FOR DRAINAGE DETAILS.

Name	Drop Struc	Concrete Channel
BEGIN STA	1+55.00	1+84.12
END STA	1+84.12	1+94.12
Q_{100} (cfs)	48.06	48.06
n (ft)	2.00'	2.00'
b_w (ft)	4.00'	6.00'
z (-): 1 left z (+): 1 right	3	3
t_w (ft)	16	18
n	0.015	0.015
Slope (%)	33.33%	0.50%
y (ft)	0.40'	1.03'
V (fps)	23.43	5.11

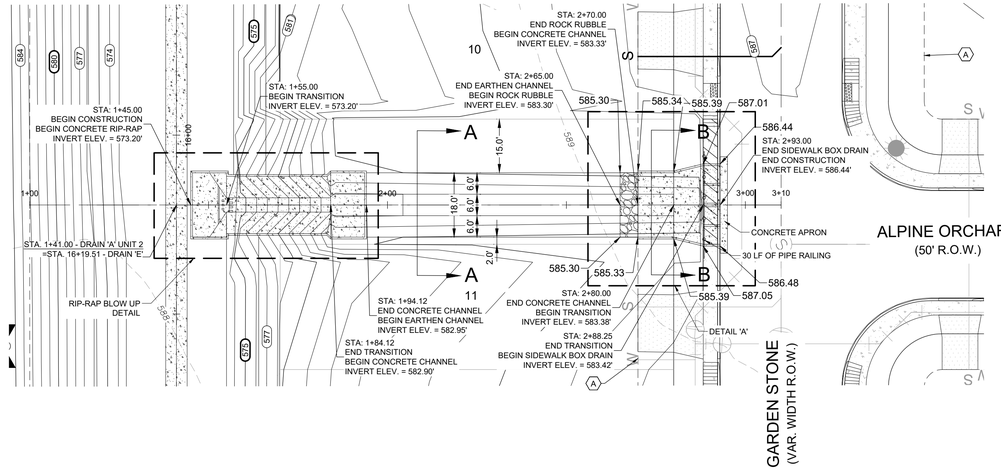
Fr_1	7.88	Froude Number
V_1 (fps)	23.43	velocity at drop
y_1 (ft)	0.40'	Supercritical Depth
g (ft/s2)	32.20	Gravitational constant
C=	0.85	Coefficient
L_B=	4.00'	Length of Basin
L_B/3 =	1.33	Chute to Baffle Distance
N_C =	9.00	Number of Chutes
z=	0.50	Flare
W_{B2}=	5.50	Basin Width at Baffles
y_2=	3.58	Conjugate Depth
h_1 =	0.42	Height of Baffles/Chutes
W_1 =	0.33	Baffle Width
W_2 =	0.33	Baffle Spacing
h_4=	0.33	End Sill Height
V_2	2.24	Exit Velocity

BAFFLE BLOCKS CALCS



BAFFLE BLOCKS SPACING DETAIL

N.T.S.



SIDEWALK BOX DRAIN 'A'		
$Q = CL(h)^{3/2}$ 8.3.2.a		
Amount of flow in CFS =	**Q (cfs)** **38.62**	ft^3/sec
The Weir coefficient 3.087 =	C 3.087	
The length of drop curb opening required in feet =	L_R 17.82	ft
Length Provided =	L_P 20.00	ft
The head or depth of water at the opening in feet =	h 0.79	ft
	h^(3/2) 0.70	ft^2
	CHECK 38.62	ft^3/sec

(A) 10' G.E.T.CA. ESM'T
OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)

(B) 5' G.E.T.CA. ESM'T

(C) 1' V.N.A.E.

(D) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)

(A) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)

(B) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)

(C) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)

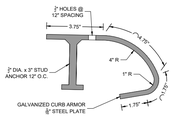
(D) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)

(E) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)

(F) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

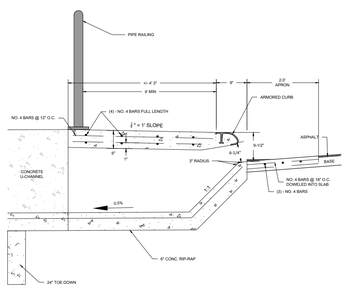
(G)

DRAIN 'A' STA 1+00 TO END



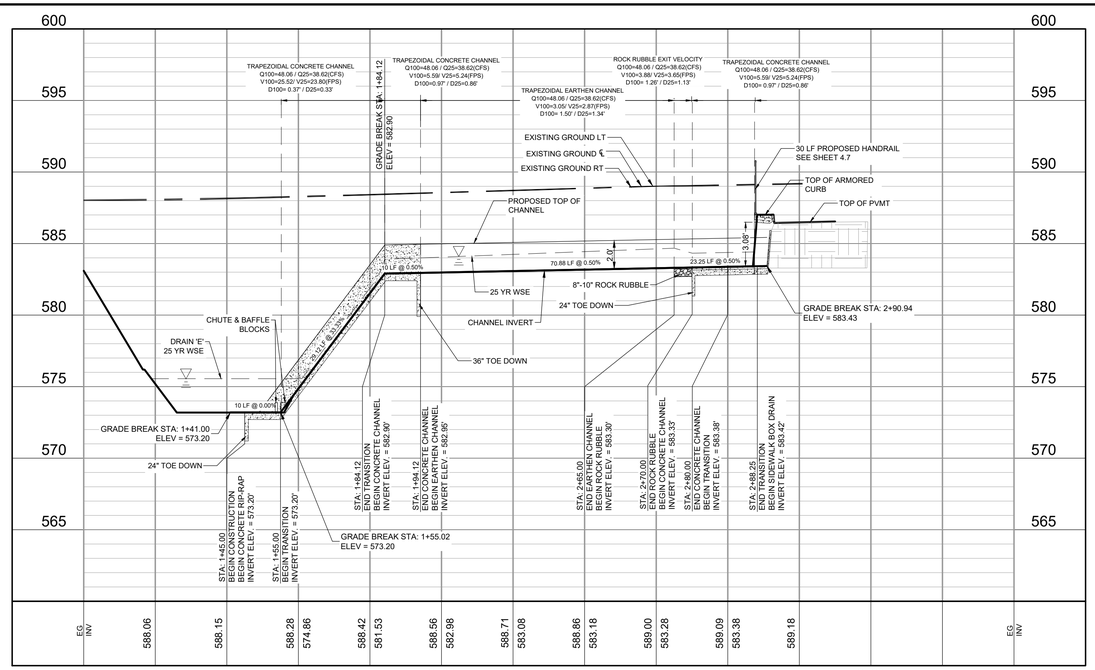
CURB ARMOR DETAIL

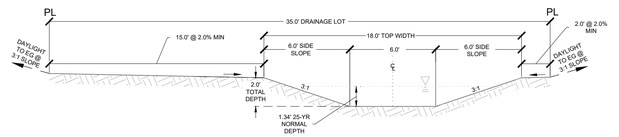
N.T.S.



SIDEWALK BOX DETAIL C-C

N.T.S.

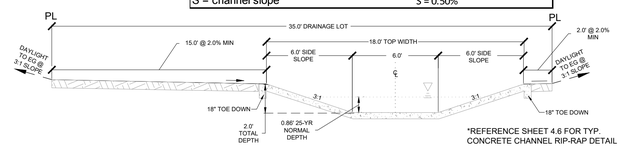




DRAIN 'A' EARTHEN CHANNEL SECTION A-A

N.T.S. STA.: 1+94.12 - 2+65.00

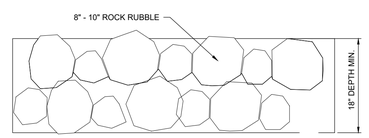
DRAIN 'A'	
τd = γRS	Retardance Class 'E' Vegetation (Bermuda Grass 1.5 in)
τd = average shear stress at normal depth	τd = 0.29 lb/ft^2
γ = unit weight of water	62.4 lb/ft
R = hydraulic radius	0.93 ft
S = channel slope	S = 0.50%



*REFERENCE SHEET 4.6 FOR TYP. CONCRETE CHANNEL RIP-RAP DETAIL

DRAIN 'A' CONCRETE CHANNEL SECTION B-B

N.T.S. STA.: 1+84.12 - 1+94.12
STA.: 2+70.00 - 2+80.00



ROCK RUBBLE DETAIL

N.T.S.

ROCK RUBBLE CALCULATIONS

6' BOTTOM WIDTH
3:1, 3:1 SIDE SLOPE
S=0.50%
N=0.025 (STONE, COBBLE, GRAVEL)
Q100=48.06 / Q25=38.62(CFS)
V100=3.88' V25=3.65(FPS)
D100= 1.26' / D25= 1.13'

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
DRAIN 'A'
STA 1+00 TO END PLAN & PROFILE

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/6/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sht_Drain 'A'.dwg

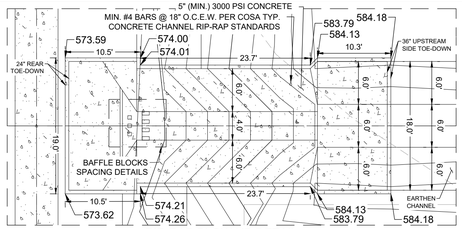
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

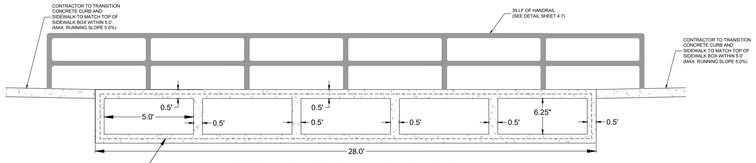
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User: jturon
Last Modified: Dec 23, 24 - 09:56
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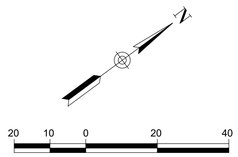
RIP-RAP BLOW UP DETAIL

1" = 10'



DRAIN 'B' SIDEWALK BOX DRAIN

N.T.S.



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

LEGEND

800	PROPOSED CONTOUR
2%	FLOW ARROW
	GRASSED DRAIN FLOW
	PROPOSED STREET GRADE
	EXISTING GROUND LEFT
	EXISTING GROUND CENTERLINE
	EXISTING GROUND RIGHT
	SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)
G,E,T,CA	GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
BSL	BUILDING SETBACK LINE
ESM'T.	EASEMENT
LT.	LEFT
RT.	RIGHT

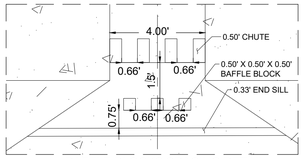
GENERAL NOTES:

1. ALL CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 4 ROUND BARS @ 18 INCHES ON CENTER EACH WAY. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3000) POUNDS PER SQUARE INCH IN TWENTY EIGHT (28) DAYS. THE DEPTH OF ALL TOEDOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES OF SIDE SLOPES.
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
3. REFER TO SHEETS 4.6 - 4.8 FOR DRAINAGE DETAILS.

Name	Drop Struc	Concrete Channel
BEGIN STA	1+54.75	1+80.25
END STA	1+80.25	1+90.50
Q_{100} (cfs)	54.55	54.55
h (ft)	2.00'	2.00'
b_w (ft)	4.00'	6.00'
z (__):1 left z (__):1 right	3 3	3 3
t_w (ft)	16	18
n	0.015	0.015
Slope (%)	33.33%	0.50%
y (ft)	0.40'	1.03'
V (fps)	26.59	5.80

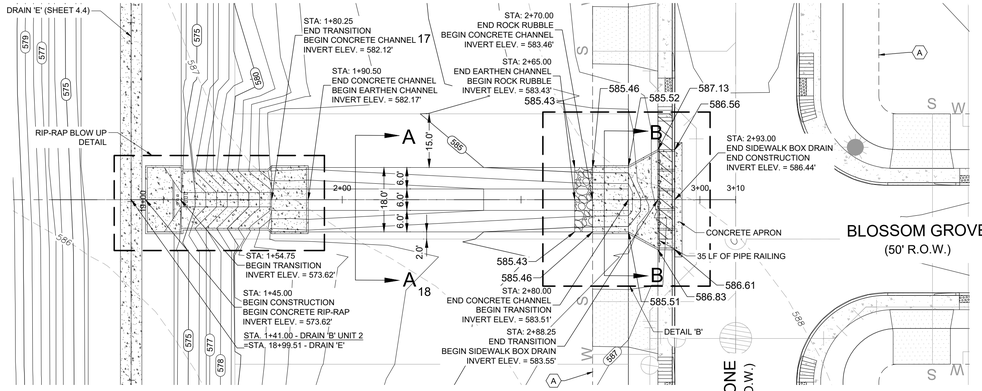
Fr_1	8.94	Froude Number
V_1 (fps)	26.59	velocity at drop
y_1 (ft)	0.40'	Supercritical Depth
g (ft/s2)	32.20	Gravitational constant
C=	0.85	Coefficient
L_B=	4.00'	Length of Basin
$L_B/3$ =	1.33	Chute to Baffle Distance
N_C =	9.00	Number of Chutes
z=	0.50	Flare
W_{B2}=	5.50	Basin Width at Baffles
y_2=	4.09	Conjugate Depth
h_1 =	0.42	Height of Baffles/Chutes
W_1 =	0.33	Baffle Width
W_2 =	0.33	Baffle Spacing
h_4=	0.33	End Sill Height
V_2	2.23	Exit Velocity

BAFFLE BLOCKS CALCS

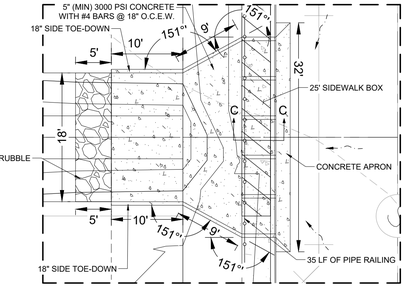


BAFFLE BLOCKS SPACING DETAIL

N.T.S.



DRAIN 'B' STA 1+00 TO END



DETAIL 'B'

N.T.S.

SIDEWALK BOX DRAIN 'B'		
$Q = CL(h)^{3/2}$ 8.3.2.a		
Amount of flow in CFS =	**Q (cfs)**	**43.83** ft^3/sec
The Weir coefficient 3.087 =	C	3.087
The length of drop curb opening required in feet =	L_R	20.22 ft
Length Provided =	L_P	25.00 ft
The head or depth of water at the opening in feet =	h	0.79 ft
	h^(3/2)	0.70 ft^2
	CHECK	43.83 ft^3/sec

(A) 10' G.E.T.CA. ESM'T
OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)

(B) 5' G.E.T.CA. ESM'T

(C) 1' V.N.A.E.

(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)

(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)

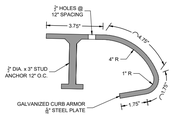
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)

(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)

(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)

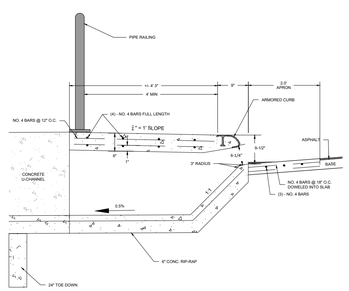
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)

(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)



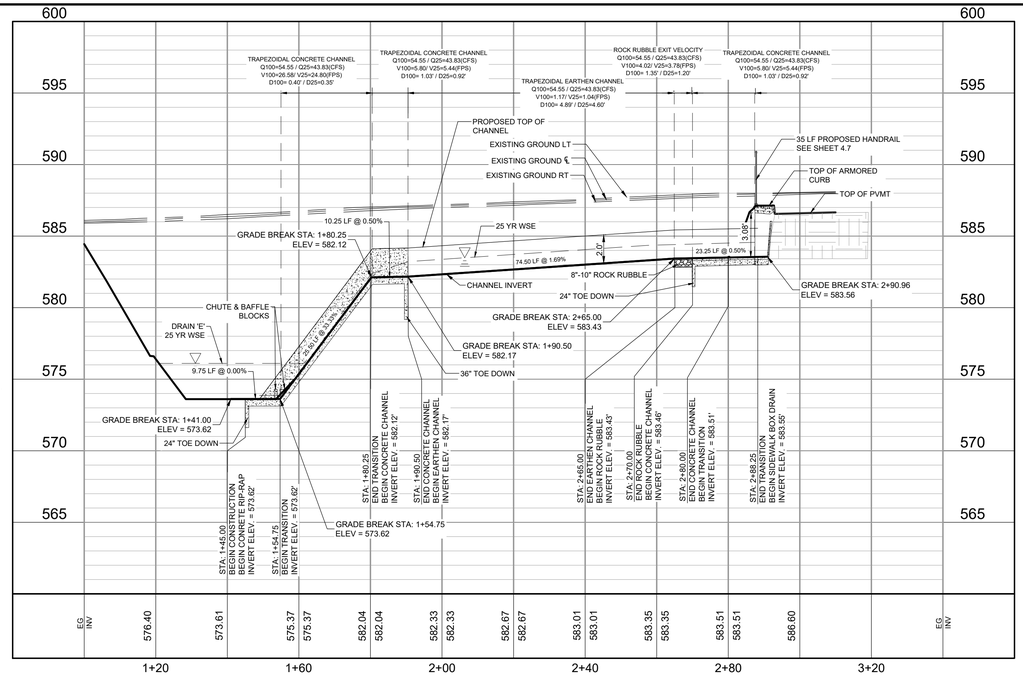
CURB ARMOR DETAIL

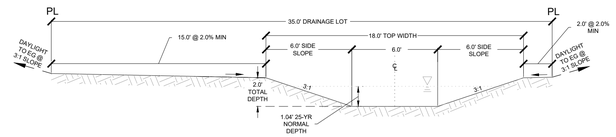
N.T.S.



SIDEWALK BOX DETAIL C-C

N.T.S.

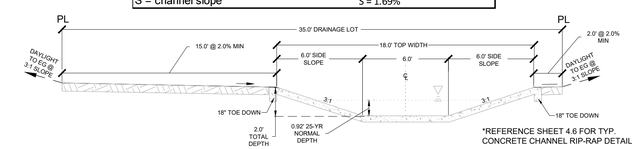




DRAIN 'B' EARTHEN CHANNEL SECTION A-A

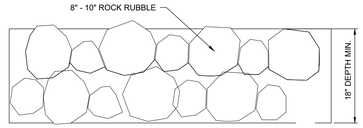
N.T.S. STA.: 1+90.50 - 2+65.00

DRAIN 'B'		
$\tau d = \gamma RS$	Retardance Class 'C' Vegetation (Bermuda Grass 6 in)	
τd = average shear stress at normal depth	τd =	0.79 lb/ft^2
γ = unit weight of water	62.4 lb/ft	
R = hydraulic radius	0.75	
S = channel slope	S = 1.69%	



DRAIN 'B' CONCRETE CHANNEL SECTION B-B

N.T.S. STA.: 2+70.00 - 2+80.00



ROCK RUBBLE DETAIL

N.T.S.

ROCK RUBBLE CALCULATIONS

6' BOTTOM WIDTH
3:1, 3:1 SIDE SLOPE
S=0.50%
N=0.025 (STONE, COBBLE, GRAVEL)
Q100=54.55 / Q25=43.83(CFS)
V100=4.02/ V25=3.78(FPS)
D100= 1.35' / D25= 1.20'

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
DRAIN 'B'
STA 1+00 TO END PLAN & PROFILE

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sht_Drain 'B'.dwg

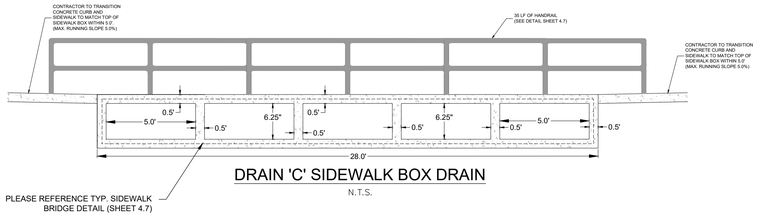
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

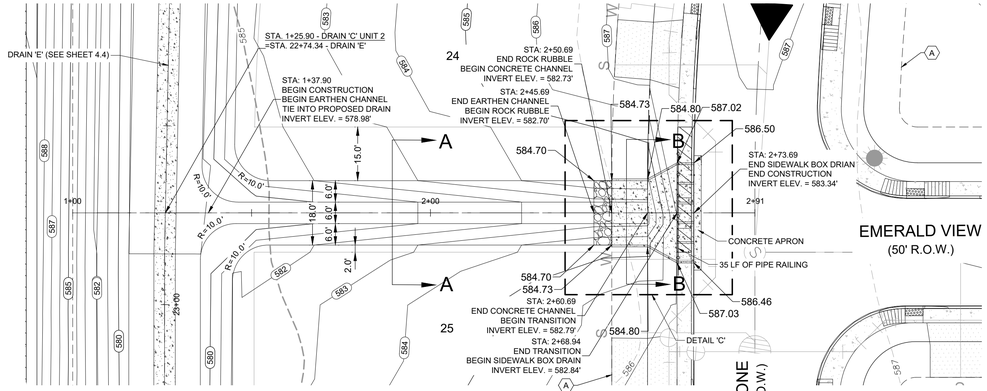
SHEET NO. 4.1

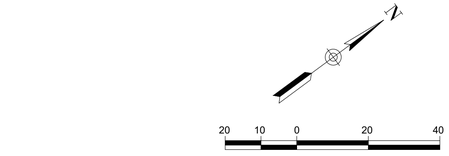
K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\DWG-Sheets\sh_Drain 'B'.dwg
User: jturon
Last Modified: Dec 23, 24 - 10:07
Plot Date/Time: Jan 15, 25 - 11:26:32



DRAIN 'C' SIDEWALK BOX DRAIN

N.T.S.





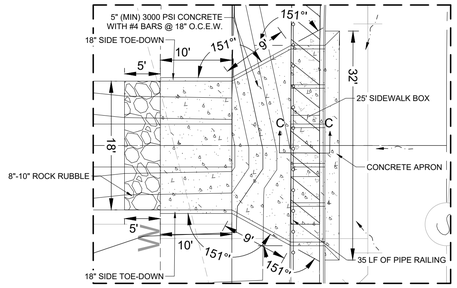
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 5'

LEGEND

800	PROPOSED CONTOUR
2%	FLOW ARROW
	GRASSED DRAIN FLOW
	PROPOSED STREET GRADE
	EXISTING GROUND LEFT
	EXISTING GROUND CENTERLINE
	EXISTING GROUND RIGHT
	SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)
G,E,T,CA	GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
BSL	BUILDING SETBACK LINE
ESM'T.	EASEMENT
LT.	LEFT
RT.	RIGHT

GENERAL NOTES:

1. ALL CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 4 ROUND BARS @ 18 INCHES ON CENTER EACH WAY. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3000) POUNDS PER SQUARE INCH IN TWENTY EIGHT (28) DAYS. THE DEPTH OF ALL TOEDOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES OF SIDE SLOPES.
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
3. REFER TO SHEETS 4.6 - 4.8 FOR DRAINAGE DETAILS.



DETAIL 'C'

N.T.S.

(A) 10' G.E.T.CA. ESM'T
OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)

(B) 5' G.E.T.CA. ESM'T

(C) 1' V.N.A.E.

(D) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)

(A) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)

(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)

(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)

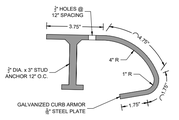
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)

(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)

(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

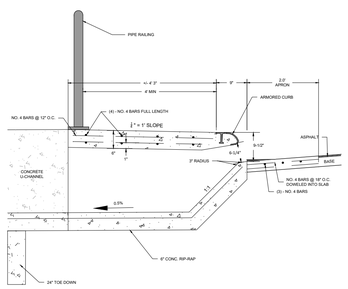
SIDEWALK BOX DRAIN 'C'			
$Q = CL(h)^{3/2}$ 8.3.2.a			
Amount of flow in CFS =	**Q (cfs)**	**45.01**	ft^3/sec
The Weir coefficient 3.087 =	C	3.087	
The length of drop curb opening required in feet =	L_R	20.76	ft
Length Provided =	L_P	25.00	ft
The head or depth of water at the opening in feet =	h	0.79	ft
	h^(3/2)	0.70	ft^2
	CHECK	45.01	ft^3/sec

DRAIN 'C' STA 1+00 TO END



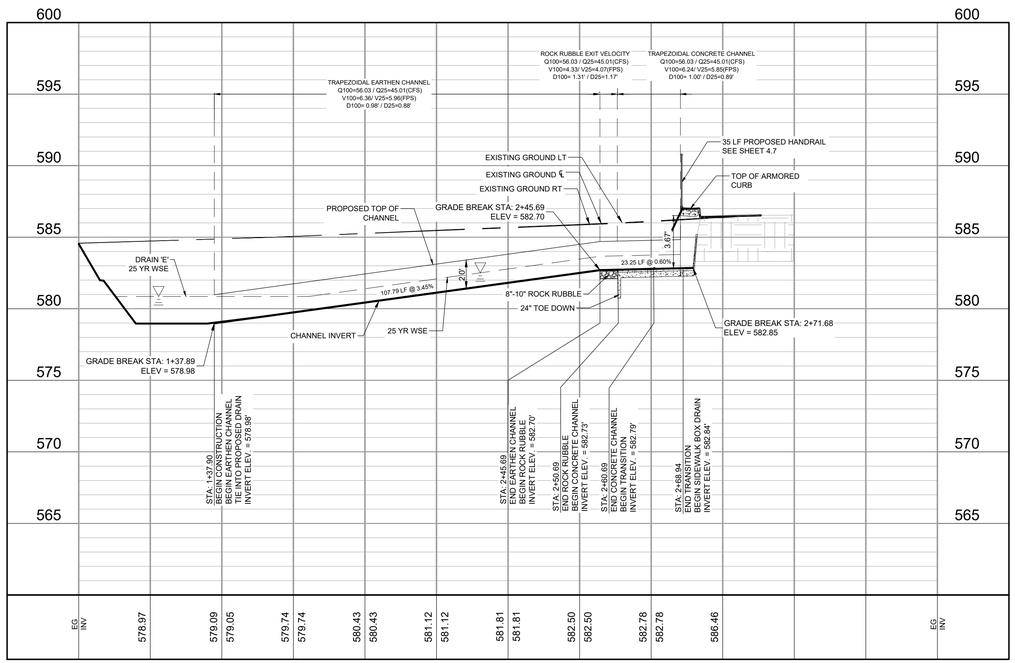
CURB ARMOR DETAIL

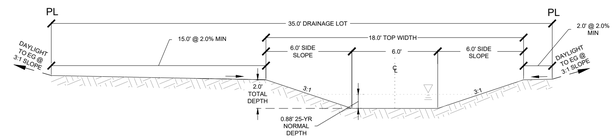
N.T.S.



SIDEWALK BOX DETAIL C-C

N.T.S.

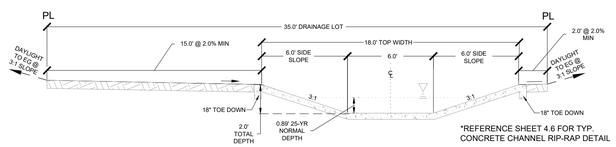




DRAIN 'C' EARTHEN CHANNEL SECTION A-A

N.T.S. STA.: 1+37.90 - 2+45.69

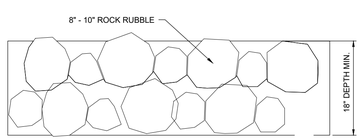
DRAIN 'C'	
$\tau d = \gamma RS$ Retardance Class 'B' Vegetation (Bermuda Grass 12 in)	
τd = average shear stress at normal depth	τd = 1.40 lb/ft^2
γ = unit weight of water	62.4 lb/ft
R = hydraulic radius	0.65 ft
S = channel slope	S = 3.45%



*REFERENCE SHEET 4.6 FOR TYP. CONCRETE CHANNEL RIP-RAP DETAIL

DRAIN 'C' CONCRETE CHANNEL SECTION B-B

N.T.S. STA.: 2+50.69 - 2+60.69



ROCK RUBBLE DETAIL

N.T.S.

ROCK RUBBLE CALCULATIONS

6' BOTTOM WIDTH
3:1, 3:1 SIDE SLOPE
S=0.60%
N=0.025 (STONE, COBBLE, GRAVEL)
Q100=56.03 / Q25=45.01(CFS)
V100=4.33/ V25=4.07(FPS)
D100= 1.31' / D25= 1.17'

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
DRAIN 'C'
STA 1+00 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/6/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Drain 'C'.dwg

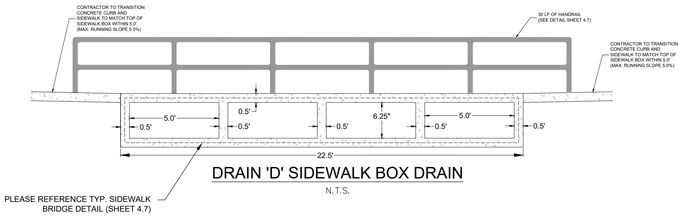
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

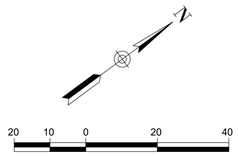
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User: jturon
Last Modified: Dec 23, 24 - 10:35
Plot Date/Time: Jan 15, 25 - 14:26:04



DRAIN 'D' SIDEWALK BOX DRAIN

N.T.S.



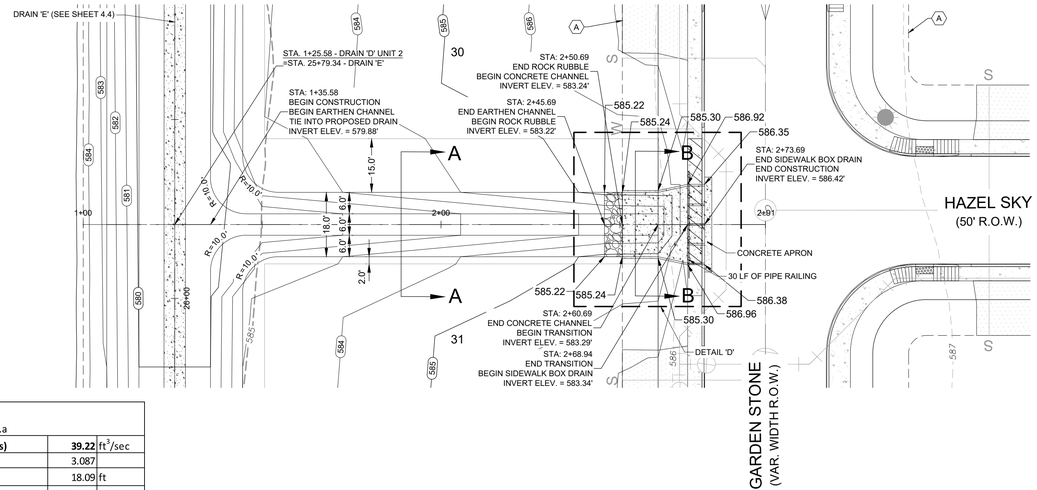
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 5'

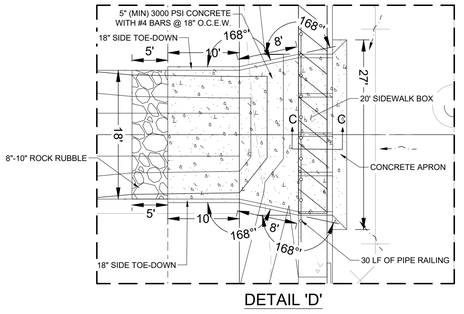
LEGEND

800	PROPOSED CONTOUR
2%	FLOW ARROW
	GRASSED DRAIN FLOW
	PROPOSED STREET GRADE
	EXISTING GROUND LEFT
	EXISTING GROUND CENTERLINE
	EXISTING GROUND RIGHT
	SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)
G,E,T,CA	GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
BSL	BUILDING SETBACK LINE
ESM'T.	EASEMENT
LT.	LEFT
RT.	RIGHT

GENERAL NOTES:

1. ALL CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 4 ROUND BARS @ 18 INCHES ON CENTER EACH WAY. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3000) POUNDS PER SQUARE INCH IN TWENTY EIGHT (28) DAYS. THE DEPTH OF ALL TOEDOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES OF SIDE SLOPES.
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
3. REFER TO SHEETS 4.6 - 4.8 FOR DRAINAGE DETAILS.





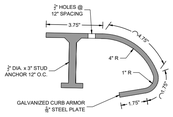
DETAIL 'D'

N.T.S.

SIDEWALK BOX DRAIN 'D'			
$Q = CL(h)^{3/2}$ 8.3.2.a			
Amount of flow in CFS =	Q (cfs)	39.22	ft^3/sec
The Weir coefficient 3.087 =	C	3.087	
The length of drop curb opening required in feet =	L_R	18.09	ft
Length Provided =	L_P	20.00	ft
The head or depth of water at the opening in feet =	h	0.79	ft
	h^(3/2)	0.70	ft^2
	CHECK	39.22	ft^3/sec

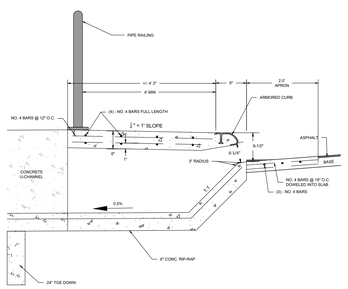
(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

DRAIN 'D' STA 1+00 TO END



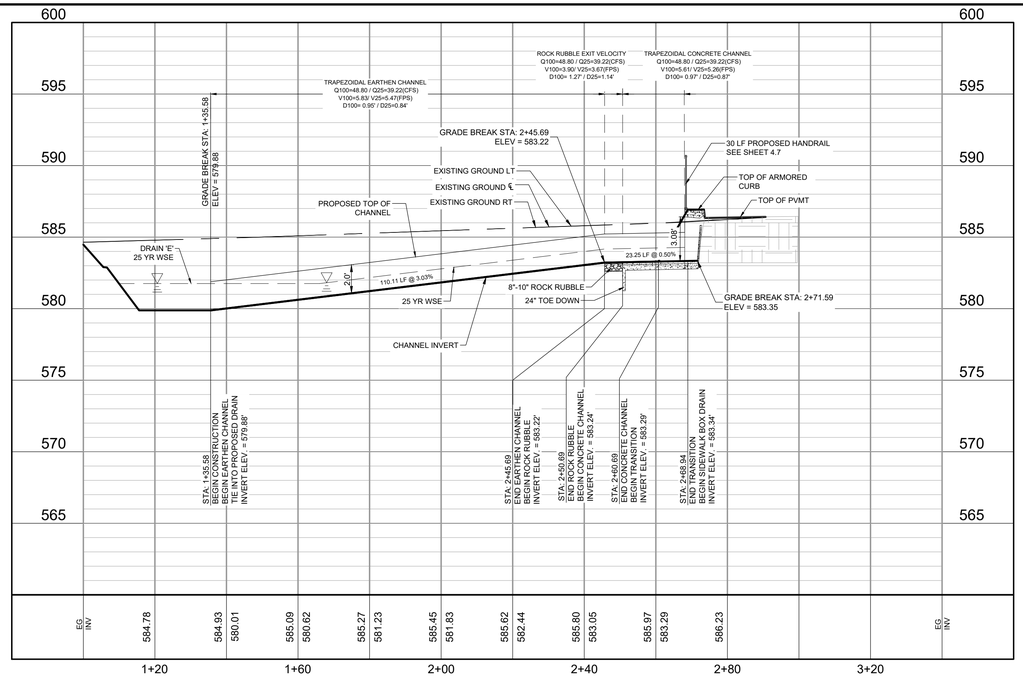
CURB ARMOR DETAIL

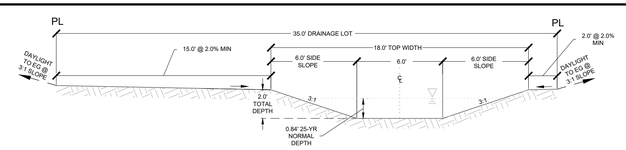
N.T.S.



SIDEWALK BOX DETAIL C-C

N.T.S.

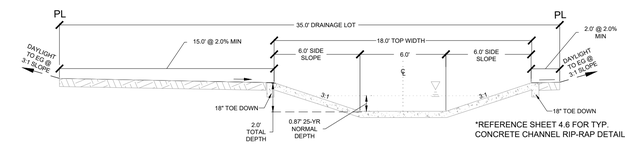




DRAIN 'D' EARTHEN CHANNEL SECTION A-A

N.T.S. STA.: 1+35.58 - 2+45.69

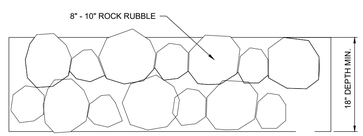
DRAIN 'D'		
$\tau d = \gamma RS$	Retardance Class 'B' Vegetation (Bermuda Grass 12 in)	
τd = average shear stress at normal depth	τd =	1.19 lb/ft^2
γ = unit weight of water	62.4 lb/ft	
R = hydraulic radius	0.63 ft	
S = channel slope	S = 3.03%	



*REFERENCE SHEET 4.6 FOR TYP. CONCRETE CHANNEL RIP-RAP DETAIL

DRAIN 'D' CONCRETE CHANNEL SECTION B-B

N.T.S. STA.: 2+50.69 - 2+60.69



ROCK RUBBLE DETAIL

N.T.S.

ROCK RUBBLE CALCULATIONS

6' BOTTOM WIDTH
3:1, 3:1 SIDE SLOPE
S=0.50%
N=0.025 (STONE, COBBLE, GRAVEL)
Q100=48.80 / Q25=39.22(CFS)
V100=3.90/ V25=3.67(FPS)
D100= 1.27' / D25= 1.17'

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
DRAIN 'D'
STA 1+00 TO END PLAN & PROFILE

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Drain 'D' dwg

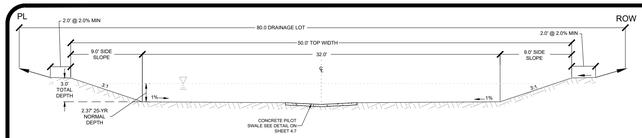
STATE OF TEXAS
RICHARD W. GRAY III
75617
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01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 4.3

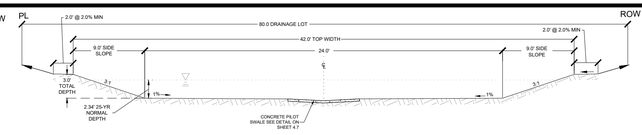
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User: jaron
Last Modified: Dec. 23, 24 - 10:22
Plot Date/Time: Jan 15, 25 - 11:26:58



DRAIN 'E' EARTHEN CHANNEL SECTION A-A

N.T.S. STA.: 14+60.74 - 16+10.01

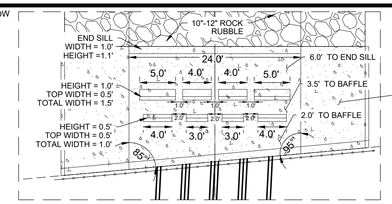
DRAIN 'E' (SECTION A-A)		
$\tau d = \gamma RS$	Retardance Class 'B' Vegetation (Bermuda Grass 12 in)	
τd = average shear stress at normal depth	τd =	1.85 lb/ft^2
γ = unit weight of water		62.4 lb/ft
R = hydraulic radius		1.97 ft
S = channel slope		S = 0.15%



DRAIN 'E' EARTHEN CHANNEL SECTION C-C

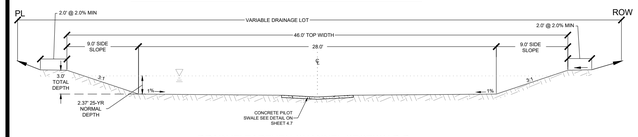
N.T.S. STA.: 18+90.01 - 20+56.87

DRAIN 'E' (SECTION C-C)		
$\tau d = \gamma RS$	Retardance Class 'B' Vegetation (Bermuda Grass 12 in)	
τd = average shear stress at normal depth	τd =	1.75 lb/ft^2
γ = unit weight of water		62.4 lb/ft
R = hydraulic radius		1.87 ft
S = channel slope		S = 0.15%



BAFFLE BLOCKS DETAIL

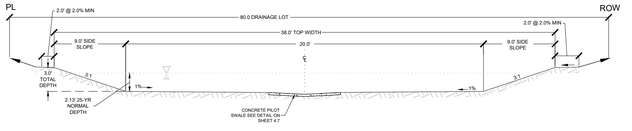
N.T.S.



DRAIN 'E' EARTHEN CHANNEL SECTION B-B

N.T.S. STA.: 16+10.01 - 18+90.01

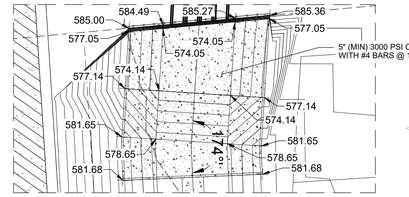
DRAIN 'E' (SECTION B-B)		
$\tau d = \gamma RS$	Retardance Class 'B' Vegetation (Bermuda Grass 12 in)	
τd = average shear stress at normal depth	τd =	1.82 lb/ft^2
γ = unit weight of water		62.4 lb/ft
R = hydraulic radius		1.94 ft
S = channel slope		S = 0.15%



DRAIN 'E' EARTHEN CHANNEL SECTION D-D

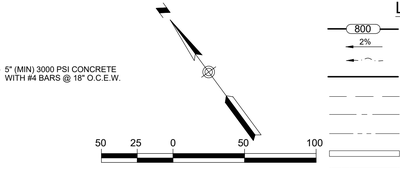
N.T.S. STA.: 21+77.06 - 26+50.00

DRAIN 'E' (SECTION D-D)		
$\tau d = \gamma RS$	Retardance Class 'B' Vegetation (Bermuda Grass 12 in)	
τd = average shear stress at normal depth	τd =	3.15 lb/ft^2
γ = unit weight of water		62.4 lb/ft
R = hydraulic radius		1.68 ft
S = channel slope		S = 0.30%



DROP STRUCTURE DETAIL

N.T.S.



CONCRETE TIE-IN DETAIL

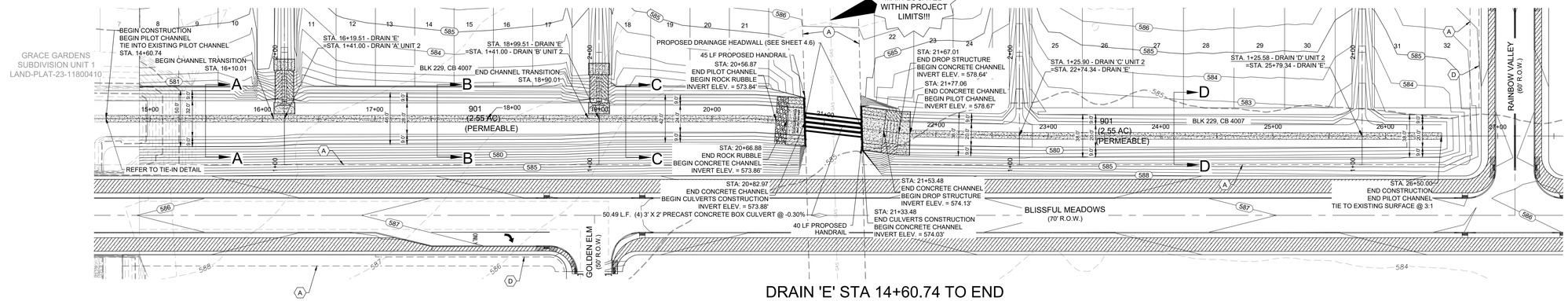
N.T.S.

LEGEND

- 800 — PROPOSED CONTOUR
- 2% — FLOW ARROW
- GRASSED DRAIN FLOW
- PROPOSED STREET GRADE
- EXISTING GROUND LEFT
- EXISTING GROUND CENTERLINE
- EXISTING GROUND RIGHT
- SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
- SIDEWALK (DEVELOPER'S RESPONSIBILITY)
- G,E,T,CA — GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
- BSL — BUILDING SETBACK LINE
- ESM'T. — EASEMENT
- LT. — LEFT
- RT. — RIGHT

- A — 10' G.E.T.CA. ESM'T
- B — OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
- C — 5' G.E.T.CA. ESM'T
- D — 1' V.N.A.E.
- A — ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
- B — VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
- C — OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
- D — OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
- E — 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
- F — OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
- G — OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

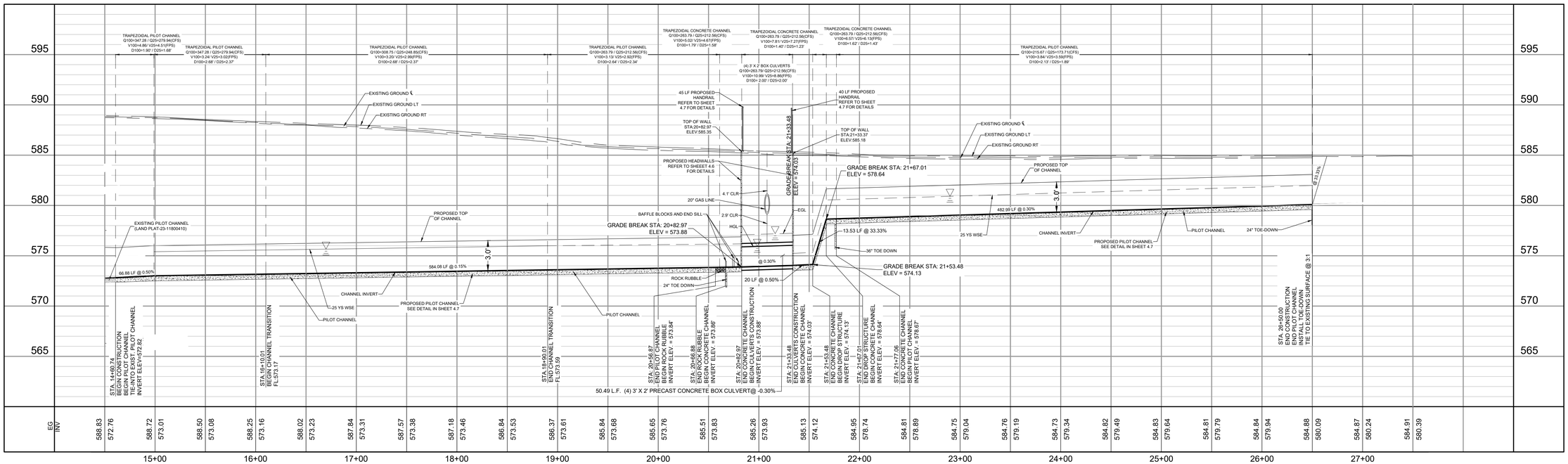
CAUTION: EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!



