CANYON RANCH UNIT 4

COMAL COUNTY

CIVIL CONSTRUCTION DRAWINGS

WATER, SEWER, STREET AND DRAINAGE IMPROVEMENTS

June 2025

STREETS - COMAL COUNTY
WATER - TEXAS WATER COMPANY, SJWTX
DRAINAGE - COMAL COUNTY
WASTEWATER - CANYON RANCH MUD OF COMAL COUNTY

FEMA PANEL: #48091C0080F, DATED SEPTEMBER 9, 2009
TRACT SIZE: 30.698 ACRES
TYPE: SINGLE FAMILY RESIDENTIAL

CONTACT INFORMATION FOR COORDINATION AND EMERGENCY

COMAL COUNTY ENGINEER'S OFFICE : (830) 608-2090
ELECTRIC UTILITY: PEDERNALES ELECTRIC COOPERATIVE: (512) 262-2161
WATER UTILITY: TEXAS WATER COMPANY, SJWTX: (830) 312-4600
WASTEWATER UTILITY: CANYON RANCH MUD OF COMAL COUNTY: (512) 328-2008
TEXAS DEPARTMENT OF TRANSPORTATION: (512) 832-7000
FIRE DEPARTMENT: COMAL COUNTY ESD #1 & #4: (830) 228-4501

BENCHMARK

BM #101: MAG NAIL SET IN ASPHALT DRIVEWAY APRON LOCATED ON THE SOUTH SIDE OF FARM TO MARKET 306, ±614' FROM THE SOUTHWEST CORNER OF THE 400.00 ACRE PARENT TRACT.
ELEVATION: 1,228.08'

BM #102: MAG NAIL SET 2' SOUTH FROM THE EDGE OF ASPHALT PAVEMENT OF FARM TO MARKET 306, ± 278' FROM THE SOUTEAST CORNER OF THE 400.00 ACRE PARENT TRACT,
ELEVATION: 1,195.17'

ACCEPTED FOR CONSTRUCTION:

COMAL COUNTY — DATE

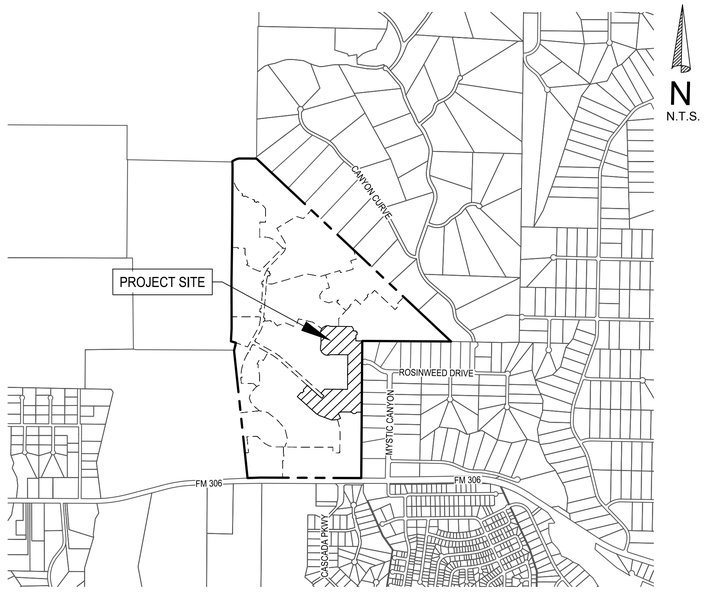
TEXAS WATER COMPANY, SJWTX — DATE

CANYON RANCH MUD — DATE

Know what's below. Call before you dig.

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

VICINITY MAP



NAME: CANYON RANCH UNIT 4

OWNER: CANYON RANCH 400
CONTACT: KELLY LEACH, PRESIDENT
1141 N. LOOP 1604
SUITE 105-114
SAN ANTONIO, TEXAS 78232
PHONE: (210) 827-7918

ENGINEER: BGE, INC., TBPE-1046
CONTACT: STACY MULHOLLAND
EMAIL: SMULHOLLAND@BGEINC.COM
7330 SAN PEDRO AVENUE SUITE 202
SAN ANTONIO, TEXAS 78216
PHONE: (210) 581-3600

WATER: TEXAS WATER COMPANY, SJWTX
1399 SATTLER RD
NEW BRAUNFELS, TEXAS 78132
PHONE: (830) 312-4600

ELECTRIC: PEDERNALES COOP, INC.
PO BOX 1
JOHNSON CITY, TEXAS 78636
PHONE: (877) 372-0391

DEVELOPER: LENNAR
CONTACT: RICHARD MOTT
100 NE LP 410, SUITE 1155
SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6200

LAND SURVEYOR: BGE INC., TBPE F1046
CONTACT: DION ALBERTSON R.P.L.S.
7330 SAN PEDRO AVE SUITE 202
SAN ANTONIO, TX 78216
PHONE: (210) 581-3600

WASTEWATER: CANYON RANCH MUD OF COMAL COUNTY
ATTN: MCLEAN & HOWARD LLP
901 SOUTHMOPAR SUITE 225
AUSTIN, TX 78746
PHONE: (512) 328-2008