DRAIN 'E' STA 14+60.74 TO END

GENERAL NOTES:

1. ALL CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 4 ROUND BARS @ 18 INCHES ON CENTER EACH WAY. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3000) POUNDS PER SQUARE INCH IN TWENTY EIGHT (28) DAYS. THE DEPTH OF ALL TOEDOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES OF SIDE SLOPES.
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
3. REFER TO SHEETS 4.6 - 4.8 FOR DRAINAGE DETAILS.



NO.	REVISIONS DESCRIPTION	BY	DATE

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
DRAIN 'E'
STA 14+60.74 TO END PLAN & PROFILE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: ...\Drain 'E'.dwg

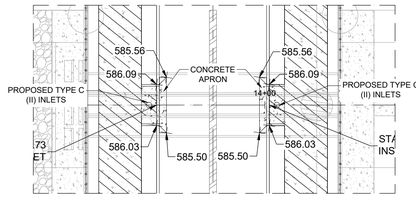
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.593.2700
LJA.COM
TBPE No. F-1386

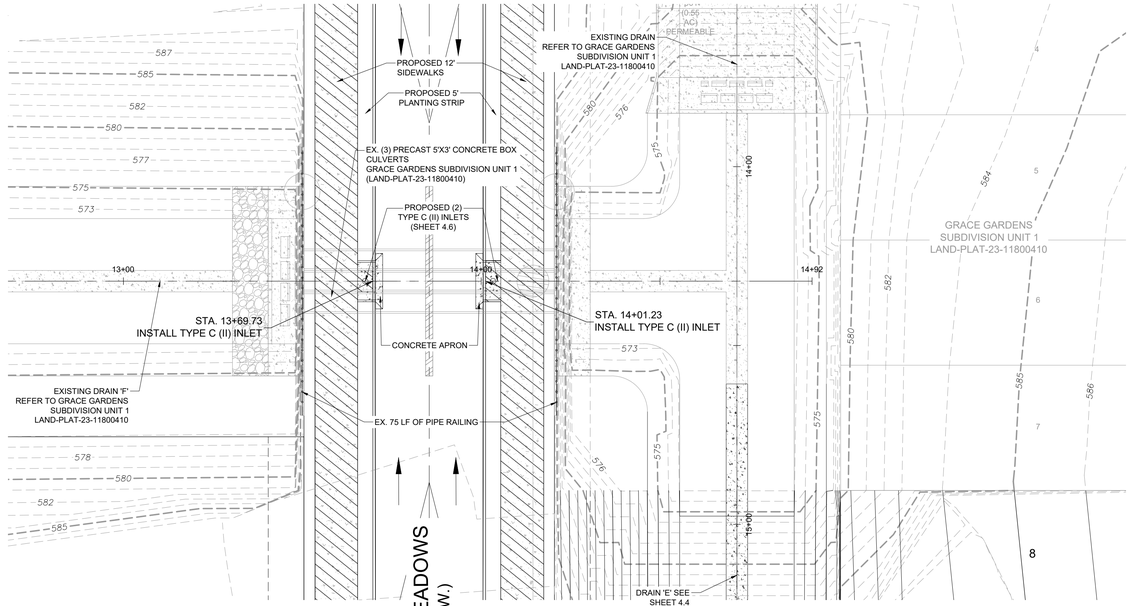
JOB NUMBER: SA173-0402-426

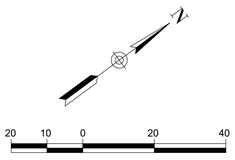
SHEET NO. **4.4**

K:\SA173_Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Phase\GMC-Sheets\sh_Drain 'E'.dwg
User: jburn
Last Modified: Dec. 23, 24 - 10:49
Plot Style/Time: Dec. 16, 25 - 10:22:25



INLET DETAIL
N.T.S.





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

LEGEND

800	PROPOSED CONTOUR
2%	FLOW ARROW
	GRASSED DRAIN FLOW
	PROPOSED STREET GRADE
	EXISTING GROUND LEFT
	EXISTING GROUND CENTERLINE
	EXISTING GROUND RIGHT
	SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)
G,E,T,CA	GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
BSL	BUILDING SETBACK LINE
ESM'T.	EASEMENT
LT.	LEFT
RT.	RIGHT

GENERAL NOTES:

1. ALL CONCRETE LINING SHALL BE A MINIMUM OF FIVE (5) INCHES THICK AND REINFORCED WITH NO. 4 ROUND BARS @ 18 INCHES ON CENTER EACH WAY. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN THREE THOUSAND (3000) POUNDS PER SQUARE INCH IN TWENTY EIGHT (28) DAYS. THE DEPTH OF ALL TOEDOWNS SHALL BE 36 INCHES UPSTREAM, 24 INCHES DOWNSTREAM, AND 18 INCHES OF SIDE SLOPES.
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT THE CHANNEL FOR MAINTENANCE.
3. REFER TO SHEETS 4.6 - 4.8 FOR DRAINAGE DETAILS.

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

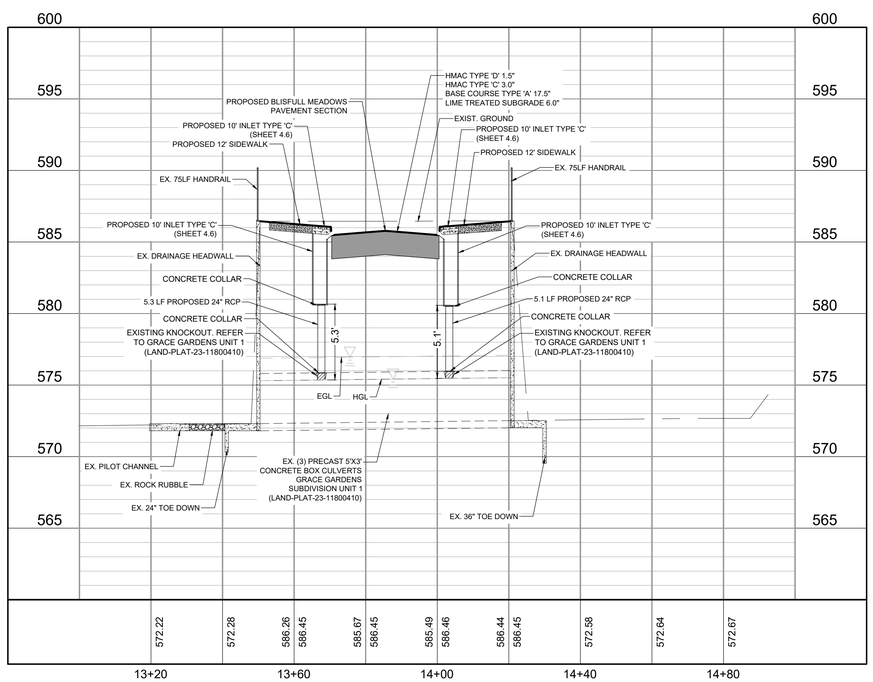
ORIFICE CALCULATION (24" RCPS)

Q = Cd*A*√2gh

Cd= 0.80
A= Π*r^2
g= 32.2
h= 5ft.
Q= 45.10 cfs > 10.90 cfs

TYPE 'C' INLETS DRAIN 'F'			
Q = CL(h)$^{3/2}$	8.3.2.a		
Amount of flow in CFS =	**Q (cfs)**	**21.79**	ft^3/sec
The Weir coefficient 3.087 =	C	3.087	
The length of drop curb opening required in feet =	L_R	10.05	ft
Length Provided =	L_P	20.00	ft
The head or depth of water at the opening in feet =	h	0.79	ft
	h^(3/2)	0.70	ft^2
	CHECK	21.79	ft^3/sec

DRAIN 'F' STA 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
DRAIN 'F'
STA 1+00 TO END PLAN & PROFILE

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sht_Drain 'F'.dwg

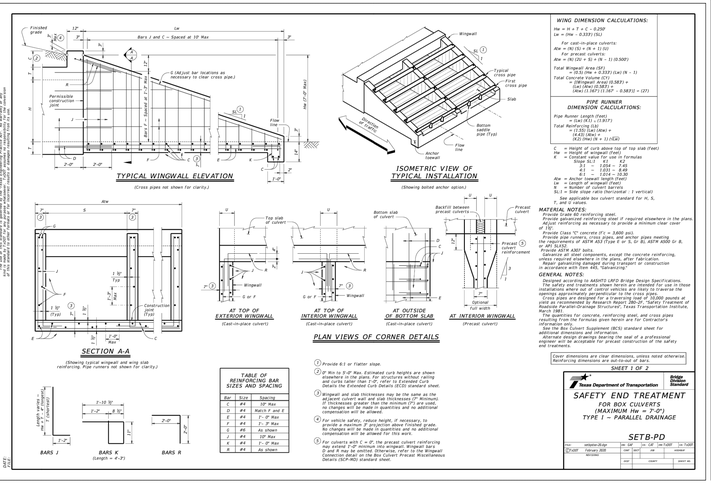
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. **4.5**

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\DWG-Sheets\sh_Drain 'F'.dwg
User: jkuhn
Last Modified: Jan 15, 25 - 13:00
Plot Date/Time: Jan 15, 25 - 13:28:02



WING DIMENSION CALCULATIONS:

$H_W = H + T + C + 0.292'$

$L_W = (W_W - 0.333') / \sin\theta$

For cast-in-place culverts:

$A_W = (W_W - 0.333') \times (H - 11.00.500')$

Total Wingwall Area (SF):

$= 19.50 (W_W - 0.333') / \sin(\theta) \times (H - 1)$

Total Curb Length (LF):

$= 2 \times [(W_W - 0.333') / \sin(\theta)] + [\text{Last Wing (S.M.F.)} \times (W_W - 0.333') / \sin(\theta) \times (H - 1.00')]$

PIPE RUNNER DIMENSION CALCULATIONS:

Pipe Runner Length (Feet):

$L_R = \text{INT}(W_W / 1.5167')$

Total Reinforcing (LB):

$= [(\text{Pipe Runner Length} \times 14.63) \text{ (lbs)} \times (H-1)] + [(L_R) \text{ (lbs)} \times (H-1)] \times (L_R)$

C_L = Height of curb above top of top slab (feet)

K = Constant value for use in formulas

$= 0.5 \times [0.5 \times (T + 0.5')]$

$0.5 \times [0.5 \times 0.46$

$0.5 \times [0.5 \times 0.79$

W_W = Anchor bolted wingwall length (feet)

L_W = Length of wingwall (feet)

H_W = Height of wingwall (feet)

S_L = Side slope ratio (horizontal : vertical)

See applicable box culvert standard for H, S, T, and C values.

MATERIAL NOTES:

Reinforcing: All reinforcing steel. Provide galvanized reinforcing steel if required elsewhere in the plans. Adjust reinforcing as necessary to provide a minimum clear cover of 2".

Provide Class "C" concrete (f'c = 3,600 psi). Provide pipe runners, cross pipes, and anchor pipes meeting the requirements of Item 464, "Type E or S, SI, ASTM A820 Gr B, or ASTM A252".

Anchor bolts: ASTM A307 bolts.

Galvanize all steel components, except the concrete reinforcing, in accordance with Item 445, "Galvanizing".

Repair galvanizing damaged during transport or construction in accordance with Item 445, "Galvanizing".

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications, and the Texas Department of Transportation Bridge Design Manual. Those installations where out of control vehicles are likely to traverse the opening approximately perpendicular to the cross pipes.

Use of safety features such as guardrail, crash cushion, guide posts et al. used as recommended by Research Report 350-2F, "Safety Treatment of Fixed Objects", Texas Transportation Institute, Texas A&M University, March 1981.

Dimensions for concrete, reinforcing steel, and cross pipes resulting from the formulas given herein are for Contractor's information only.

See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.

Alternate design drawings bearing the seal of a professional engineer may be acceptable for precast construction of this safety end treatment.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

TABLE OF REINFORCING BAR SIZES AND SPACING		
Bar	Size	Spacing
C	#5	10" Max.
D	#4	Match Y and S
E	#5	7'-7" Max.
F	#5	7'-7" Max.
G	#4	As Shown
I	#4	10" Max.
J	#4	7'-7" Max.
K	#4	As Shown

① Provide 6:1 or flatter slope.

② For Wx to 3'-0" Max. Extended curb heights are shown elsewhere in the plans. For structures without railing requiring curbs taller than 3'-0", see Box Culvert Standard Details the Extended Curb Details (ECD) standard sheet.

③ Wingwall and slab thicknesses may be the same as the culvert top slab and bottom slab thicknesses, respectively. If thicknesses greater than the minimum (T) are used, no changes will be made in quantities and no additional compensation will be allowed.

④ For vehicle safety, reduce height, if necessary, to match the height of the adjacent roadway railing. No changes will be made in quantities and no additional compensation will be allowed for this work.

⑤ For culverts with C = 0', the precast culvert reinforcing steel may be bent to form the wingwall reinforcing. Bars D and R may be omitted. Otherwise, refer to the Wingwall Reinforcing Details for Precast Culvert Precast Miscellaneous Details (SCP-MD) standard sheet.

SHEET 1 OF 2

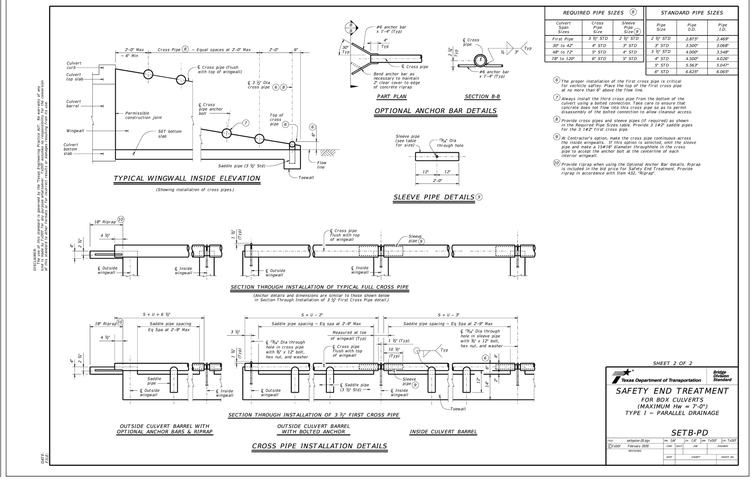
Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT
FOR BOX CULVERTS
(MAXIMUM Hw = 7'-0")
TYPE I – PARALLEL DRAINAGE

SETB-PD

FILE:	setbpdm-00.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
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		07/21					

DATE:



REQUIRED PIPE SIZES ⑦			STANDARD PIPE SIZES		
Culvert Span Sizes	Pipe Size	Pipe O.D.	Pipe Size	Pipe O.D.	
First Pipe	3'-5" STD	3'-5" STD	2'-5" STD	2.875'	2.969'
30° to 42°	4" STD	3'-5" STD	3'-5" STD	3.500'	3.599'
48° to 72°	5" STD	5" STD	3'-5" STD	4.000'	3.548'
78° to 120°	6" STD	5" STD	4'-5" STD	4.500'	4.670'
			5'-5" STD	5.563'	5.047'
			6'-5" STD	6.625'	6.563'

⑥ The proper installation of the typical Wingwall Anchor Bar Details, Riprap and Sleeve Pipe Details is critical to the performance of this safety end treatment. Provide riprap in accordance with Item 432, "Riprap".

⑦ Always install the third cross pipe from the bottom of the culvert using a bolted connection. Take care to ensure that concrete does not flow into this cross pipe so as to permit future removal of the cross pipe for cleaning purposes as shown.

⑧ Provide cross pipes and sleeve pipes of required size shown in the Required Pipe Sizes table. Provide 3 1/4" saddle pipes for the 3'-3"x3'-7" cross pipe.

⑨ At Contractor's option, make the cross pipe continuous across the culvert. Provide a 1'-6" sleeve pipe through the cross pipe and make a 1'x4'x8" diameter throughholes in the cross pipe to accept the anchor bolt at the centerline of each interior wingwall.

⑩ Provide riprap when using the Optional Anchor Bar Details. Riprap is not required when using the Bolted Anchor Details. Provide riprap in accordance with Item 432, "Riprap".

SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

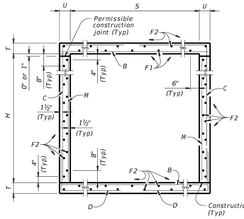
SAFETY END TREATMENT
FOR BOX CULVERTS
(MAXIMUM Hw = 7'-0")
TYPE I – PARALLEL DRAINAGE

SETB-PD

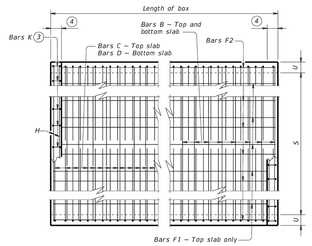
FILE:	setbpdm-02.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
©TxDOT	February 2008	REVISIONS					
		07/21					

DATE:

| TABLE OF DIMENSIONS AND REINFORCING STEEL (Wingx for one structure end) | | | | | | |



TYPICAL SECTION



PLAN OF REINF STEEL

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 7" high, Bars K may be omitted.
4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

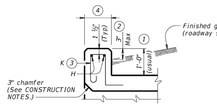
CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

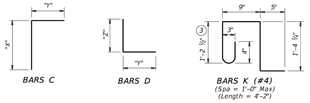
Provide bar laps, where required, as follows:
- Uncoated or galvanized — #4 = 1'-8" Min
- Uncoated or galvanized — #5 = 2'-1" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



SECTION THRU CURB



BARS C | BARS D | BARS K (#4) (Spa = 1'-0" Max) (Length = 4'-2")

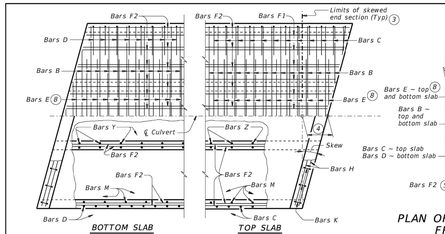
HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

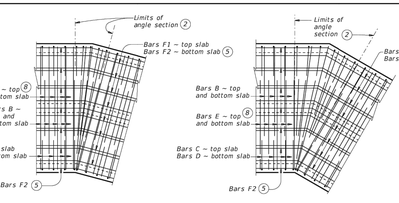
SCC-3 & 4

File: CO-SCC34-21.dgn	dn: TBE	ck: BWP	dw: TxDOT	ck: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.

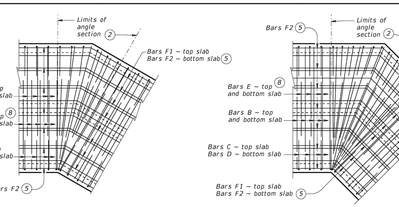


BOTTOM SLAB | TOP SLAB

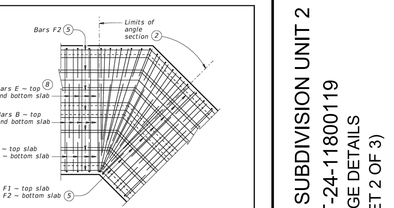
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° 7



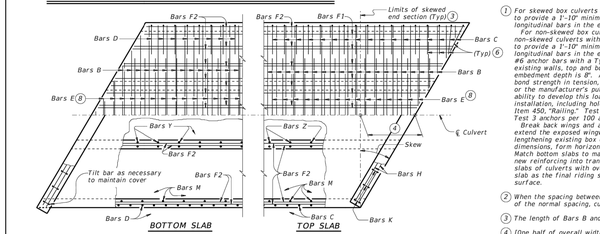
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°

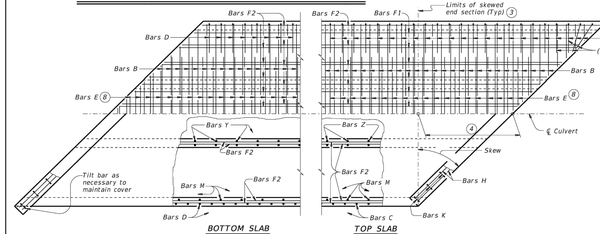


PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



BOTTOM SLAB | TOP SLAB

PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



BOTTOM SLAB | TOP SLAB

PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

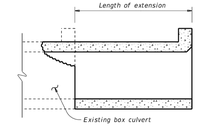
1. For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.
   For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, Class C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.
   Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.
2. When the spacing between Bars B or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.
3. The length of Bars B and Bars E will vary in the skewed end sections.
4. (One half of overall width) x (tangent of the skew angle)
5. Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.
6. When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.
7. At the Contractor's option, for skews of 15° or less, place Bars B, C, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.
8. Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

CONSTRUCTION NOTES:
Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) with these exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.



LENGTHENING DETAIL 1

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

MC-MD

File: CO-MC-MD-20.dgn	dn: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

SECTION DIMENSIONS				FILL HEIGHT 5	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																										QUANTITIES			
					Bars B					Bars C							Bars D						Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4			Bars K			Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Wt	Length	Wt	No.	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
3'-0"	2'-0"	8"	7"	30'	108	#5	9"	3'-11"	441	108	#4	9"	5'-4"	385	2'-6"	2'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	19	39'-9"	505	3'-11"	10	10	28	0.292	48.1	0.3	38	12.0	1,960
3'-0"	3'-0"	8"	7"	30'	108	#5	9"	3'-11"	441	108	#4	9"	6'-4"	457	3'-6"	2'-10"	108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	23	39'-9"	611	3'-11"	10	10	28	0.335	54.3	0.3	38	13.7	2,210
4'-0"	2'-0"	8"	7"	30'	108	#5	9"	4'-11"	554	162	#4	6"	5'-8"	613	2'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	21	39'-9"	558	4'-11"	13	12	33	0.342	63.4	0.4	46	14.1	2,581
4'-0"	3'-0"	8"	7"	30'	108	#5	9"	4'-11"	554	162	#4	6"	6'-8"	721	3'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.385	70.5	0.4	46	15.8	2,867
4'-0"	4'-0"	8"	7"	30'	108	#5	9"	4'-11"	554	162	#4	6"	7'-8"	830	4'-6"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	4'-0"	289	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.428	75.1	0.4	46	17.5	3,049

5 For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

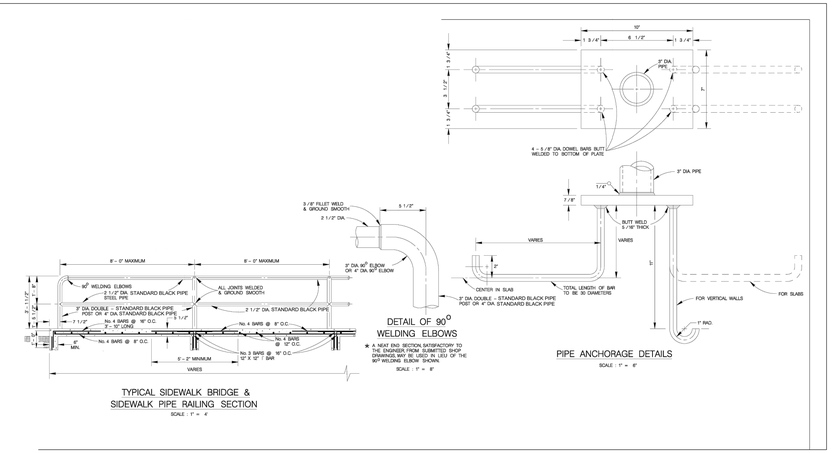
HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-3 & 4

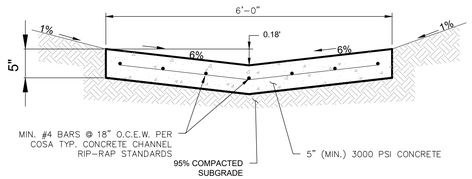
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.



TYPICAL SIDEWALK BRIDGE & SIDEWALK PIPE RAILING SECTION
SCALE : 1" = 4"

DETAIL OF 90° WELDING ELBOWS
★ A NEAT END SECTION SATISFACTORY TO THE ENGINEER FROM SUBMITTED SHOP DRAWINGS, MAY BE USED IN LIEU OF THE 90° WELDING ELBOW SHOWN.
SCALE : 1" = 8"

PIPE ANCHORAGE DETAILS
SCALE : 1" = 8"



CONCRETE PILOT CHANNEL
N.T.S.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
DRAINAGE DETAILS
(SHEET 2 OF 3)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: APPLEWHITE MDW

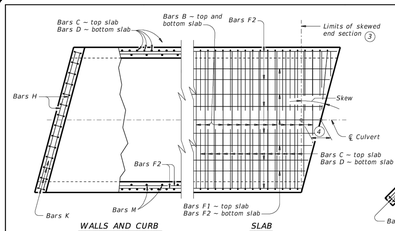
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.593.2700
LJA.COM
TBPE No. F-1386

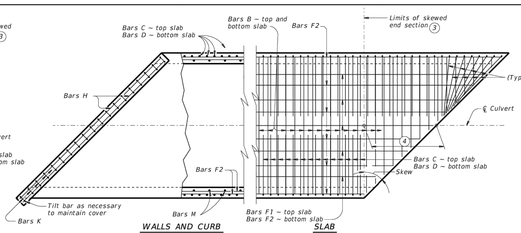
JOB NUMBER: SA173-0402-426

SHEET NO. 4.7

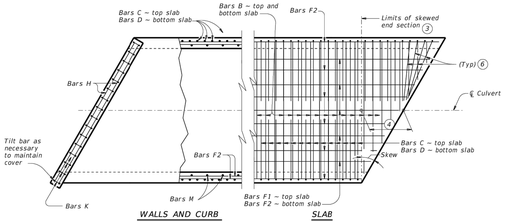
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User: jburon
Last Modified: Jun. 05, 24 - 11:44
Plot Date/Time: Jan. 15, 25 - 10:36:26



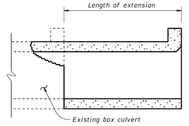
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



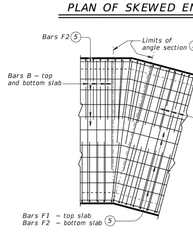
PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



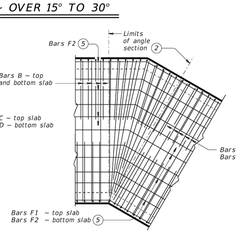
PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



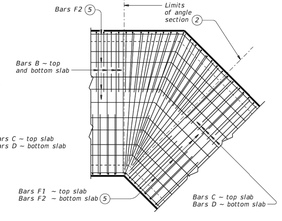
LENGTHENING DETAIL (1)



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

(1) For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.
For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, C, D , E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-0" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.
Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

(2) When the spacing between Bars B becomes less than half of the normal spacing, cut bars to avoid conflict.

(3) The length of Bars B vary in the skewed end sections.

(4) [One half of overall width] x [tangent of the skew angle]

(5) Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

(6) When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.

(7) At the Contractor's option, for skews of 15° or less, place Bars B, C, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast-In-Place (SCC) standards sheets to accommodate the skew.

CONSTRUCTION NOTES:
Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) with these exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast-In-Place (SCC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

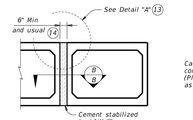
HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

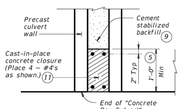
SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

SCC-MD

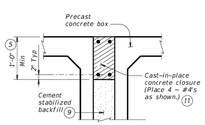
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	DIST	COUNTY		SHEET NO.



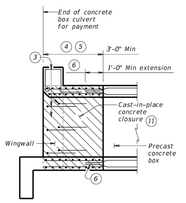
MULTIPLE UNIT PLACEMENT



SECTION B-B

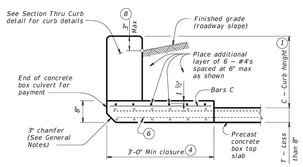


DETAIL "A" (13)

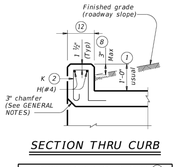


WINGWALL CONNECTION

(Also applies to safety end treatment.)

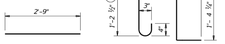


SECTION THRU TOP SLABS LESS THAN 8"



SECTION THRU CURB

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



BARS C (#4) (Spa = 1'-0" Max)

BARS K (#4) (Spa = 1'-0" Max) (Length = 4'-2")

(1) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(2) For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

(3) Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.

(4) Provide a 3'-0" Min cast-in-place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.

(5) For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.

(6) Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).

(7) Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.

(8) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade. Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(9) Cement stabilized backfill between boxes is considered part of the box culvert for payment.

(10) All curb concrete and reinforcing is considered part of the box culvert for payment.

(11) Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.

(12) 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.

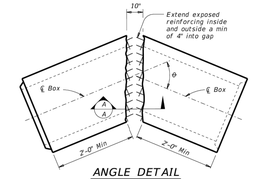
(13) For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".

(14) This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box." No payment will be made for any additional material in the gap between adjacent boxes.

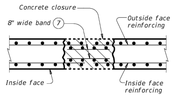
MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'_c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

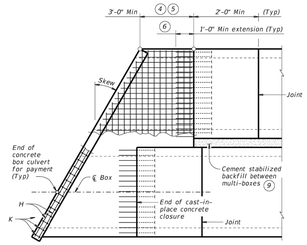
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bars dimensions are out-to-out of bars.



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi-box placement.)

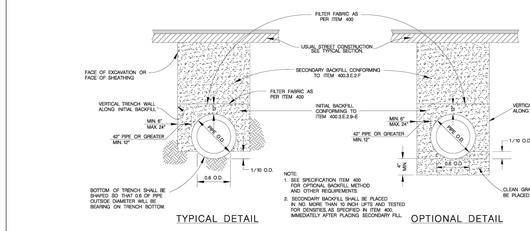
HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

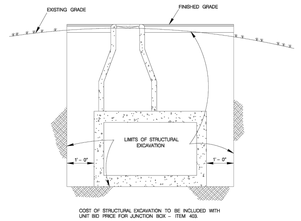
SCP-MD

FILE: CD-SCP-MD-20.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.



TYPICAL DETAIL OPTIONAL DETAIL

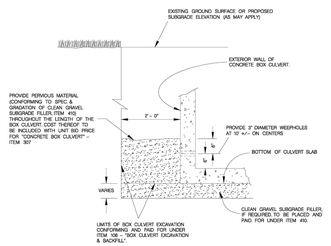
PIPE BEDDING & BACKFILL DETAILS



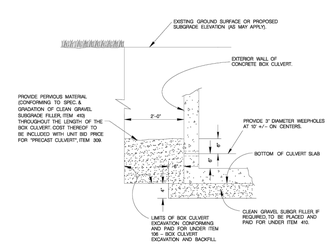
COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR JUNCTION BOX ~ ITEM 403.

STRUCTURAL EXCAVATION AT JUNCTION BOXES

NO SCALE

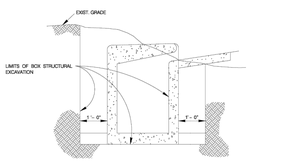


CAST-IN-PLACE BOX CULVERT

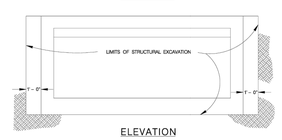


PRECAST BOX CULVERT

CONCRETE BOX CULVERT



SIDE VIEW



ELEVATION

COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR INLETS ~ ITEM 403.

STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS

NO SCALE

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

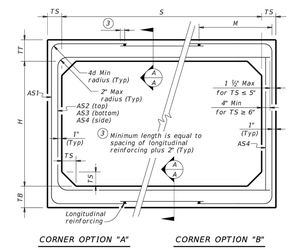
% SUBMITTAL PROJECT NO.: DATE:
DRAWN BY: DSGN BY: CHKD. BY: SHEET NO.: OF

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
3	2	7	6	4	< 2	–	0.17	0.25	0.16	0.10	0.17	0.17	0.14	3.3
3	2	4	4	4	2 < 3	31	0.13	0.19	0.18	0.10	–	–	–	2.4
3	2	4	4	4	3 – 5	31	0.10	0.11	0.12	0.10	–	–	–	2.4
3	2	4	4	4	10	31	0.10	0.10	0.10	0.10	–	–	–	2.4
3	2	4	4	4	15	31	0.10	0.13	0.13	0.10	–	–	–	2.4
3	2	4	4	4	20	31	0.11	0.17	0.17	0.10	–	–	–	2.4
3	2	4	4	4	25	31	0.14	0.21	0.21	0.10	–	–	–	2.4
3	2	4	4	4	30	31	0.17	0.25	0.25	0.10	–	–	–	2.4
3	2	4	4	4	35	31	0.20	0.29	0.30	0.10	–	–	–	2.4
3	3	7	6	4	< 2	–	0.17	0.27	0.17	0.10	0.17	0.17	0.14	3.7
3	3	4	4	4	2 < 3	31	0.10	0.22	0.21	0.10	–	–	–	2.8
3	3	4	4	4	3 – 5	31	0.10	0.14	0.14	0.10	–	–	–	2.8
3	3	4	4	4	10	31	0.10	0.11	0.11	0.10	–	–	–	2.8
3	3	4	4	4	15	31	0.10	0.10	0.14	0.15	0.10	–	–	2.8
3	3	4	4	4	20	31	0.10	0.18	0.19	0.10	–	–	–	2.8
3	3	4	4	4	25	31	0.10	0.23	0.23	0.10	–	–	–	2.8
3	3	4	4	4	30	31	0.12	0.27	0.28	0.10	–	–	–	2.8
3	3	4	4	4	35	31	0.14	0.32	0.32	0.10	–	–	–	2.8

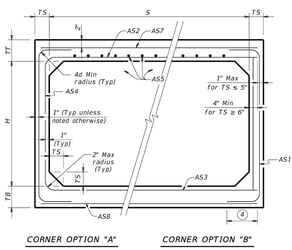
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

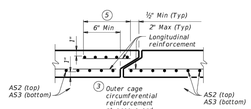
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'_c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 3'-0" SPAN

SCP-3

FILE: CD-SCP93-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

GRACE GARDENS SUBDIVISION UNIT 2

LAND-PLAT-24-11800119

DRAINAGE DETAILS (SHEET 3 OF 3)

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: APPLEWHITE MDW

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

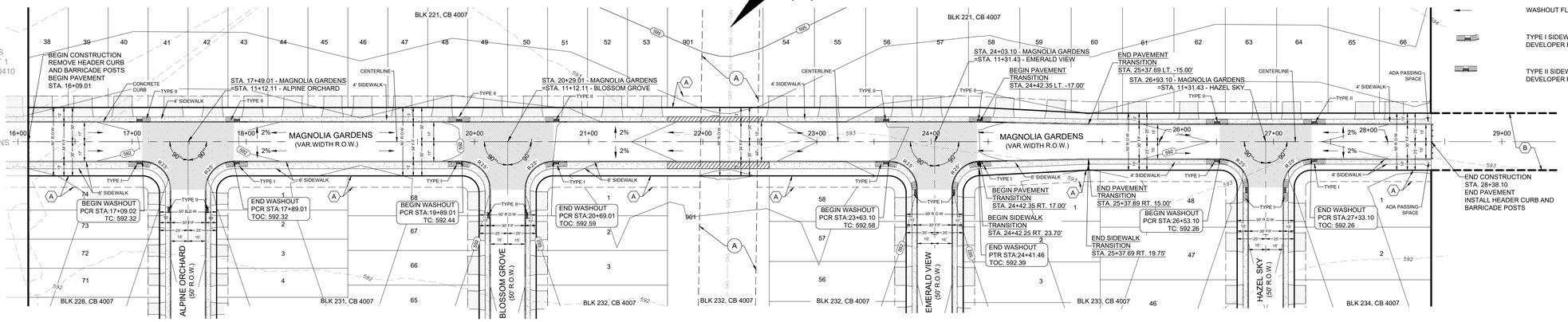
SHEET NO. **4.8**

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User: jdunn
Last Modified: Jun. 05, 24 - 11:44
Plot Date/Time: Jan. 15, 25 - 11:36

GENERAL NOTES:

1. ALL HANDICAP RAMPS TO BE TYPE I OR II AS NOTED, REFER TO SHEET 5.11.
2. ALL ELEVATIONS ARE TOP OF CURB UNLESS OTHERWISE NOTED.
3. PROPOSED STREET LIGHTS SHALL BE LOCATED BEHIND THE BACK OF SIDEWALK AND INSTALLED PER THE CPS DESIGN.
4. STREETS AND DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. REFER TO SHEET 5.9 FOR STREET AND PAVEMENT SECTION DETAIL, CONCRETE CURB DETAIL, AND SIDEWALK DETAIL.
6. CONTRACTOR TO FIELD VERIFY ALL MATCH EXISTING ELEVATIONS, SEWER MANHOLE INVERTS, STORM DRAIN INVERTS, AND ALL OTHER UTILITIES PRIOR TO UTILITY WORK AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES.
7. CONTRACTOR IS TO MATCH EXISTING PAVEMENT, SIDEWALK, AND CURB ELEVATIONS.
8. A BEXAR COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY RIGHT OF WAY.

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)



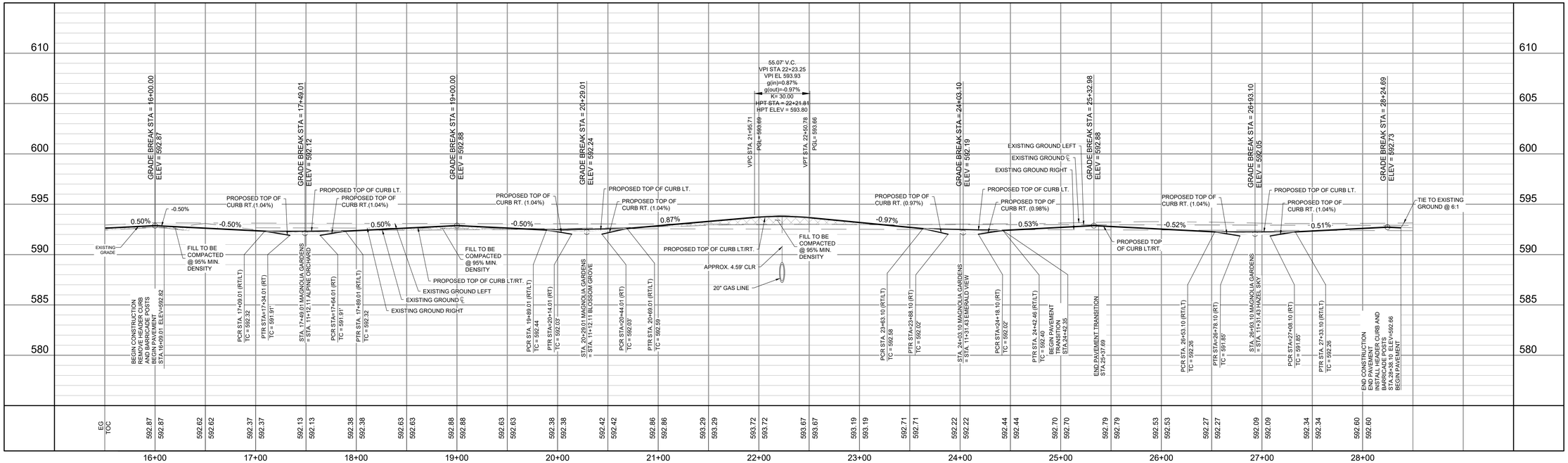
LEGEND

- 800 — PROPOSED CONTOUR
- 2% — FLOW ARROW
- GRASSED DRAIN FLOW
- PROPOSED STREET GRADE
- EXISTING GROUND LEFT
- EXISTING GROUND CENTERLINE
- EXISTING GROUND RIGHT
- SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
- SIDEWALK (DEVELOPER'S RESPONSIBILITY)
- G,E,T,CA — GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
- BSL — BUILDING SETBACK LINE
- ESM'T. — EASEMENT
- LT. — LEFT
- RT. — RIGHT
- WASHOUT CROWN
- WASHOUT FLOW ARROW
- TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
- TYPE II SIDEWALK RAMP DEVELOPER RESPONSIBLE

50 25 0 50 100

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

MAGNOLIA GARDENS STA 16+09.01 TO END



REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: sh_Street Magnolia_P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. **5.0**

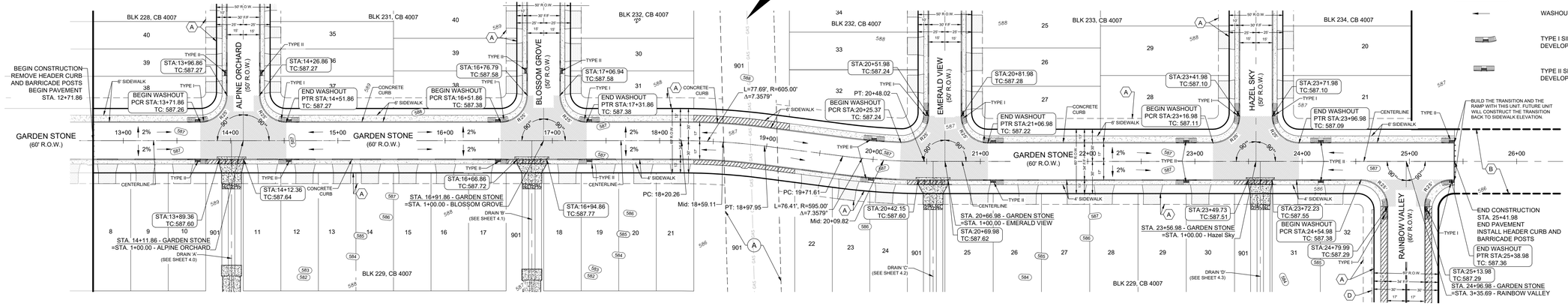
GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
MAGNOLIA GARDENS
STA 16+09.1 TO END PLAN & PROFILE

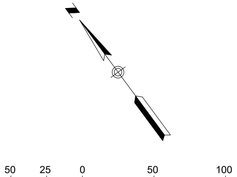
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User: jduron
Last Modified: Dec. 23, 24 - 13:21
Plot Date/Time: Jan. 15, 25 - 11:53:50

GENERAL NOTES:

1. ALL HANDICAP RAMPS TO BE TYPE I OR II AS NOTED, REFER TO SHEET 5.11.
2. ALL ELEVATIONS ARE TOP OF CURB UNLESS OTHERWISE NOTED.
3. PROPOSED STREET LIGHTS SHALL BE LOCATED BEHIND THE BACK OF SIDEWALK AND INSTALLED PER THE CPS DESIGN.
4. STREETS AND DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. REFER TO SHEET 5.9 FOR STREET AND PAVEMENT SECTION DETAIL, CONCRETE CURB DETAIL, AND SIDEWALK DETAIL.
6. CONTRACTOR TO FIELD VERIFY ALL MATCH EXISTING ELEVATIONS, SEWER MANHOLE INVERTS, STORM DRAIN INVERTS, AND ALL OTHER UTILITIES PRIOR TO UTILITY WORK AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES.
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8. A BEXAR COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY RIGHT OF WAY.

(A) 10' G.E.T.CA. ESM'T
OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY
(B) ESM'T TO EXPIRE UPON INCORPORATION OF
FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
ENTERPRISE GAS LINE EASEMENT
(A) (VOL. 3315, PG. 380 O.P.R.)
(VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT
(VOL. 7517, PGS. 863-867 OPR)
OFF-LOT VARIABLE WIDTH PRIVATE
(C) DRAINAGE EASEMENT
(PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT
(PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T
(PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T
(PLAT #23-11800410)
OFF-LOT PERMEABLE VARIABLE WIDTH
(G) UTILITY ESM'T
(PLAT #23-11800410)

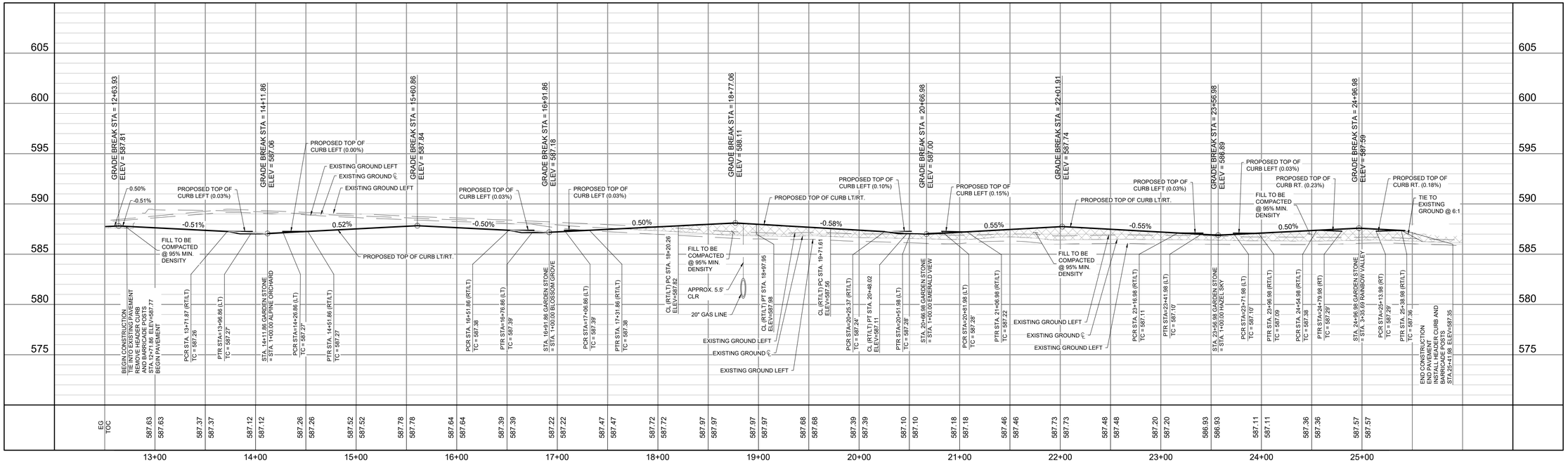




LEGEND

- 800 — PROPOSED CONTOUR
- 2% — FLOW ARROW
- GRASSED DRAIN FLOW
- PROPOSED STREET GRADE
- EXISTING GROUND LEFT
- EXISTING GROUND CENTERLINE
- EXISTING GROUND RIGHT
- SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
- SIDEWALK (DEVELOPER'S RESPONSIBILITY)
- G,E,T,CA — GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
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- RT. — RIGHT
- WASHOUT CROWN
- WASHOUT FLOW ARROW
- TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
- TYPE II SIDEWALK RAMP DEVELOPER RESPONSIBLE

GARDEN STONE STA 12+71.86 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
GARDEN STONE
STA 12+71.86 TO END PLAN & PROFILE

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: st_Street "Garden Stone" P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

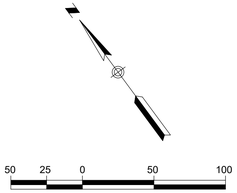
SHEET NO. 5.1

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Plot Date/Time: Jan. 15, 25 - 13:54:31

GENERAL NOTES:

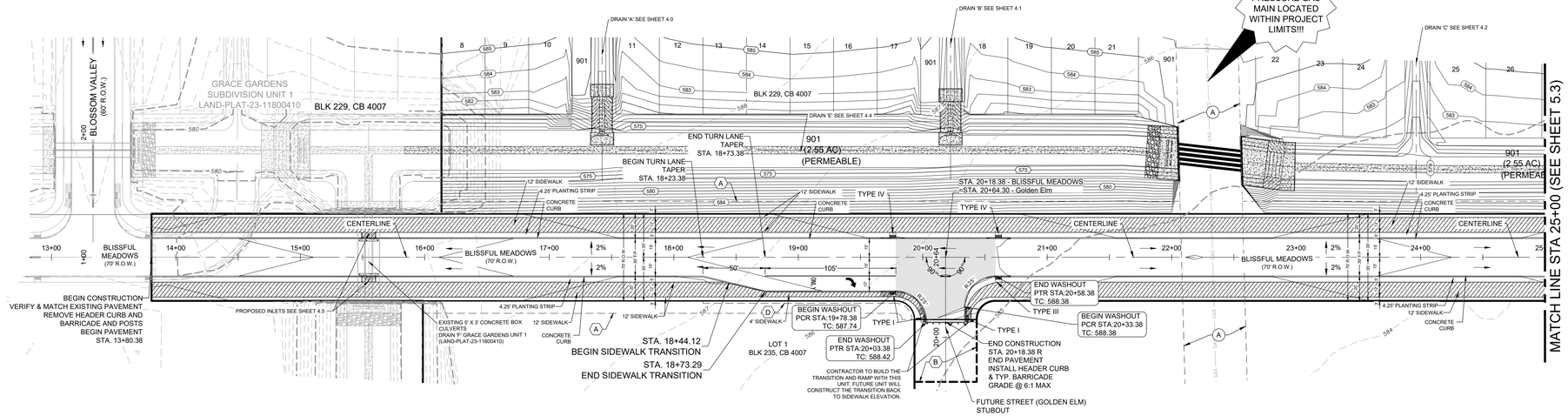
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(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
ENTERPRISE GAS LINE EASEMENT
(A) (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
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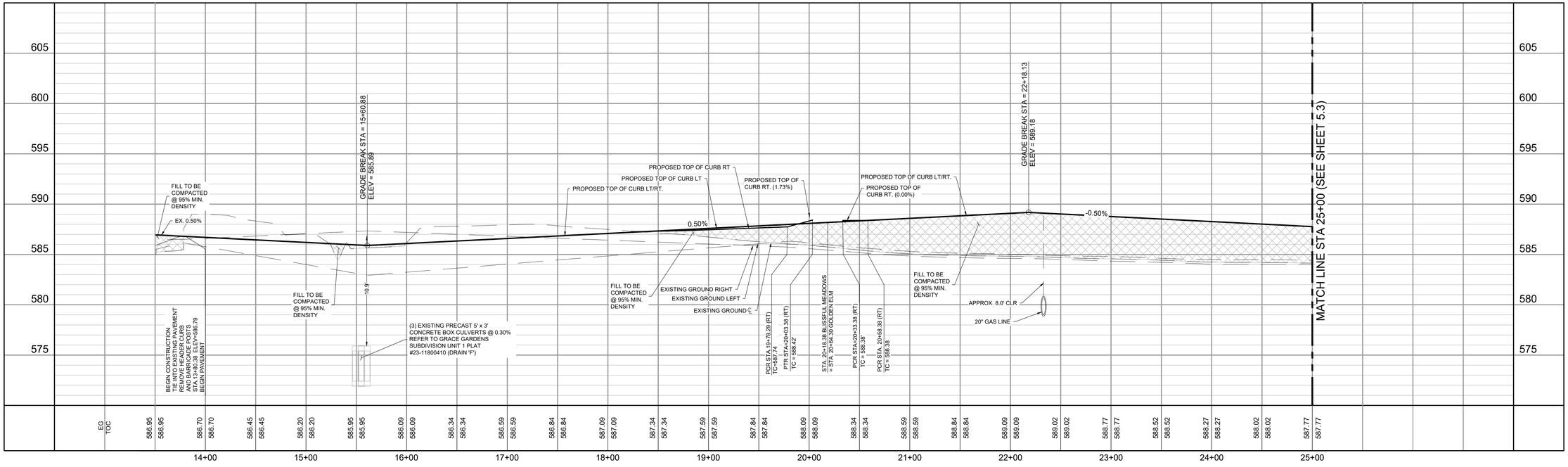


LEGEND

- 800 — PROPOSED CONTOUR
- 2% — FLOW ARROW
- GRASSED DRAIN FLOW
- PROPOSED STREET GRADE
- EXISTING GROUND LEFT
- EXISTING GROUND CENTERLINE
- EXISTING GROUND RIGHT
- SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
- SIDEWALK (DEVELOPER'S RESPONSIBILITY)
- G,E,T,CA — GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
- BSL — BUILDING SETBACK LINE
- ESM'T. — EASEMENT
- LT. — LEFT
- RT. — RIGHT
- WASHOUT CROWN
- WASHOUT FLOW ARROW
- TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
- TYPE II SIDEWALK RAMP DEVELOPER RESPONSIBLE



BLISSFUL MEADOWS STA 13+80.38 TO 25+00



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
GARDEN STONE
STA 13+80.38 TO 25+00 PLAN & PROFILE

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: s:_Street \Blissful Meadows_P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

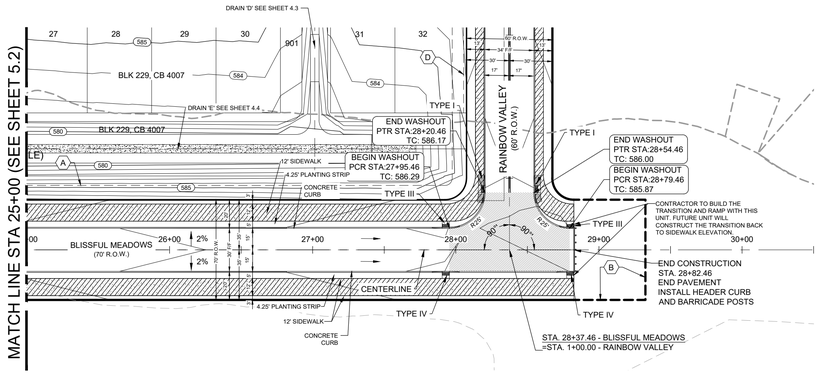
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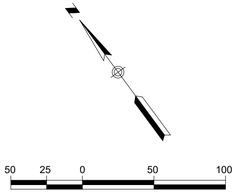
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User: jduron
Last Modified: Jan. 02, 25 - 11:05
Plot Style/Time: Jan. 16, 25 - 11:36:14

GENERAL NOTES:

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(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)



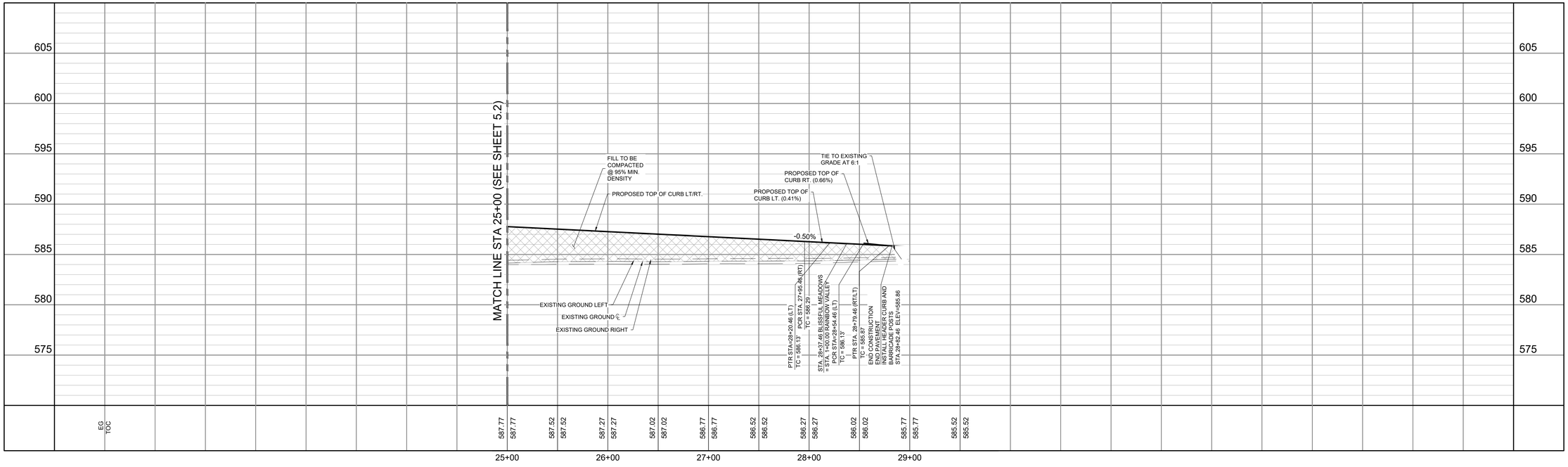


HORIZONTAL SCALE 1" = 50'
VERTICAL SCALE 1" = 5'

LEGEND

800	PROPOSED CONTOUR
2%	FLOW ARROW
	GRASSED DRAIN FLOW
	PROPOSED STREET GRADE
	EXISTING GROUND LEFT
	EXISTING GROUND CENTERLINE
	EXISTING GROUND RIGHT
	SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)
G,E,T,CA	GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
BSL	BUILDING SETBACK LINE
ESM'T.	EASEMENT
LT.	LEFT
RT.	RIGHT
	WASHOUT CROWN
	WASHOUT FLOW ARROW
	TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
	TYPE II SIDEWALK RAMP DEVELOPER RESPONSIBLE

BLISSFUL MEADOWS STA 25+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
BLISSFUL MEADOWS
STA 25+00 TO END PLAN & PROFILE

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: S:\Sheet Sets\Blissful Meadows_P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 5.3

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\CMC-Sheets\sh_Street 'Blissful Meadows'_P&P.dwg
User: jduron
Last Modified: Jan. 02, 25 - 11:05
Plot Style/Time: Jan. 15, 25 - 12:36:26

GENERAL NOTES:

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(A) (VOL. 3315, PG. 380 O.P.R.)
(VOL. 1747, PG. 236, O.P.R.)

(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)

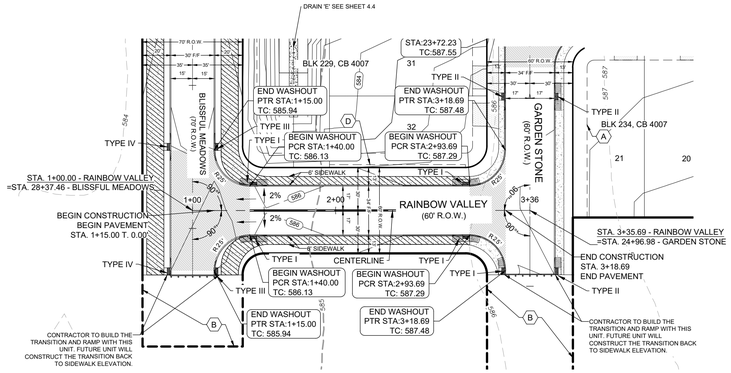
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)

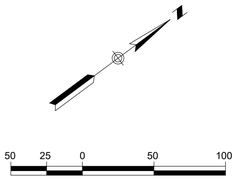
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)

(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)

(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)

(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)



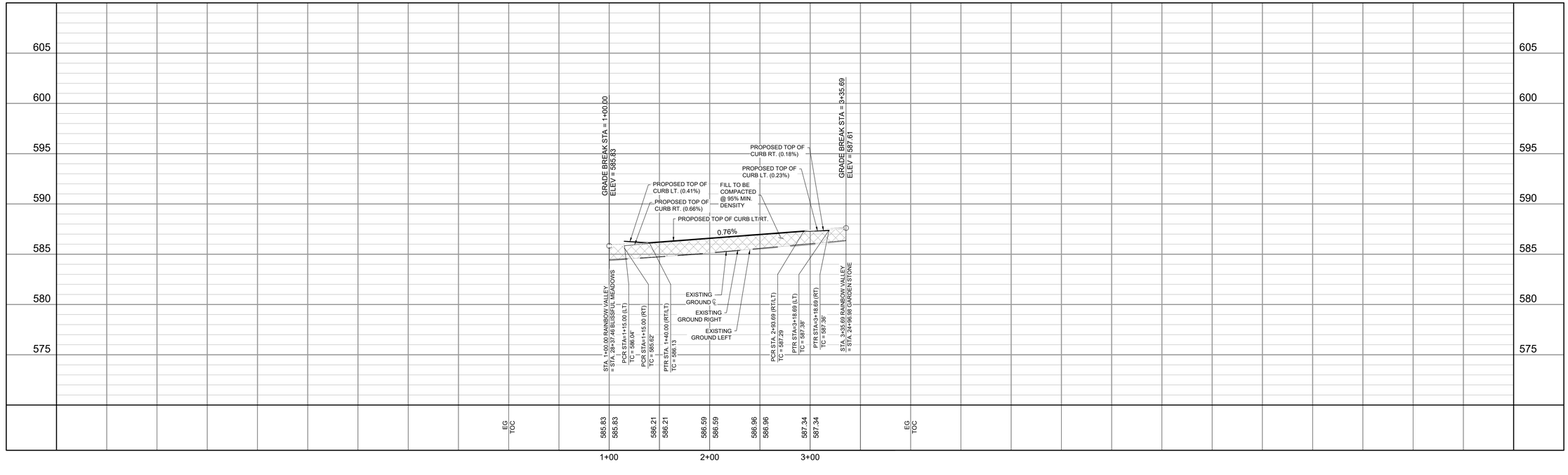


HORIZONTAL SCALE 1" = 50'
VERTICAL SCALE 1" = 5'

LEGEND

800	PROPOSED CONTOUR
2%	FLOW ARROW
	GRASSED DRAIN FLOW
	PROPOSED STREET GRADE
	EXISTING GROUND LEFT
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RAINBOW VALLEY STA 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
RAINBOW VALLEY
STA 1+00.00 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: 5.4_Street_Rainbow Valley_P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
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Phone 210.503.2700
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TBPE No. F-1386

JOB NUMBER:
SA173-0402-426

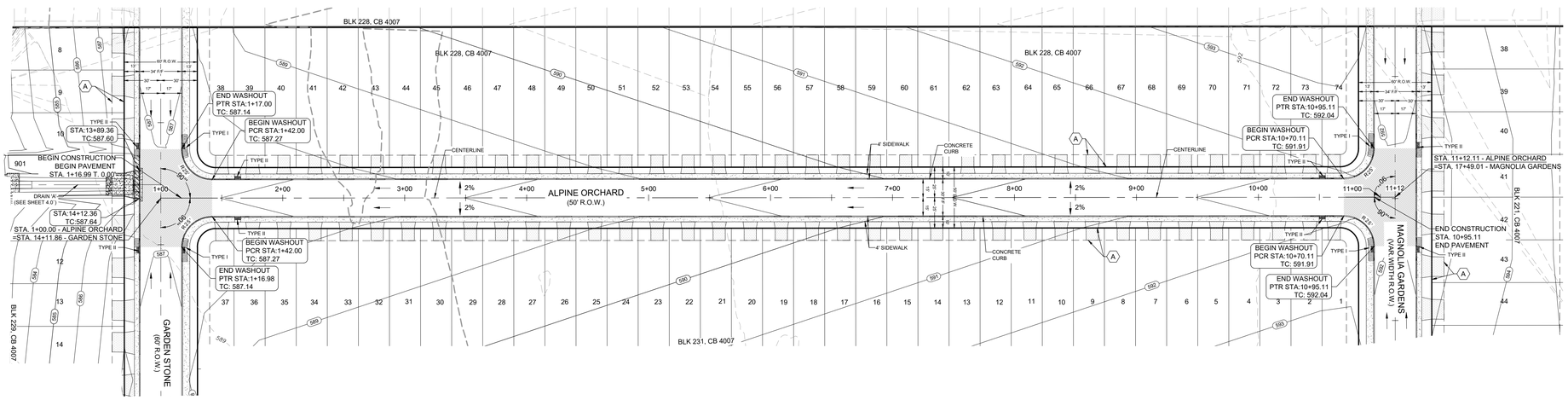
SHEET NO.
5.4

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plan\CMC-Sheets\sh_Street Tieslove Valley_P&P.dwg
User: jduron
Last Modified: Jan. 13, 25 - 10:01
Plot Style/Time: Jan. 15, 25 - 11:56:05

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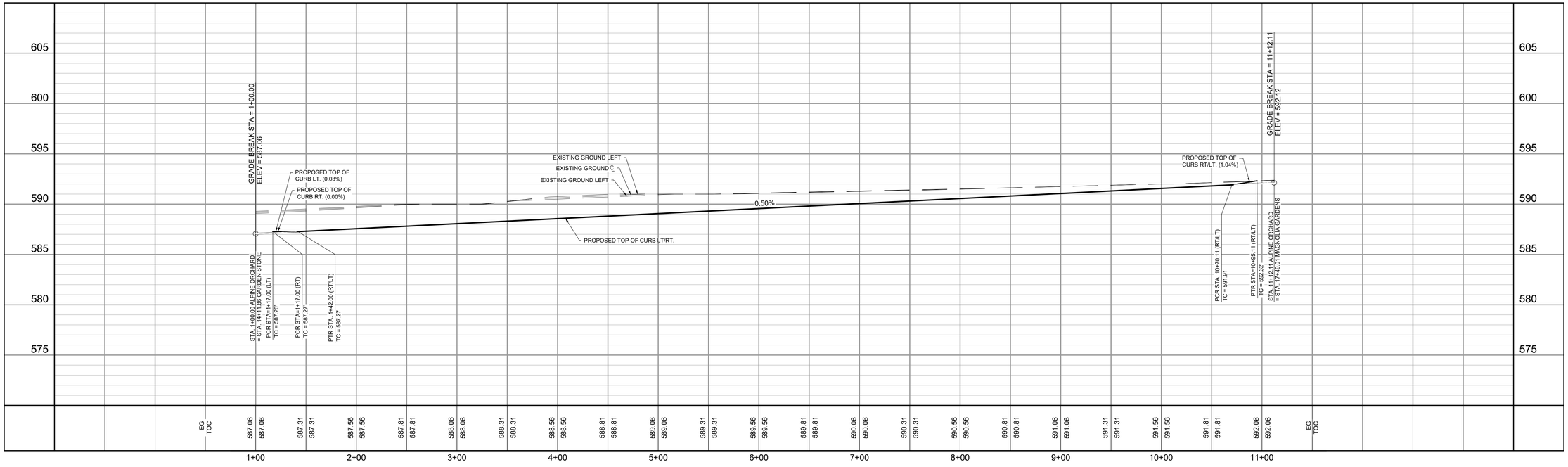


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VERTICAL SCALE 1" = 5'

LEGEND

- PROPOSED CONTOUR
- FLOW ARROW
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- EXISTING GROUND LEFT
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- LT. — LEFT
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- WASHOUT CROWN
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- TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
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ALPINE ORCHARD STA 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
ALPINE ORCHARD
STA 1+00 TO END PLAN & PROFILE

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: s:\Street\ Alpine Orchard_P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
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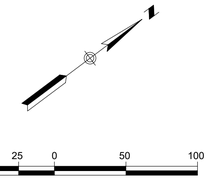
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User: jduron
Last Modified: Jan 15, 25 - 10:29
Plot Style/Time: Jan 15, 25 - 11:56:46

GENERAL NOTES:

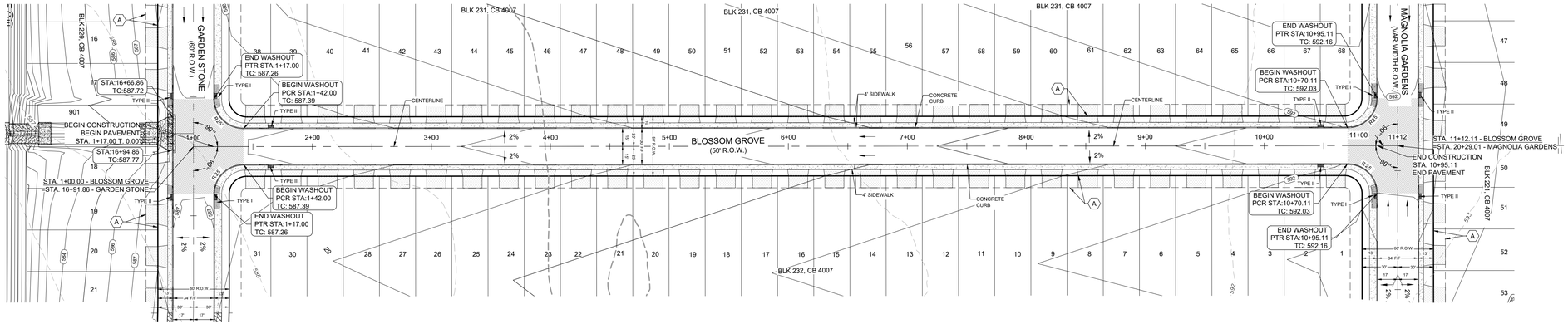
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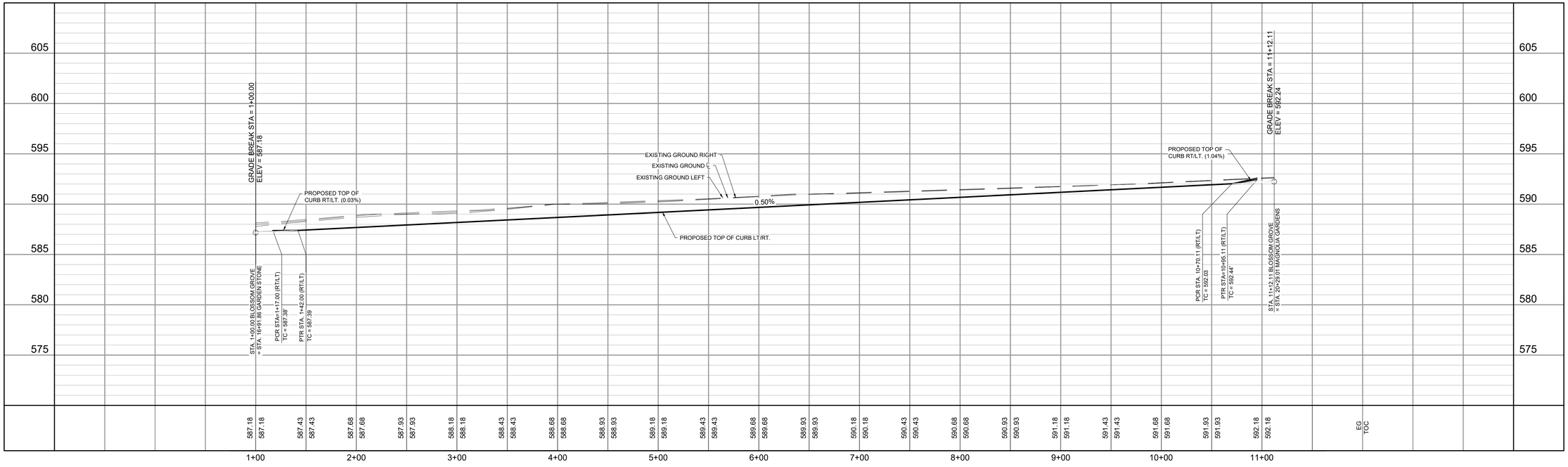


LEGEND

- 800 — PROPOSED CONTOUR
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- GRASSED DRAIN FLOW
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- EXISTING GROUND LEFT
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- WASHOUT FLOW ARROW
- TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
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BLOSSOM GROVE STA 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
BLOSSOM GROVE
STA 1+00 TO END PLAN & PROFILE

REVISIONS
NO. | DESCRIPTION | BY | DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: 5.6_Street_Blossom Grove_P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED
PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
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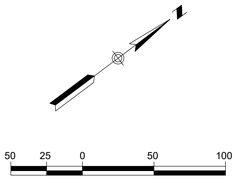
SHEET NO.
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User: jduron
Last Modified: Dec. 11, 24 - 12:18
Plot Style/Time: Jan. 16, 25 - 10:10:23

GENERAL NOTES:

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8. A BEXAR COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY RIGHT OF WAY.

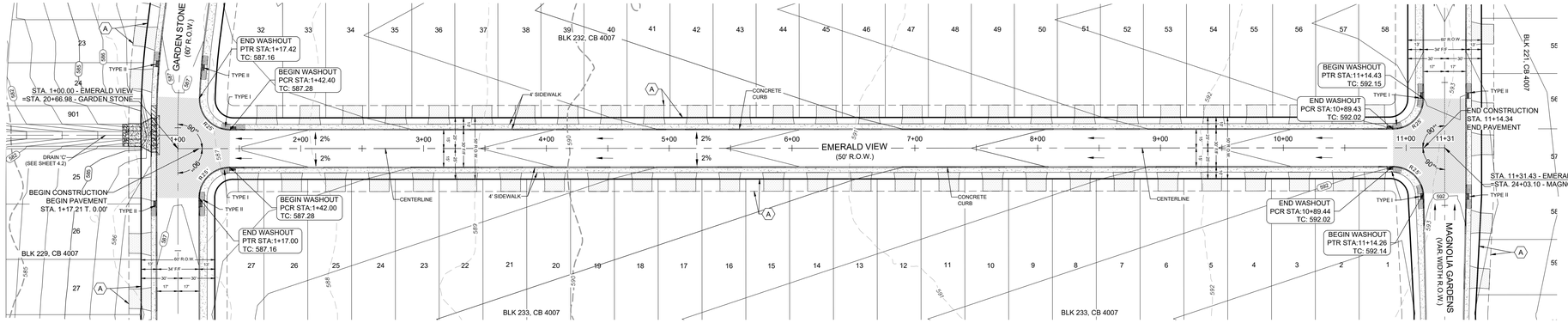
(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)



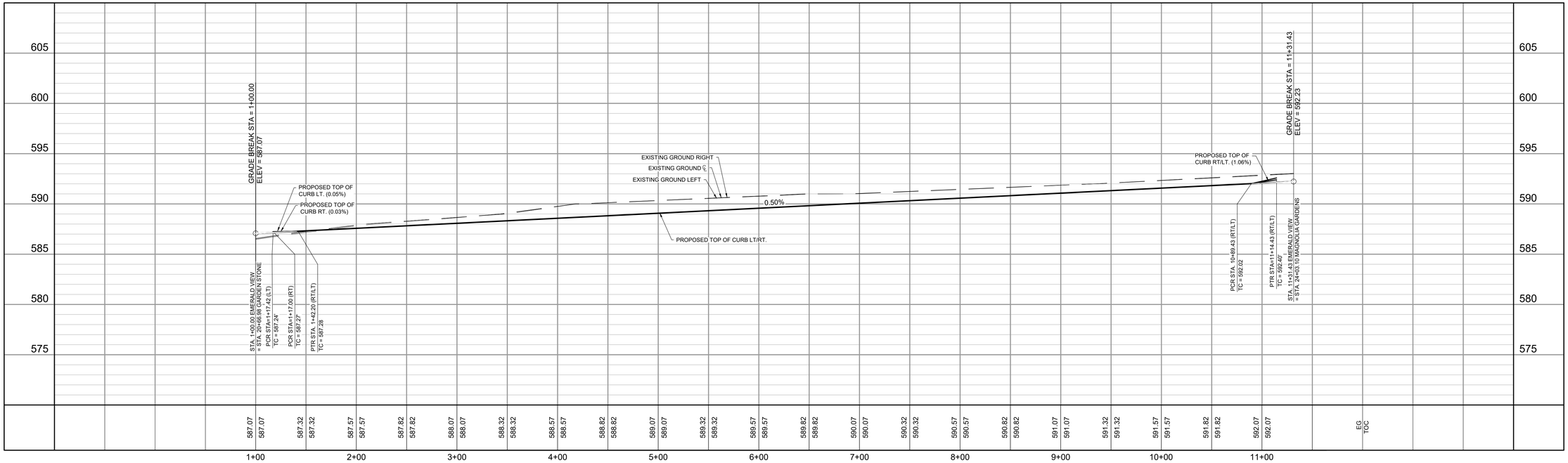
HORIZONTAL SCALE 1" = 50'
VERTICAL SCALE 1" = 5'

LEGEND

- 800 — PROPOSED CONTOUR
- 2% — FLOW ARROW
- GRASSED DRAIN FLOW
- PROPOSED STREET GRADE
- EXISTING GROUND LEFT
- EXISTING GROUND CENTERLINE
- EXISTING GROUND RIGHT
- SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
- SIDEWALK (DEVELOPER'S RESPONSIBILITY)
- G,E,T,CA — GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
- BSL — BUILDING SETBACK LINE
- ESM'T. — EASEMENT
- LT. — LEFT
- RT. — RIGHT
- WASHOUT CROWN
- WASHOUT FLOW ARROW
- TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
- TYPE II SIDEWALK RAMP DEVELOPER RESPONSIBLE



EMERALD VIEW STA 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
EMERALD VIEW
STA 1+00 TO END PLAN & PROFILE

REVISIONS
NO. | DESCRIPTION | BY | DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: 05_Street Emerald View_P&P.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
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Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 5.7

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plan\CMC-Sheets\sh_Street Emerald View_P&P.dwg
User: jduron
Last Modified: Aug 07, 24 - 15:58
Plot Style/Time: Jan 15, 25 - 13:58:13

GENERAL NOTES:

1. ALL HANDICAP RAMPS TO BE TYPE I OR II AS NOTED, REFER TO SHEET 5.11.
2. ALL ELEVATIONS ARE TOP OF CURB UNLESS OTHERWISE NOTED.
3. PROPOSED STREET LIGHTS SHALL BE LOCATED BEHIND THE BACK OF SIDEWALK AND INSTALLED PER THE CPS DESIGN.
4. STREETS AND DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. REFER TO SHEET 5.9 FOR STREET AND PAVEMENT SECTION DETAIL, CONCRETE CURB DETAIL, AND SIDEWALK DETAIL.
6. CONTRACTOR TO FIELD VERIFY ALL MATCH EXISTING ELEVATIONS, SEWER MANHOLE INVERTS, STORM DRAIN INVERTS, AND ALL OTHER UTILITIES PRIOR TO UTILITY WORK AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES.
7. CONTRACTOR IS TO MATCH EXISTING PAVEMENT, SIDEWALK, AND CURB ELEVATIONS.
8. A BEXAR COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY RIGHT OF WAY.

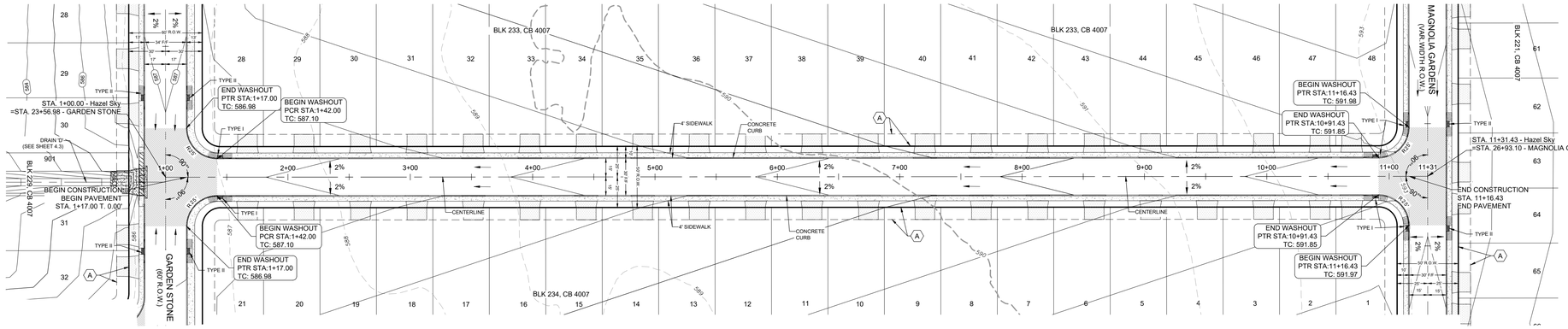
(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
ENTERPRISE GAS LINE EASEMENT
(A) (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
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(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

50 25 0 50 100

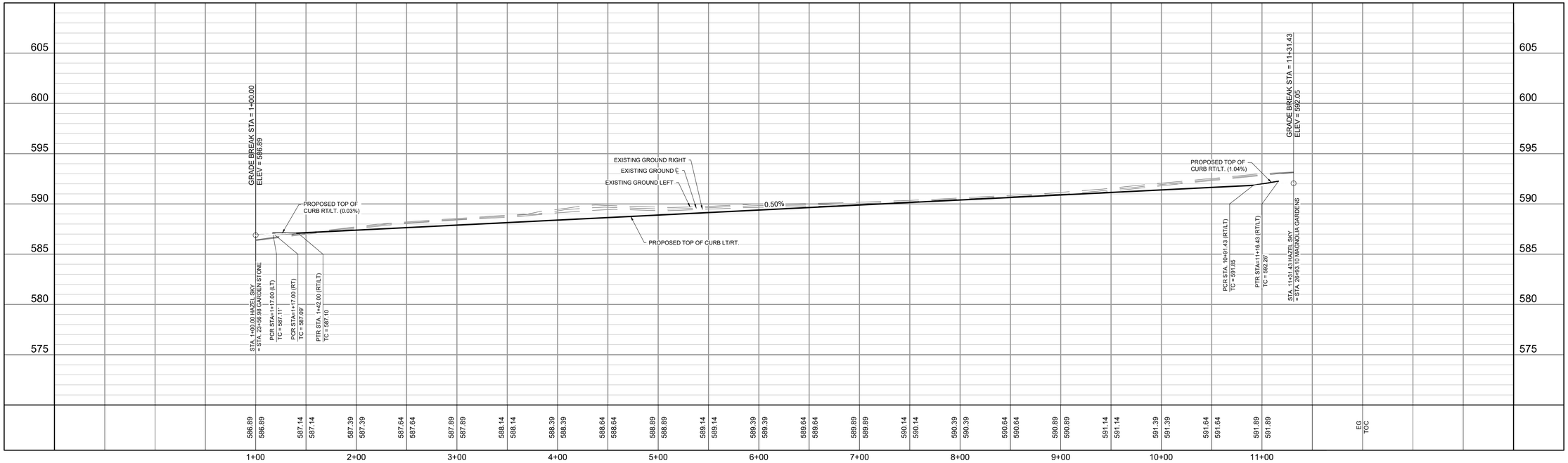
HORIZONTAL SCALE 1" = 50'
VERTICAL SCALE 1" = 5'

LEGEND

- 800 — PROPOSED CONTOUR
- 2% — FLOW ARROW
- GRASSED DRAIN FLOW
- PROPOSED STREET GRADE
- EXISTING GROUND LEFT
- EXISTING GROUND CENTERLINE
- EXISTING GROUND RIGHT
- SIDEWALK (HOMEOWNER'S RESPONSIBILITY)
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- G,E,T,CA — GAS, ELECTRIC, TELEPHONE & CABLE TV EASEMENT
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- LT. — LEFT
- RT. — RIGHT
- WASHOUT CROWN
- WASHOUT FLOW ARROW
- TYPE I SIDEWALK RAMP DEVELOPER RESPONSIBLE
- TYPE II SIDEWALK RAMP DEVELOPER RESPONSIBLE



HAZEL SKY STA 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
HAZEL SKY
STA 1+00 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: 8b_Street Plans\Hazel Sky_P&P.dwg

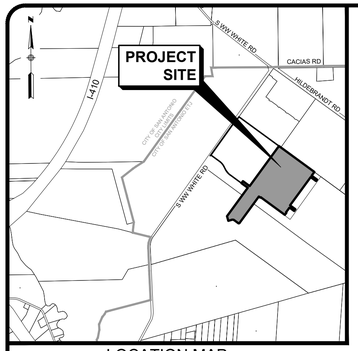
STATE OF TEXAS
RICHARD W. GRAY III
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REGISTERED
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01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
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TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 5.8

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plan\CIVIL-Sheets\ph_Street Plans\Hazel Sky_P&P.dwg
User: jburon
Last Modified: Aug 07, 24 - 16:21
Plot Style/Time: Jan 15, 25 - 13:58:01



LOCATION MAP

N.T.S.

PAVEMENT SECTION TABLE CBR = 3.0	LOCAL A	LOCAL B	COLLECTOR
HOT MIX ASPHALT CONCRETE (TYPE "C" or TYPE "D") DEPTH:	TYPE D = 2.0"	TYPE D =1.5" TYPE C =3.0"	TYPE D =2.0" TYPE C =4.0"
TYPE A, GRADE 1-2 GRANULAR BASE COURSE:	12.0"	17.5"	14.5"
LIME TREATED SUBGRADE (SEE GENERAL NOTE 4):	6.00"	6.00"	6.00"

CONTRACTOR TO REFER TO GEOTECHNICAL ENGINEERING BY TTL, INC. DATED NOVEMBER 17, 2023 FOR PAVEMENT DESIGN SPECIFICATIONS, TTL, INC. PROJECT NO. 00230902952.01.

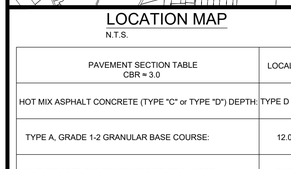
1. MINIMUM OF 4" FLEXIBLE BASE OR 2" OF ASPHALT TREATED BASE IS REQUIRED UNDERNEATH THE CURB (REFER TO PAVEMENT & CURB DETAILS).
2. LIME TRATMENT SHALL BE PERFORMED ONLY ON THE DARK BROWN CLAY SUBGRADE. THE SUBGRADE SHALL BE TREATED WITH HYDRATED LIME IN ACCORDANCE WITH TXDOT ITEM 260. WE ANTICIPATE THAT APPROXIMATELY 6% HYDRATED LIME WILL BE REQUIRED (APPROXIMATELY 35 LBS/SY). THE OPTIMUM HYDRATED LIME CONTENT SHOULD RESULT IN A SOIL-LIME MIXTURE WITH A PH OF AT LEAST 12.4 WHEN TESTED IN ACCORDANCE WITH ASTM C 977, APPENDIX XI.
3. GEOTECHNICAL ENGINEER TO BE ON SITE TO MAKE FINAL SUBGRADE DETERMINATION. CHANGES TO THIS PAVEMENT DESIGN SHALL BE SUBMITTED TO COSA-DSD & BEXAR COUNTY PRIOR TO PLACEMENT OF BASE MATERIAL.

PAVEMENT NOTE:

GEOTECHNICAL ENGINEER TO BE ON SITE TO MAKE FINAL SUBGRADE DETERMINATION. CHANGES TO THIS PAVEMENT DESIGN SHALL BE SUBMITTED TO COSA-DSD & BEXAR COUNTY PRIOR TO PLACEMENT OF BASE MATERIAL.

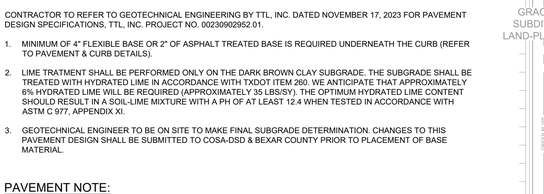
GENERAL NOTES

- 1. INPUT PARAMETERS USED IN PAVEMENT SECTION CALCULATIONS ARE SHOWN IN TABLE NO. 5.3.1. (TTL) & PAGE 7 OF FSG PROJECT NO: FGS-G20017 (FROST SCIENCES, INC.). PLEASE CALL TTL, INC. AND FROST SCIENCES TO PROVIDE PAVEMENT RECOMMENDATIONS, IF NEEDED, FOR DIFFERENT INPUT VALUES.
- 2. IF REPETITIVE TRUCK OR HEAVY TRUCK TRAFFIC IS ANTICIPATED, PLEASE CONTACT US FOR REVISED PAVEMENT RECOMMENDATIONS.
- 3. PAVEMENT SECTION RECOMMENDATIONS ARE BASED ON A SUBGRADE CBR VALUE OF 3.0. THE PAVEMENT RECOMMENDATIONS ARE NOT BASED ON THE SHRINK/ SWELL CHARACTERISTICS OF THE UNDERLYING SOILS. THE PAVEMENT CAN EXPERIENCE CRACKING AND DEFORMATION DUE TO SHRINKAGE AND SWELLING CHARACTERISTICS OF THE SOILS AS DESCRIBED IN THE VERTICAL MOVEMENTS SECTION OF THIS REPORT. USE OF GEOGRID HELPS REDUCE THE SHRINK/ SWELL RELATED CRACKING.
- 4. THE SUBGRADE SHOULD BE TREATED TO A DEPTH OF 6 INCHES USING 6% LIME CONTENT, APPROX. 35 LBS PER SQ YARD.
- 5. THE SUBGRADE MAY ALSO BE STABILIZED WITH CEMENT IN LIEU OF LIME. CEMENT APPLICATION RATES SHOULD BE DETERMINED AT THE TIME OF CONSTRUCTION.
- 6. IF WATER IS ALLOWED TO GET UNDERNEATH THE ASPHALT, OR IF MOISTURE CONTENT OF THE BASE OR SUBGRADE CHANGES SIGNIFICANTLY, THEN PAVEMENT DISTRESS WILL OCCUR. MOISTURE PENETRATION UNDERNEATH THE ASPHALT PAVEMENT SURFACE MAY BE REDUCED BY INSTALLING A VERTICAL MOISTURE BARRIER, SUCH AS DEEPER CURBS; CURBS EXTENDING A MINIMUM OF 6 INCHES INTO SUBGRADE.
- 7. TTL RECOMMENDS THAT A CBR VALUE OF 3.0 PERCENT BE USED TO REPRESENT THE PAVEMENT SUBGRADE CONDITIONS AT THIS SITE.
- 8. FILL MATERIAL - IF FILL IS USED TO RAISE THE GRADE, APPROVED FILL MATERIAL UNDERNEATH THE PAVEMENT SHOULD BE USED. THE FILL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 4.5 AND PREFERABLY A PLASTIC INDEX BELOW 20.



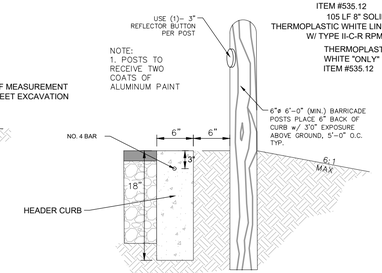
PAVEMENT TIE-IN DETAIL

N.T.S.



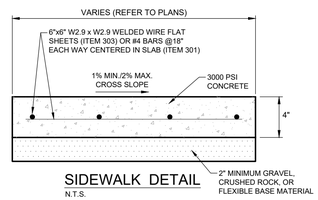
7" MACHINE LAID CURB DETAIL

N.T.S.