REVISIONS/CORRECTIONS

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SUBMITTED BY

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GENERAL NOTES

1. IF CONSTRUCTION HAS NOT COMMENCED WITHIN ONE YEAR OF COUNTY APPROVAL FOR CONSTRUCTION INSPECTION THAT APPROVAL IS NO LONGER VALID.
2. THE MOST CURRENT EDITIONS OF COMAL COUNTY STANDARD SPECIFICATIONS AND THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES SHALL BE FOLLOWED FOR ALL CONSTRUCTION EXCEPT AS AMENDED BY THE CITY OF NEW BRAUNFELS, CITY OF SAN ANTONIO, OR CITY OF AUSTIN STANDARD DETAILS.
3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER OF RECORD. IN ACCEPTING THESE PLANS, COMAL COUNTY MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
4. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL CONTACT COMAL COUNTY TO SET A PRE-CONSTRUCTION MEETING. A 48-HOUR NOTIFICATION IS REQUIRED FOR ALL INSPECTION AND MEETING REQUESTS.
   - ALL INSPECTIONS ARE TO BE CALLED IN AT (830) 608-2090
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL DEVICES ARE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PLANS AND THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. IF, IN THE OPINION OF THE ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO THE 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. IF THE NEED ARISES, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES MAY BE ORDERED BY THE ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
6. A TXDOT TYPE II B-B BLUE REFLECTIVE RAISED PAVEMENT MARKER SHALL BE INSTALL IN THE CENTER OF THE ROADWAY ADJACENT TO ALL FIRE HYDRANTS. IN LOCATIONS WHERE FIRE HYDRANTS ARE SITUATED ON CORNERS, BLUE REFLECTIVE RAISED PAVEMENT MARKERS SHALL BE INSTALLED ON BOTH APPROACHES FROM THE HYDRANT. THE RAISED PAVEMENT MARKER SHALL MEET TXDOT MATERIAL, EPOXY, AND ADHESIVE SPECIFICATIONS.
7. STRUCTURAL RETAINING WALL DESIGN IS NOT INCLUDED WITHIN THIS SET OF PLANS.

GROUND WATER:

1. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, CONTRACTOR, SUBCONTRACTORS, BUILDERS, GEO-TECHNICAL ENGINEER, AND PROJECT ENGINEER TO IMMEDIATELY NOTIFY THE OFFICE OF THE COUNTY ENGINEER AND PROJECT ENGINEER IF THE PRESENCE OF GROUNDWATER WITHIN THE SITE IS EVIDENT. UPON NOTIFICATION THE PROJECT ENGINEERS SHALL RESPOND WITH PLAN REVISIONS FOR THE MITIGATION OF THE GROUNDWATER ISSUE. THE COUNTY ENGINEER SHALL RESPOND WITHIN TWO (2) BUSINESS DAYS UPON RECEIPT OF THE MITIGATION PLAN. ALL CONSTRUCTION ACTIVITY, IMPACTED BY THE DISCOVERY OF GROUNDWATER, SHALL BE SUSPENDED UNTIL THE COUNTY ENGINEER GRANTS A WRITTEN APPROVAL OF THE GROUNDWATER MITIGATION PLAN.

RECORD DRAWINGS:

1. AS PER PLATTING ORDINANCE SECTION 118-38M: WHEN ALL OF THE IMPROVEMENTS ARE FOUND TO BE CONSTRUCTED AND COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND WITH THE COUNTY'S STANDARDS, AND UPON RECEIPT OF ONE SET OF "RECORD DRAWING" PLANS, AND DIGITAL COPY OF ALL PLANS (PDF COPY) THE COUNTY ENGINEER SHALL ACCEPT SUCH IMPROVEMENTS FOR COMAL COUNTY, SUBJECT TO THE GUARANTY OF MATERIAL AND WORKMANSHIP PROVISIONS IN THIS SECTION.

CONSTRUCTION NOTE:

1. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT EROSION CONTROL MEASURES AND STORM WATER CONTROL SUFFICIENT TO MITIGATE OFF-SITE IMPACTS ARE IN PLACE AT ALL STAGES OF CONSTRUCTION.

DRAINAGE NOTE:

1. DRAINAGE IMPROVEMENTS SUFFICIENT TO MITIGATE THE IMPACT OF CONSTRUCTION SHALL BE INSTALLED PRIOR TO ADDING IMPERVIOUS COVER.

FINISHED FLOOR ELEVATIONS:

1. THE ELEVATIONS OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORM WATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO STORM WATER CONVEYANCE STRUCTURES MUST HAVE A FLOOR SLAB ELEVATION OR BOTTOM FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE A PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE GARAGE.

SOILS TESTING:

1. PROCTORS SHALL BE SAMPLED FROM ON-SITE MATERIAL (ON-SITE IS DEFINED AS LIMITS OF CONSTRUCTION FOR THIS PLAN SET) AND A COPY OF THE PROCTOR RESULTS SHALL BE DELIVERED TO COMAL COUNTY STREET INSPECTOR PRIOR TO ANY DENSITY TESTS.

ROADWAY:

1. ALL ROADWAY COMPACTION TESTS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FLEXIBLE BASE OR FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED SIX INCHES COMPACTED, EACH LAYER OF MATERIAL, INCLUSIVE OF SUB GRADE, SHALL BE COMPACTED AS SPECIFIED AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, AND TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY COMAL COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100 LF FOR EACH UPLIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER WILL PROVIDE COMAL COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FLEXIBLE BASE, AND FILL MATERIAL AND SUB GRADE, HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.
2. ITEM 340: ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE "D" HOT MIX ASPHALT AS DEFINED IN TXDOT'S STANDARD SPECIFICATIONS FOR CURRENT TXDOT STANDARD SPECIFICATIONS FOR CONSTRICTION OF HIGHWAYS, STREET, AND BRIDGES.
3. COMAL COUNTY WILL NOT ACCEPT THE USE OF RECYCLED ASPHALT PAVEMENT (RAP) OR RECYCLED ASPHALT SHINGLES (RAS) IN ASPHALT MIXTURES FOR NEW ROADWAYS, ANY DEBRIS INCLUSIONS WITHIN NEW ASPHALT PAVEMENTS WILL RESULT IN ASPHALT REMOVAL AND REPLACEMENTS FROM CURB TO CURB FOR LIMITS TO BE DETERMINED BY COMAL COUNTY.
4. THE ASPHALTIC CONCRETE SURFACE COURSE SHALL BE PLANT MIXED, HOT LAID TYPE "D" MEETING THE SPECIFICATION REQUIREMENTS OF TXDOT ITEM 340, THE MIX SHALL BE DESIGNED FOR A STABILITY OF AT LEAST 35 AND SHALL BE COMPACTED TO BETWEEN 91 AND 95 PERCENT OF THE MAXIMUM THEORETICAL DENSITY AS DETERMINED BY TXDOT TEST METHOD TEX-227-F. THE ASPHALT CEMENT CONTENT BY PERCENT OF TOTAL MIXTURE WEIGHT SHALL FALL WITHIN A TOLERANCE OF +/- 0.5 PERCENT FROM A SPECIFIC MIX DESIGN.

UTILITY TRENCH COMPACTION:

1. ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYER NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIALS SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, AND TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER SHALL PROVIDE COMAL COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

CURB CUT DUE TO CONSTRUCTION OF NEW RIGHT-OF-WAY CONSTRUCTION:

1. SAW CUT EXISTING STREET AND MATCH TO NEW CONSTRUCTION.
2. SAW CUT EXISTING CURB TO TIE INTO EXISTING CONSTRUCTION.

CONSTRUCTION STABILIZED ENTRANCE:

1. SAW CUT CURB FOR CONSTRUCTION ENTRANCE.
2. STABILIZED CONSTRUCTION AREA SHALL BE CONSTRUCTED OF 3"X5" ROCK TO BE PLACED A MINIMUM LENGTH OF 25-FT AND MAINTAINED SO THAT CONSTRUCTION DEBRIS DOES NOT FALL WITHIN THE CITY RIGHT-OF-WAY. RIGHT-OF-WAY MUST BE CLEARED FROM MUD, ROCKS, ETC.

SIGNING AND PAVEMENT MARKING PLAN NOTES:

1. COMAL COUNTY WILL INSTALL COUNTY ROAD SIGNS AND INVOICE THE OWNER. THE CONTRACTOR IS TO INSTALL ALL TXDOT SIGNS AND PAVEMENT MARKINGS. ALL ROAD SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
2. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.

TEXAS WATER COMPANY STANDARD CONSTRUCTION NOTES FOR PLANS:
EFFECTIVE JULY 27TH, 2023

1. NO CONSTRUCTION ACTIVITIES SHALL BEGIN UNTIL A PRE-CONSTRUCTION MEETING HAS BEEN HELD BETWEEN THE CONTRACTOR, ENGINEER OF RECORD, AND A REPRESENTATIVE OF THE TEXAS WATER CO.
2. IT IS THE INTENT OF THESE PLANS TO SHOW THE LOCATION OF EXISTING UNDERGROUND FACILITIES IN ACCORDANCE WITH EXISTING RECORDS. HOWEVER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY THE EXACT LOCATION OF ALL EXISTING UNDERGROUND FACILITIES PRIOR TO EXCAVATION. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES TO EXISTING FACILITIES.
3. BOUNDARY FENCES OR OTHER IMPROVEMENTS REMOVED TO PERMIT CONSTRUCTION SHALL BE REPLACED IN THE SAME LOCATION AND IN SAME CONDITION AS GOOD OR BETTER THAN IN WHICH THEY WERE FOUND. NO COMPENSATION SHALL BE GIVEN TO THE CONTRACTOR FOR REMOVAL AND REPLACEMENT OF FENCES.
4. CONTRACTOR SHALL NOTIFY THE TEXAS WATER CO (830-964-3854) AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO PROJECT FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION.
6. CONTRACTOR SHALL NOT PLACE FILL OR WASTE MATERIAL ON ANY PRIVATE PROPERTY WITHOUT PRIOR WRITTEN AGREEMENT WITH THE PROPERTY OWNER. A COPY OF ANY WRITTEN AGREEMENT BETWEEN PROPERTY OWNER AND CONTRACTOR SHALL BE FURNISHED TO THE TEXAS WATER CO.
7. NO EXCESS EXCAVATION MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAY WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
8. ALL VEGETATED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITIONS THAN FOUND PRIOR TO THE BEGINNING OF CONSTRUCTION.
9. BEFORE FINAL COMPLETION OF THE PROPOSED WORK, ALL ROADWAY, SLOPES, DITCHES AND BERMS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
10. REMOVE AND DISPOSE OF TREES, STUMPS, BRUSH, ROOTS, VEGETATION, LOGS, RUBBISH AND OTHER OBJECTIONABLE MATTER WITHIN THE LIMITS OF AREA AFFECTED BY THE WORK, INCLUDING ALL AREAS TO BE RE-GRADED. PROTECT TREES, SHRUBS, AND OTHER LANDSCAPE FEATURES SPECIFICALLY DESIGNATED FROM DAMAGE DURING CONSTRUCTION OPERATIONS.
11. CONTRACTOR TO CONFIRM ACTUAL HORIZONTAL AND VERTICAL LOCATION OF EXISTING STRUCTURES, PIPING, PAVING, FENCING AND ALL OTHER EXISTING FACILITIES PRIOR TO CONSTRUCTION.
12. CONTRACTOR SHALL COORDINATE FOR ALL NECESSARY UTILITY LOCATES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY TEXAS DEPARTMENT OF TRANSPORTATION AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN THE STATE RIGHT-OF-WAY.
14. CONTRACTOR SHALL NOT OPEN CUT ANY IMPROVED DRIVEWAY IN STATE RIGHT-OF-WAY WITHOUT PRIOR WRITTEN APPROVAL OF PROPERTY OWNER.
15. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED OR RESTORE EXISTING GRADES. REMOVE RUBBISH VEGETATION AND ROCKS OVER 1 ½" IN DIAMETER. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM STRUCTURES. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER WILL STAND.
16. NO UTILITY TRENCHES OR PITS ARE TO BE LEFT OPEN OVERNIGHT. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ADEQUATE SAFETY MEASURES ARE IN PLACE FOR BOTH HUMANS AND LIVESTOCK FOR ANY TRENCH LEFT OPEN OVERNIGHT. BACKFILLING WILL OCCUR DAILY AND AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OPERATIONS.
17. THE MOST RECENT TEXAS WATER CO STANDARDS AND SPECIFICATIONS SHALL APPLY TO ALL CONSTRUCTION REGARDLESS OF INFORMATION PROVIDED ON PLANS. CONTRACTORS ARE ENCOURAGED TO VERIFY CURRENT INFORMATION WITH TEXAS WATER CO STAFF PRIOR TO THE BEGINNING OF CONSTRUCTION.
18. ALL ROAD CROSSING UNDER COMAL COUNTY ROADWAYS SHALL REQUIRE A SEPARATE PERMIT FROM THE COMAL COUNTY ENGINEER. CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS AND SHALL CONSTRUCT ALL CROSSINGS IN ACCORDANCE WITH COMAL COUNTY STANDARDS.