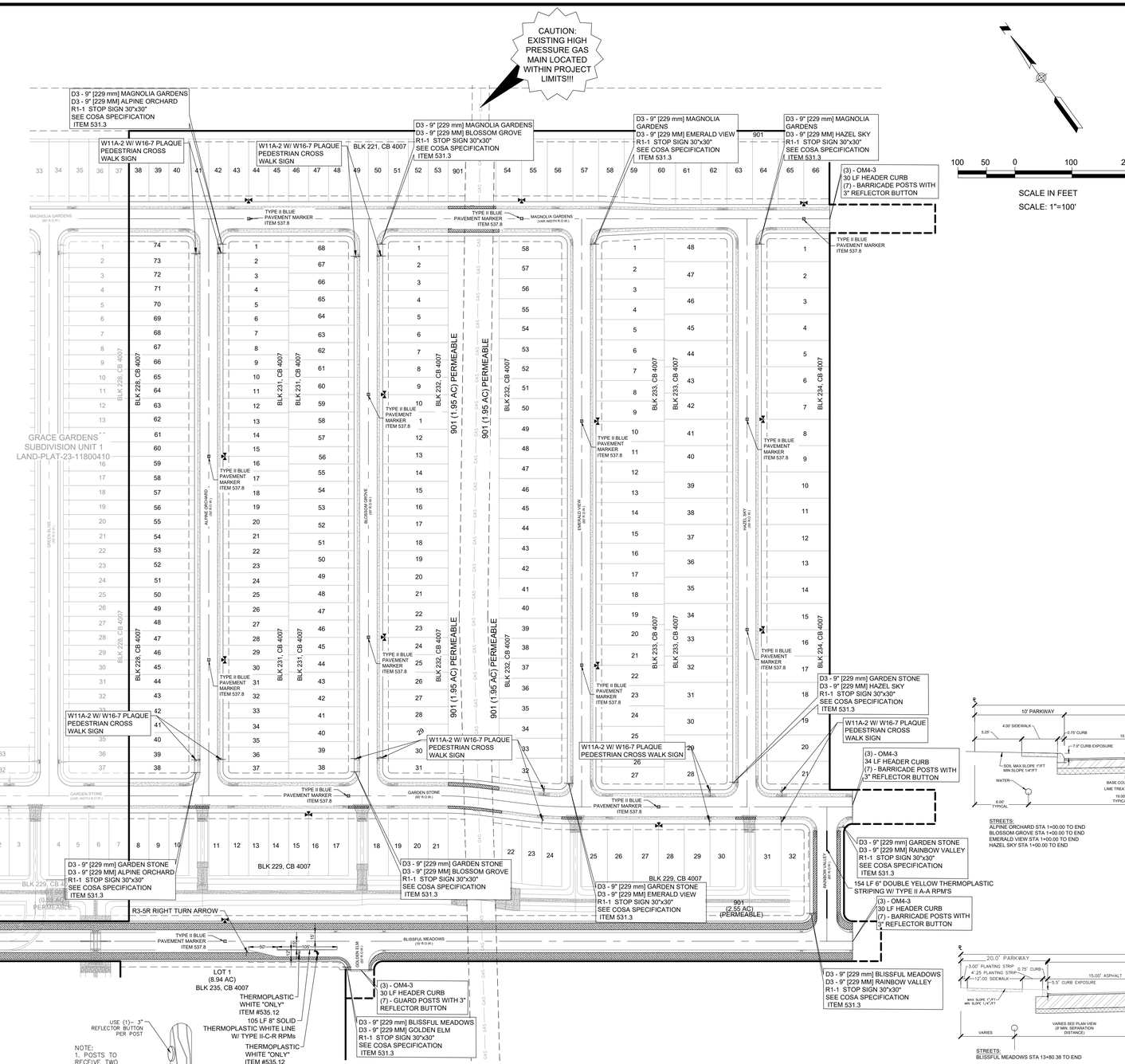
HEADER CURB & BARRICADE POST DETAIL

N.T.S.



SIDEWALK DETAIL

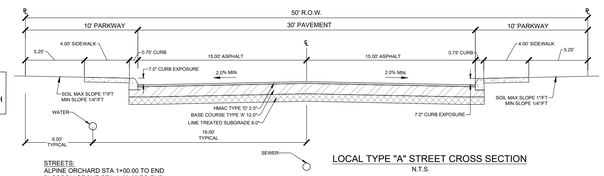
N.T.S.



SCALE IN FEET
SCALE: 1"=100'

LEGEND

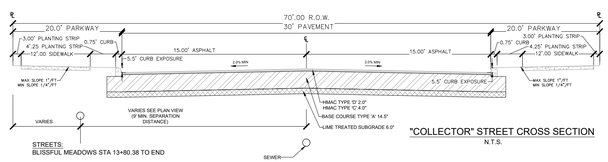
PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8" WW	8" WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
c/o	c/o	SANITARY SEWER LATERAL CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE



STREETS:
ALPINE ORCHARD STA 1+00.00 TO END
BLOSSOM GROVE STA 1+00.00 TO END
EMERALD VIEW STA 1+00.00 TO END
HAZEL SKY STA 1+00.00 TO END

LOCAL TYPE "A" STREET CROSS SECTION

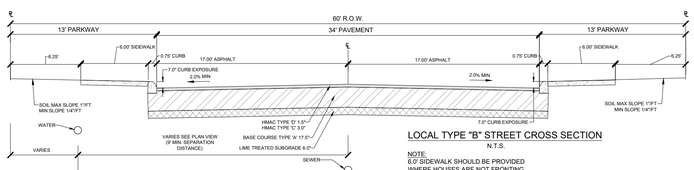
N.T.S.



STREETS:
BLISSFUL MEADOWS STA 13+80.38 TO END

"COLLECTOR" STREET CROSS SECTION

N.T.S.



STREETS:
MAGNOLIA GARDENS STA 15+19.01 TO END
GARDEN STONE STA 12+71.86 TO END
RAINBOW VALLEY STA 1+00.00 TO END

LOCAL TYPE "B" STREET CROSS SECTION

N.T.S.

NOTE:
6.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE NOT FRONTING LOCAL 'B' STREET. 4.0' SIDEWALK SHOULD BE PROVIDED WHERE HOUSES ARE FRONTING LOCAL 'B' STREET.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
SIGNAGE PLAN

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sht_Signage Plan.dwg

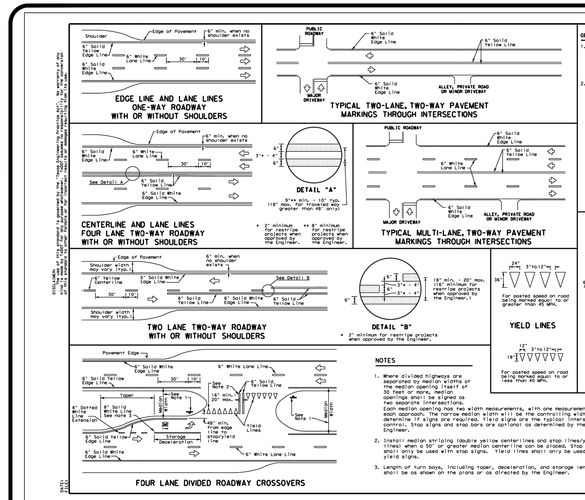
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

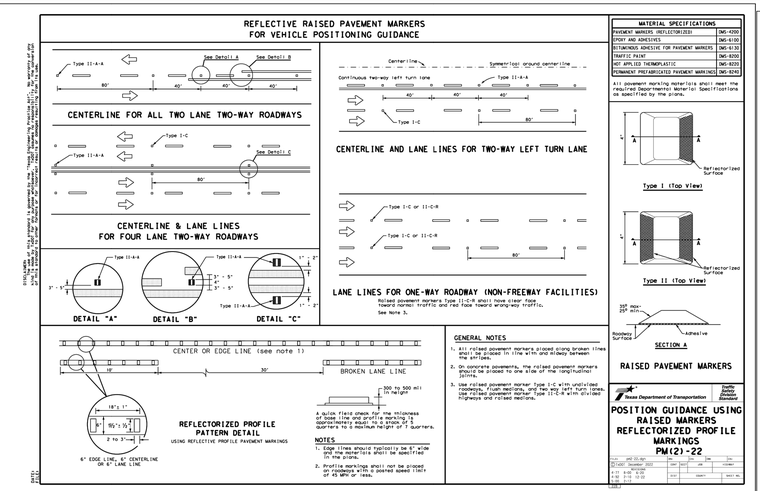
LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

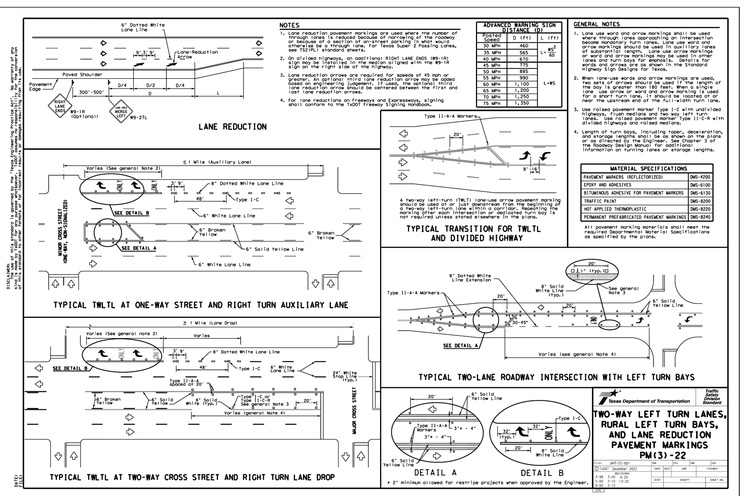
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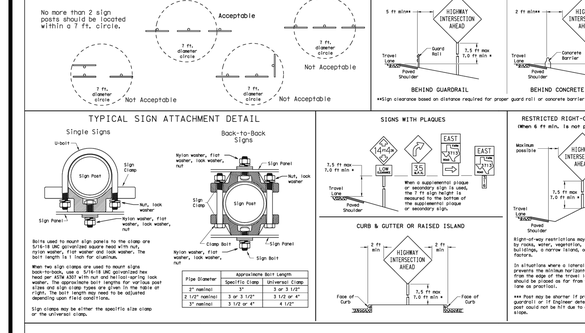
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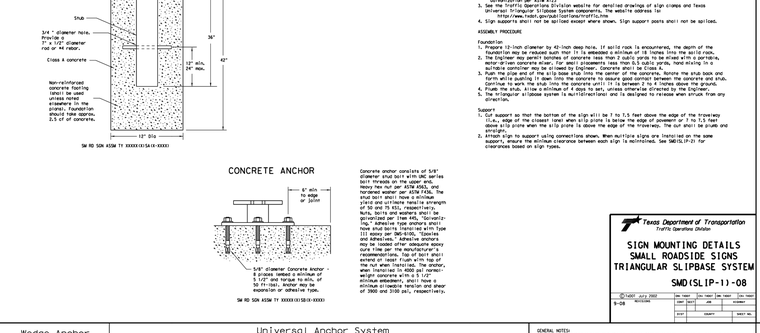
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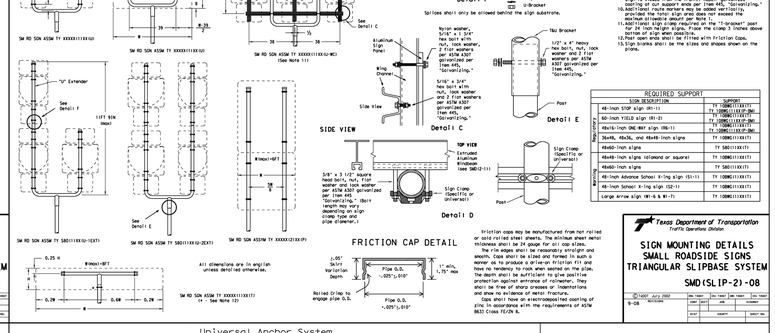












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TBPE No. F-1386

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
TRAFFIC DETAILS (SHEET 1 OF 2)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

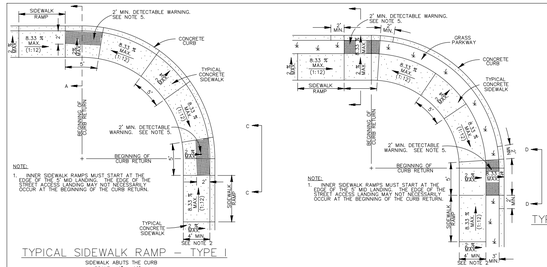
DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Traffic Details.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

JOB NUMBER: SA173-0402-426

SHEET NO. 5.10

K:\SA\173 Lennar Homes\04\02 Grace Gardens Subdivision Unit 2\400 Site Development (Plans)\DWG-Sheets\sh_Traffic Details.dwg
User: jburn
Last Modified: Mon, 23, 24 - 10:32
Xref Path(s):None
Date/Time: Jan 15, 25 - 10:38:31



TYPICAL SIDEWALK RAMP – TYPE I

SIDEWALK ABUTS THE CURB
SCALE : 1" = 10'

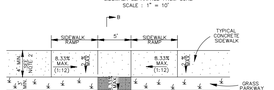


TYPICAL SIDEWALK RAMP – TYPE II

USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE : 1" = 10'

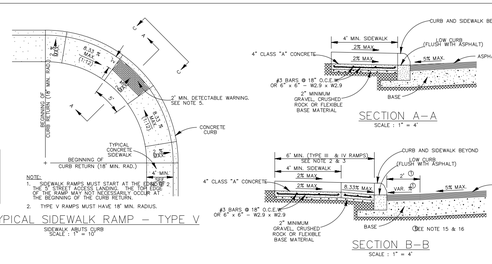
TYPICAL SIDEWALK RAMP – TYPE III

SIDEWALK SEPARATED FROM CURB
SCALE : 1" = 10'



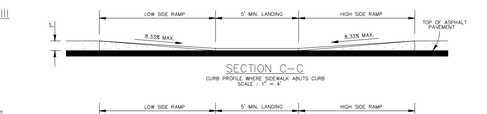
TYPICAL SIDEWALK RAMP – TYPE IV

USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1" = 10'



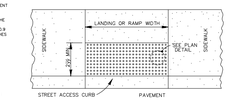
TYPICAL SIDEWALK RAMP – TYPE V

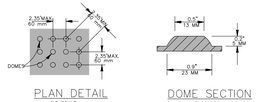
SIDEWALK ABUTS CURB
SCALE : 1" = 10'



GENERAL NOTES

1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MINIMUM OF 1 FOOT BUFFER, DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND 6' SEPARATED FROM THE CURB. THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE.
5. ALL CURB RAMPS OR LANDINGS ABUTTING THE CROSSWALK SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP ON THE DIRECTION OF PEDESTRIAN TRAVEL) AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SURFACE SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES WITH A NOMINAL DIAMETER OF 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 0.2 INCHES (5 MM) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). THE DETECTABLE WARNING SURFACE SHALL BE A CAST–IN–PLACE TILE CONFORMING TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS OR PAVERS CONFORMING TO TDOT STANDARD PED–UDL PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT–ON–DARK, OR DARK–ON–LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE MATERIAL SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I, II, III OR IV RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEM 750S – CONCRETE CURB, GUTTER, AND CONSTRUCTION JOINT. ALL WHEELCHAIR RAMPS SHALL BE CONSTRUCTED WITH SIDEWALK RAMP SURFACE SHALL BE BROOM FINISHED.
9. TAPER DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE DETERMINED ON CONSTRUCTION PLANS. CITY CONSTRUCTION INSPECTOR CAN ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.◄► OR 6" x 6" – W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADIENTS SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY. ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2%. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE MEASURED AT THE BACK OF CURB OR AT THE EDGE OF THE ADJACENT PAVEMENT IF NO CURB IS PRESENT. WHERE THE CURB RAMP IS DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33–(–2.67)=11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT.

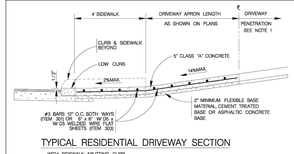






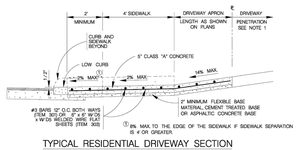
TABLE–1 (SEE NOTE 4)		
GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12)	
	LOW SIDE	HIGH SIDE
1%	5'–6"	7'–2"
2%	5'–0"	8'–4"
3%	4'–6"	10'–0"
4%	4'–2"	12'–6"
5%	3'–10"	15'–8"

NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED FOR DETECTABLE WARNING ON WHEELCHAIR RAMPS. CONTRACTOR MUST SUBMIT TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.



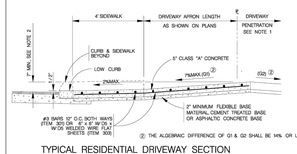
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.1



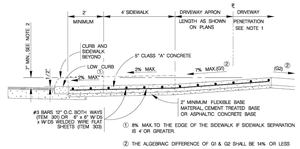
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1



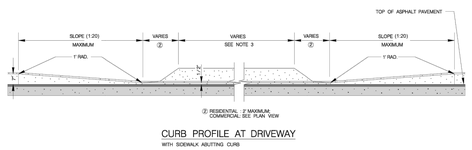
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB
ITEM 503.1



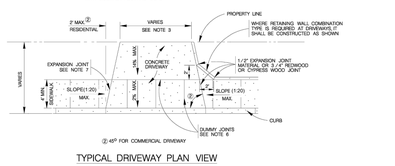
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS SEPARATED FROM CURB
ITEM 503.1



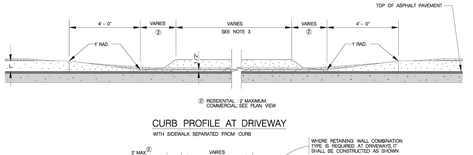
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK ABUTTING CURB



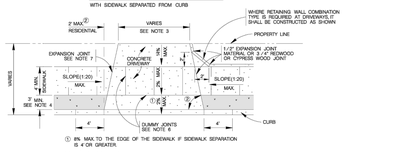
TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB



CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



TYPICAL DRIVEWAY PLAN VIEW

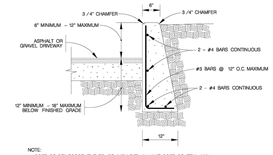
WITH SIDEWALK SEPARATED FROM CURB

CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A) CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO.503.1 OR 503.2
   B) FLEXIBLE BASE DRIVEWAY PAVEMENT PAID FOR UNDER ITEM NO. 503.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE 'D'& 6" FLEXIBLE BASE
   C) GRAVEL DRIVEWAY PAID FOR UNDER ITEM NO.503.5 AND SHALL INCLUDE A MINIMUM OF 8" FLEXIBLE BASE
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER,THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	20'
COMMERCIAL – ONE WAY	12'	20'
COMMERCIAL – TWO WAY	24'	30'

4. FOR LOCAL TYPE "A" STREETS,SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB,THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS,THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR,AS AN OPTION,THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB,AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS,SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.
7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3/4" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
8. SIDEWALK RAMP LONGITUDE SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE. WHERE SIDEWALK CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.



NOTE:
1. COST OF REINFORCEMENT TO BE INCLUDED IN UNIT COST OF ITEM 307.1.
2. CONCRETE RETAINING WALL COMBINATION TYPE SHALL BE USED FOR CONCRETE DRIVEWAYS.

DRIVEWAY – CONCRETE RETAINING WALL

ON COMPACTED SUBGRADE
ITEM 307.1

MAY 2009

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

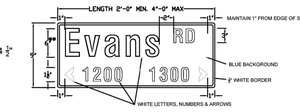
CONCRETE DRIVEWAY STANDARDS

% SUBMITTAL	PROJECT NO.	DATE:
DRAWN BY V. VASQUEZ	DSGN BY:	CHKD BY R.B.HOSSEINI, P.E.	SHEET NO.	OF



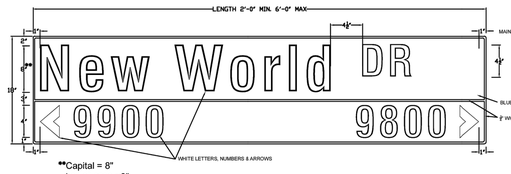
**Capital = 6"
Lower case =4 3/4"

9" GROUND MOUNT STREET NAME SIGNS



**Capital = 6"
Lower case =4 3/4"

9" GROUND MOUNT STREET NAME SIGNS WITH STREET DESIGNATION

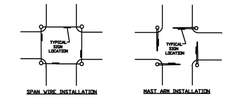


**Capital = 8"
Lower case =6"

18" OVERHEAD STREET NAME SIGNS

	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (228 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX. 1' (305mm) INCREMENTS OF LENGTH	24" (600 mm) MIN. 48" (1200 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH
THICKNESS	0.125" (3 mm)	
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209 GOLD CHROMATE FINISH	
SIGN FACE MATERIALS	BLUE FILM ✱ OVER DIAMOND GRADE - ASTM Type XI Non-Fluorescent	BLUE FILM ✱ OVER HIGH INTENSITY PRISMATIC- ASTM Type IV
LEGENDS AND SYMBOLS	SERIES D, B OR C IF NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH	
COLOR	WHITE LEGEND ON BLUE BACKGROUND	
LETTER TRACKING	17% (USUAL) 10% (MIN.)	10%

✱ ACRYLIC ELECTRONIC CUTTABLE FILM



SIGN FACE MATERIALS SHALL CONFORM TO:

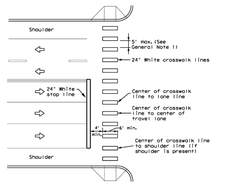
1. STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS & BRIDGES ON FEDERAL HIGHWAY PROJECTS – FP-09 U.S. CUSTOMARY – SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 09e1

GENERAL NOTES

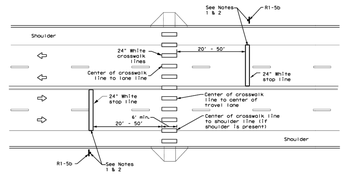
1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the face of curb crosswalk line falls within this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred marking pattern. The Ladder Crosswalk Pattern may also be used as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8220
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use snap bars with Snap Here for Pedestrians (R1-5a) signs at unsignalized midblock cross walks.
2. Use snap bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation — Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE:	pm(4)-22a	DN:	CK:	DW:	CK:	FHWA:	Div./Unit:
©TxDOT	December 2022	CONT	SECT	JOB		HIGHWAY	
REVISIONS		6-22					
		8-22				DIST	COUNTY
		5-22					

DATE:

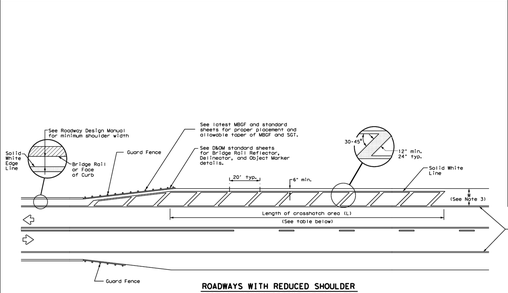
UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should be placed approximately 4 inches from the face of curb or face of curb or 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions.
2. No-passing zone on bridge approach is optional. If used, the no-passing zone shall be a minimum 500 feet long from the beginning of the bridge.
3. The crossmarking should be required if the shoulder width in advance of the bridge is 4 feet or wider and is a reduction of at least 3 feet in shoulder width across the bridge occurs.
4. On divided highways, review both the right and left shoulder widths for the need for narrow bridge pavement markings.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8220
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

CROSSMATCH LENGTH (L)	
Posted Speed (MPH)	L (ft)
30	300 ft
35	
40	
45	
50	500 ft
55	
60	
65	
70	
75	

Texas Department of Transportation — Traffic Safety Division Standard

PAVEMENT MARKINGS FOR ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

PM(5)-22

FILE:	pm(5)-22.dgn	DN:	CK:	DW:	CK:	FHWA:	Div./Unit:
©TxDOT	December 2022	CONT	SECT	JOB		HIGHWAY	
REVISIONS		6-22					
		8-22				DIST	COUNTY
		5-22					

DATE:

Bexar County Public Works

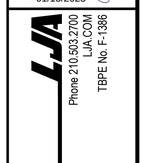
Street Name Sign Details

SHEET 1

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
TRAFFIC DETAILS (SHEET 2 OF 2)

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Traffic Details.dwg



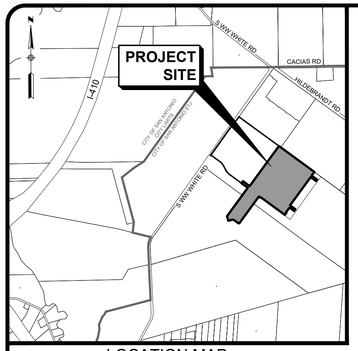
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO.
5.11

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\CIVIL\Sheets\sh_Traffic Details.dwg
User: jburon
Last Modified: Nov 03, 24 - 10:02
Plot Date/Time: Nov 15, 24 - 13:56:44



LOCATION MAP
N.T.S.

GENERAL SPECIFICATIONS FOR SITE PREPARATION

GENERAL DESCRIPTION

THE ITEM SHALL CONSIST OF ALL CLEARING AND PREPARATION OF LAND TO BE FILLED, FILLING OF THE LAND, SPREADING, COMPACTION TESTING AND INSPECTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES AND SLOPES AS SHOWN ON THE APPROVED PLANS.

SCARIFYING THE AREA TO BE FILLED

ALL ORGANIC MATTER SHALL BE REMOVED FROM THE SURFACE UPON WHICH THE FILL IS TO BE PLACED, AND SURFACE SHALL THEN BE DISKED OR SCARIFIED TO A MINIMUM DEPTH OF SIX INCHES (6"). ALL SURFACE RUTS OR OTHER UNEVEN FEATURES WILL BE LEVELED PRIOR TO FIELD DENSITY TESTING.

COMPACTING THE AREA TO BE FILLED

FOLLOWING THE CLEARING AND DISKING OR SCARIFYING OF THE FILL AREA, IT SHALL BE BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS. THE AREA SHALL BE BROUGHT TO THE ADEQUATE MOISTURE CONTENT AND COMPACTED (TYPICALLY) TO NOT LESS THAN NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT ASTM D 1557 COMPACTION PROCEDURE, OR 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT THD-TEX-113-E COMPACTION PROCEDURE.

FILL MATERIALS

THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.

DEPTH AND MIXING OF FILL LAYERS

THE SELECTED FILL MATERIAL SHALL BE PLACED IN LEVEL, UNIFORM LAYERS WHICH, WHEN COMPACTED, SHALL HAVE A DENSITY CONFORMING TO THE STIPULATED ABOVE. EACH LAYER SHALL BE THOROUGHLY MIXED DURING THE SPREADING TO ENSURE UNIFORMITY OF MATERIAL IN EACH LAYER. COMPACTED LAYER THICKNESS MAY VARY DEPENDING ON THE COMPACTION EQUIPMENT OF THE DEMONSTRATED CAPABILITY. THE MAXIMUM LOOSE DEPTH FOR ANY MATERIAL SHALL NOT EXCEED TWELVE INCHES (12").

ROCK

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DENSITY TEST

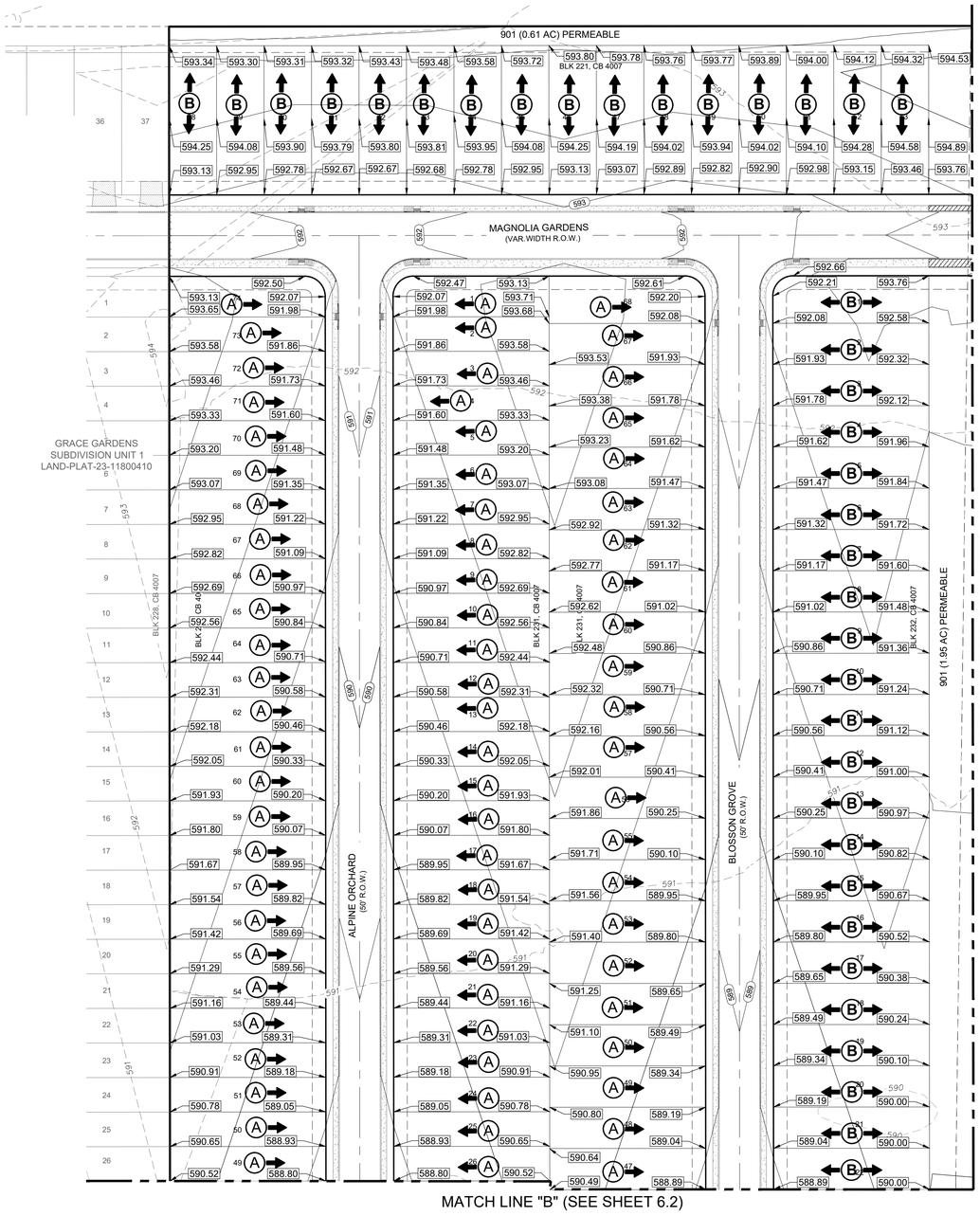
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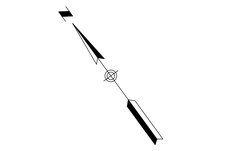
MATCH LINE "A" (SEE SHEET 6.1)

MATCH LINE "B" (SEE SHEET 6.2)

CAUTION:
EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!

LEGEND

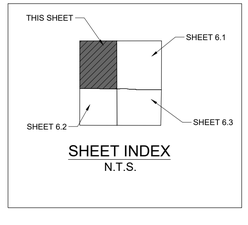
PROPOSED	EXISTING	
800	800	CONTOUR
2%	2%	FLOW ARROW
		GRASSED DRAIN FLOW
706.41	801.33	GROUND ELEVATION
706.41 ME		MATCH EXISTING GROUND
A		LOT DRAINS TO FRONT
B		LOT DRAINS 1/2 TO FRONT AND 1/2 TO REAR
C		LOT DRAINS TO REAR
Am		LOT TYPE A MODIFIED
Bm		LOT TYPE B MODIFIED
Cm		LOT TYPE C MODIFIED
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESMT.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		RETAINING WALL
TOW		TOP OF WALL
BOW		BOTTOM OF WALL



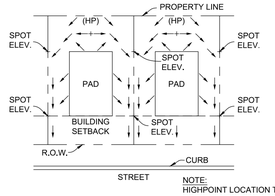
50 25 0 50 100

SCALE IN FEET
SCALE: 1"=50'

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
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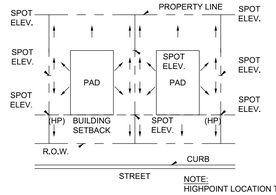


SHEET INDEX
N.T.S.



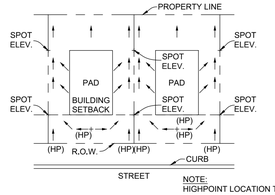
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N.T.S.



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TYPICAL "C" LOT GRADING
N.T.S.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
GRADING PLAN (SHEET 1 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Grading Plan.dwg

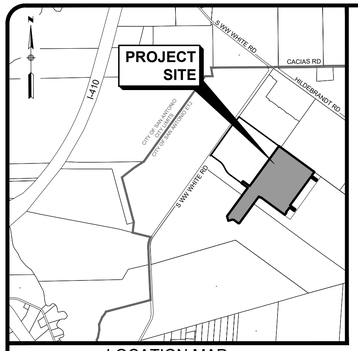
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER:
SA173-0402-426

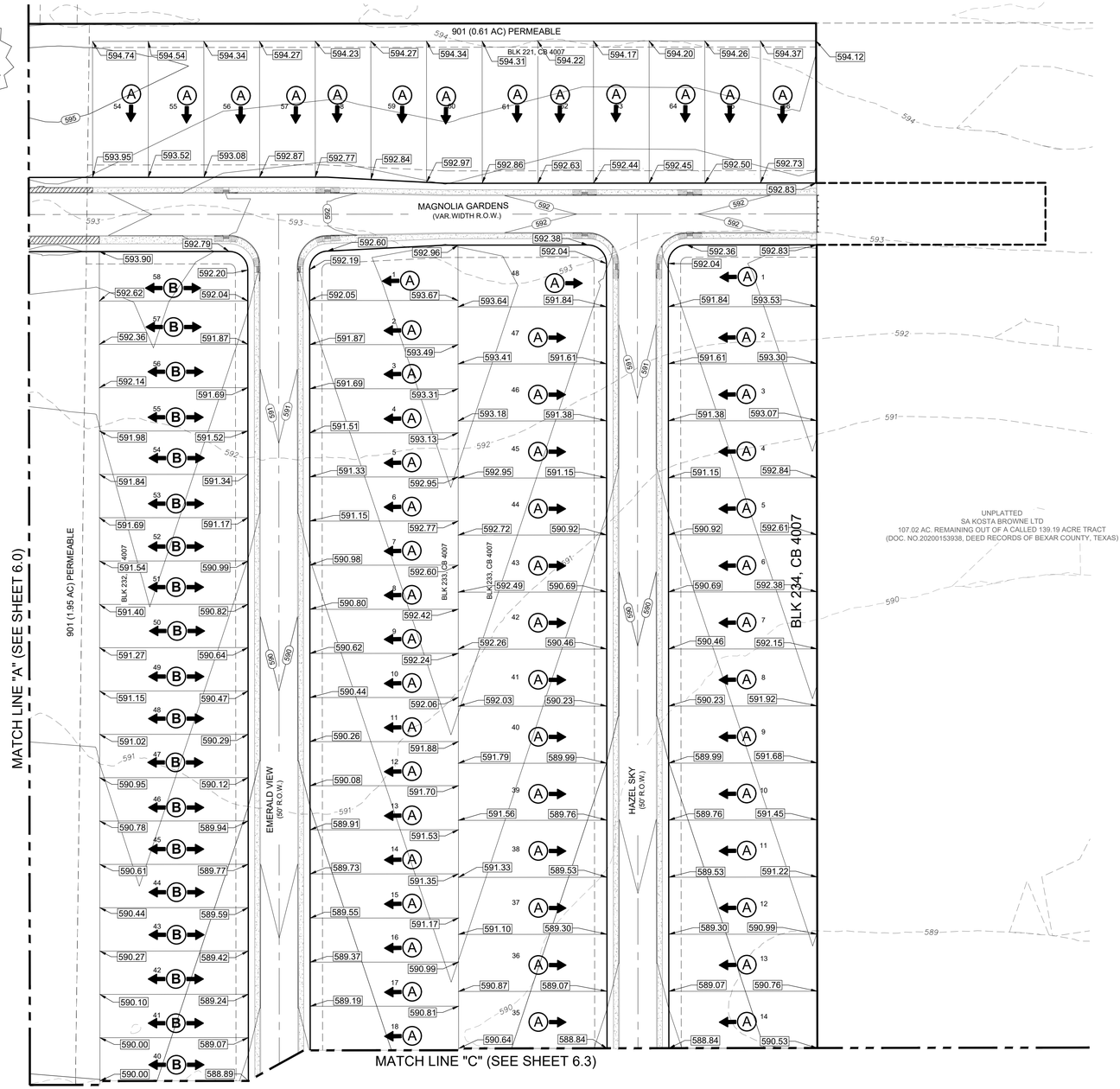
SHEET NO.
6.0

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User: jburn
Last Modified: Jul 02, 24 - 08:16
Plot Style/Pen: acad.ctb, 1:1, 1" = 50' - 11"x17"



LOCATION MAP
N.T.S.

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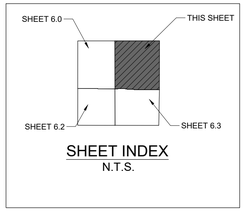
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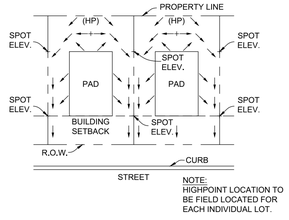
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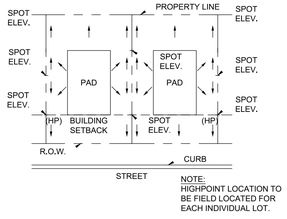


SHEET INDEX
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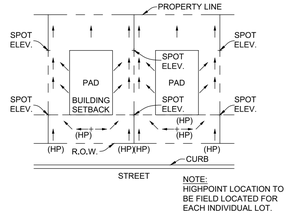
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GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
GRADING PLAN (SHEET 2 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Grading Plan.dwg

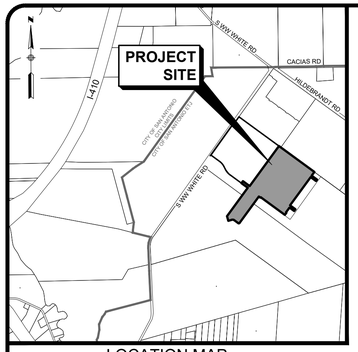
STATE OF TEXAS
RICHARD W. GRAY III
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01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 6.1

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User: jburon
Last Modified: Jul 02, 24 - 08:16
Plot Style/Pen: acad.ctb, 1:1
Plot Scale: 1.00 = 1.00



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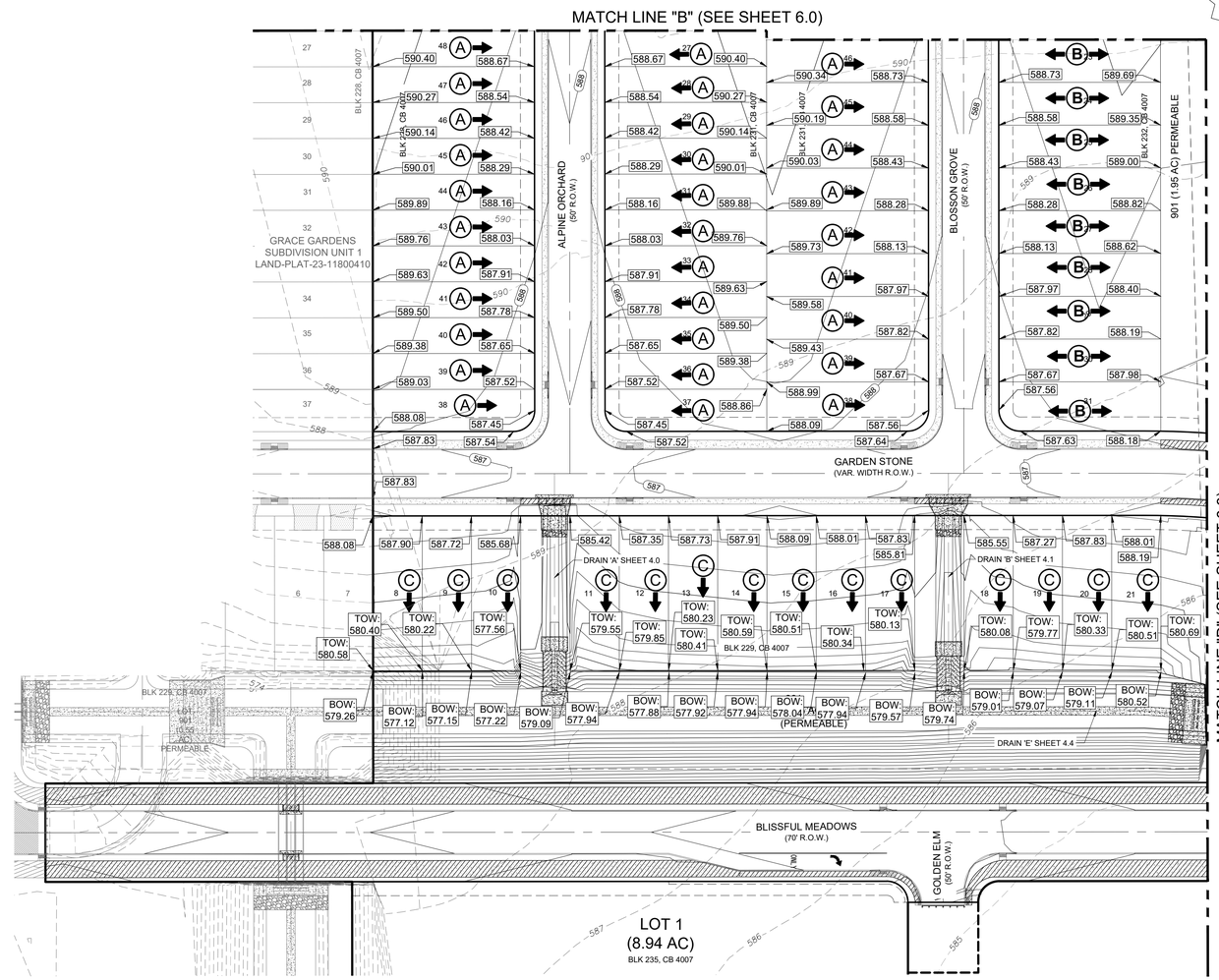
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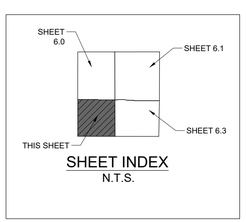
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A		LOT DRAINS TO FRONT
B		LOT DRAINS 1/2 TO FRONT AND 1/2 TO REAR
C		LOT DRAINS TO REAR
Am		LOT TYPE A MODIFIED
Bm		LOT TYPE B MODIFIED
Cm		LOT TYPE C MODIFIED
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESMT.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		RETAINING WALL
TOW		TOP OF WALL
BOW		BOTTOM OF WALL

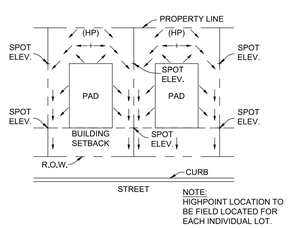
50 25 0 50 100

SCALE IN FEET
SCALE: 1"=50'

- (A) 10' G.E.T.CA. ESM'T
- (B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
- (C) 5' G.E.T.CA. ESM'T
- (D) 1' V.N.A.E.
- (A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
- (B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
- (C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
- (D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
- (E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
- (F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
- (G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

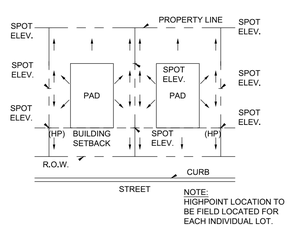


SHEET INDEX
N.T.S.



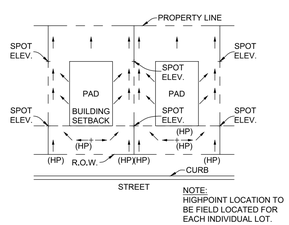
NOTE: HIGHPOINT LOCATION TO BE FIELD LOCATED FOR EACH INDIVIDUAL LOT.

TYPICAL "A" LOT GRADING
N.T.S.



NOTE: HIGHPOINT LOCATION TO BE FIELD LOCATED FOR EACH INDIVIDUAL LOT.

TYPICAL "B" LOT GRADING
N.T.S.



NOTE: HIGHPOINT LOCATION TO BE FIELD LOCATED FOR EACH INDIVIDUAL LOT.

TYPICAL "C" LOT GRADING
N.T.S.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
GRADING PLAN (SHEET 3 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Grading Plan.dwg

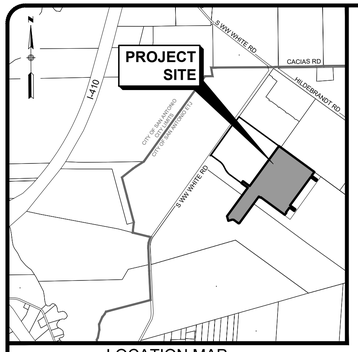
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 6.2

K:\SA\173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\DWG Sheets\sh_Grading Plan.dwg
User: jdurun
Last Modified: Jul. 02, 24 - 08:16
Plot Date/Time: Jan 15, 25 - 13:55:50



LOCATION MAP
N.T.S.

CAUTION: EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!

MATCH LINE "C" (SEE SHEET 6.1)

MATCH LINE "D" (SEE SHEET 6.2)

901 (1.95 AC) PERMEABLE

BLK 233, CB 4007

BLK 234, CB 4007

EMERALD VIEW (50' R.O.W.)

HAZEL SKY (50' R.O.W.)

UNPLATTED
SA KOSTA BROWNE LTD
107.02 AC. REMAINING OUT OF A CALLED 139.19 ACRE TRACT
(DOC. NO.20200153939, DEED RECORDS OF BEXAR COUNTY, TEXAS)

GARDEN STONE
(VAR. WIDTH R.O.W.)

DRAIN 'C' SHEET 4.2

DRAIN 'D' SHEET 4.3

DRAIN 'E' SHEET 4.4

901
(2.55 AC)
(PERMEABLE)

BLK 229, CB 4007

RAINBOW VALLEY (60' R.O.W.)

BLISSFUL MEADOWS
(70' R.O.W.)