CONTRACTOR SHALL:

1. FOLLOW METHODS AND PROCEDURES OF SHUTDOWN AS DIRECTED BY THE TEXAS WATER CO STAFF.
2. NOTIFY CONSUMERS OF, AND COORDINATE ALL SHUTDOWNS WITH TEXAS WATER CO, PER TEXAS WATER CO GUIDELINES.
3. ESTABLISH PIPE GRADES USING TOP OF FINISHED GRADE UNLESS OTHERWISE INDICATED ON PLANS.
4. GRADE MAIN TO AVOID USE OF AIR VALVES.
5. MAINTAIN MINIMUM 10 FEET CLEARANCE BETWEEN MAINS AND SANITARY SEWERS.
6. CONSTRUCT ALL CROSSINGS WITH SANITARY SEWER FACILITIES IN ACCORDANCE WITH THE MOST RECENT VERSION OF APPLICABLE TCEQ STANDARDS.
7. MAINTAIN MINIMUM 10 FEET CLEARANCE BETWEEN HYDRANTS AND DRIVEWAYS.
8. INSTALL SERVICES SUCH THAT CONSUMER'S LINES DO NOT CROSS DRIVEWAYS.
9. SHALL PROVIDE A CLEAN NEAT AS BUILT DRAWING WITHIN 30 DAYS OF JOB COMPLETION IN BOTH PAPER AND ELECTRONIC (PDF) FORMAT.
10. USE DUCTILE IRON FITTING WITH MECHANICAL JOINT AND MEGALUG PER TEXAS WATER CO STANDARD SPECIFICATIONS ON ALL PIPE REGARDLESS OF PIPE MATERIAL UNLESS OTHERWISE INDICATED ON PLANS.
11. INSTALL ALL APPURTENANCES ON WATER MAIN IN ACCORDANCE WITH APPLICABLE TEXAS WATER CO STANDARD DETAILS.
12. INSTALL TRACER WIRE ON ALL WATER MAINS LOCATED IN COMMERCIAL SUBDIVISIONS AND RESIDENTIAL SUBDIVISIONS WITH URBAN STREET CROSS SECTIONS.
13. MAINTAIN A COPY OF THE STAMPED SET OF PLANS "APPROVED FOR CONSTRUCTION" ON THE JOB SITE AT ALL TIMES.

TCEQ CZP GENERAL CONSTRUCTION NOTES:

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY GROUND DISTURBANCE OR CONSTRUCTION ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN (CZP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.
3. NO HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.
4. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
5. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
6. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORM WATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.
8. ALL EXCAVATED MATERIAL THAT WILL BE STORED ON-SITE MUST HAVE PROPER E&S CONTROLS.
9. IF PORTIONS OF THE SITE WILL HAVE A CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
10. THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
    - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
    - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THIS SITE; AND
    - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
11. THE HOLDER OF ANY APPROVED CZP MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
    A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES (BMPS) OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;
    B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;
    C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER; OR
    D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE APPROVED CONTRIBUTING ZONE PLAN.