LEGEND

PROPOSED	EXISTING	
800	800	CONTOUR
2%	2%	FLOW ARROW
		GRASSED DRAIN FLOW
706.41	801.33	GROUND ELEVATION
706.41 ME		MATCH EXISTING GROUND
A		LOT DRAINS TO FRONT
B		LOT DRAINS 1/2 TO FRONT AND 1/2 TO REAR
C		LOT DRAINS TO REAR
Am		LOT TYPE A MODIFIED
Bm		LOT TYPE B MODIFIED
Cm		LOT TYPE C MODIFIED
	TMH	TOP OF MANHOLE
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	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESMT.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		RETAINING WALL
TOW		TOP OF WALL
BOW		BOTTOM OF WALL

50 25 0 50 100

SCALE IN FEET
SCALE: 1"=50'

- (A) 10' G.E.T.CA. ESM'T
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- (G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

GENERAL SPECIFICATIONS FOR SITE PREPARATION

GENERAL DESCRIPTION

THE ITEM SHALL CONSIST OF ALL CLEARING AND PREPARATION OF LAND TO BE FILLED, FILLING OF THE LAND, SPREADING, COMPACTION TESTING AND INSPECTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES AND SLOPES AS SHOWN ON THE APPROVED PLANS.

SCARIFYING THE AREA TO BE FILLED

ALL ORGANIC MATTER SHALL BE REMOVED FROM THE SURFACE UPON WHICH THE FILL IS TO BE PLACED, AND SURFACE SHALL THEN BE DISKED OR SCARIFIED TO A MINIMUM DEPTH OF SIX INCHES (6"). ALL SURFACE RUTS OR OTHER UNEVEN FEATURES WILL BE LEVELED PRIOR TO FIELD DENSITY TESTING.

COMPACTING THE AREA TO BE FILLED

FOLLOWING THE CLEARING AND DISKING OR SCARIFYING OF THE FILL AREA, IT SHALL BE BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS. THE AREA SHALL BE BROUGHT TO THE ADEQUATE MOISTURE CONTENT AND COMPACTED (TYPICALLY) TO NOT LESS THAN NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT ASTM D 1557 COMPACTION PROCEDURE, OR 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT THD-TEX-113-E COMPACTION PROCEDURE.

FILL MATERIALS

THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.

DEPTH AND MIXING OF FILL LAYERS

THE SELECTED FILL MATERIAL SHALL BE PLACED IN LEVEL, UNIFORM LAYERS WHICH, WHEN COMPACTED, SHALL HAVE A DENSITY CONFORMING TO THE STIPULATED ABOVE. EACH LAYER SHALL BE THOROUGHLY MIXED DURING THE SPREADING TO ENSURE UNIFORMITY OF MATERIAL IN EACH LAYER. COMPACTED LAYER THICKNESS MAY VARY DEPENDING ON THE COMPACTION EQUIPMENT OF THE DEMONSTRATED CAPABILITY. THE MAXIMUM LOOSE DEPTH FOR ANY MATERIAL SHALL NOT EXCEED TWELVE INCHES (12").

ROCK

WHEN FILL MATERIAL INCLUDES ROCK, THE MAXIMUM ROCK SIZE SHALL BE AS APPROVED BY THE GEOTECHNICAL ENGINEER. NO LARGE ROCKS SHALL BE ALLOWED TO NEST AND ALL VOIDS MUST BE FILLED WITH SMALL STONES OR SOIL AND ADEQUATELY COMPACTED. NO LARGE ROCKS WILL BE PERMITTED WITHIN EIGHTEEN INCHES (18") OF THE FINISHED GRADE.

COMPACTION OF FILL LAYER

COMPACTION EQUIPMENT SHALL BE CAPABLE OF COMPACTING THE FILL TO THE SPECIFIED DENSITY. COMPACTION SHALL BE ACCOMPLISHED WHILE THE FILL MATERIAL IS AT OR NEAR THE APPROPRIATE MOISTURE CONTENT. COMPACTION OF EACH LAYER SHALL BE CONTINUOUS OVER THE ENTIRE STRUCTURAL AREA (BENEATH PROPOSED STRUCTURES).

DENSITY TEST

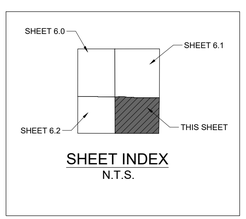
FIELD DENSITY TESTS SHALL BE PERFORMED ON LAYERS OF FILL WHEN THE FILL IS BEING PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE MAXIMUM FILL HEIGHT BETWEEN DENSITY TESTING SHALL BE EIGHTEEN INCHES (18"). ALL TESTING SHALL BE REQUESTED BY THE CONTRACTOR TO MEET THE CONTRACTOR'S CONSTRUCTION SCHEDULE. CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THE TESTING LAB PERFORMS ALL TEST REQUIRED BY FHA SPECIFICATION.

LOT GRADING

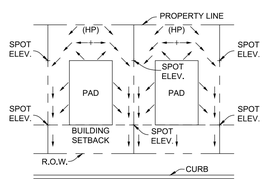
ALL LOT GRADING SHALL BE IN ACCORDANCE WITH H.U.D.- F.H.A. DATA SHEET 79G.

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE OWNER ALL NECESSARY DENSITY TESTS FOR FILL LOTS AS REQUIRED BY HUD SPECIFICATIONS.
2. THE HOMEBUILDER WILL BE RESPONSIBLE FOR DETAILED GRADING ON EACH INDIVIDUAL LOT TO INCLUDE MINOR GRADING ON THE LOTS AND ANY SIDE OR BACK-LOT SWALES REQUIRED TO MEET THE DEPICTED DRAINAGE PATTERNS (SEE OVERALL MASTER DRAINAGE PLAN).
3. HOMEBUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
4. AS SOON AS PRACTICAL HOMEBUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC...) TO PREVENT EROSION FROM OCCURRING.
5. CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
6. ELEVATIONS IN STREET ARE FINISHED GRADE AT PROPERTY LINE.
7. FINISHED FLOOR ELEVATIONS FOR EACH LOT SHALL BE A MINIMUM OF 8 INCHES ABOVE THE FINISHED ADJACENT GRADE.
8. EXISTING TOPOGRAPHIC CONTOURS SHOWN BASED ON FIELD SURVEY PROVIDED BY D.A. MAWYER LAND SURVEYING (210-325-0858).

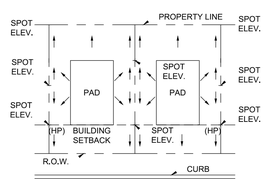


SHEET INDEX
N.T.S.



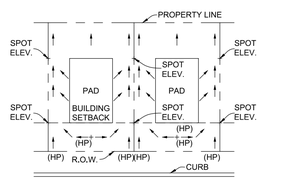
NOTE: HIGHPOINT LOCATION TO BE FIELD LOCATED FOR EACH INDIVIDUAL LOT.

TYPICAL "A" LOT GRADING
N.T.S.



NOTE: HIGHPOINT LOCATION TO BE FIELD LOCATED FOR EACH INDIVIDUAL LOT.

TYPICAL "B" LOT GRADING
N.T.S.



NOTE: HIGHPOINT LOCATION TO BE FIELD LOCATED FOR EACH INDIVIDUAL LOT.

TYPICAL "C" LOT GRADING
N.T.S.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
GRADING PLAN (SHEET 4 OF 4)

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Grading Plan.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 6.3

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\GWG-Sheets\sh_Grading Plan.dwg
User: jbyron
Last Modified: Jul 02, 24 - 08:16
Plot Date/Time: Jan 15, 25 - 11:41:00

GRACE GARDENS SUBDIVISION UNIT 2

WATER CONSTRUCTION PLANS

LAND-PLAT-24-11800119

BEXAR COUNTY, TEXAS 78223

Revised January 2022

SAWS CONSTRUCTION NOTES
COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT

General Section

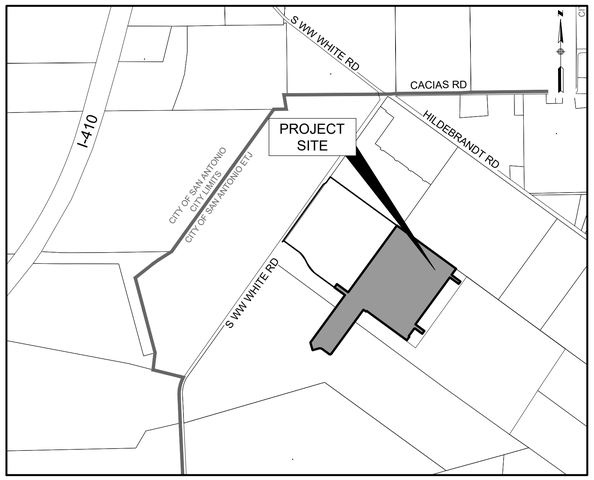
1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE:
   A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN 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 FAT 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.

WATER SECTION

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 565 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 565 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 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 COLLECTIONS 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 CONTINUE 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 OPERATIONS 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.



LOCATION MAP
(N.T.S.)

SUBMITTAL DATE: DECEMBER 2024

PROPERTY DESCRIPTION

BEING A TOTAL OF 50.65 ACRES OUT OF:

BEING 2.84 ACRES OUT OF A 139.197 ACRE TRACT OF LAND OUT OF THE JUAN MONTES SURVEY NO. 6, ABSTRACT 11, COUNTY BLOCK 4007, BEXAR COUNTY, TEXAS, BEING A CALLED 139.65 ACRES OF LAND CONVEYED UNTO CAROLINE JANSZEN PFEIFER, ET AL. BY DEED EXECUTED MAY 27, 1986 AND RECORDED IN VOLUME 3761, PAGE 1412, OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY, TEXAS.

AND

BEING 38.86 ACRES OUT OF A 83.66 ACRE TRACT OF LAND OUT OF THE JUAN MONTEZ SURVEY NO. 6 ABSTRACT NO. 11, SITUATED IN THE CITY OF SAN ANTONIO, BEXAR COUNTY, TEXAS, AND BEING OUT OF A CALLED 139.197 ACRE TRACT OF LAND CONVEYED TO SA KOSTA BROWNE, LTD., A TEXAS LIMITED PARTNERSHIP DESCRIBED AND RECORDED IN DOC. NO. 20200153938, OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY TEXAS.

DEVELOPER: LENNAR HOMES
CONTACT: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 889-5516

ENGINEER: LJA ENGINEERING, INC.
9830 COLONNADE BLVD, SUITE 300
SAN ANTONIO, TEXAS 78230
CONTACT PERSON: RICK GRAY, PE
PHONE # (210) 503-2700
FAX # (210) 503-2749

SURVEYOR: LJA SURVEYING
9830 COLONNADE BLVD, SUITE 300
SAN ANTONIO, TEXAS 78230
CONTACT PERSON: GORDON ANDERSON
PHONE # (512) 439-4700

WATER: SAWS PRESSURE ZONE 750

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
SAWS BLOCK MAP # 192548 TOTAL EDU'S 289 TOTAL ACREAGE 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7,084 LF; 12" - 1,502 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 286 - RESIDENTIAL; 1- COMMERCIAL SAWS JOB NO. 24-1124

REVISIONS			
NO.	DESCRIPTION	BY	DATE

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

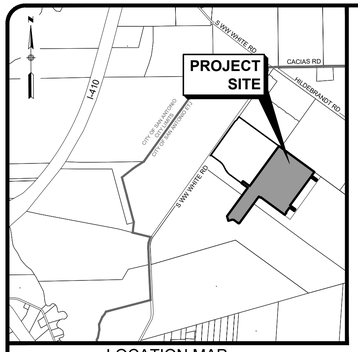
LJA JOB NO. SA173-0402-426

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

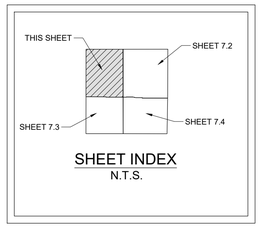
SHEET INDEX

SHEET #	SHEET TITLE
1.0	COVER
1.1	GENERAL NOTES
2.0	UTILITY LAYOUT SH1
2.1	UTILITY LAYOUT SH2
2.2	UTILITY LAYOUT SH3
2.3	UTILITY LAYOUT SH4
3.0	EXISTING DRAINAGE AREA MAP
3.1	PROPOSED DRAINAGE AREA MAP
3.2	ULTIMATE DRAINAGE AREA MAP
4.0	DRAIN 'A' P&P
4.1	DRAIN 'B' P&P
4.2	DRAIN 'C' P&P
4.3	DRAIN 'D' P&P
4.4	DRAIN 'E' P&P
4.5	DRAIN 'F' P&P
4.6	DRAINAGE DETAILS (SHEET 1 OF 3)
4.7	DRAINAGE DETAILS (SHEET 2 OF 3)
4.8	DRAINAGE DETAILS (SHEET 3 OF 3)
5.0	'MAGNOLIA G.' P&P 16+00 TO END
5.1	'GARDEN S.' P&P 16+00 TO END
5.2	'BLISSFUL M.' P&P 13+80.38 TO 25+00
5.3	'BLISSFUL M.' P&P 25+00 TO END
5.4	'RAINBOW VALLEY' P&P 1+00 TO END
5.5	'ALPINE ORCHARD' P&P 1+00 TO END
5.6	'BLOSSOM GROVE' P&P 1+00 TO END
5.7	'EMERALD VIEW' P&P 1+00 TO END
5.8	'HAZEL SKY' P&P 1+00 TO END
5.9	SIGNAGE PLAN
5.10	TRAFFIC SHEET 1 OF 2
5.11	TRAFFIC SHEET 2 OF 2
6.0	GRADING PLAN (SHEET 1 OF 4)
6.1	GRADING PLAN (SHEET 2 OF 4)
6.2	GRADING PLAN (SHEET 3 OF 4)
6.3	GRADING PLAN (SHEET 4 OF 4)
7.0	**WATER COVER**
7.1	**WATER PLAN (SHEET 1 OF 4)**
7.2	**WATER PLAN (SHEET 2 OF 4)**
7.3	**WATER PLAN (SHEET 3 OF 4)**
7.4	**WATER PLAN (SHEET 4 OF 4)**
8.0	WASTEWATER COVER
8.1	WASTEWATER LAYOUT (SHEET 1 OF 4)
8.2	WASTEWATER LAYOUT (SHEET 2 OF 4)
8.3	WASTEWATER LAYOUT (SHEET 3 OF 4)
8.4	WASTEWATER LAYOUT (SHEET 4 OF 4)
8.5	WWL 'A' STA 1+00 TO 10+50
8.6	WWL 'A' STA 10+50 TO 17+00
8.7	WWL 'A' STA 17+00 TO END
8.8	WWL 'B' STA 1+00 TO 10+50
8.9	WWL 'B' STA 10+50 TO END
8.10	WWL 'C' STA 1+00 TO 8+50
8.11	WWL 'C' STA 8+50 TO END
8.12	WWL 'D' STA 1+00 TO 10+50
8.13	WWL 'D' STA 10+50 TO END
8.14	WWL 'E' STA 1+00 TO END
8.15	WWL 'F' STA 1+00 TO END
8.16	WWL 'G' STA 1+00 TO END
8.17	WWL 'H' STA 1+00 TO END
8.18	UNIT 2 SERVICE LATERALS
8.19	UNIT 2 SERVICE LATERALS
9.0	STORMWATER POLLUTION PREVENTION PLAN
9.1	STORMWATER POLLUTION PREVENTION DETAILS

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
FRN-F-1386



LOCATION MAP
N.T.S.



SHEET INDEX
N.T.S.

1. FIRE HYDRANT SHALL BE LOCATED BETWEEN SIDEWALK & CURB IN ACCORDANCE WITH THE FIRE HYDRANT INSTALLATION DETAIL DD-834-01.
2. CONTRACTOR TO FIELD VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
3. ALL VALVES SHALL READ "OPEN RIGHT".
4. ALL FIRE HYDRANTS SHALL BE PAINTED APPROPRIATE SAWS COLORS.
5. FIRE HYDRANTS AND VALVE BOXES TO BE RAISED TO THE PROPOSED TOP OF PAVEMENT OR GROUND ELEVATION.
6. ALL WATER PIPE TO BE CL-235, DR-18, UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
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(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

WATER: SAWS PRESSURE ZONE 750

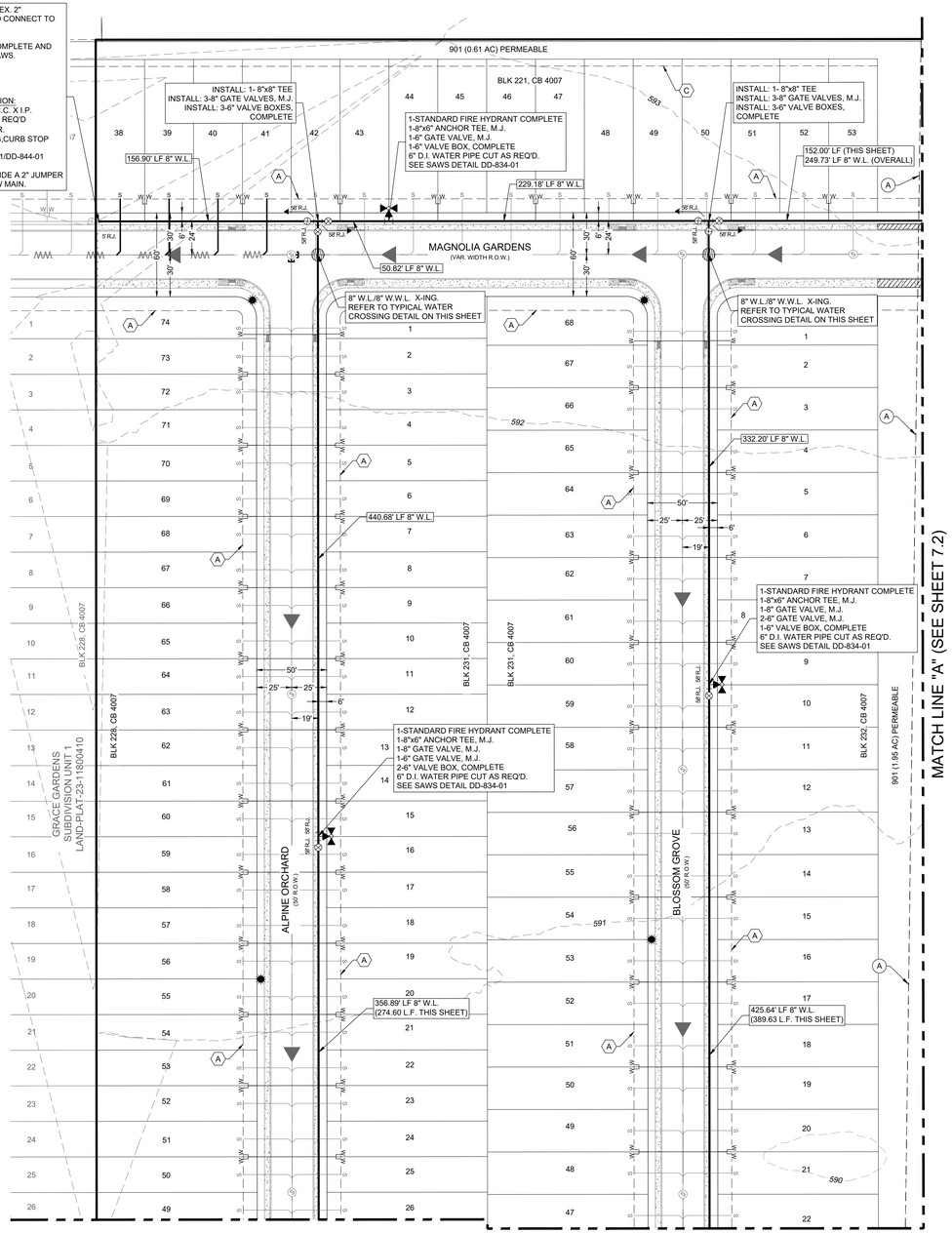
DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
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TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7,084 LF; 12" - 1,502 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 286 - RESIDENTIAL; 1 COMMERCIAL SAWS JOB NO. 24-1124

CONTRACTOR TO REMOVE EX. 2" PERMANENT BLOWOFF AND CONNECT TO EX. 8" PVC WATER MAIN (SAWS JOB NO. 23-1198) AFTER DISINFECTION IS COMPLETE AND WATER IS ACCEPTED BY SAWS.

INSTALL FOR TIE-IN
1-8" SOLID SLEEVE, MJ

FOR CHLORINATION INJECTION:
2-1" CORPORATION STOP, C.C. X I.P.
2- COPPER TUBING, CUT AS REQ'D
2-1 ½" THD SOLID CAPS, THR.
2-1" COMP. x 1 ½" COUPLING,CURB STOP
1-2" TEMP. BLOWOFF
SEE SAWS DETAIL DD-847-01/DD-844-01

CONTRACTOR SHALL PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN.



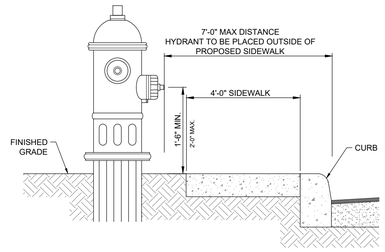
MATCH LINE "A" (SEE SHEET 7.2)

MATCH LINE "B" (SEE SHEET 7.3)

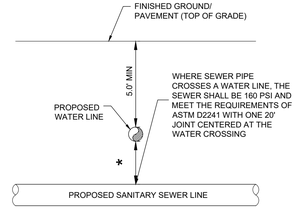
50 25 0 50 100
SCALE IN FEET
SCALE: 1"=50'

LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8"WW	8"WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
XX' R.J		RESTRAINT JOINT LENGTH
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE



FIRE HYDRANT LOCATION (WITH SIDEWALK)
NTS



★ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE
★ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WATER LAYOUT (SHEET 1 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: 8th_Water Layout.dwg

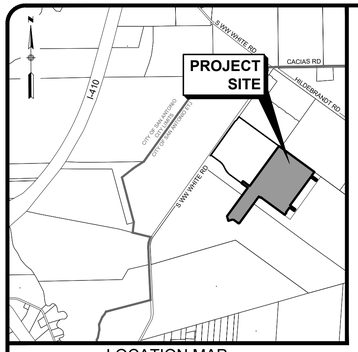
STATE OF TEXAS
RICHARD W. GRAY III
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12/12/2024

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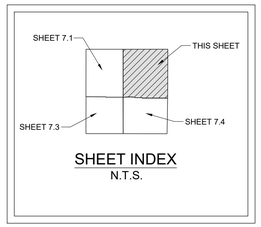
JOB NUMBER: SA173-0402-426

SHEET NO. 7.1

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User: jdunn
Last Modified: Dec. 11, 24 - 15:00
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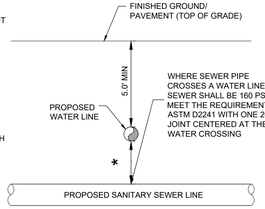
LOCATION MAP
N.T.S.



SHEET INDEX
N.T.S.

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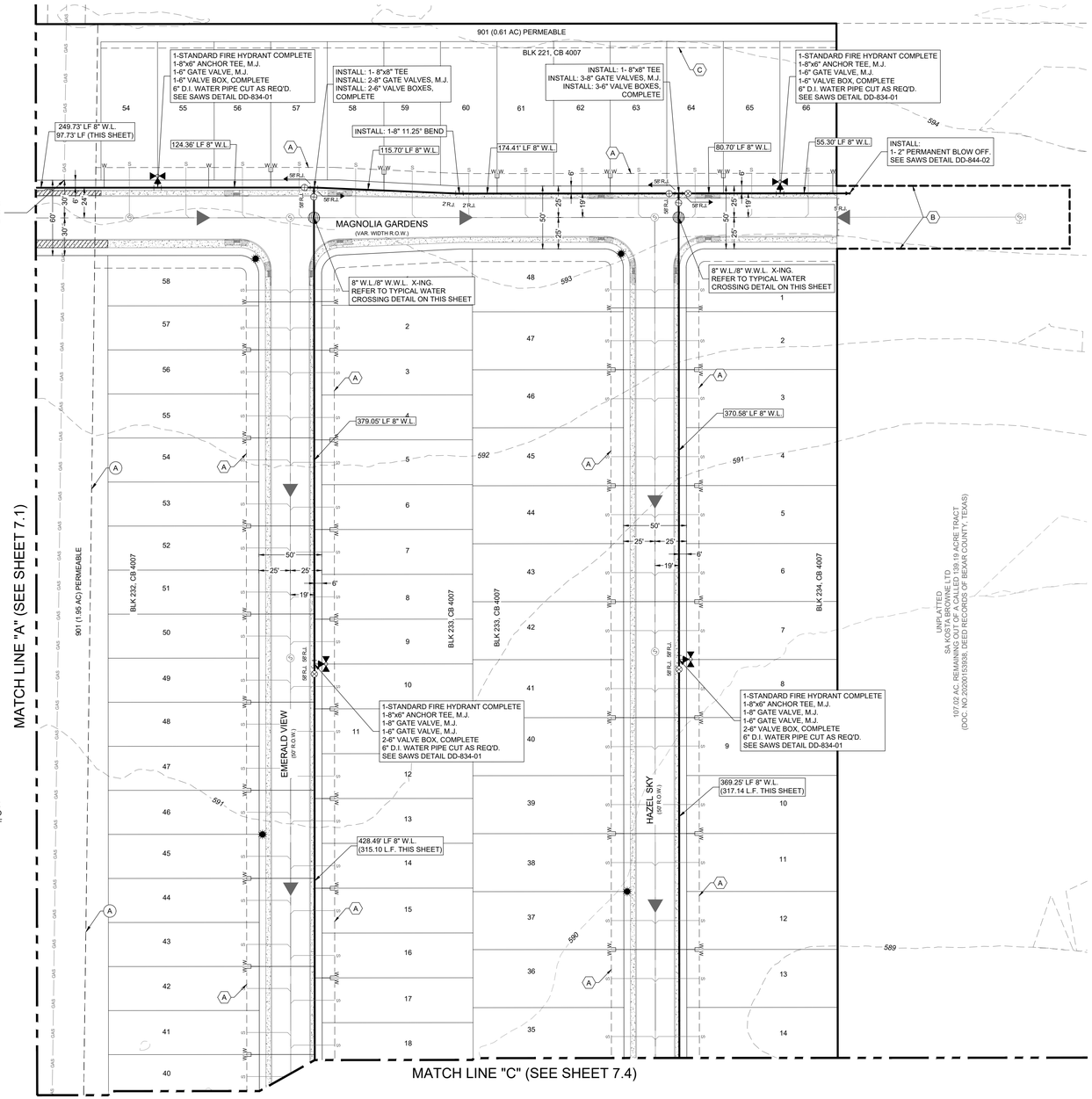


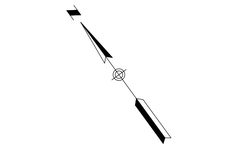
* SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE
* REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

WATER: SAWS PRESSURE ZONE 750

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
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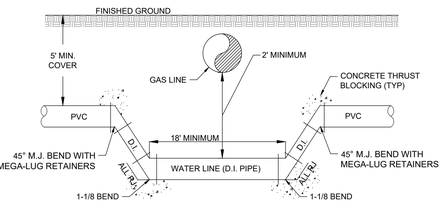




SCALE IN FEET
SCALE: 1"=50'

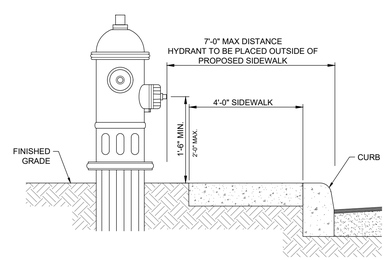
LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8"WW	8"WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
XX' R.J		RESTRAINT JOINT LENGTH
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE



GAS LINE / WATER CROSSING DETAIL
NTS

NOTE:
1. 18' MINIMUM WATER PIPE SEGMENT TO BE CENTERED UNDER GAS LINE.



FIRE HYDRANT LOCATION (WITH SIDEWALK)
NTS

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WATER LAYOUT (SHEET 2 OF 4)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/6/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Water Layout.dwg

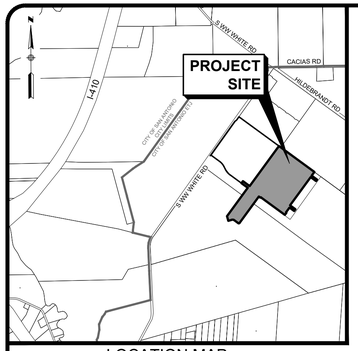
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

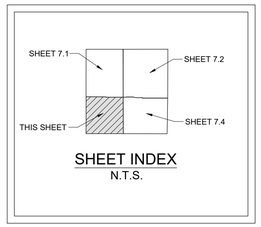
JOB NUMBER: SA173-0402-426

SHEET NO. 7.2

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Last Modified: Dec. 11, 24 - 15:00
Xref Name: None - LJA - 11x17



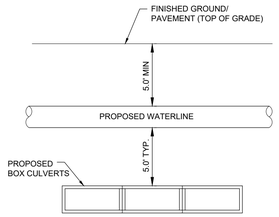
LOCATION MAP
N.T.S.



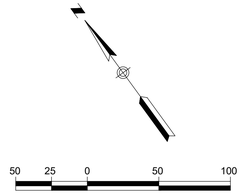
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- (D) 1' V.N.A.E. ENTERPRISE GAS LINE EASEMENT
- (A) (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
- (B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
- (C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
- (D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
- (E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
- (F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
- (G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)



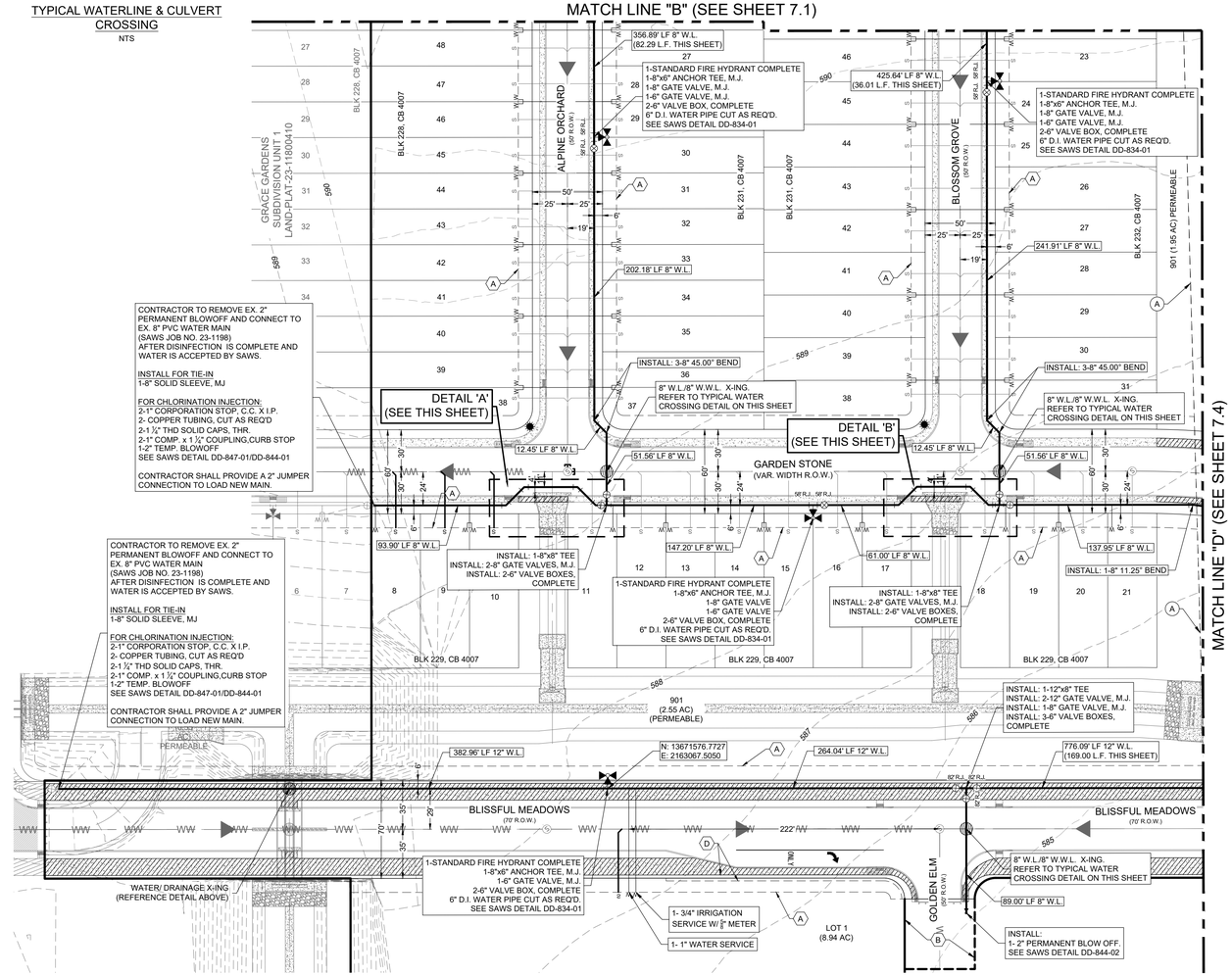
TYPICAL WATERLINE & CULVERT CROSSING
NTS

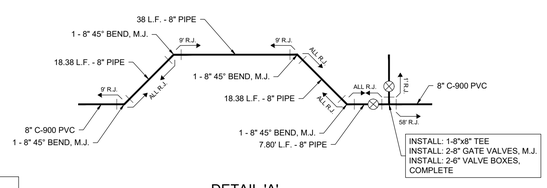


SCALE IN FEET
SCALE: 1"=50'

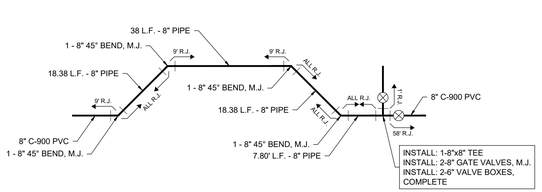
LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8"WW	8"WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
XX' R.J		RESTRAINT JOINT LENGTH
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE

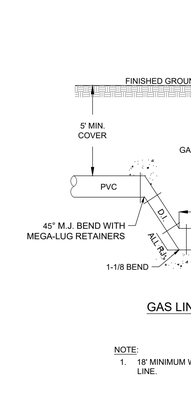




DETAIL 'A'
VERTICAL OFFSET
N.T.S.

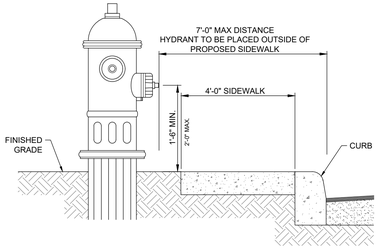


DETAIL 'B'
VERTICAL OFFSET
N.T.S.

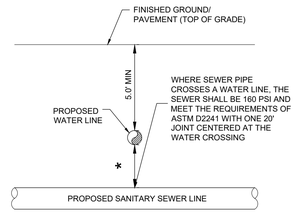


GAS LINE / WATER CROSSING DETAIL
NTS

NOTE:
1. 18' MINIMUM WATER PIPE SEGMENT TO BE CENTERED UNDER GAS LINE.



FIRE HYDRANT LOCATION (WITH SIDEWALK)
NTS



* SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE
* REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

WATER: SAWS PRESSURE ZONE 750

DEVELOPER'S NAME:	LENNAR HOMES
DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78216
PHONE #: (210) 403-6200	FAX #: N/A
SAWS BLOCK MAP #: 192548	TOTAL EDU'S: 289 TOTAL ACREAGE: 50.65
TOTAL LINEAR FOOTAGE OF PIPE:	8": 7,084 LF 12": 1,502 LF PLAT NO.: 24-11800119
NUMBER OF LOTS:	286 - RESIDENTIAL 1- COMMERCIAL SAWS JOB NO.: 24-1124

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WATER LAYOUT (SHEET 3 OF 4)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_Water Layout.dwg

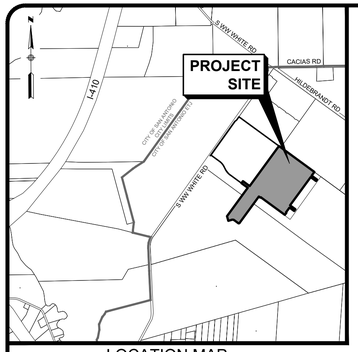
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

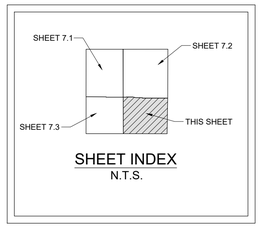
JOB NUMBER: SA173-0402-426

SHEET NO. 7.3

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Last Modified: Dec. 11, 24 - 15:00
File Name/Path: Date: 11-25-2024



LOCATION MAP
N.T.S.



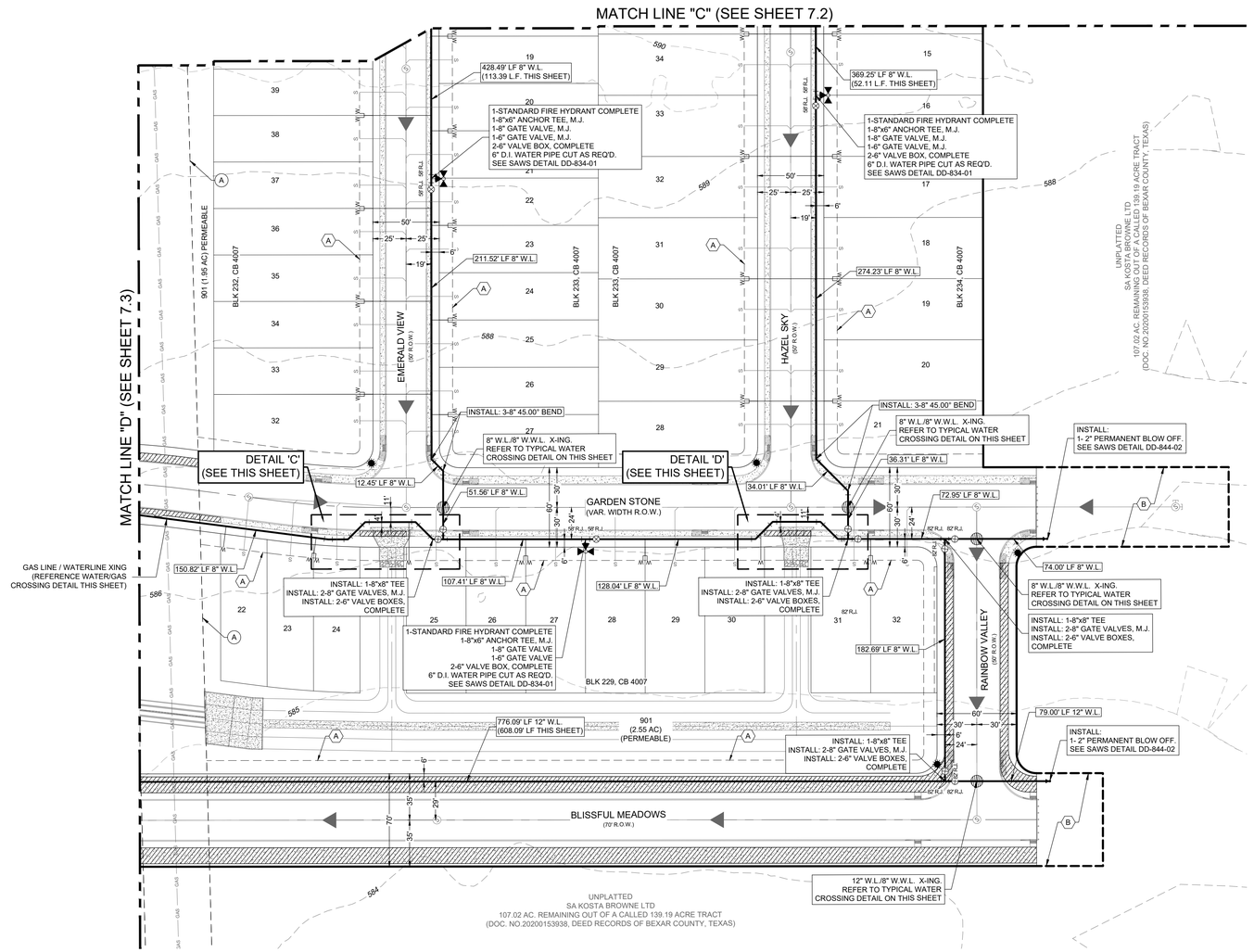
SHEET INDEX
N.T.S.

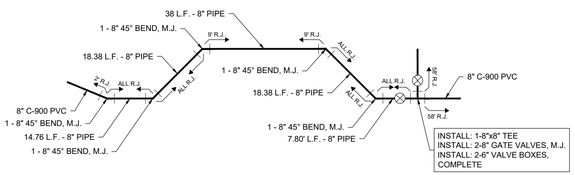
1. FIRE HYDRANT SHALL BE LOCATED BETWEEN SIDEWALK & CURB IN ACCORDANCE WITH THE FIRE HYDRANT INSTALLATION DETAIL DD-834-01.
2. CONTRACTOR TO FIELD VERIFY EXACT LOCATIONS OF ALL EXISTING UTILITIES HORIZONTALLY AND VERTICALLY PRIOR TO CONSTRUCTION.
3. ALL VALVES SHALL READ "OPEN RIGHT".
4. ALL FIRE HYDRANTS SHALL BE PAINTED APPROPRIATE SAWS COLORS.
5. FIRE HYDRANTS AND VALVE BOXES TO BE RAISED TO THE PROPOSED TOP OF PAVEMENT OR GROUND ELEVATION.
6. ALL WATER PIPE TO BE CL-235, DR-18, UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
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(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

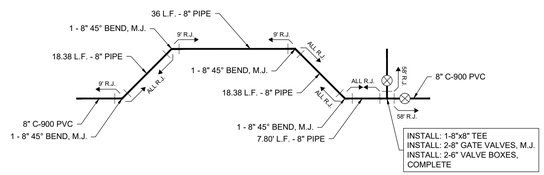
WATER: SAWS PRESSURE ZONE 750

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
SAWS BLOCK MAP # 192548 TOTAL EDU'S 289 TOTAL ACREAGE 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7,084 LF; 12" - 1,502 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 296 - RESIDENTIAL; 1- COMMERCIAL SAWS JOB NO. 24-1124

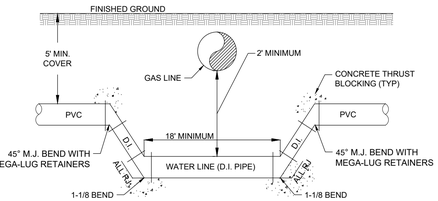




DETAIL 'C'
VERTICAL OFFSET
N.T.S.

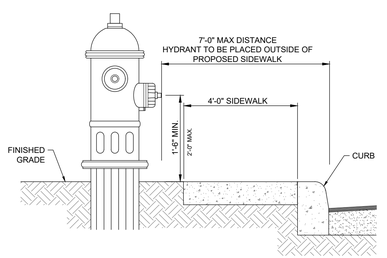


DETAIL 'D'
VERTICAL OFFSET
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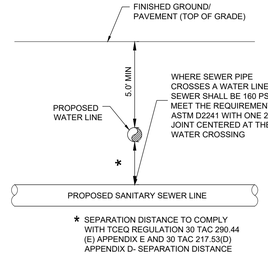


GAS LINE / WATER CROSSING DETAIL
NTS

NOTE:
1. 18' MINIMUM WATER PIPE SEGMENT TO BE CENTERED UNDER GAS LINE.



FIRE HYDRANT LOCATION (WITH SIDEWALK)
NTS



★ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE
★ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

LEGEND

PROPOSED	EXISTING	
Ⓢ	Ⓢ	SANITARY SEWER MANHOLE
8"WW	8"WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
C/O	C/O	SANITARY SEWER LATERAL CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
Ⓓ	Ⓓ	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
XX' R.J		RESTRAINT JOINT LENGTH
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE

50 25 0 50 100
SCALE IN FEET
SCALE: 1"=50'

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WATER LAYOUT (SHEET 4 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: 01_Water Layout.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 7.4

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User: jbrain
Last Modified: Dec. 11, 24 - 15:00
Xref Attachment: Dec. 11, 24 - 14:55:11

GRACE GARDENS SUBDIVISION UNIT 2

WASTEWATER CONSTRUCTION PLANS

LAND-PLAT-24-11800119

BEXAR COUNTY, TEXAS 78223

Revised January 2022

SAWS CONSTRUCTION NOTES
COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT

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 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.

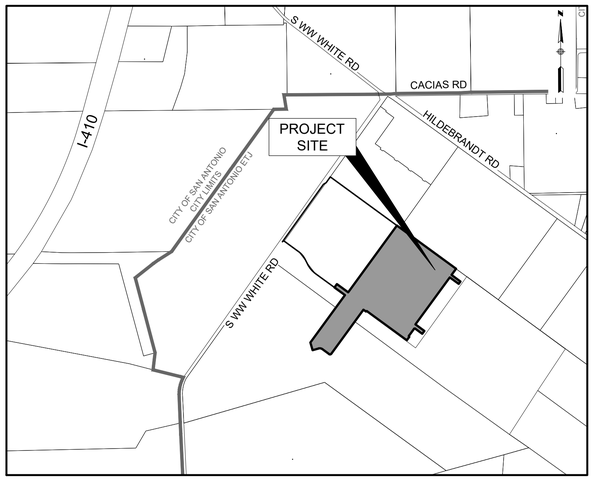
    ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.
12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY 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.

SEWER NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO SANITARY SEWER OVERFLOW (SSO) OCCURS AS A RESULT OF THEIR WORK. ALL CONTRACTOR PERSONNEL RESPONSIBLE FOR SSO PREVENTION AND CONTROL SHALL BE TRAINED ON PROPER RESPONSE. SHOULD AN SSO OCCUR, THE CONTRACTOR SHALL:
   A. IDENTIFY THE SOURCE OF THE SSO AND NOTIFY SAWS EMERGENCY OPERATIONS CENTER (EOC) IMMEDIATELY AT (210) 233-2014. PROVIDE THE ADDRESS OF THE SPILL AND AN ESTIMATED VOLUME OR FLOW.
   B. ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.
   C. CONTAIN SEWAGE FROM THE SSO TO THE EXTENT OF PREVENTING A POSSIBLE CONTAMINATION OF WATERWAYS.
   D. CLEAN UP SPILL SITE (RETURN CONTAINED SEWAGE TO THE COLLECTION SYSTEM IF POSSIBLE) AND PROPERLY DISPOSE OF CONTAMINATED SOIL/MATERIALS.
   E. CLEAN THE AFFECTED SEWER MAINS AND REMOVE ANY DEBRIS.
   F. MEET ALL POST-SSO REQUIREMENTS AS PER THE EPA CONSENT DECREE, INCLUDING LINE CLEANING AND TELEVISING THE AFFECTED SEWER MAINS (AT SAWS DIRECTION) WITHIN 24 HOURS.