AUSTIN REGIONAL OFFICE
12100 PARK 35 CIRCLE, BLDG A
AUSTIN, TX 78753-1808
PHONE (512) 339-2929
FAX (512) 339-3795

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TX 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

GENERAL PAVING NOTES:

1. PAVEMENT SUBGRADE PREPARATION AND PAVEMENT DESIGN SHOULD BE IN MINIMUM CONFORMANCE WITH THE SOILS REPORT BY THE INTEC PROJECT/REPORT NUMBER S201370 DATED DECEMBER 10, 2020. IF DISCREPANCIES EXIST BETWEEN THE REPORT AND THE CONSTRUCTION DRAWINGS, THE MORE STRINGENT WILL APPLY, BUT MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER. THE LAB TEST WILL BE A NUCLEAR DENSITY TEST PREFORMED EVERY 150 FEE.

GEOTECHNICAL REPORT:

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS
CANYON RANCH SUBDIVISION
COMAL COUNTY, TEXAS
REPORT FOR GRAM VIKAS PARTNERS, INC
DECEMBER 10, 2020
BY INTEC OF SAN ANTONIO, LP.
12028 RADIUM
SAN ANTONIO, TX 78216

SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.0	-	6.00	NO	*	2.07
RESIDENTIAL COLLECTOR	3.00	-	18.50	NO	*	3.91
	3.00	-	15.50	YES	*	3.95
	3.00	-		NO	*	4.04

SUMMARY OF RECOMMENDED OPTIONS - RIDGID PAVEMENT**

STREET CLASSIFICATION	REINFORCED CONCRETE, INCHES	SUBGRADE THICKNESS, INCHES
RESIDENTIAL LOCAL (NO BUS TRAFFIC)	6.00	-
RESIDENTIAL COLLECTOR	10.00	-

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT

SUBGRADE NOTE (*):

1. CUT AND FILL DATA ARE NOT AVAILABLE AT THIS TIME.
2. BASED ON THE THICKNESS OF THE CLAYS ENCOUNTERED IN THE BORINGS, WE ANTICIPATE THE FINAL PAVEMENT SUBGRADE PLASTICITY INDEX VALUE TO BE LESS THAN 20. SUBGRADE TREATMENT/ STABILIZATION IS NOT NEEDED IF THE PLASTICITY INDEX VALUES ARE LESS THAN OR EQUAL TO 20.
3. HOWEVER, IF THE FINAL PAVEMENT SUBGRADE PLASTICITY INDEX VALUES ARE GREATER THAN 20, THEN THE FOLLOWING OPTION MAY BE FOLLOWED:
   3.1. THE CLAYS MAY BE REMOVED TO EXPOSE STRATUM II SOILS AT THE PAVEMENT SUBGRADE ELEVATION AND REPLACE WITH ON-SITE MILLED MATERIAL FILL (PLASTICITY INDEX VALUES ARE 20 OR LESS).
   3.2. IF THICKER CLAY SECTIONS ARE ENCOUNTERED OR IF THE CLAYEY FILL MATERIAL IS USED TO RAISE THE GRADE, PLEASE CONTACT INTEC TO EVALUATE THE SUBGRADE CONDITIONS AND PROVIDE RECOMMENDATIONS.
4. IF FILL IS USED TO RAISE THE GRADE, APPROVED FILL MATERIAL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 5.0 AND PLASTICITY INDEX VALUES OF 20 OR LESS. ANY STRATUM I CLAYS (ANY CLAYS WITH PLASTICITY INDEX VALUES GREATER THAN 20) SHOULD BE REMOVED PRIOR TO FILL PLACEMENT. THE GRAVEL SIZE SHOULD NOT EXCEED 3 INCHES IN DIAMETER. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES.

GENERAL NOTES (**):

1. INPUT PARAMETERS USED IN PAVEMENT SECTION CALCULATIONS ARE SHOWN IN TABLE NOS. 5A &5B. PLEASE CALL US 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.
4. IF WATER IS ALLOWED TO GET UNDERNEATH THE ASPHALT OR IF MOISTURE CONTENT OF THE BASE OR SUBGRADE CHANGES SIGNIFICANTLY, THEN THE 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.

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS FOR CANYON RANCH UNIT 4
SPRING BRANCH, TEXAS
REPORT FOR LENNAR
OCTOBER 22, 2024
BY PROFESSIONAL SERVICE INDUSTRIES, INC
REPORT NUMBER: 0312-3287-1R

SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.5	-	7.00	NO	*	*

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: RRA
REVIEWED BY: SSM
DRAWN BY: RRA