   SHOULD THE CONTRACTOR FAIL TO ADDRESS AN SSO IMMEDIATELY AND TO SAWS SATISFACTION, THEY WILL BE RESPONSIBLE FOR ALL COSTS INCURRED BY SAWS, INCLUDING ANY FINES FROM EPA, TCEQ AND/OR ANY OTHER FEDERAL, STATE OR LOCAL AGENCIES.

   NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TCEQ AND SAWS.
2. IF BYPASS PUMPING IS REQUIRED, THE CONTRACTOR SHALL PERFORM SUCH WORK IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION FOR WATER AND SANITARY SEWER CONSTRUCTION, ITEM NO. 864, "BYPASS PUMPING".
3. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING FORCE MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973 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.
4. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241, TAC 217.53 AND TCEQ 290.44(E)(4)(B). CONTRACTOR SHALL CENTER A 20' JOINT OF 160 PSI PRESSURE RATED PVC AT THE PROPOSED WATER CROSSING.
5. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALLOWANCES AND ADJUSTMENTS FOR TOP OF MANHOLES TO MATCH THE FINISHED GRADE OF THE PROJECT'S IMPROVEMENTS. (NSPI)
6. SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER; ALL SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER, RECYCLED WATER, PETROLEUM PRODUCTS, OR CHEMICALS MUST BE REPORTED IMMEDIATELY TO THE SAWS INSPECTOR ASSIGNED TO THE COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP). THIS REQUIREMENT APPLIES TO EVERY SPILL, OVERFLOW, OR DISCHARGE REGARDLESS OF SIZE.
7. MANHOLE AND ALL PIPE TESTING (INCLUDING THE TV INSPECTION) MUST BE PERFORMED AND PASSED PRIOR TO FINAL FIELD ACCEPTANCE BY SAWS CONSTRUCTION INSPECTION DIVISION, AS PER THE SAWS SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION.
8. ALL PVC PIPE OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH WITH MINIMUM PIPE STIFFNESS OF 115 PSI.



LOCATION MAP
(N.T.S.)

SUBMITTAL DATE: DECEMBER 2024

PROPERTY DESCRIPTION

BEING A TOTAL OF 50.65 ACRES OUT OF:

BEING 2.84 ACRES OUT OF A 139.197 ACRE TRACT OF LAND OUT OF THE JUAN MONTES SURVEY NO. 6, ABSTRACT 11, COUNTY BLOCK 4007, BEXAR COUNTY, TEXAS, BEING A CALLED 139.65 ACRES OF LAND CONVEYED UNTO CAROLINE JANSZEN PFEIFER, ET AL. BY DEED EXECUTED MAY 27, 1986 AND RECORDED IN VOLUME 3761, PAGE 1412, OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY, TEXAS.

AND

BEING 38.86 ACRES OUT OF A 83.66 ACRE TRACT OF LAND OUT OF THE JUAN MONTEZ SURVEY NO. 6 ABSTRACT NO. 11, SITUATED IN THE CITY OF SAN ANTONIO, BEXAR COUNTY, TEXAS, AND BEING OUT OF A CALLED 139.197 ACRE TRACT OF LAND CONVEYED TO SA KOSTA BROWNE, LTD., A TEXAS LIMITED PARTNERSHIP DESCRIBED AND RECORDED IN DOC. NO. 20200153938, OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY TEXAS.

EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
SAWS BLOCK MAP # 194544, 194546 TOTAL EDU'S 287 TOTAL ACREAGE 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 287 SAWS JOB NO. 24-1596

REVISIONS			
NO.	DESCRIPTION	BY	DATE

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

DEVELOPER: LENNAR HOMES
CONTACT: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 889-5516

ENGINEER: LJA ENGINEERING, INC.
9830 COLONNADE BLVD, SUITE 300
SAN ANTONIO, TEXAS 78230
CONTACT PERSON: RICK GRAY, PE
PHONE # (210) 503-2700
FAX # (210) 503-2749

SURVEYOR: LJA SURVEYING
9830 COLONNADE BLVD, SUITE 300
SAN ANTONIO, TEXAS 78230
CONTACT PERSON: GORDON ANDERSON
PHONE # (512) 439-4700

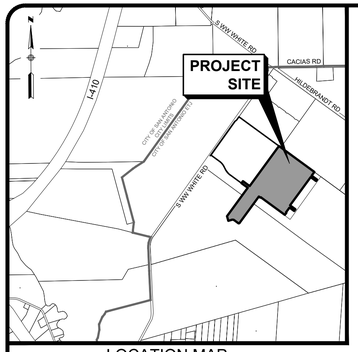
LJA JOB NO. SA173-0402-426

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

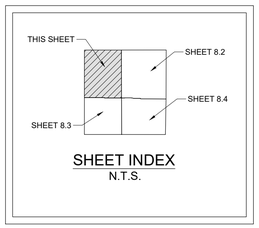
SHEET INDEX

SHEET #	SHEET TITLE
1.0	COVER
1.1	GENERAL NOTES
2.0	UTILITY LAYOUT SH1
2.1	UTILITY LAYOUT SH2
2.2	UTILITY LAYOUT SH3
2.3	UTILITY LAYOUT SH4
3.0	EXISTING DRAINAGE AREA MAP
3.1	PROPOSED DRAINAGE AREA MAP
3.2	ULTIMATE DRAINAGE AREA MAP
4.0	DRAIN 'A' P&P
4.1	DRAIN 'B' P&P
4.2	DRAIN 'C' P&P
4.3	DRAIN 'D' P&P
4.4	DRAIN 'E' P&P
4.5	DRAIN 'F' P&P
4.6	DRAINAGE DETAILS (SHEET 1 OF 3)
4.7	DRAINAGE DETAILS (SHEET 2 OF 3)
4.8	DRAINAGE DETAILS (SHEET 3 OF 3)
5.0	'MAGNOLIA G.' P&P 16+00 TO END
5.1	'GARDEN S.' P&P 16+00 TO END
5.2	'BLISSFUL M.' P&P 13+80.38 TO 25+00
5.3	'BLISSFUL M.' P&P 25+00 TO END
5.4	'RAINBOW VALLEY' P&P 1+00 TO END
5.5	'ALPINE ORCHARD' P&P 1+00 TO END
5.6	'BLOSSOM GROVE' P&P 1+00 TO END
5.7	'EMERALD VIEW' P&P 1+00 TO END
5.8	'HAZEL SKY' P&P 1+00 TO END
5.9	SIGNAGE PLAN
5.10	TRAFFIC SHEET 1 OF 2
5.11	TRAFFIC SHEET 2 OF 2
6.0	GRADING PLAN (SHEET 1 OF 4)
6.1	GRADING PLAN (SHEET 2 OF 4)
6.2	GRADING PLAN (SHEET 3 OF 4)
6.3	GRADING PLAN (SHEET 4 OF 4)
7.0	WATER COVER
7.1	WATER PLAN (SHEET 1 OF 4)
7.2	WATER PLAN (SHEET 2 OF 4)
7.3	WATER PLAN (SHEET 3 OF 4)
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8.0	**WASTEWATER COVER**
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8.5	**WWL 'A' STA 1+00 TO 10+50**
8.6	**WWL 'A' STA 10+50 TO 17+00**
8.7	**WWL 'A' STA 17+00 TO END**
8.8	**WWL 'B' STA 1+00 TO 10+50**
8.9	**WWL 'B' STA 10+50 TO END**
8.10	**WWL 'C' STA 1+00 TO 8+50**
8.11	**WWL 'C' STA 8+50 TO END**
8.12	**WWL 'D' STA 1+00 TO 10+50**
8.13	**WWL 'D' STA 10+50 TO END**
8.14	**WWL 'E' STA 1+00 TO END**
8.15	**WWL 'F' STA 1+00 TO END**
8.16	**WWL 'G' STA 1+00 TO END**
8.17	**WWL 'H' STA 1+00 TO END**
8.18	**UNIT 2 SERVICE LATERALS**
8.19	**UNIT 2 SERVICE LATERALS**
9.0	STORMWATER POLLUTION PREVENTION PLAN
9.1	STORMWATER POLLUTION PREVENTION DETAILS

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
FRN-F-1386



LOCATION MAP
N.T.S.



SHEET INDEX
N.T.S.

(A) 10' G.E.T.CA. ESM'T
OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)

(C) 5' G.E.T.CA. ESM'T

(D) 1' V.N.A.E.

(A) ENTERPRISE GAS LINE EASEMENT
(VOL. 3315, PG. 380 O.P.R)
(VOL. 1747, PG. 236, O.P.R.)

(B) VARIABLE WIDTH ELECTRIC EASEMENT
(VOL. 7517, PGS. 863-867 OPR)

(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT
(PLAT #23-11800410)

(D) OFF-LOT 15' GRADING EASEMENT
(PLAT #23-11800410)

(E) 10' G.E.T.CA. ESM'T
(PLAT #23-11800410)

(F) OFF-LOT DRAINAGE ACCESS ESM'T
(PLAT #23-11800410)

(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESMT
(PLAT #23-11800410)

EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
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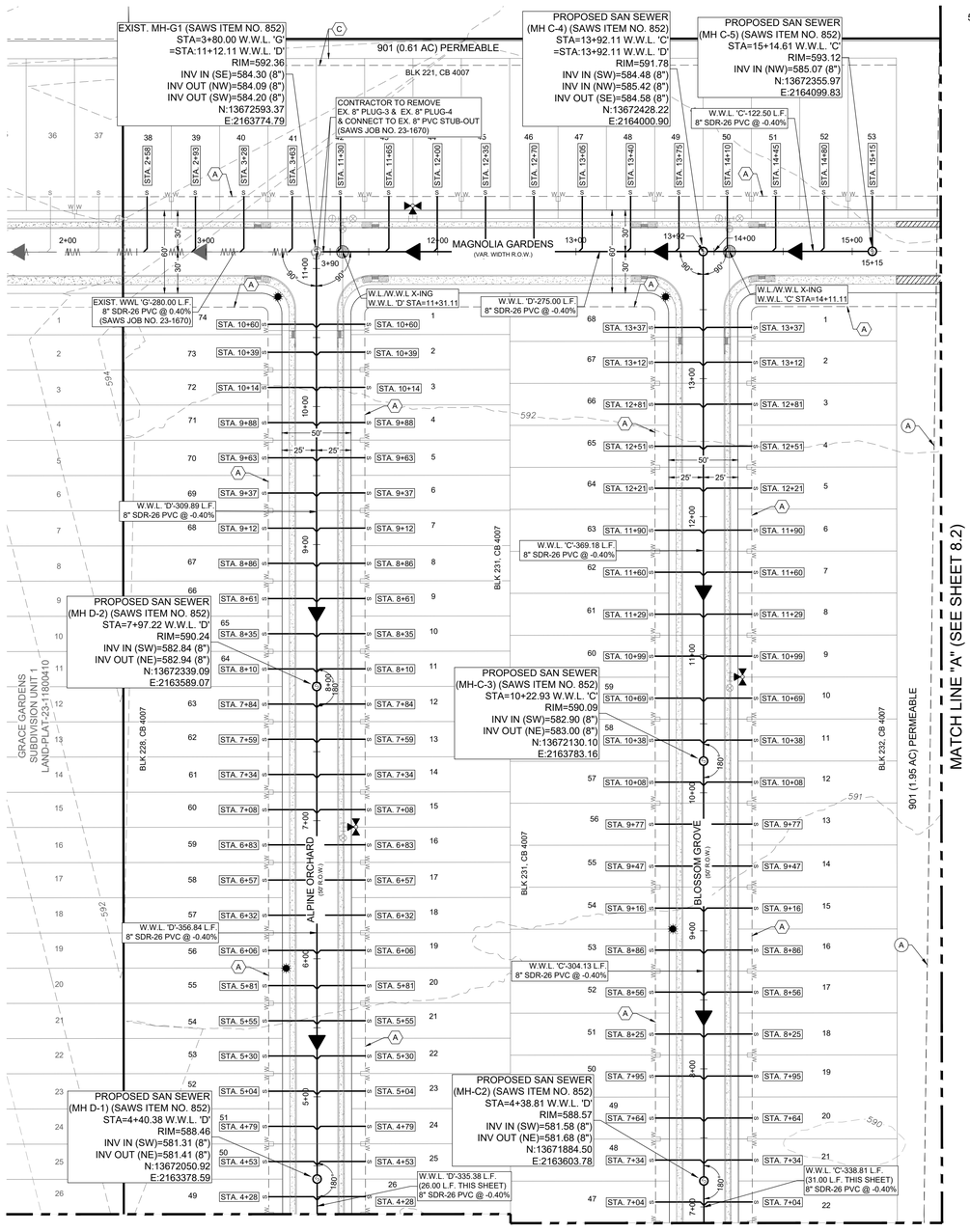
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TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION, SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION: CONTRACTOR TO NOTIFY TEXAS ONE CALL AT 1-800-245-4545 48 HOURS PRIOR TO CONSTRUCTION FOR UTILITY LINE LOCATE. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY SIGNIFICANT DISCREPANCIES OR REQUIRED DESIGN CHANGES. EXISTING UTILITIES SHOWN HEREON ARE FOR INFORMATIONAL PURPOSES ONLY. ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION.

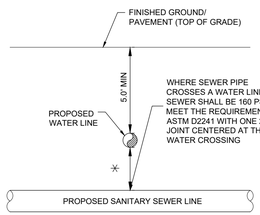


LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8" WW	8" WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
C/O	C/O	SANITARY SEWER LATERAL CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
XX' R.J		RESTRAINT JOINT LENGTH
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
	ESM'T.	EASEMENT
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE

GENERAL NOTES

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15. COORDINATES ARE BASED ON STATE PLANE TX83-SCF- SURFACE. SCALE FACTOR: 1.00017.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.



✳ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

✳ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LAYOUT (SHEET 1 OF 4)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

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DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_1ststeWater Layout.dwg

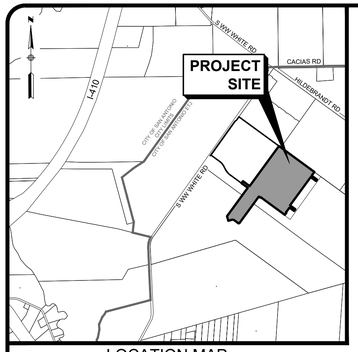
STATE OF TEXAS
RICHARD W. GRAY III
75617
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12/12/2024

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LJA.COM
TBPE No. F-1386

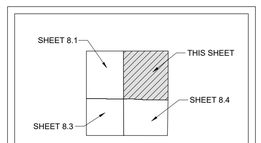
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SHEET NO. **8.1**

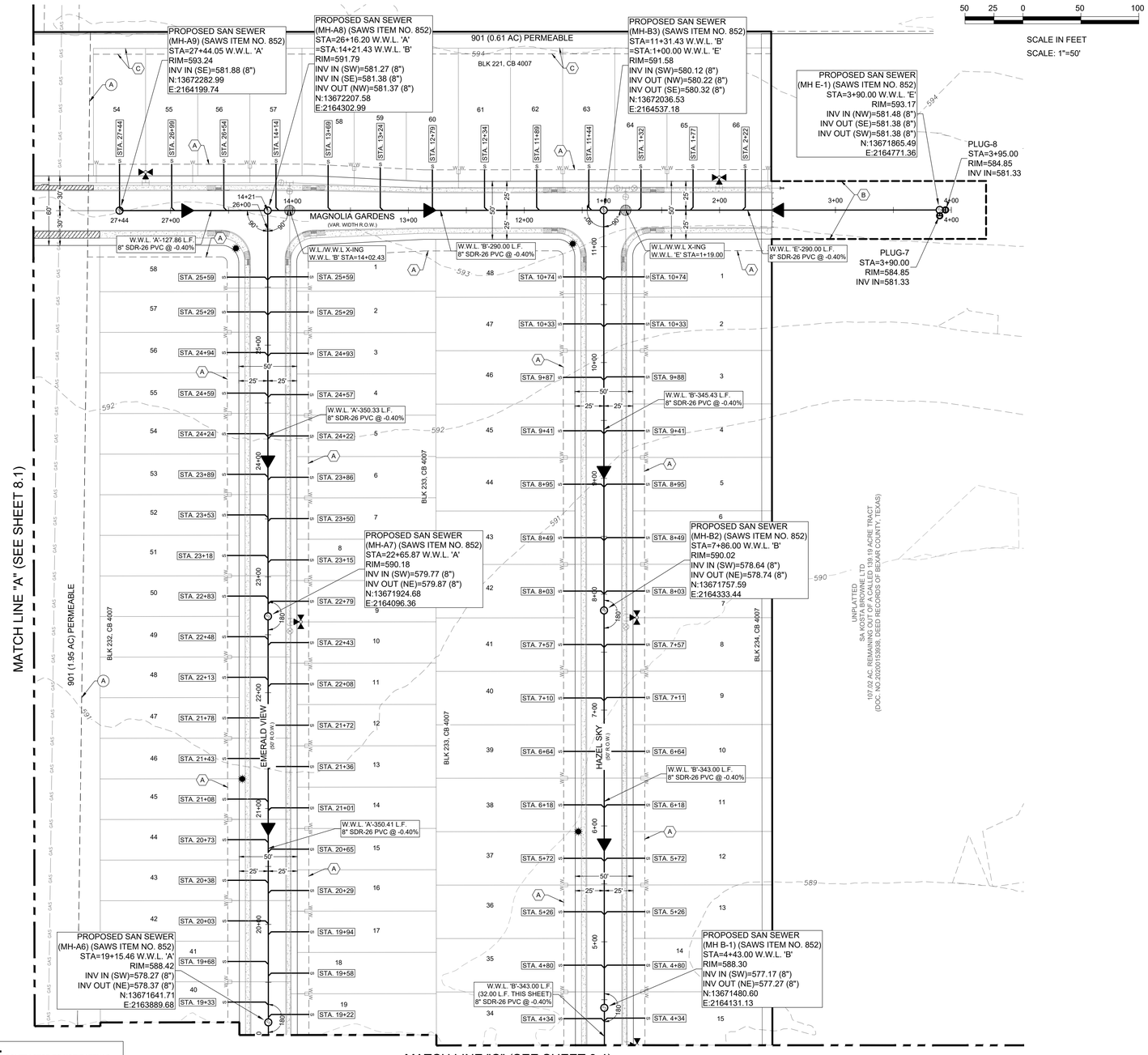
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User: jdurbin
Last Modified: Dec 11, 24 - 15:07
Plot Style Name: Std To 24 - 100-47.ctb



LOCATION MAP
N.T.S.



SHEET INDEX
N.T.S.



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8" WW	8" WW	SANITARY SEWER LINE
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		GUY WIRE
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XX' R.J		RESTRAINT JOINT LENGTH
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(A) 10' G.E.T.CA. ESM'T
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EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES
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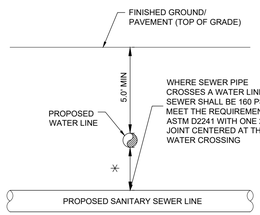
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∗ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LAYOUT (SHEET 2 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
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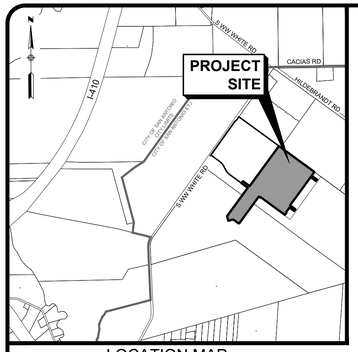
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

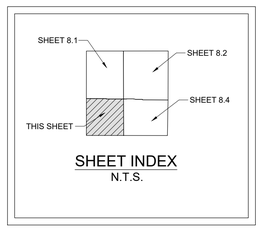
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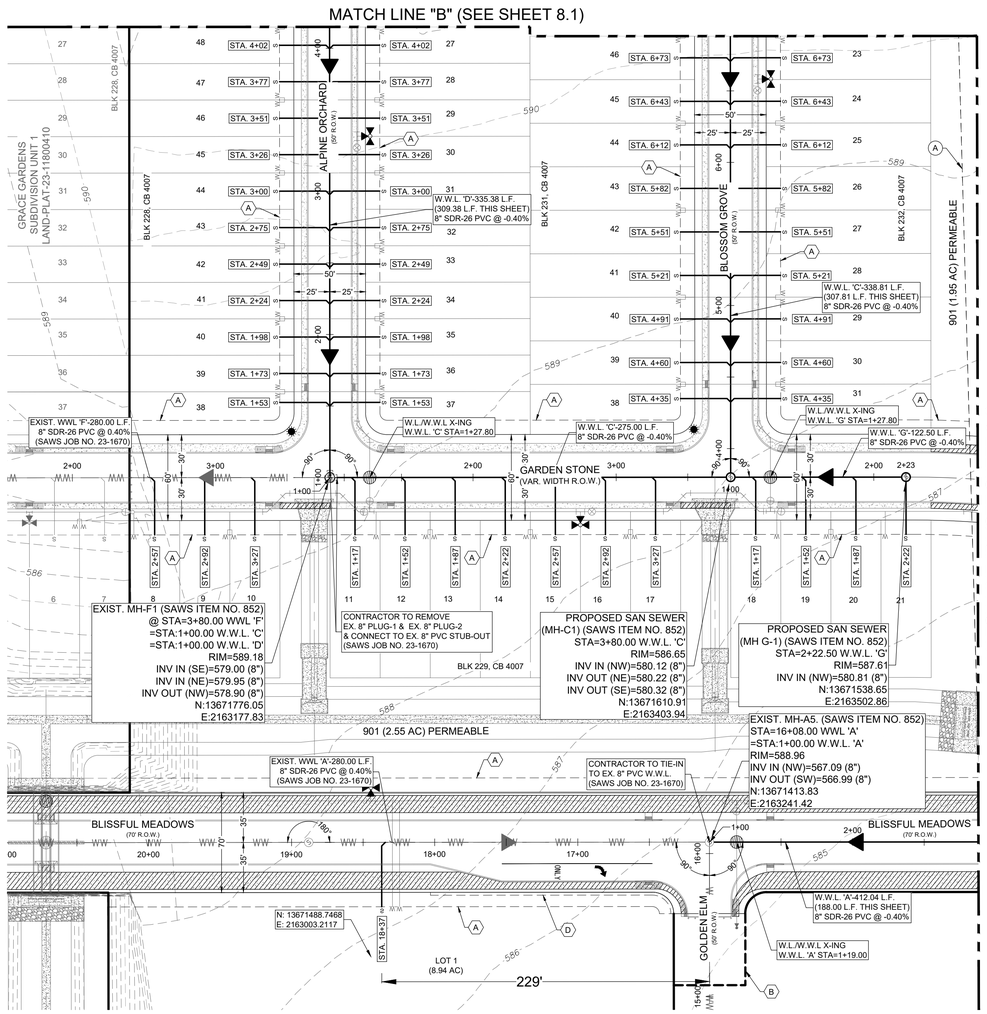
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Plot Date/Time: Dec. 12, 24 - 08:01:18



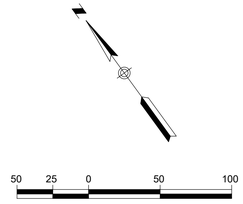
LOCATION MAP
N.T.S.



SHEET INDEX
N.T.S.



LEGEND



PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8" WW	8" WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
C/O	C/O	SANITARY SEWER LATERAL / CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
XX' R.J		RESTRAINT JOINT LENGTH
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
		EASEMENT
	ESM'T.	VOLUME
	VOL	PAGE
	PG	4" CONDUIT FOR WATER SERVICE
		PHASE LINE

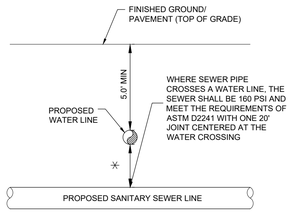
- (A) 10' G.E.T.CA. ESM'T
- (B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
- (C) 5' G.E.T.CA. ESM'T
- (D) 1' V.N.A.E.
- (A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
- (B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
- (C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
- (D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
- (E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
- (F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
- (G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

EAST SEWERSHED

DEVELOPER'S NAME:	LENNAR HOMES		
DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155		
CITY	SAN ANTONIO	STATE	TEXAS
ZIP	78216		
PHONE #	(210) 403-6200	FAX #	N/A
SAWS BLOCK MAP #	194544, 194546	TOTAL EDU'S	287
TOTAL ACREAGE	50.65		
TOTAL LINEAR FOOTAGE OF PIPE:	8" - 7364 LF	PLAT NO.	24-11800113
NUMBER OF LOTS:	287	SAWS JOB NO.	24-1596

GENERAL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING AND TESTING THE SANITARY SEWER SYSTEM IN ACCORDANCE WITH 30 TAC 217 [AND 213.5 FOR PROJECTS IN THE ERZD], THE DESIGN PLANS AND SAWS SPECIFICATIONS.
2. THE CONTRACTOR MUST PROVIDE CERTIFICATION UPON REQUEST OF THE ENGINEER THAT ALL MATERIALS FOR THE CONSTRUCTION OF THE SANITARY SEWER SYSTEM MEET TCEQ AND SAWS SPECIFICATIONS.
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5. ANY TESTING PERFORMED WITHOUT THE PRESENCE OF THE ENGINEER WILL BE REDONE AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR MUST PROVIDE THE ENGINEER WITH COPIES OF TV-VIDEO INSPECTIONS WHEN COMPLETED AND COMPACTION TESTING RESULTS PRIOR TO FINAL TESTING OBSERVATION BY THE ENGINEER.
7. AFTER ALL SANITARY SEWER CONSTRUCTION HAS BEEN COMPLETED, FINAL STABILIZATION OF THE CONSTRUCTION AREA ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES SHALL BE COMPLETED BY EVENLY DISTRIBUTING SEEDING AND WATERING TO A MINIMUM OF 70% OF THE NATIVE BACKGROUND VEGETATIVE COVER.
8. ALL RESIDENTIAL SEWER SERVICE LATERALS ARE 6" DIA. AND 35 FEET FOR 50 FEET ROW, 40 FT. FOR 60 FEET ROW IN LENGTH UNLESS NOTED OTHERWISE.
9. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE EXTENDED TO THE 10' G.E.T.V.E. EASEMENT AND CAPPED AND SEALED.
10. LATERALS TO LOTS THAT SLOPE AWAY FROM STREET SHALL BE SLOPED FROM THE TEE OR STACK AT 2% TO THE PROPERTY LINE.
12. CONTRACTOR TO FIELD VERIFY ALL MATCH EXISTING ELEVATIONS, SEWER MANHOLE INVERTS, STORM DRAIN INVERTS, AND ALL OTHER UTILITIES PRIOR TO UTILITY WORK AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES.
13. RIM ELEVATIONS OF PROPOSED MANHOLES THAT ARE NOT WITHIN STREET RIGHT-OF-WAY ARE TO BE APPROXIMATELY 6" ABOVE NATURAL GROUND.
14. DAMAGE TO EXISTING PAVEMENT SHALL BE REPLACED BY CONTRACTOR AT NO ADDITIONAL COST.
15. COORDINATES ARE BASED ON STATE PLANE TX83-SCF- SURFACE. SCALE FACTOR: 1.00017.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.



✳ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

✳ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

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 AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION, SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION: CONTRACTOR TO NOTIFY TEXAS ONE CALL AT 1-800-245-4545 48 HOURS PRIOR TO CONSTRUCTION FOR UTILITY LINE LOCATE. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY SIGNIFICANT DISCREPANCIES OR REQUIRED DESIGN CHANGES. EXISTING UTILITIES SHOWN HEREON ARE FOR INFORMATIONAL PURPOSES ONLY. ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LAYOUT (SHEET 3 OF 4)

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY:
CHECKED BY: RG
DRAWING NAME: 3b_WastewaterLayout.dwg

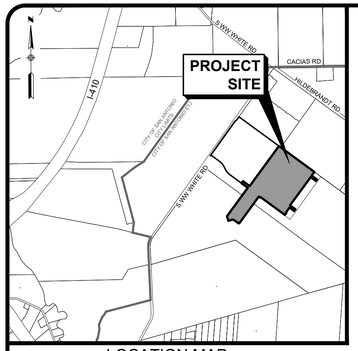
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

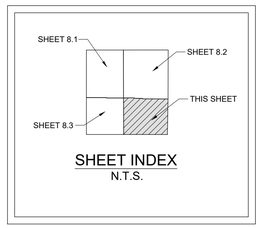
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Last Modified: Dec. 11, 24 - 15:07
Plot Date/Time: Dec. 12, 24 - 09:42:28



LOCATION MAP
N.T.S.



SHEET INDEX
N.T.S.

- (A) 10' G.E.T.CA. ESM'T
  OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
- (C) 5' G.E.T.CA. ESM'T
- (D) 1' V.N.A.E.
- (A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
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- (G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES

DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155

CITY SAN ANTONIO STATE TEXAS ZIP 78216

PHONE # (210) 403-6200 FAX # N/A

SAWS BLOCK MAP # 194544, 194546 TOTAL EDU'S 287 TOTAL ACREAGE 50.65

TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF PLAT NO. 24-11800113

NUMBER OF LOTS: 287 SAWS JOB NO. 24-1596

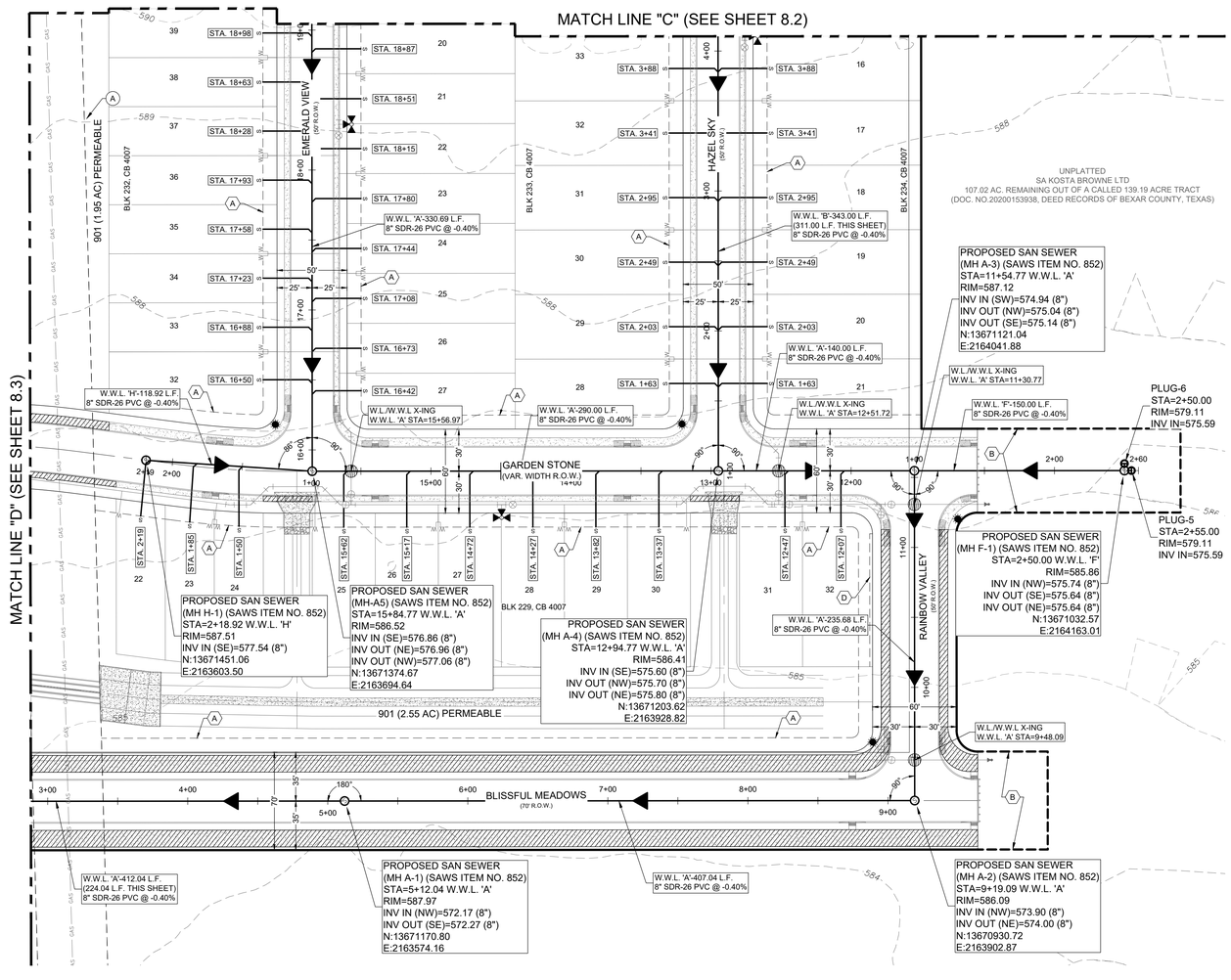
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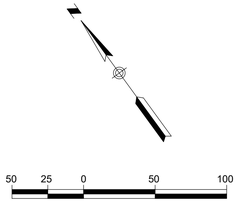
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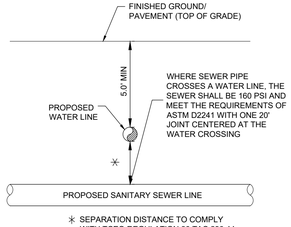


LEGEND

PROPOSED	EXISTING	
Ⓢ	Ⓢ	SANITARY SEWER MANHOLE
8" WW	8" WW	SANITARY SEWER LINE
	WL	WATER LINE
FM (BY OTHERS)		FORCE MAIN (BY OTHERS)
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		1"-6" (CPS) 2-4" CONDUITS (ATT/SPECTRUM)
		WATER METER
		GAS VALVE
G	G	GAS LINE
Ⓓ	Ⓓ	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
	OU	OVERHEAD ELECTRIC
		BENCHMARK
XX' R.J.		RESTRAINT JOINT LENGTH
	TMH	TOP OF MANHOLE
	EX.	EXISTING
	G,E,T,CA	GAS, ELEC, TELE & CABLE TV ESM'T.
		EASEMENT
	ESM'T.	
	VOL	VOLUME
	PG	PAGE
		4" CONDUIT FOR WATER SERVICE
		PHASE LINE

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✳ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

✳ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LAYOUT (SHEET 4 OF 4)

REVISIONS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: 8_WastewaterLayout.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 8.4

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User: jburon
Last Modified: Dec. 11, 24 – 15:07
Plot Date/Time: Dec. 12, 24 – 09:43:38

GENERAL NOTES

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9. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE EXTENDED TO THE 10' G.E.T.CA. EASEMENT AND CAPPED AND SEALED.
10. LATERALS TO LOTS THAT SLOPE AWAY FROM STREET SHALL BE SLOPED FROM THE TEE OR STACK AT 2% TO THE 10' G.E.T.CA.
11. DAMAGE TO EXISTING PAVEMENT SHALL BE REPLACED BY CONTRACTOR AT NO ADDITIONAL COST.
12. ALL CLEANOUTS TO BE CONSTRUCTED AT PROPERTY LINE.
13. COORDINATES ARE BASED ON STATE PLANE TX83-SCF- SURFACE. SCALE FACTOR: 1.00017.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
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(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

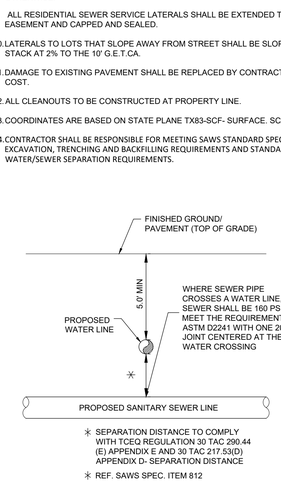
EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
SAWS BLOCK MAP # 194544, 194546 TOTAL EDU'S 287 TOTAL ACREAGE 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 287 SAWS JOB NO. 24-1596

50 25 0 50 100
HORIZONTAL SCALE 1" = 50'
VERTICAL SCALE 1" = 5'

LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8	EX 16	SANITARY SEWER LINE
8 WL	WL	WATER LINE
C/O	C/O	SANITARY SEWER LATERAL
		CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
OU	OU	OVERHEAD ELECTRIC
		BENCHMARK

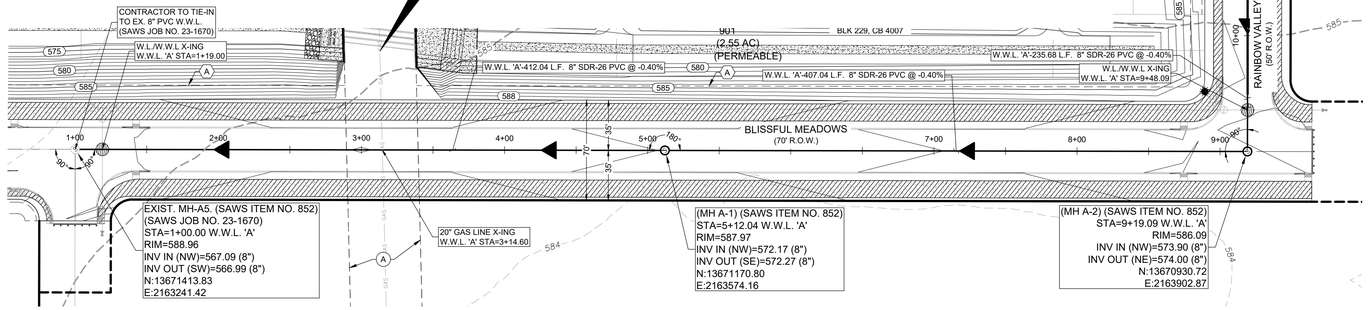


✳ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE
✳ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

CAUTION: EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!

*CONTRACTOR SHALL COORDINATE WITH THE LAND ENCROACHMENT GROUP AT ENTERPRISE PRODUCTS PRIOR TO CROSSING GAS LINE. (PH# 866-901-8170)



LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

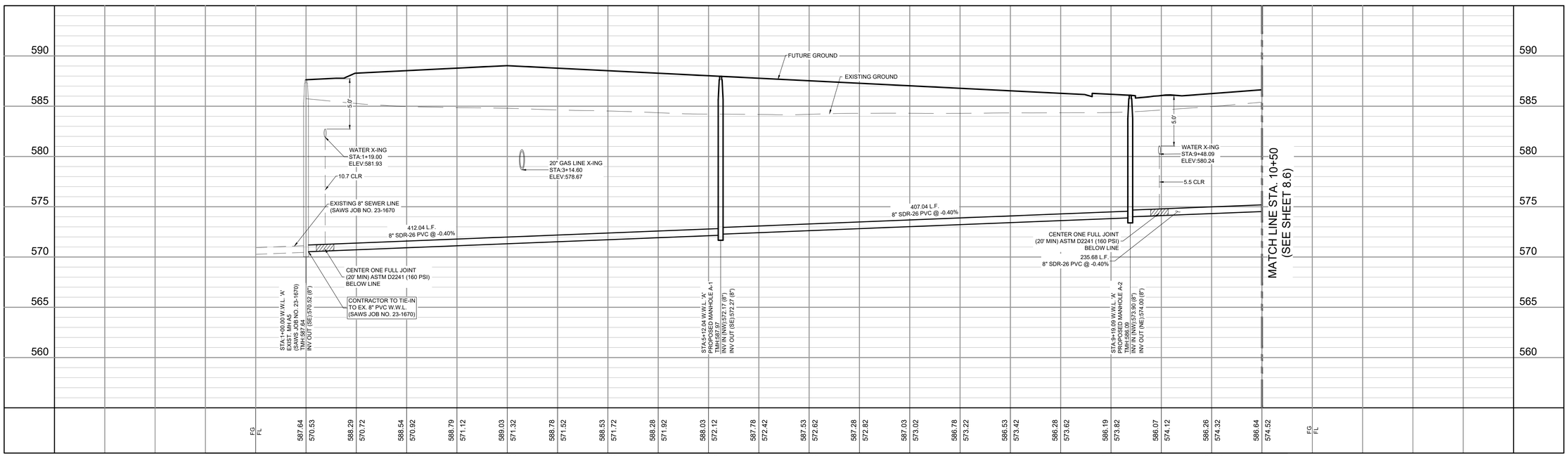
811 Know what's below. Call before you dig.

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TRENCH EXCAVATION SAFETY PROTECTION

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W.W.L. 'A' STA. 1+00 TO STA. 10+50



LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

RICHARD W. GRAY III 75617 REGISTERED PROFESSIONAL ENGINEER
12/12/2024

JOB NUMBER: SA173-0402-426

SHEET NO. 8.5

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'A'
STA 1+00 TO 10+50 PLAN & PROFILE

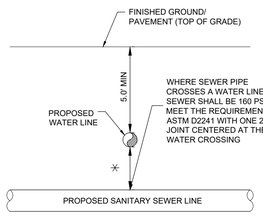
NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'A'.dwg

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plan\DWG-Sheets\sh_WWL 'A'.dwg
User: jburn
Last Modified: Oct. 14, 24 - 10:35
Plot Style/Time: Table - by LJA - 10:46:27

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12. ALL CLEANOUTS TO BE CONSTRUCTED AT PROPERTY LINE.
13. COORDINATES ARE BASED ON STATE PLANE TX83-SCF- SURFACE. SCALE FACTOR: 1.00017.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.