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

GENERAL NOTES

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C00.01

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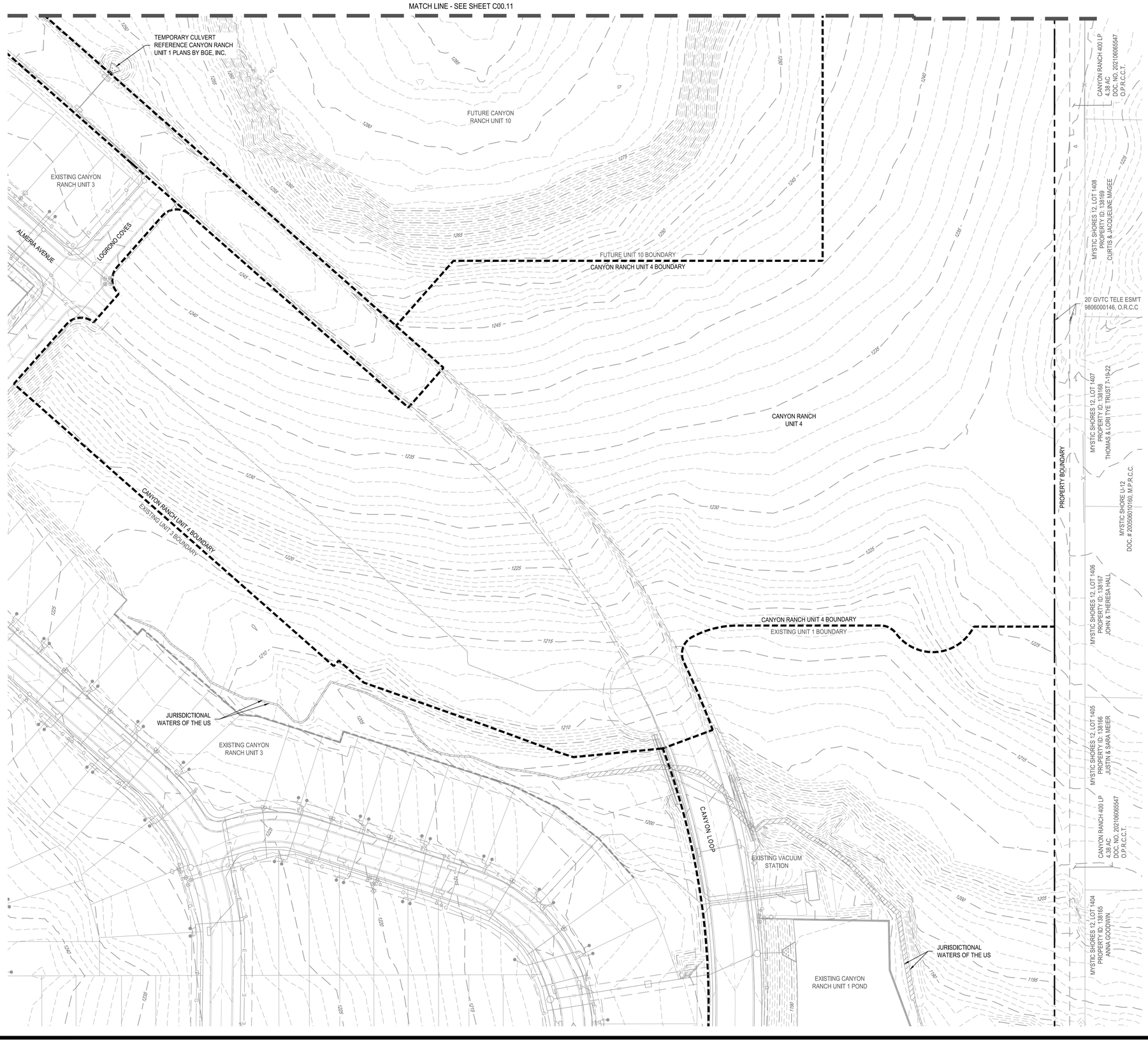

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0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- 100 YEAR FEMA FLOODPLAIN
- RIPARIAN BUFFER
- JURISDICTIONAL WATERS
- EXISTING WASTEWATER
- EXISTING WATER
- EXISTING STORM DRAIN

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: RRA
REVIEWED BY: SSM
DRAWN BY: RRA

BGE
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7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

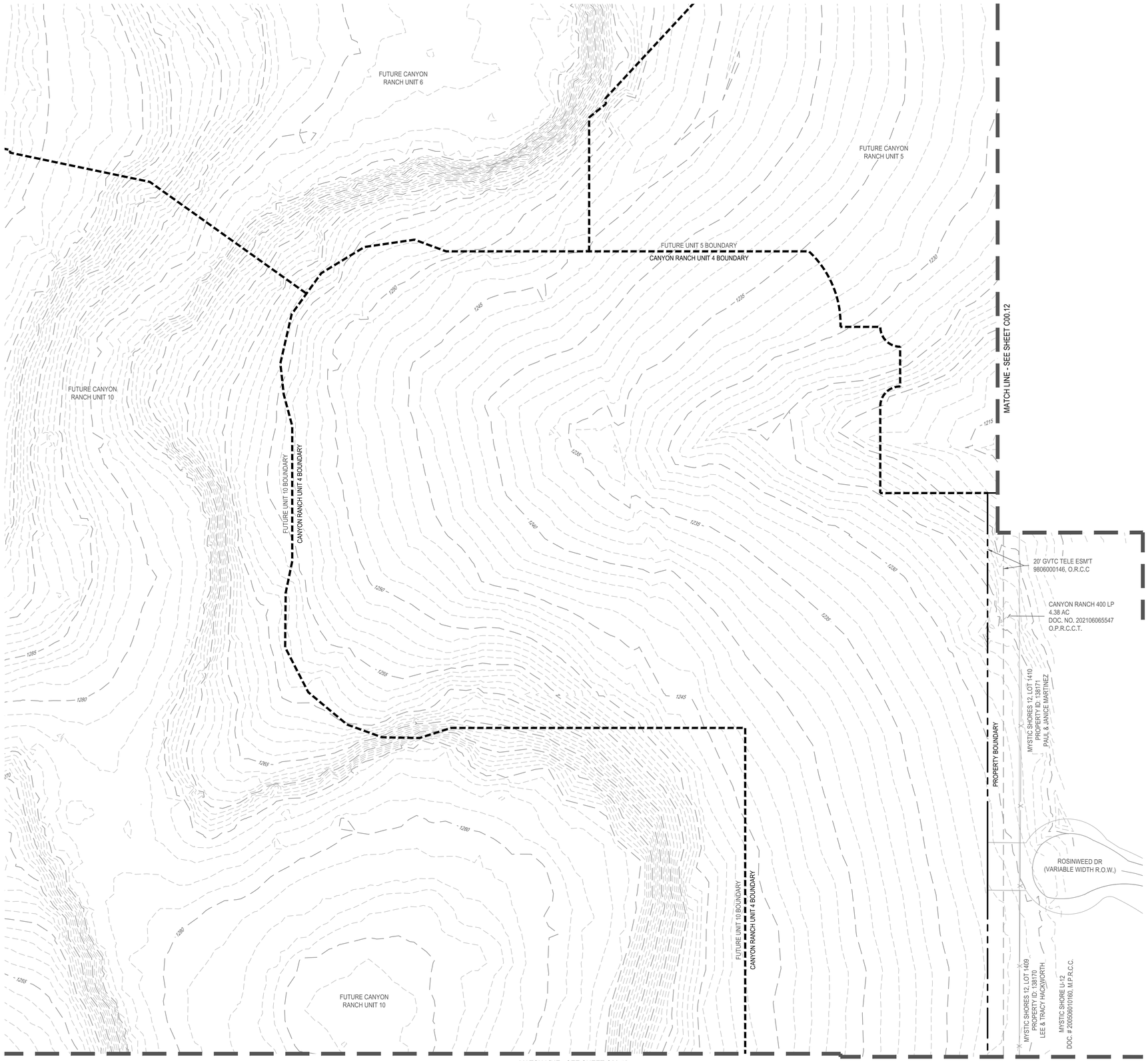
CANYON RANCH UNIT 4

EXISTING CONDITIONS SURVEY (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C00.10



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0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 100 YEAR FEMA FLOODPLAIN
- RIPARIAN BUFFER
- JURISDICTIONAL WATERS
- WW EXISTING WASTEWATER
- W EXISTING WATER
- SS EXISTING STORM DRAIN

REV	DESCRIPTION	DATE	APR

DESIGNED BY: RRA

REVIEWED BY: SSM

DRAWN BY: RRA

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
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TBPE Registration No. F-1046

CANYON RANCH UNIT 4

EXISTING CONDITIONS SURVEY (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
REGISTERED PROFESSIONAL LAND SURVEYOR

06/17/2025

SHEET
C00.11

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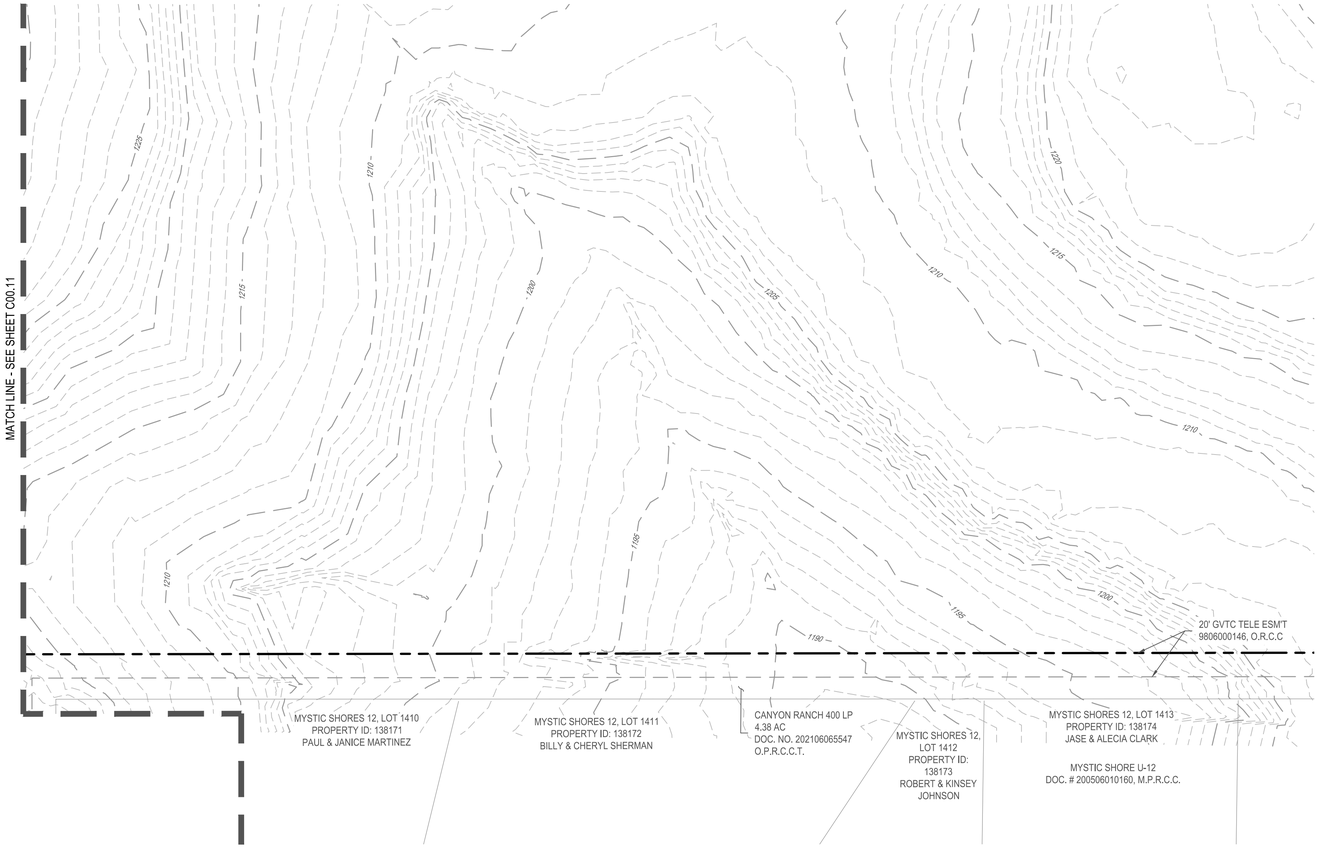