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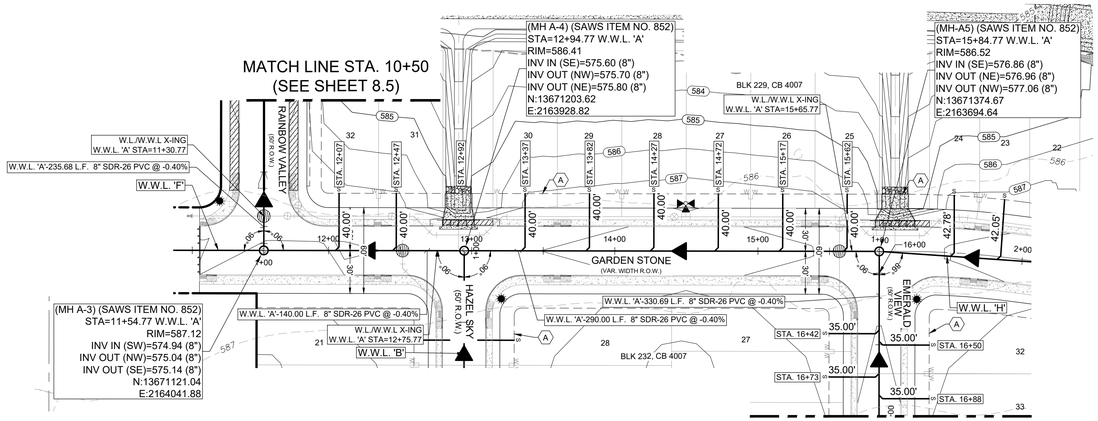
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TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

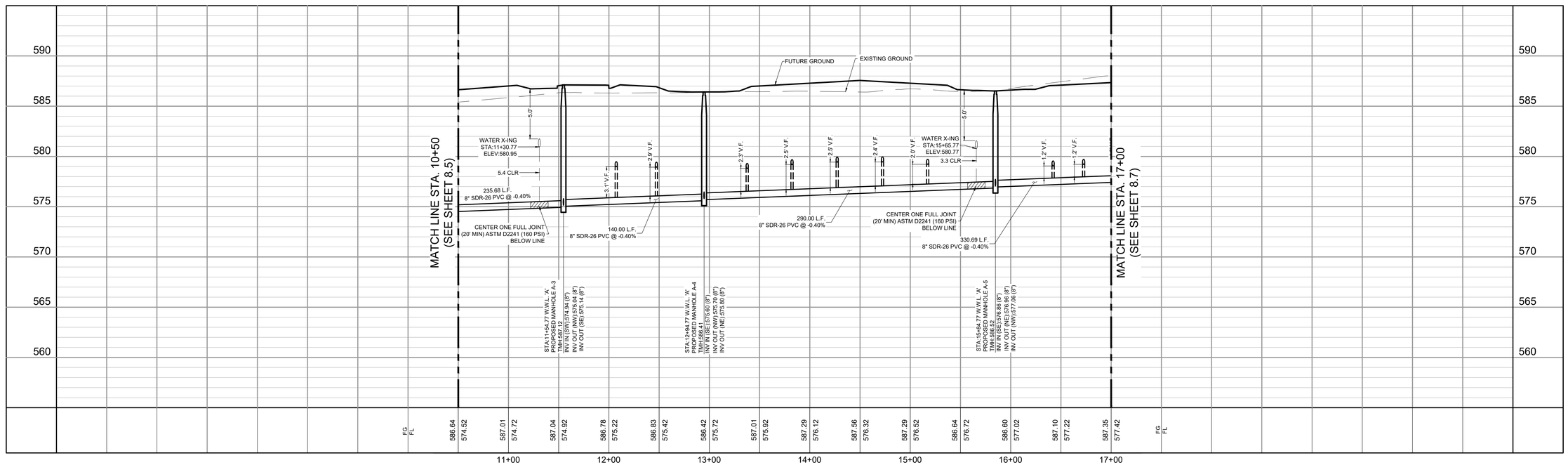
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EAST SEWERSHED

DEVELOPER'S NAME:	LENNAR HOMES
DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155
CITY	SAN ANTONIO
STATE	TEXAS
ZIP	78216
PHONE #	(210) 403-6200
FAX #	N/A
SAWS BLOCK MAP #	194544, 194546
TOTAL EDU'S	287
TOTAL ACREAGE	50.65
TOTAL LINEAR FOOTAGE OF PIPE:	8" - 7364 LF
PLAT NO.	24-11800119
NUMBER OF LOTS:	287
SAWS JOB NO.	24-1596



W.W.L. 'A' STA. 10+50 TO STA. 17+00



LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
	EX 16	SANITARY SEWER LINE
8 WL	WL	WATER LINE
C/O	C/O	SANITARY SEWER LATERAL
		CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
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GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'A'
STA 10+50 TO 17+00 PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/9/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'A' dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

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San Antonio, Texas 78230
Phone 210.503.2700
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TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. **8.6**

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\CIVIL\Sheets\sh_WWL 'A'.dwg
User: jburn
Last Modified: Oct 14, 24 - 10:35
File Status/Type: Sec 12, A4 - 50%&R-40

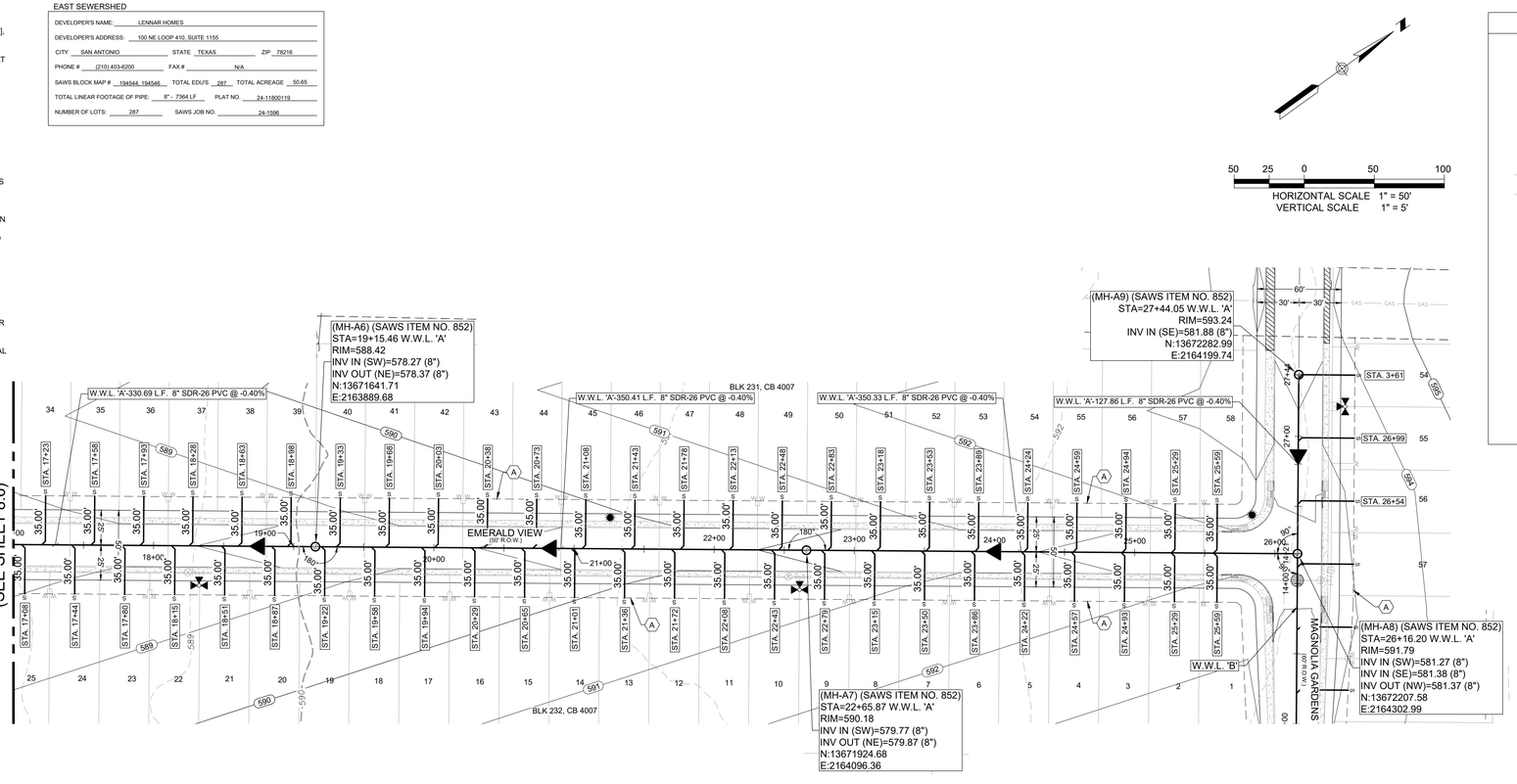
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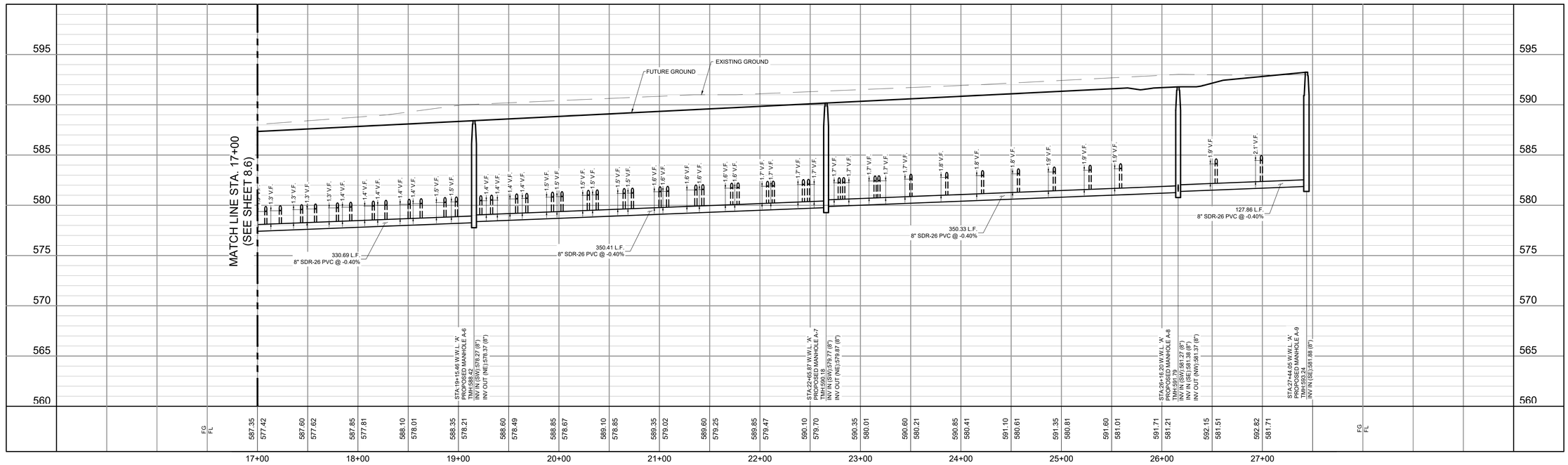
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W.W.L. 'A' STA. 17+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'A'
STA 17+00 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE

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SHEET NO. 8.7

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User: jaron
Last Modified: Oct. 14, 24 - 10:35
Plot Date/Time: Dec. 12, 24 - 09:48:59

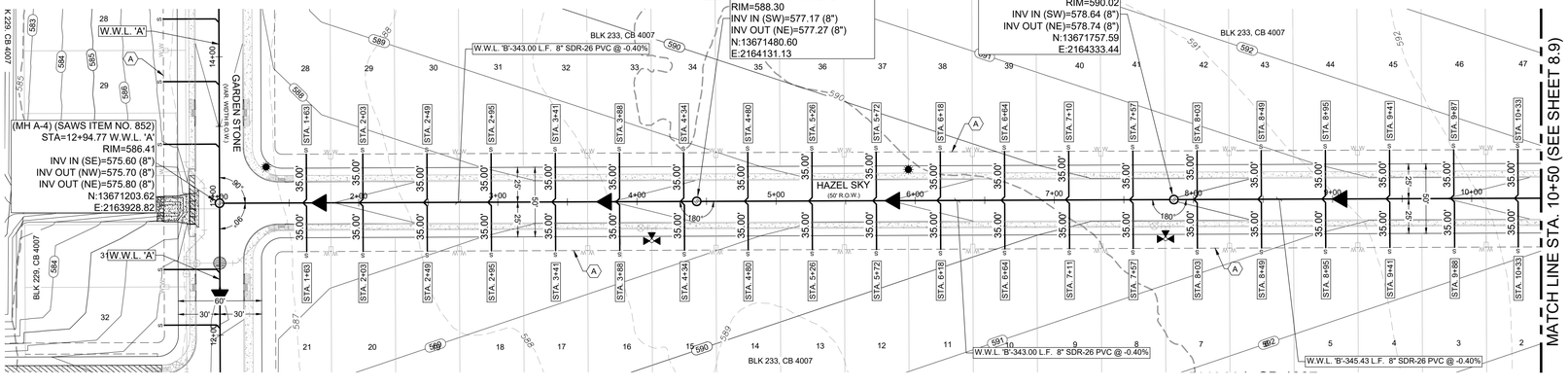
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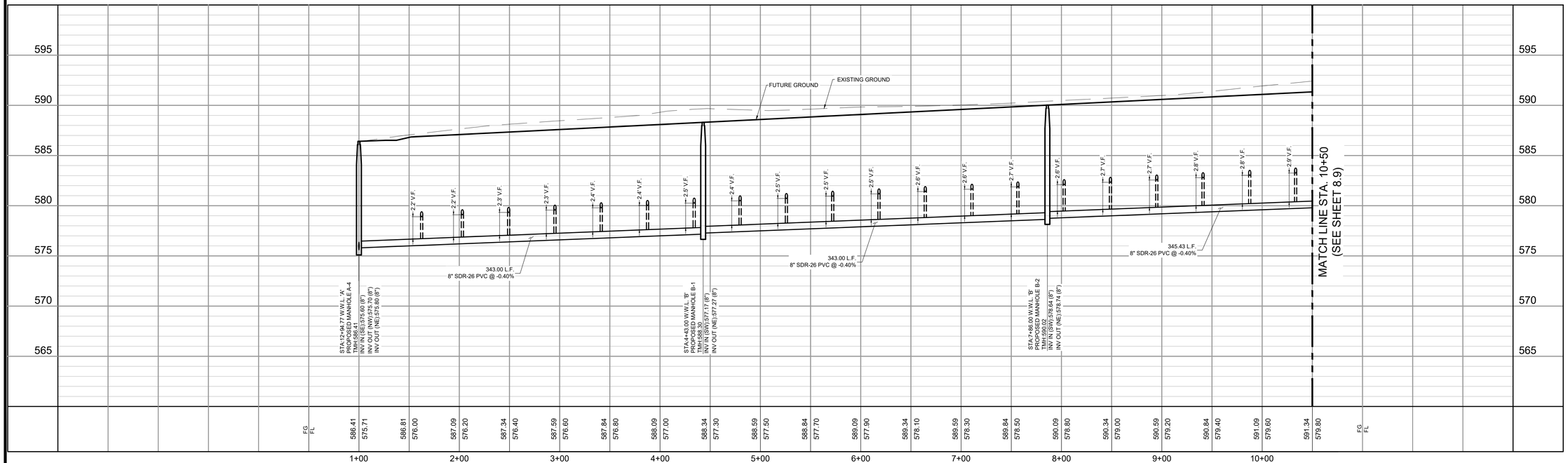
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(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
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EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
SAWS BLOCK MAP # 194544, 194546 TOTAL EDU'S 287 TOTAL ACREAGE 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 287 SAWS JOB NO. 24-1596



W.W.L. 'B' STA. 1+00 TO STA. 10+50



LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8 SS	EX 16 SS	SANITARY SEWER LINE
8 WL	EX 16 WL	WATER LINE
C/O	C/O	SANITARY SEWER LATERAL
		CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
OU	OU	OVERHEAD ELECTRIC
		BENCHMARK

50 25 0 50 100
HORIZONTAL SCALE 1" = 50'
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GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'B'
STA 1+00 TO 10+50 PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'B'.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
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TBPE No. F-1386

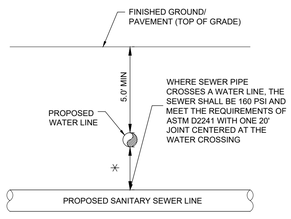
JOB NUMBER: SA173-0402-426

SHEET NO. **8.8**

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\LDP\Sheets\sh_WWL 'B'.dwg
User: jaron
Last Modified: Oct. 14, 24 - 10:42
Plot Date/Time: Dec. 12, 24 - 08:43

GENERAL NOTES

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12. ALL CLEANOUTS TO BE CONSTRUCTED AT PROPERTY LINE.
13. COORDINATES ARE BASED ON STATE PLANE TX83-SCF- SURFACE. SCALE FACTOR: 1.00017.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.



✳ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

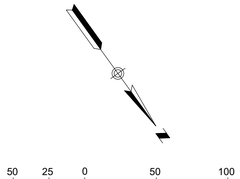
✳ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

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EAST SEWERSHED

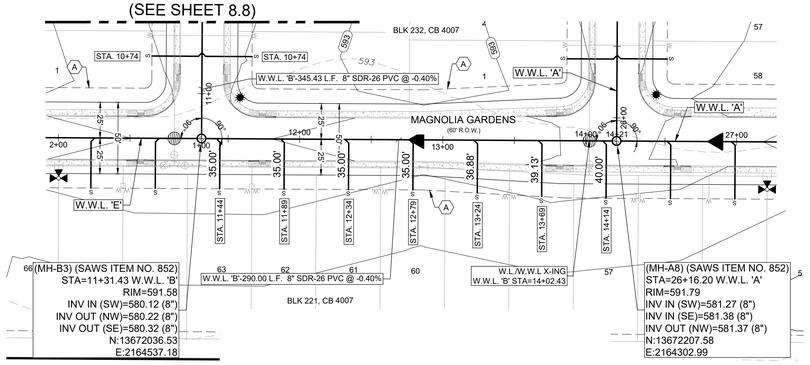
DEVELOPER'S NAME:	LENNAR HOMES
DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78216
PHONE #: (210) 403-6200	FAX #: N/A
SAWS BLOCK MAP #: 194544, 194546	TOTAL EDU'S: 287 TOTAL ACREAGE: 50.65
TOTAL LINEAR FOOTAGE OF PIPE:	8" - 7364 LF PLAT NO.: 24-11800119
NUMBER OF LOTS: 287	SAWS JOB NO.: 24-1596



LEGEND

PROPOSED	EXISTING	
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8	EX 16	SANITARY SEWER LINE
WL	WL	WATER LINE
C/O	C/O	SANITARY SEWER LATERAL
		CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
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		FIRE HYDRANT
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G	G	GAS LINE
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MATCH LINE STA. 10+50
(SEE SHEET 8.8)



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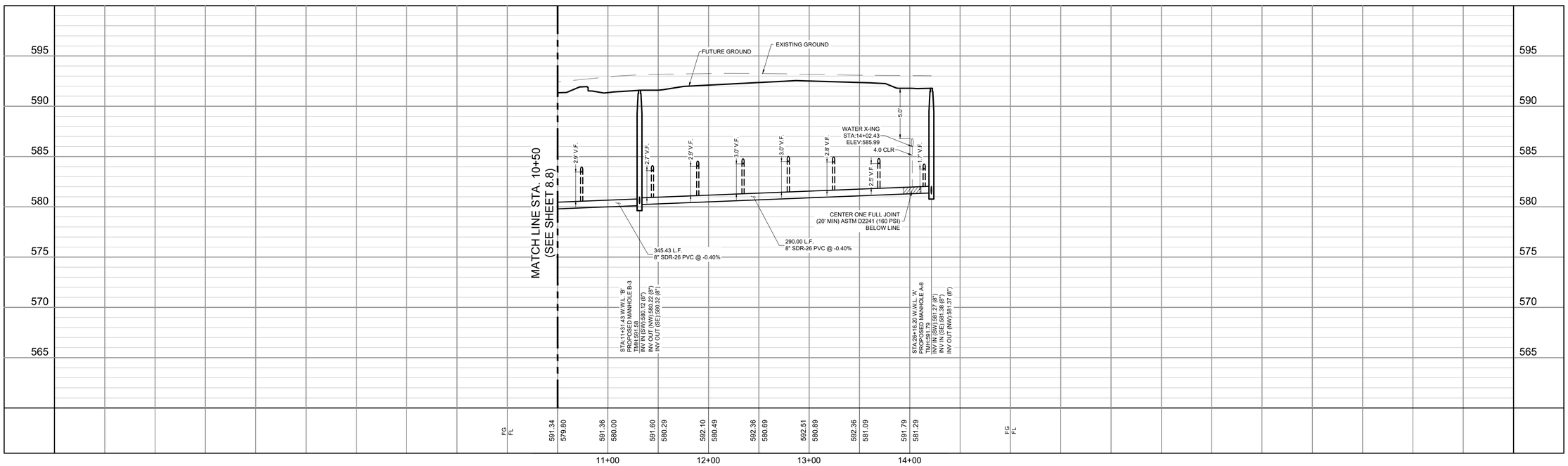
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W.W.L. 'B' STA. 10+50 TO STA. END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'B'
STA 10+50 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'B'.dwg

STATE OF TEXAS
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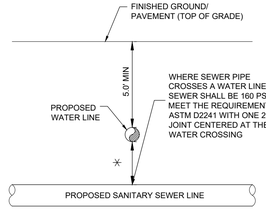
JOB NUMBER: SA173-0402-426

SHEET NO. **8.9**

K:\SA173 Lennar Homes\DAGD Grace Gardens Subdivision Unit 2\426 Site Development Plan\CIVIL-Sheets\sh_WWL 'B'.dwg
User: jburon
Last Modified: Oct. 14, 24 - 10:42
Plot Style/Time: Dec. 12, 24 - 09:44:53

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EAST SEWERSHED

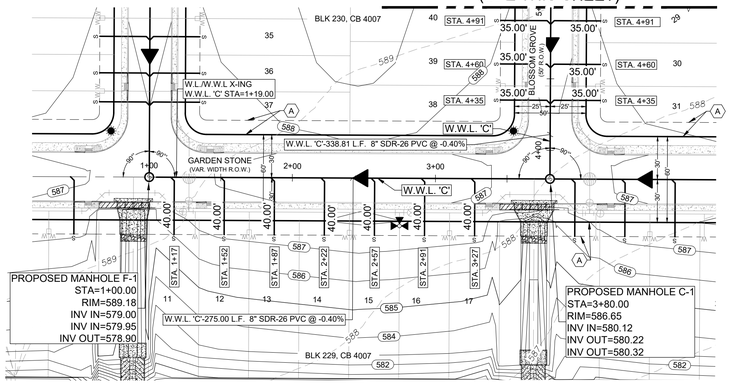
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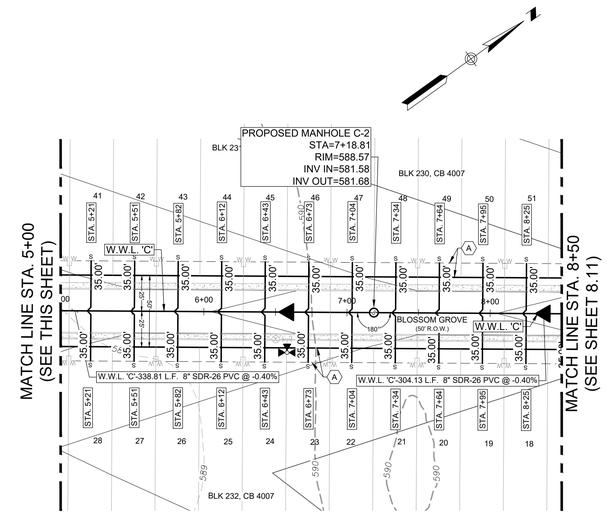
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		GUY WIRE
OU	OU	OVERHEAD ELECTRIC
		BENCHMARK

MATCH LINE STA. 5+00
(SEE THIS SHEET)





MATCH LINE STA. 5+00
(SEE THIS SHEET)

MATCH LINE STA. 8+50
(SEE SHEET 8.11)

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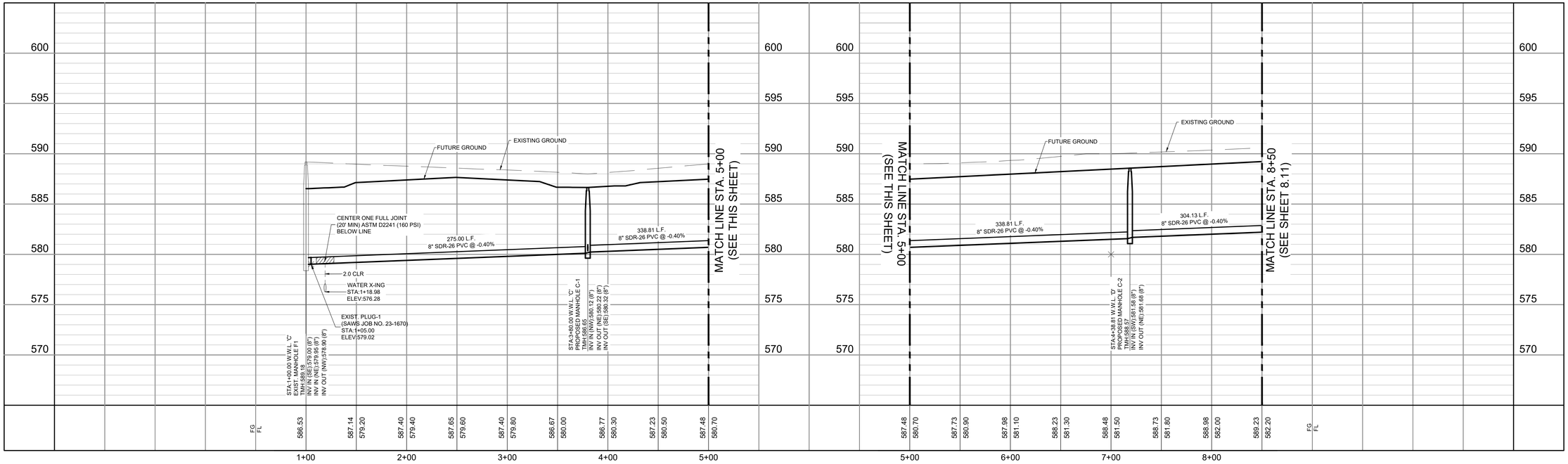
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W.W.L. 'C' STA. 1+00 TO STA. 8+50



LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'C'
STA 1+00 TO 10+50 PLAN & PROFILE

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'C'.dwg

RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
12/12/2024

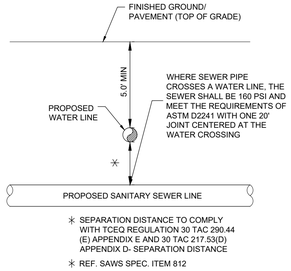
JOB NUMBER: SA173-0402-426

SHEET NO. 8.10

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\LDP\C-Sheets\sh_WWL 'C'.dwg
User: jduran
Last Modified: Oct. 14, 24 - 10:30
Plot Date/Time: Dec. 12, 24 - 09:39:15

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12. ALL CLEANOUTS TO BE CONSTRUCTED AT PROPERTY LINE.
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✳ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

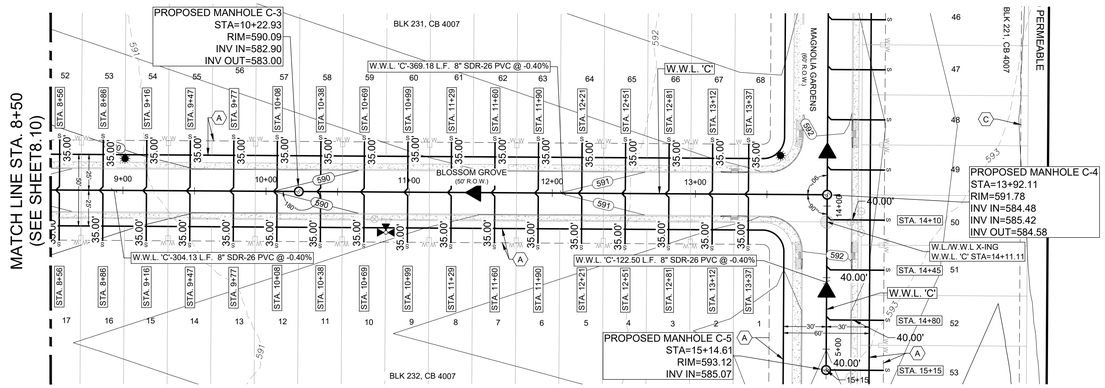
✳ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
ENTERPRISE GAS LINE EASEMENT
(A) (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
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(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)

EAST SEWERSHED

DEVELOPER'S NAME:	LENNAR HOMES
DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78216
PHONE #: (210) 403-6200	FAX #: N/A
SAWS BLOCK MAP #: 194544, 194546	TOTAL EDU'S: 287 TOTAL ACREAGE: 50.65
TOTAL LINEAR FOOTAGE OF PIPE:	8" - 7364 LF PLAT NO.: 24-11800119
NUMBER OF LOTS: 287	SAWS JOB NO.: 24-1596



LEGEND

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

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
		SANITARY SEWER LINE
8 WL	EX 16 WL	WATER LINE
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
OU	OU	OVERHEAD ELECTRIC
		BENCHMARK

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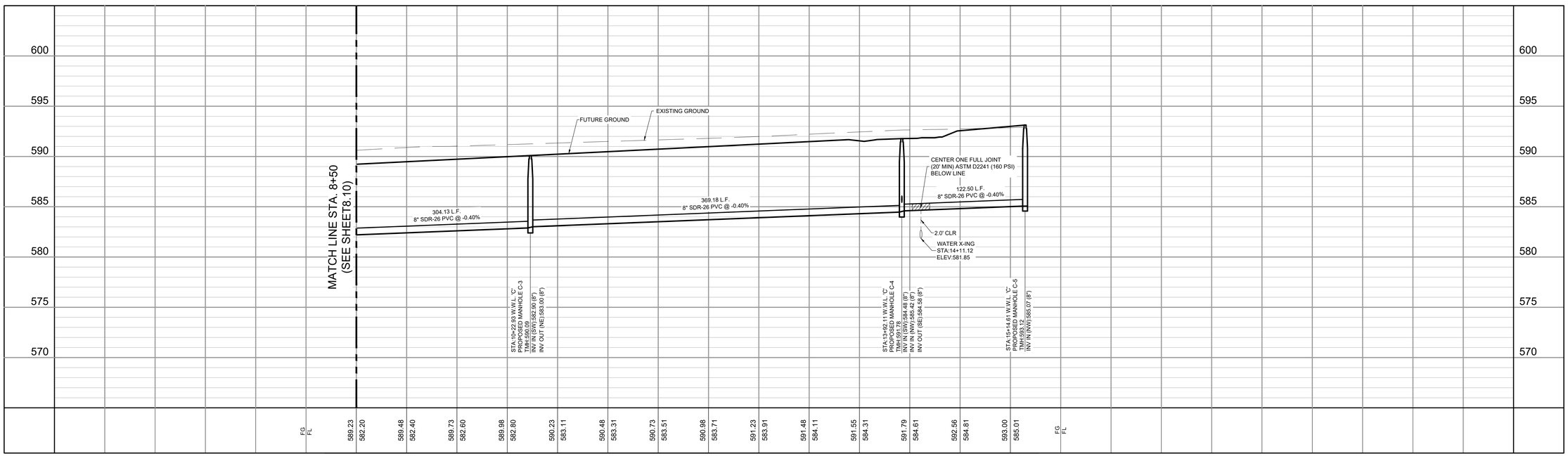
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W.W.L. 'C' STA. 8+50 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'C'
STA 8+50 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'C' dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 8.11

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\GWG-Sheets\sh_WWL 'C'.dwg
User: jburn
Last Modified: Oct. 14, 24 - 10:30
Plot Style/Time: Dec. 12, 24 - 09:58:23

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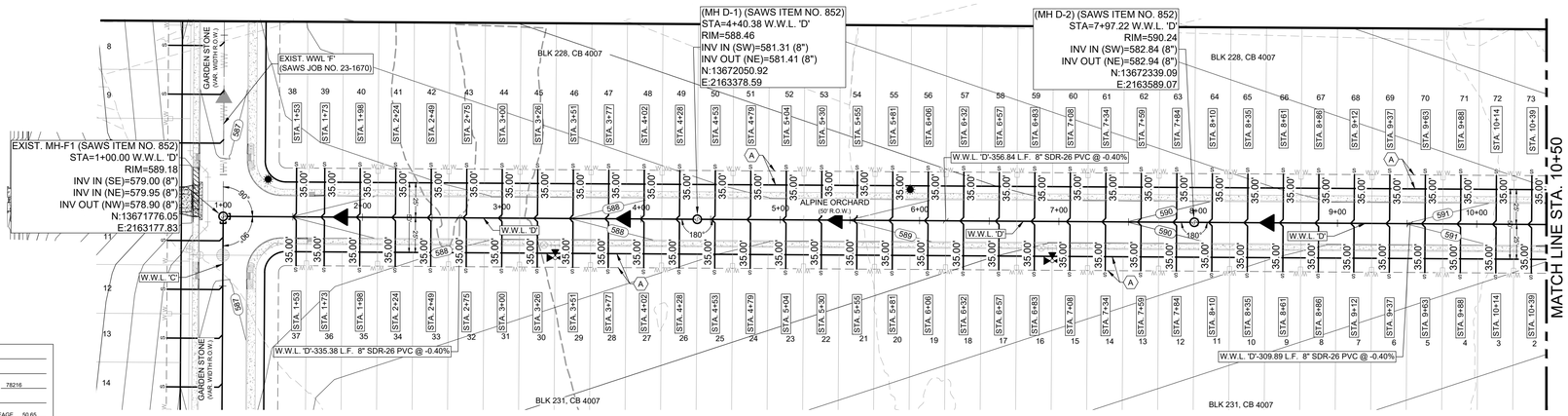
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EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES

DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155

CITY SAN ANTONIO STATE TEXAS ZIP 78216

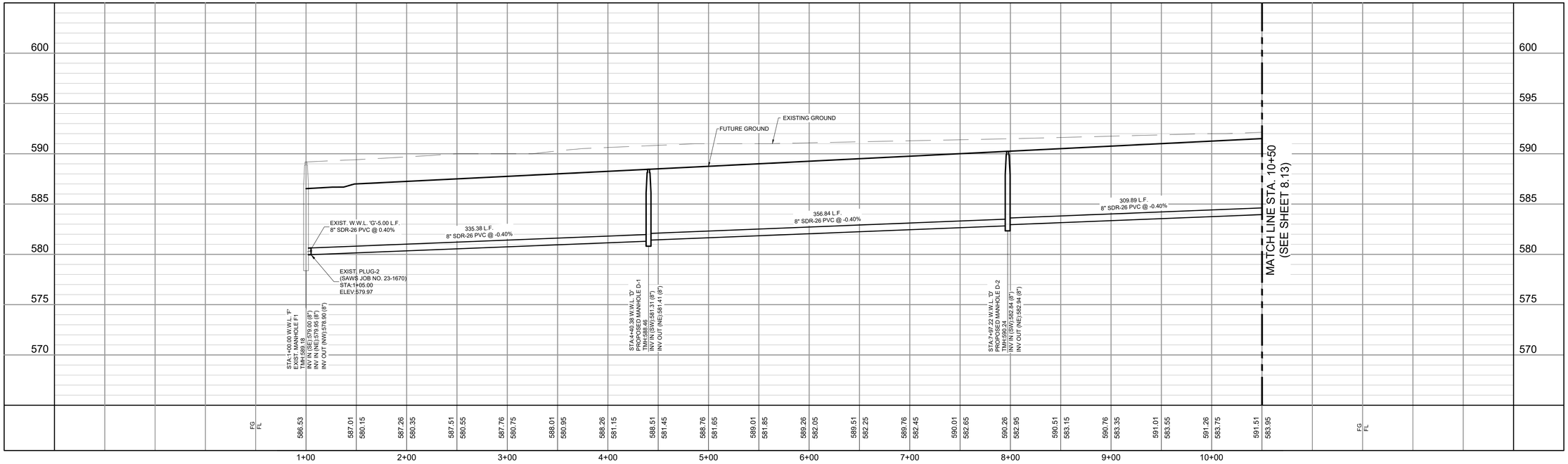
PHONE # (210) 403-6200 FAX # N/A

SAWS BLOCK MAP # 194544, 194546 TOTAL EDU'S 287 TOTAL ACREAGE 50.65

TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF PLAT NO. 24-11800119

NUMBER OF LOTS: 287 SAWS JOB NO. 24-1596

W.W.L. 'D' STA. 1+00 TO STA. 10+50



LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
8 SS	EX 16 SS	SANITARY SEWER LINE
8 WL	EX 16 WL	WATER LINE
C/O	C/O	SANITARY SEWER LATERAL
		CLEAN OUT (INSTALL BY HOME BUILDER)
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GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'D'
STA 1+00 TO 10+50 PLAN & PROFILE

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'D'.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
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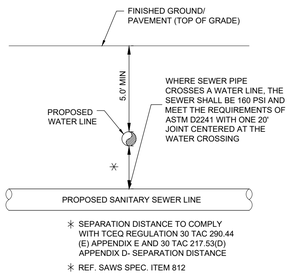
JOB NUMBER: SA173-0402-426

SHEET NO. 8.12

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User: jlyon
Last Modified: Oct. 25, 24 - 10:36
Plot Date/Time: Dec. 12, 24 - 09:09:07

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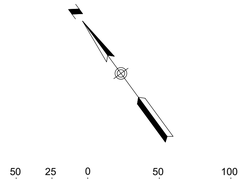
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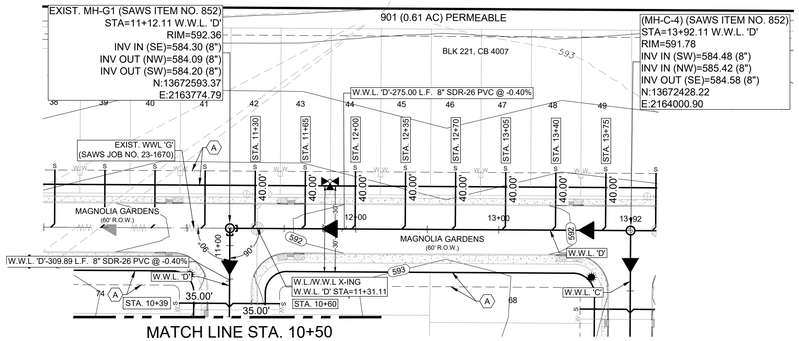
EAST SEWERSHED

DEVELOPER'S NAME:	LENNAR HOMES		
DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155		
CITY	SAN ANTONIO	STATE	TEXAS
ZIP	78216	PHONE #	(210) 403-6200
FAX #	N/A	SAWS BLOCK MAP #	194544, 194546
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TOTAL LINEAR FOOTAGE OF PIPE:	8" - 7364 LF	PLAT NO.	24-11800119
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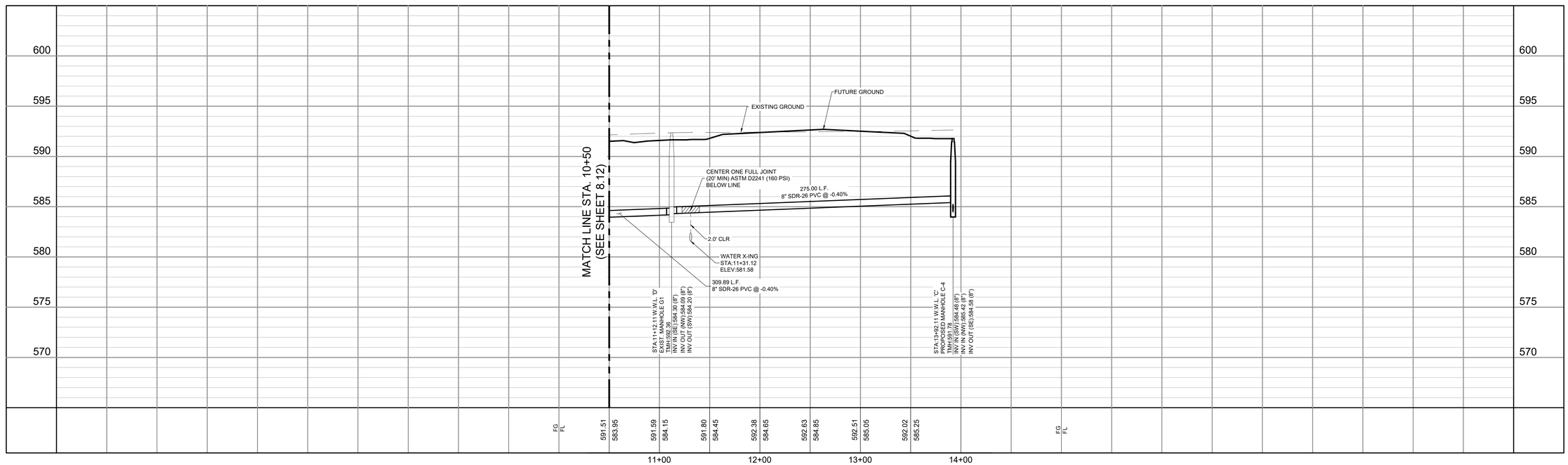
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MATCH LINE STA. 10+50
(SEE SHEET 8.12)

W.W.L. 'D' STA. 10+50 TO END



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GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'D'
STA 10+50 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'D' dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
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LJA Engineering, Inc.
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Suite 300
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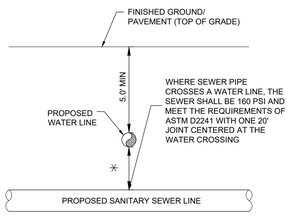
JOB NUMBER: SA173-0402-426

SHEET NO. **8.13**

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User: jburon
Last Modified: Oct 25, 24 - 15:28
Plot Style/Time: Pen-'12_A4' - 09:00:17

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✳ SEPARATION DISTANCE TO COMPLY WITH TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E AND 30 TAC 217.53(D) APPENDIX D- SEPARATION DISTANCE

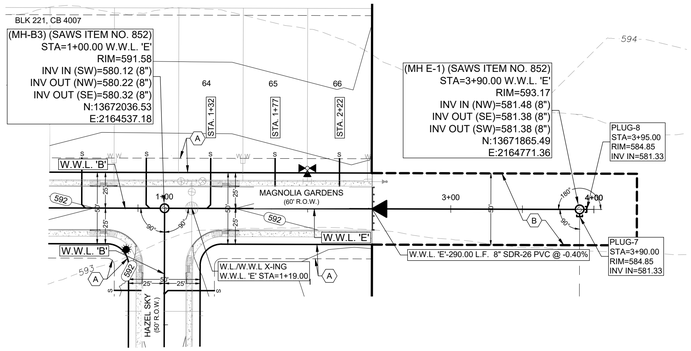
✳ REF. SAWS SPEC. ITEM 812

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
NTS

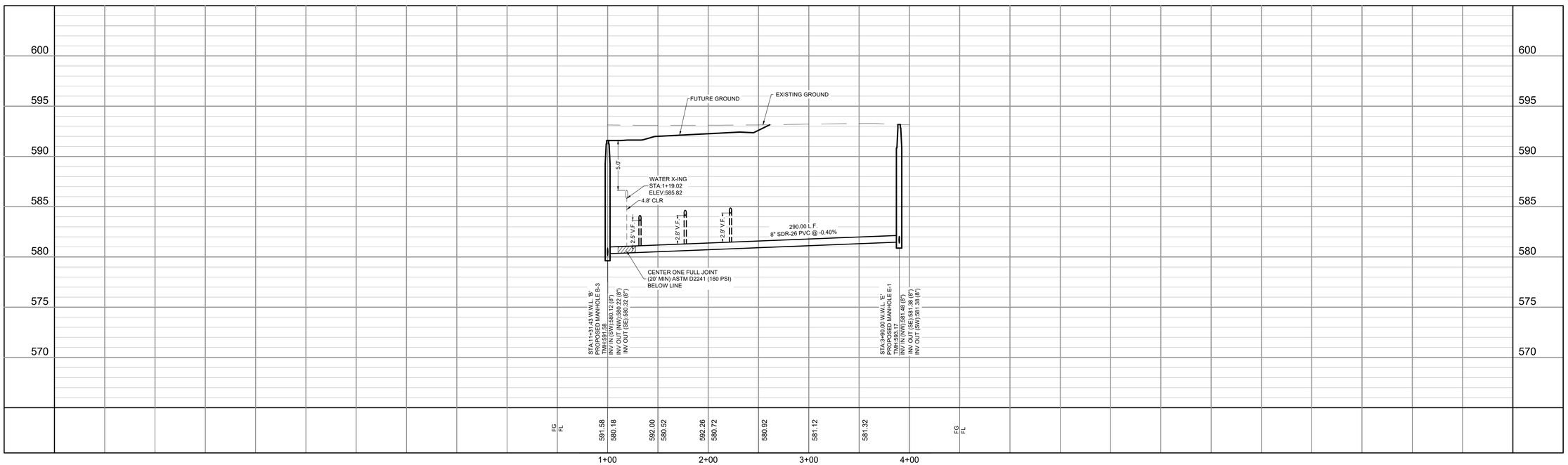
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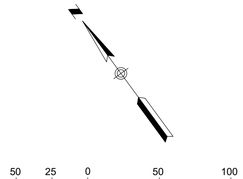
EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
SAWS BLOCK MAP # 194544, 194546 TOTAL EDU'S 287 TOTAL ACREAGE 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 287 SAWS JOB NO. 24-1596



W.W.L. 'E' STA. 1+00 TO END





LEGEND

PROPOSED	EXISTING	
Ⓢ	Ⓢ	SANITARY SEWER MANHOLE
8	EX 16	SANITARY SEWER LINE
8 WL	16 WL	WATER LINE
C/O	C/O	SANITARY SEWER LATERAL
		CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		WATER METER
		GAS VALVE
G	G	GAS LINE
Ⓓ	Ⓓ	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
		STREET LIGHT (100 WATT LED)
		STREET LIGHT (250 WATT LED)
		GUY WIRE
OU	OU	OVERHEAD ELECTRIC
		BENCHMARK

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GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'E'
STA 1+00 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE

DATE: 9/9/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'E'.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. **8.14**

K:\SA173 Lennar Homes\DAGD Grace Gardens Subdivision Unit 2\426 Site Development Plans\GWG-Sheets\sh_WWL 'E'.dwg
User: jburn
Last Modified: Oct 15, 24 - 17:12
Plot Style/Time: Dec 12, 24 - 09:56:55

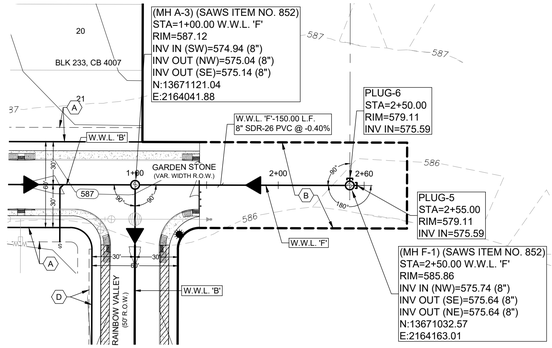
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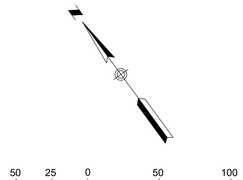
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		SANITARY SEWER LINE
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C/O	C/O	SANITARY SEWER LATERAL
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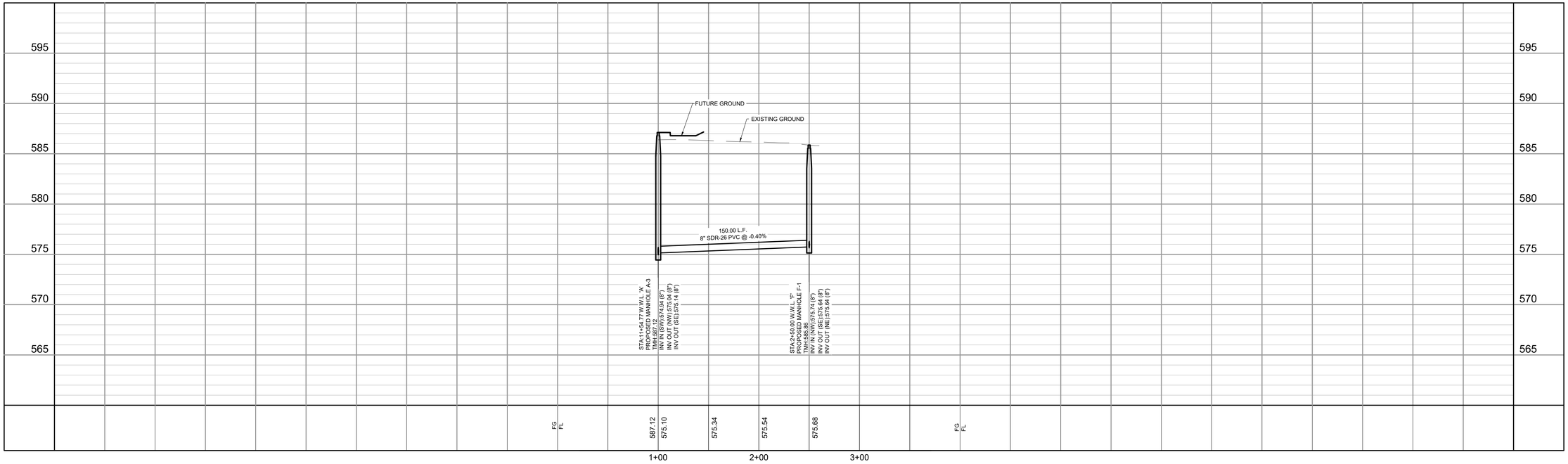
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W.W.L. 'F' STA. 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'F'
STA 1+00 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'F' dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
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Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 8.15

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\CIVIL-Sheets\sh_WWL 'F'.dwg
User: jlyon
Last Modified: Oct. 14, 24 - 11:13
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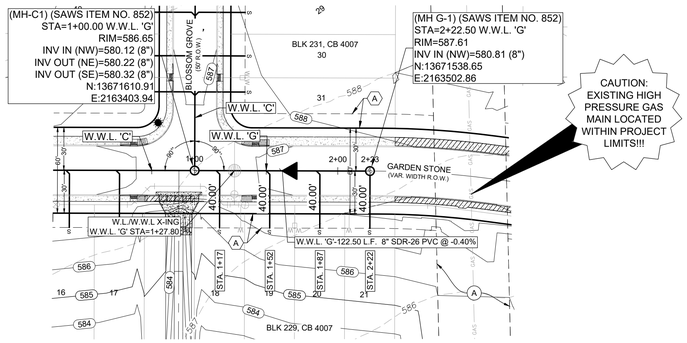
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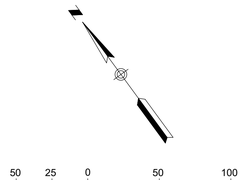
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DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155		
CITY	SAN ANTONIO	STATE TEXAS	ZIP 78216
PHONE #	(210) 403-9200	FAX #	N/A
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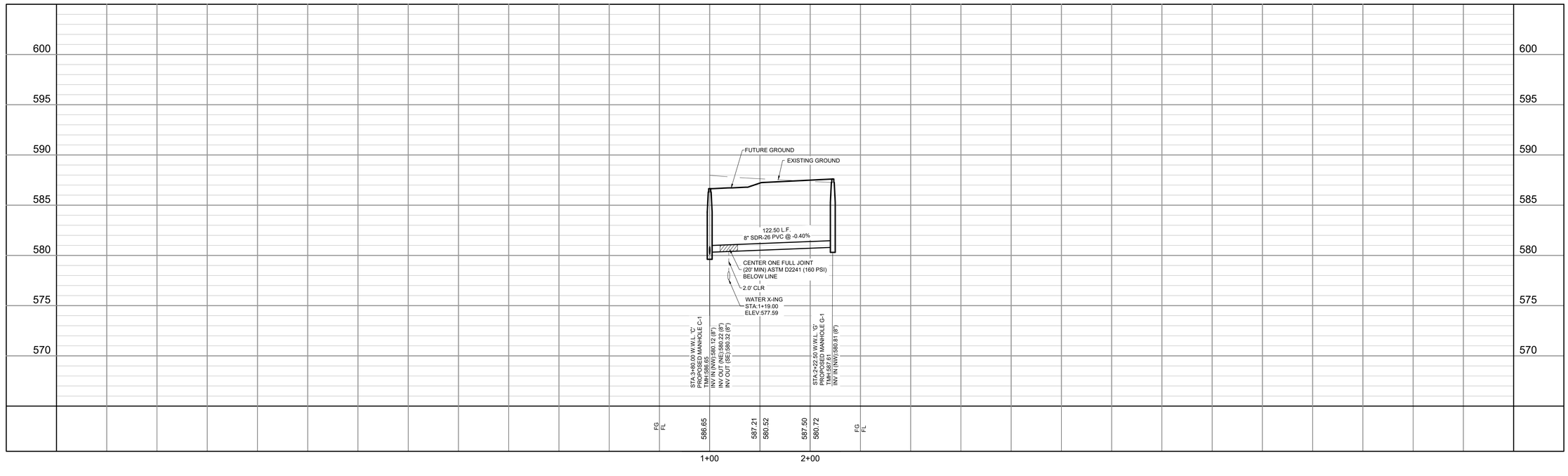
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JOB NUMBER: SA173-0402-426

SHEET NO. 8.16

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\LDP\~Sheets\sh_WWL 'G'.dwg
User: jlyon
Last Modified: Oct. 14, 24 - 11:17
File Copy/Time: Dec. 12, 24 - 08:11:09

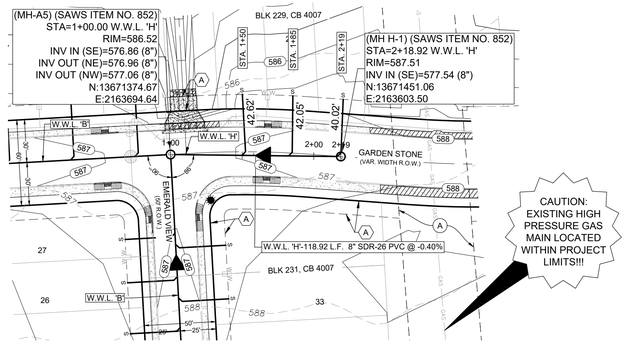
GENERAL NOTES

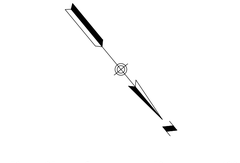
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13. COORDINATES ARE BASED ON STATE PLANE TX83-SCF- SURFACE. SCALE FACTOR: 1.00017.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING SAWS STANDARD SPECIFICATION 804 FOR EXCAVATION, TRENCHING AND BACKFILLING REQUIREMENTS AND STANDARD SPECIFICATION 812 FOR WATER/SEWER SEPARATION REQUIREMENTS.

EAST SEWERSHED

DEVELOPER'S NAME:	LENNAR HOMES
DEVELOPER'S ADDRESS:	100 NE LOOP 410, SUITE 1155
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78216
PHONE #: (210) 403-6200	FAX #: N/A
SAWS BLOCK MAP #: 194544, 194546	TOTAL EDU'S: 287 TOTAL ACREAGE: 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF	PLAT NO.: 24-11800119
NUMBER OF LOTS: 287	SAWS JOB NO.: 24-1596

(A) 10' G.E.T.CA. ESM'T
(B) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T TO EXPIRE UPON INCORPORATION OF FUTURE RIGHT-OF-WAY (0.55 AC)
(C) 5' G.E.T.CA. ESM'T
(D) 1' V.N.A.E.
(A) ENTERPRISE GAS LINE EASEMENT (VOL. 3315, PG. 380 O.P.R.) (VOL. 1747, PG. 236, O.P.R.)
(B) VARIABLE WIDTH ELECTRIC EASEMENT (VOL. 7517, PGS. 863-867 OPR)
(C) OFF-LOT VARIABLE WIDTH PRIVATE DRAINAGE EASEMENT (PLAT #23-11800410)
(D) OFF-LOT 15' GRADING EASEMENT (PLAT #23-11800410)
(E) 10' G.E.T.CA. ESM'T (PLAT #23-11800410)
(F) OFF-LOT DRAINAGE ACCESS ESM'T (PLAT #23-11800410)
(G) OFF-LOT PERMEABLE VARIABLE WIDTH UTILITY ESM'T (PLAT #23-11800410)





LEGEND

PROPOSED	EXISTING	
S	S	SANITARY SEWER MANHOLE
		SANITARY SEWER LINE
8 WL	EX 16 WL	WATER LINE
		SANITARY SEWER LATERAL
C/O	C/O	CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
		FIRE HYDRANT
		WATER METER
		GAS VALVE
G	G	GAS LINE
D	D	STORM SEWER MANHOLE
		CURB INLET
		POWER POLE
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		GUY WIRE
OU	OU	OVERHEAD ELECTRIC
		BENCHMARK

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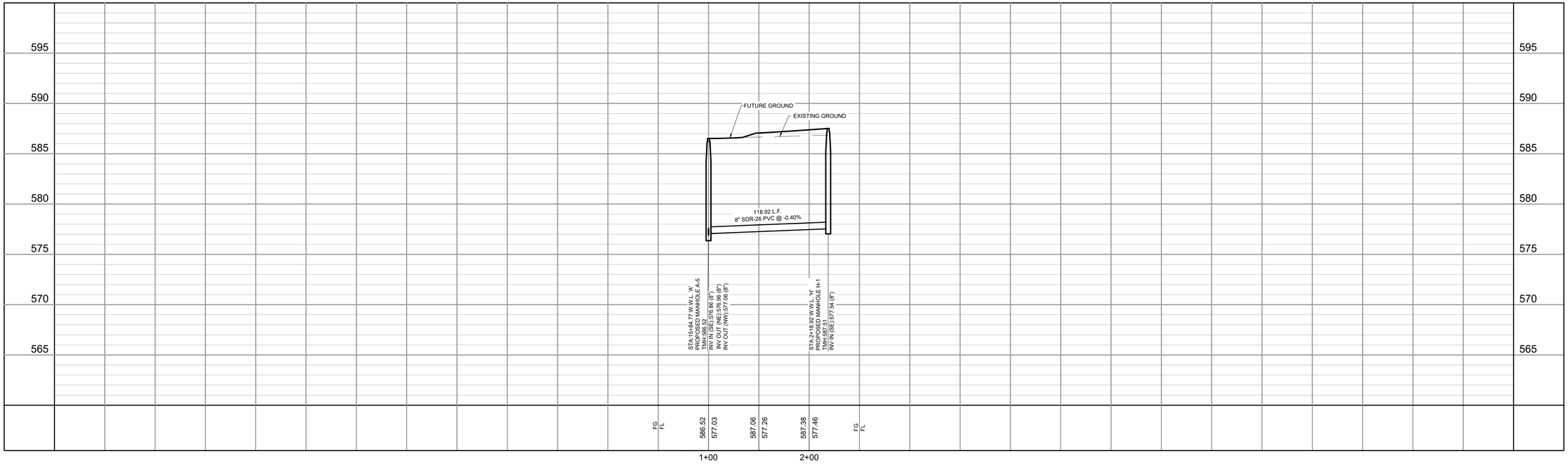
811 Know what's below. Call before you dig.

CAUTION: CONTRACTOR TO NOTIFY TEXAS ONE CALL AT 1-800-245-4545 48 HOURS PRIOR TO CONSTRUCTION FOR UTILITY LINE LOCATE. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY SIGNIFICANT DISCREPANCIES OR REQUIRED DESIGN CHANGES. EXISTING UTILITIES SHOWN HEREON ARE FOR INFORMATIONAL PURPOSES ONLY. ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION.

TRENCH EXCAVATION SAFETY PROTECTION

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W.W.L. 'H' STA. 1+00 TO END



GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
WASTEWATER LINE 'H'
STA 1+00 TO END PLAN & PROFILE

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL 'H'.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 8.17

K:\SA173\Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\LDPD-Sheets\sh_WWL 'H'.dwg
User: jaron
Last Modified: Oct. 14, 24 - 11:20
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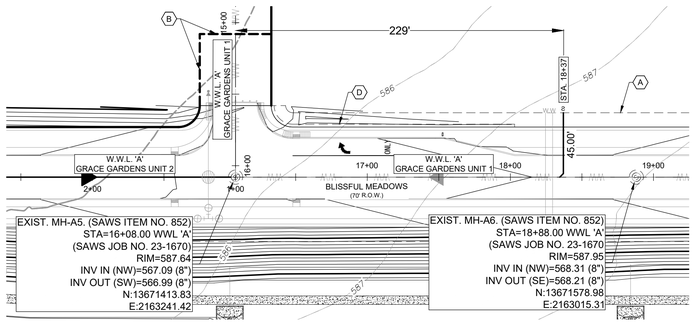
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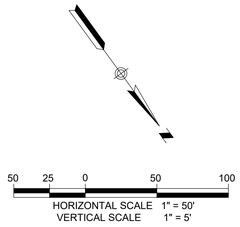
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EAST SEWERSHED

DEVELOPER'S NAME: LENNAR HOMES
DEVELOPER'S ADDRESS: 100 NE LOOP 410, SUITE 1155
CITY SAN ANTONIO STATE TEXAS ZIP 78216
PHONE # (210) 403-6200 FAX # N/A
SAWS BLOCK MAP # 194544, 194546 TOTAL EDU'S 287 TOTAL ACREAGE 50.65
TOTAL LINEAR FOOTAGE OF PIPE: 8" - 7364 LF PLAT NO. 24-11800119
NUMBER OF LOTS: 287 SAWS JOB NO. 24-1596





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PROPOSED	EXISTING	
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		SANITARY SEWER LINE
8 WL	EX 16 WL	WATER LINE
C/O	C/O	SANITARY SEWER LATERAL
		CLEAN OUT (INSTALL BY HOME BUILDER)
		WATER VALVE
		SINGLE WATER SERVICE
		DUAL WATER SERVICE
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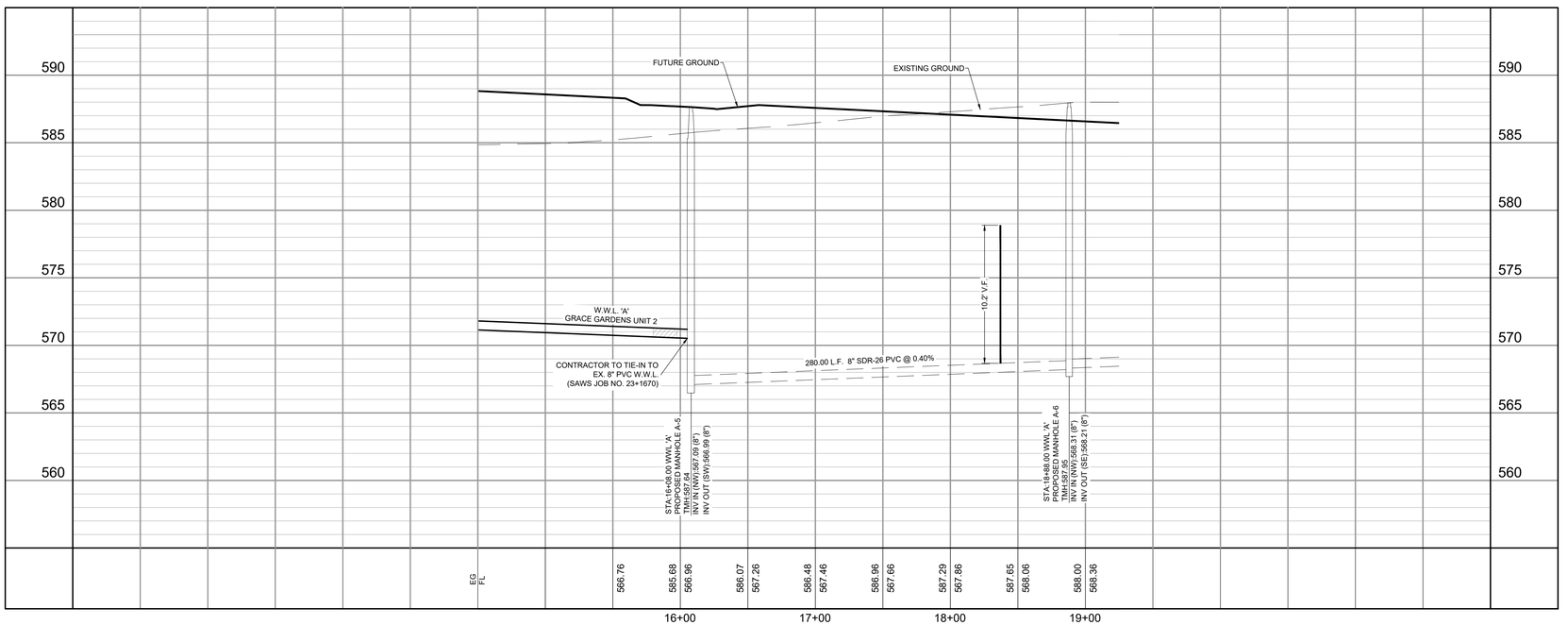
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SERVICE LATERALS @
EXIST. W.W.L. 'A' STA. 16+00 TO STA. 22+93



REVISIONS

NO.	DESCRIPTION	BY	DATE

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
UNIT 2 SERVICE LATERALS
EXIST. W.W.L. 'A' PLAN & PROFILE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_WWL Service Laterals Exhibit.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.593.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. **8.18**

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User: jdunn
Last Modified: Dec. 02, 24 - 14:13
Plot Style/Date: Dec. 12, 24 - 09:12:21

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50 25 0 50 100
HORIZONTAL SCALE 1" = 50'
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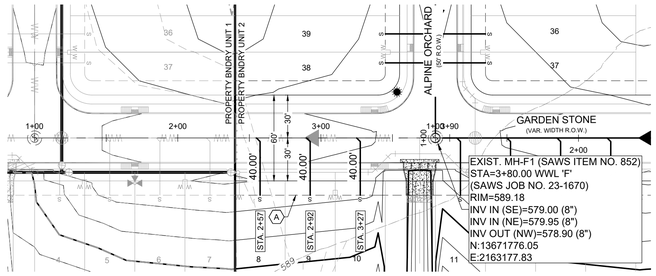
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C/O	C/O	SANITARY SEWER LATERAL
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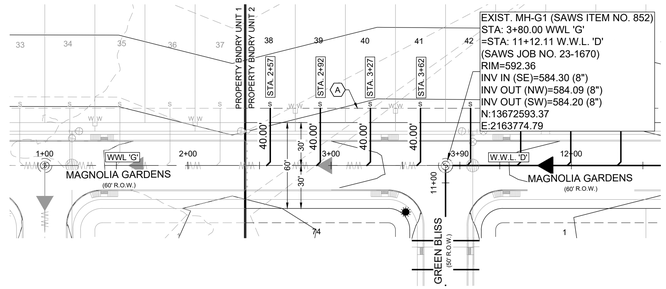
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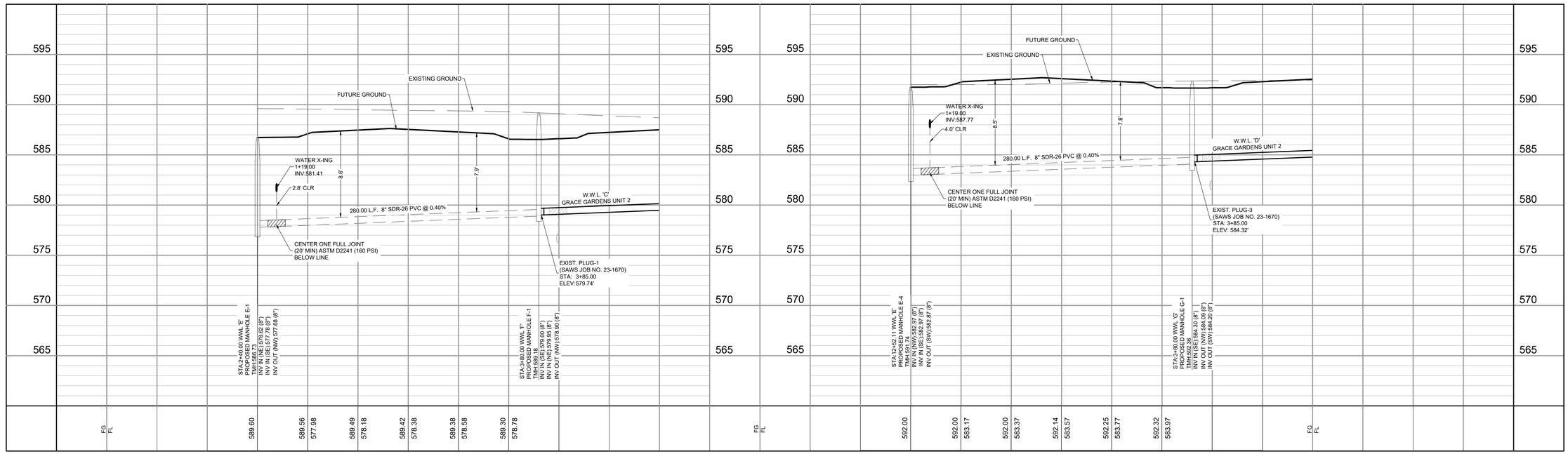
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CHECKED BY:
DRAWING NAME: ...\8_WWL Service Laterals Exhibit.dwg

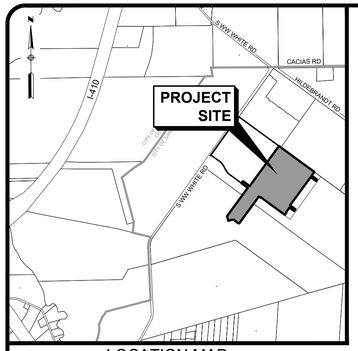
STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

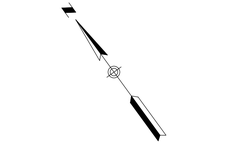
JOB NUMBER: SA173-0402-426

SHEET NO. **8.19**

K:\SA173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plan\CIVIL-Sheets\ph_WWL Service Laterals Exhibit.dwg
User: jburon
Last Modified: Dec 02, 24 - 14:13
Plot Style/Time: Dec 12, 24 - 09:32

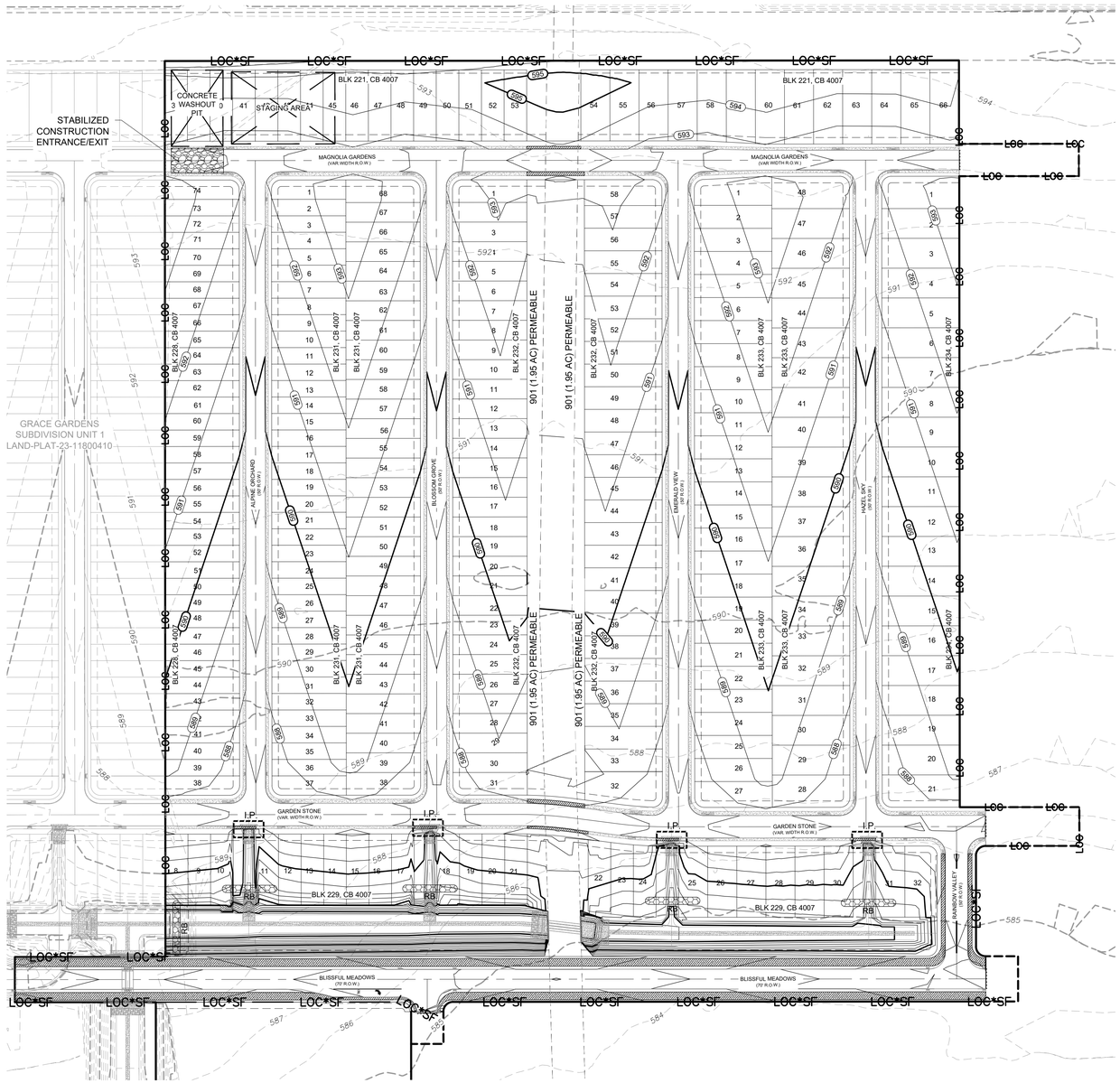


LOCATION MAP
N.T.S.



100 50 0 100 200
SCALE IN FEET
SCALE: 1"=100'

CAUTION:
EXISTING HIGH PRESSURE GAS MAIN LOCATED WITHIN PROJECT LIMITS!!!



LEGEND

- GRASSED DRAIN FLOW
- PAVEMENT DRAIN FLOW
- 800 — EXISTING CONTOUR
- 800 — PROPOSED CONTOUR
- CONCRETE WASHOUT PIT
- STABILIZED CONSTRUCTION EXIT
- SF — SILT FENCE
- LOC — LIMITS OF CONSTRUCTION
- RB — ROCK BERM
- I.P. — INLET PROTECTION SEE DETAIL C25.09, SHEET C25

SWPPP MODIFICATIONS		
DATE	*SIGNATURE*	*MODIFICATIONS*

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
STORM WATER POLLUTION PREVENTION PLAN

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: sh_SWPPP.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

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TBPE No. F-1386

JOB NUMBER:
SA173-0402-426

SHEET NO.
9.0

K:\SA\173 Lennar Homes\0402 Grace Gardens Subdivision Unit 2\426 Site Development Plans\DWG-Sheets\sh_SWPPP.dwg
User: jburun
Last Modified: Dec 13, 24 - 09:09
Plot Date/Time: Jan 15, 25 - 14:41:15

A. SILT FENCE

1. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS EXCEEDING 140.
2. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2' X 4" WELDED WIRE, 12 GAUGE MINIMUM.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. INSPECT ALL FENDING WEEKLY, AND AFTER ANY RAINFALL. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES. REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

B. TRIANGULAR SEDIMENT FILTER DIKE

1. THE DIKE STRUCTURE SHALL BE CONSTRUCTED OF 6' X 6', 6 GAUGE WELDED WIRE MESH, 18 INCHES PER SIDE, AND WRAPPED WITH GEOTEXTILE FABRIC THE SAME COMPOSITION AS THAT USED FOR SILT FENCES.
2. FILTER FABRIC SHOULD LAP OVER ENDS SIX (6) INCHES TO COVER DIKE TO DIKE JUNCTION; EACH JUNCTION SHOULD BE SECURED BY SHOAT RINGS.
3. POSITION DIKE PARALLEL TO THE CONTOURS, WITH THE END OF EACH SECTION CLOSELY ABUTTING THE ADJACENT SECTIONS.
4. FASTENING - THE FABRIC SKIRT MAY BE TOED- IN WITH 6 INCHES OF COMPACTED MATERIAL, OR 12 INCHES OF THE FABRIC SKIRT SHOULD EXTEND UPHILL AND BE SECURED WITH A MINIMUM OF 3 INCHES OF OPEN GRADED ROCK, OR WITH STAPLES OR NAILS. IF THESE TWO OPTIONS ARE NOT FEASIBLE THE DIKE STRUCTURE MAY BE TRENCHED IN 4 INCHES.
5. TRIANGULAR SEDIMENT FILTER DIKES SHOULD BE INSTALLED ACROSS EXPOSED SLOPES DURING CONSTRUCTION WITH ENDS OF THE DIKE TIED INTO EXISTING GRADES TO PREVENT FAILURE AND SHOULD INTERCEPT NO MORE THAN ONE ACRE OF RUNOFF.
6. WHEN MOVED TO ALLOW VEHICULAR ACCESS, THE DIKES SHOULD BE REINSTALLED AS SOON AS POSSIBLE, BUT ALWAYS AT THE END OF THE WORKDAY.
7. INSPECTION SHOULD BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR. INSPECT AND REALIGN DIKES AS NEEDED TO PREVENT GAPS BETWEEN SECTIONS.
8. ACCUMULATED SILT SHOULD BE REMOVED AFTER EACH RAINFALL, AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.

C. TEMPORARY CONSTRUCTION ENTRANCE/EXIT

1. AGGREGATE SIZE - 4 TO 8 INCHES WASHED, COARSE STONE.
2. LENGTH - AT LEAST 50 FEET.
3. THICKNESS - MINIMUM 8 INCHES.
4. WIDTH - MINIMUM. WIDTH SHALL BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
5. WASHING - WHEN NECESSARY, IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM 4 INCH DIAMETER WASHED STONE OR COMMERCIAL RACK SHALL BE INSTALLED WHICH DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE - IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE 6 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. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.
8. FABRIC - PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

D. INTERCEPTOR SWALE

1. MAXIMUM DEPTH OF FLOW IN THE SWALE SHALL BE 1 FOOT.
2. THE MINIMUM BOTTOM WIDTH OF THE SWALE SHALL BE 2 FEET.
3. SIDE SLOPES OF THE SWALE SHALL BE 3:1 OR FLATTER.
4. MINIMUM DESIGN CHANNEL FREEBOARD SHALL BE 6 INCHES
5. SWALES MUST MAINTAIN POSITIVE GRADE TO AN ACCEPTABLE OUTLET.
6. INTERCEPTOR SWALES MUST BE STABILIZED IMMEDIATELY UPON EXCAVATION SO AS NOT TO CONTRIBUTE TO THE EROSION PROBLEM THEY ARE ADDRESSING.
7. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS AND OTHER MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
8. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE DISPOSED OF IN AN APPROPRIATE SPOILS SITE.
9. INSPECTION MUST BE MADE AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE TO THE CHANNEL OR TO CLEAR DEBRIS OR OTHER OBSTRUCTIONS SO AS NOT TO DIMINISH FLOW CAPACITY. DAMAGES WHICH RESULT FROM NORMAL CONSTRUCTION ACTIVITIES SHALL BE REPAIRED AT THE END OF EACH WORK DAY.

E. ROCK BERMS

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 (FIGURE 1-28), 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. 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.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
7. 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.
8. REPAIR ANY LOOSE WIRE SHEATHING. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION. 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.
9. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

F. SANDBAG BERMS

1. THE BAG LENGTH SHOULD BE 24 TO 30 INCHES. WIDTH SHOULD BE 16 TO 18 INCHES AND THICKNESS SHOULD BE 6 TO 8 INCHES. (3) SANDBAGS SHOULD BE FILLED WITH COARSE GRADE SAND, FREE FROM DELETERIOUS MATERIAL. ALL SAND SHOULD PASS THROUGH A NO. 10 SIEVE. THE FILLED BAG SHOULD HAVE AN APPROXIMATE WEIGHT OF 40 POUNDS.
2. THE BERM SHOULD BE A MINIMUM HEIGHT OF 18 INCHES, MEASURED FROM THE TOP OF THE EXISTING GROUND AT THE UPSLOPE TOE TO THE TOP OF THE BERM.
3. THE BERM SHOULD BE SIZED AS SHOWN IN THE PLANS BUT SHOULD HAVE A MINIMUM WIDTH OF 48 INCHES MEASURED AT THE BOTTOM OF THE BERM AND 16 INCHES MEASURED AT THE TOP OF THE BERM.
4. RUNOFF WATER SHOULD FLOW OVER THE TOPS OF THE SANDBAGS OR THROUGH 4-INCH DIAMETER PVC PIPES EMBEDDED BELOW THE TOP LAYER OF BAGS AS SHOWN.
5. SANDBAGS SHOULD BE STACKED IN AT LEAST THREE ROWS ABUTTING EACH OTHER, AND IN STAGGERED ARRANGEMENT.
6. THE BASE OF THE BERM SHOULD HAVE AT LEAST 3 SANDBAGS. THESE CAN BE REDUCED TO 2 AND 1 BAG IN THE SECOND AND THIRD ROWS RESPECTIVELY. FOR EACH ADDITIONAL 6 INCHES OF HEIGHT, AN ADDITIONAL SANDBAG MUST BE ADDED TO EACH ROW WIDTH.
7. THE SAND BAG BERM SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN. THE SANDBAGS SHOULD BE RESHAPED OR REPLACED AS NEEDED DURING INSPECTION.
8. WHEN THE SILT REACHES 6 INCHES, THE ACCUMULATED SILT SHOULD BE REMOVED AND DISPOSED OF AT AN APPROVED SITE IN A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

G. STONE OUTLET SEDIMENT TRAP

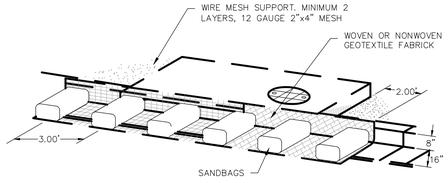
1. ALL AGGREGATE SHOULD BE AT LEAST 3 INCHES IN DIAMETER AND SHOULD NOT EXCEED A VOLUME OF 0.5 CUBIC FOOT.
2. EARTH EMBANKMENT: PLACE FILL MATERIAL IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH. BEFORE COMPACTION, MOISTEN OR AERATE EACH LAYER AS NECESSARY TO PROVIDE THE OPTIMUM MOISTURE CONTENT OF THE MATERIAL. COMPACT EACH LAYER TO 95 PERCENT STANDARD PROCTOR DENSITY. DO NOT PLACE MATERIAL ON SURFACES THAT ARE MUDDY OR FROZEN. SIDE SLOPES FOR THE EMBANKMENT ARE TO BE 3:1. THE MINIMUM WIDTH OF THE EMBANKMENT SHOULD BE 3 FEET.
3. A GAP IS TO BE LEFT IN THE EMBANKMENT IN THE LOCATION WHERE THE NATURAL CONFLUENCE OF RUNOFF CROSSES THE EMBANKMENT LINE. THE GAP IS TO HAVE A WIDTH IN FEET EQUAL TO 6 TIMES THE DRAINAGE AREA IN ACRES.
4. GEOTEXTILE COVERED ROCK CORE: A CORE OF FILTER STONE HAVING A MINIMUM HEIGHT OF 1.5 FEET AND A MINIMUM WIDTH AT THE BASE OF 3 FEET SHOULD BE PLACED ACROSS THE OPENING OF THE EARTH EMBANKMENT. THIS SHOULD BE COVERED BY GEOTEXTILE FABRIC WHICH SHOULD EXTEND A MINIMUM DISTANCE OF 2 FEET IN EITHER DIRECTION FROM THE BASE OF THE FILTER STONE CORE.
5. FILTER STONE EMBANKMENT: FILTER STONE SHOULD BE PLACED OVER THE GEOTEXTILE AND IS TO HAVE A SIDE SLOPE WHICH MATCHES THAT OF THE EARTH EMBANKMENT OF 3:1 AND SHOULD COVER THE GEOTEXTILE/ROCK CORE A MINIMUM OF 6INCHES WHEN INSTALLATION IS COMPLETE. THE CREST OF THE OUTLET SHOULD BE AT LEAST 1 FOOT BELOW THE TOP OF THE EMBANKMENT.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. REPAIR SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. TRASH AND OTHER DEBRIS SHOULD BE REMOVED AFTER EACH RAINFALL TO PREVENT CLOGGING OF THE OUTLET STRUCTURE. SEDIMENT SHOULD BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO HALF OF THE DESIGN DEPTH OF THE TRAP.

H. SEDIMENT BASINS

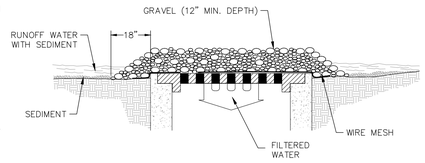
1. THE DRAINAGE AREA FOR A SEDIMENT BASIN SHALL BE LESS THAN 100 ACRES.
2. THE BASIN SHOULD INCLUDE A PERMANENT STAKE TO INDICATE THE SEDIMENT LEVEL IN THE POOL AND MARKED TO INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME (NOT THE TOP OF THE STAKE). SEDIMENT SHALL BE REMOVED WHEN SEDIMENT REACHES 50% STORAGE CAPACITY.
3. PLACE FILL MATERIAL IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH. BEFORE COMPACTION, MOISTEN OR AERATE EACH LAYER AS NECESSARY TO PROVIDE THE OPTIMUM MOISTURE CONTENT OF THE MATERIAL. COMPACT EACH LAYER TO 95 PERCENT STANDARD PROCTOR DENSITY. DO NOT PLACE MATERIAL ON SURFACES THAT ARE MUDDY OR FROZEN. SIDE SLOPES FOR THE EMBANKMENT SHOULD BE 3:1 (H:V). MINIMUM WIDTH OF THE EMBANKMENT AT THE TOP SHALL BE 8 FEET.
4. AN EMERGENCY SPILLWAY SHOULD BE INSTALLED ADJACENT TO THE EMBANKMENT ON UNDISTURBED SOIL AND SHOULD BE SIZED TO CARRY THE FULL AMOUNT OF FLOW GENERATED BY A 10-YEAR, 3-HOUR STORM WITH 1 FOOT OF FREEBOARD LESS THE AMOUNT WHICH CAN BE CARRIED BY THE PRINCIPAL OUTLET CONTROL DEVICE. THE EMERGENCY SPILLWAY SHOULD BE LINED WITH RIPRAP AS SHOULD THE SWALE LEADING FROM THE SPILLWAY TO THE NORMAL WATERCOURSE AT THE BASE OF THE EMBANKMENT.
5. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. REPAIR SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.TRASH AND OTHER DEBRIS SHOULD BE REMOVED AFTER EACH RAINFALL TO PREVENT CLOGGING OF THE OUTLET STRUCTURE.
6. ACCUMULATED SILT SHOULD BE REMOVED AND THE BASIN SHOULD BE RE- GRADED TO ITS ORIGINAL DIMENSIONS AT SUCH POINT THAT THE CAPACITY OF THE IMPOUNDMENT HAS BEEN REDUCED TO 75% OF ITS ORIGINAL STORAGE CAPACITY.

ADDITIONAL NOTES:

1. UPON COMPLETION OF CONSTRUCTION ALL DISTURBED AREAS SHALL BE REVEGETATED TO 70% OF EXISTING CONDITIONS IN ACCORDANCE WITH THE SWPPP AND TPDES REQUIREMENTS.
2. THIS SITE IS NOT LOCATED ADJACENT TO ANY SURFACE WATERS.
3. THIS SITE WILL NOT HAVE ANY LOCATIONS WHERE STORM WATER DISCHARGES DIRECTLY TO A SURFACE WATER BODY.



CURB INLET PROTECTION



GRATE INLET PROTECTION

NOTES:

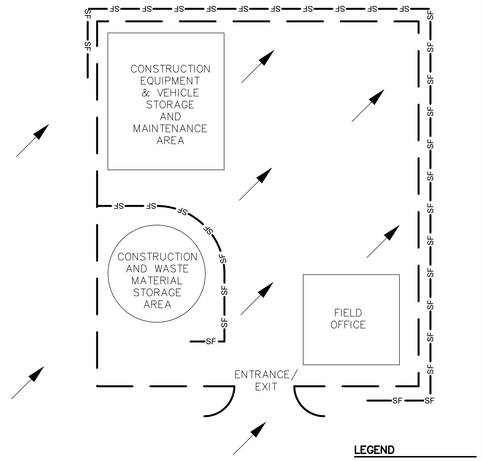
1. WHEN A SANDBAG IS FILLED WITH MATERIAL, THE OPEN END OF THE SANDBAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CHORD.
2. INLET PROTECTION SHALL BE PLACED OVER THE MOUTH OF THE INLET WITH A 2 FOOT OVERLAP ON EITHER SIDE.
3. THE FABRIC COVER AND SHALL BE A CONTINUOUS WRAPPING OF GEOTEXTILE.
4. THE SKIRT SHALL BE WEIGHTED WITH ONE 18"x24"x6" SANDBAG EVERY 3 FEET.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
6. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF FOUR INCHES, AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.
7. AFTER THE DEVELOPMENT SITE IS COMPLETELY STABILIZED, THE DIKES AND ANY REMAINING SILT SHALL BE REMOVED. SILT SHALL BE DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

NOTES:

1. WIRE MESH SHALL BE LAID OVER THE DROP INLET SO THAT THE WIRE EXTENDS MINIMUM OF 1 FOOT BEYOND EACH SIDE OF THE INLET STRUCTURE. WIRE MESH WITH ½ INCH OPENINGS SHALL BE USED. IF MORE THAN ONE STRIP OF MESH IS NECESSARY, THE STRIPS SHALL BE OVERLAPPED.
2. COARSE AGGREGATE SHALL BE PLACED OVER THE WIRE MESH AS INDICATED ABOVE. THE DEPTH OF STONE SHALL BE AT LEAST 12 INCHES OVER THE ENTIRE INLET OPENING. THE STONE SHALL EXTEND BEYOND THE INLET OPENING AT LEAST 18 INCHES ON ALL SIDES.
3. IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS IT'S FUNCTION, THE STONES MUST BE PULLED AWAY FROM THE INLET, CLEANED AND REPLACED.

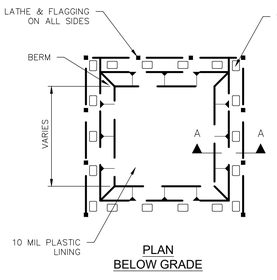
27.04 INLET PROTECTION

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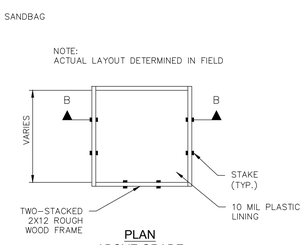


CONSTRUCTION STAGING AREA

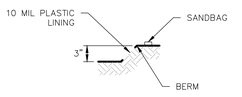
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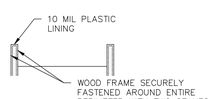
PLAN
BELOW GRADE



PLAN
ABOVE GRADE



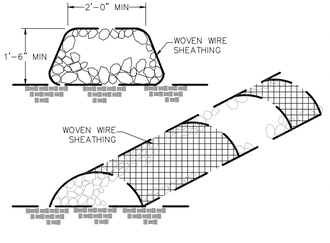
BELOW GRADE
SECTION A-A



ABOVE GRADE
SECTION B-B

27.02 CONCRETE WASHOUT AREA

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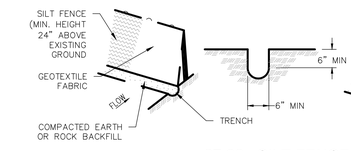


NOTES:

1. USE ONLY OPEN GRADED ROCK 4–8 INCH DIAMETER FOR STREAMFLOW CONDITION; USE OPEN GRADED ROCK 3–5 INCHES DIAMETER FOR OTHER CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENINGS AND MINIMUM WIRE DIAMETER OF 20 GAUGE.
3. THE ROCK BERM SHALL BE INSPECTED WEEKLY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE – WOVEN WIRE SHEATHING, SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE–THIRD THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SEVERE SERVICE ROCK BERMS; SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

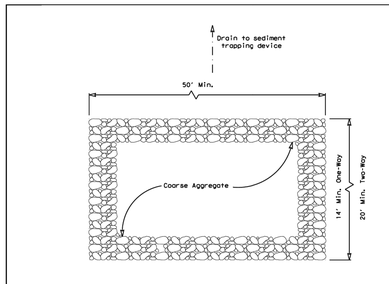
27.05 ROCK BERM

N.T.S.

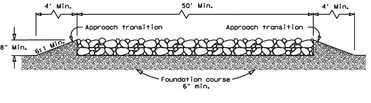


27.03 SILT FENCE

N.T.S.



PLAN VIEW



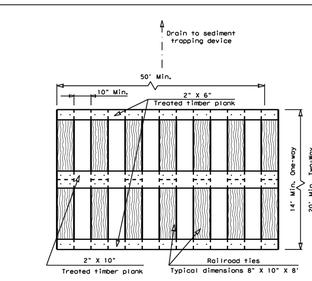
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

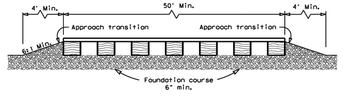
ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW



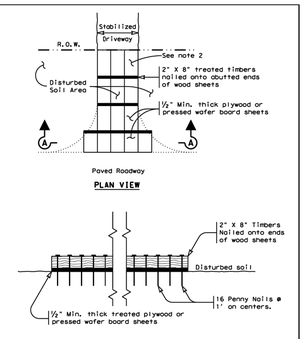
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW

SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT TERM

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	5C8	4S8	8JR	SHWY8
	DIST	COUNTY		SHEET NO.
	4DS16	4CTY8	EC(3)A-16	

GRACE GARDENS SUBDIVISION UNIT 2
LAND-PLAT-24-11800119
STORM WATER POLLUTION PREVENTION DETAILS

NO.	DESCRIPTION	BY	DATE

DATE: 9/8/2023
DESIGNED BY:
DRAWN BY: RG
CHECKED BY:
DRAWING NAME: 8b_SWPPP.dwg

STATE OF TEXAS
RICHARD W. GRAY III
75617
REGISTERED PROFESSIONAL ENGINEER
01/15/2025

LJA Engineering, Inc.
9830 Colonnade Blvd
Suite 300
San Antonio, Texas 78230
Phone 210.503.2700
LJA.COM
TBPE No. F-1386

JOB NUMBER: SA173-0402-426

SHEET NO. 9.1

K:\SA\173_Lennar Homes\0402 Grace Gardens Subdivision Unit 2\400 Site Development Plans\DWG-Sheets\sh_SWPPP.dwg
User: jburn
Last Modified: Dec 13, 24 - 09:39
Plot Style/Pen: sha10_25 - 13:48:17