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- 100 YEAR FEMA FLOODPLAIN
- RIPARIAN BUFFER
- JURISDICTIONAL WATERS
- EXISTING WASTEWATER
- EXISTING WATER
- EXISTING STORM DRAIN

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: RRA

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DRAWN BY: RRA

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CANYON RANCH UNIT 4

EXISTING CONDITIONS SURVEY
(SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL
ENGINEER

06/17/2025

SHEET
C00.12

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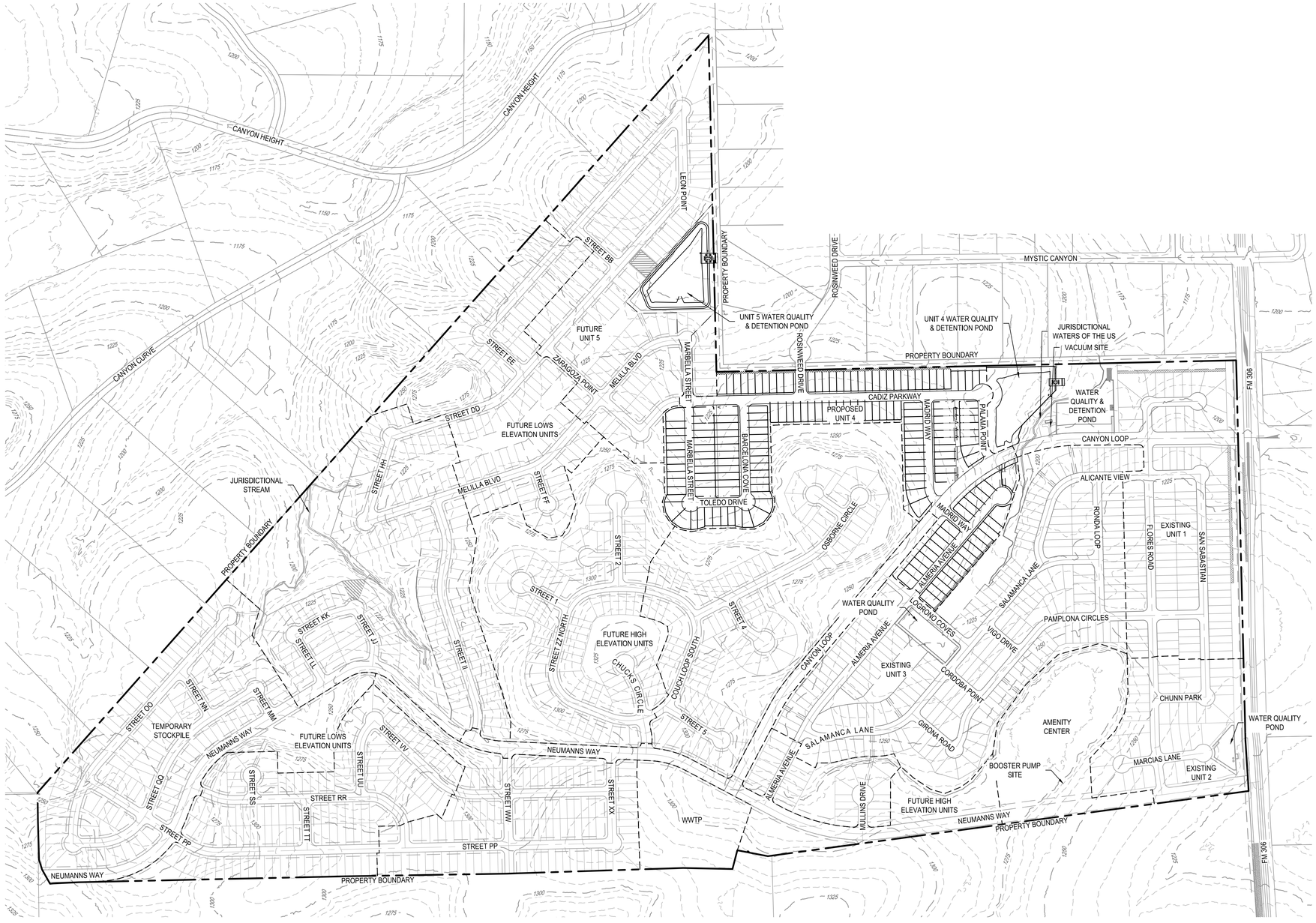

0 150' 300' 600'

SCALE: 1" = 300'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT

GENERAL SITE PLAN NOTES

1. THIS DEVELOPMENT SHALL COMPLY WITH THE COMAL COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL AND THE DEVELOPMENT MANUAL.
2. THIS SITE PLAN SHALL MEET THE COMAL COUNTY STORM WATER REQUIREMENTS.
3. A HOMEOWNER'S ASSOCIATION WILL BE ESTABLISHED FOR THIS DEVELOPMENT.
4. WATER SERVICE IS TO BE PROVIDED BY THE TEXAS WATER COMPANY.
5. ALL ROADS WILL BE PUBLICLY OWNED
6. ELECTRIC SERVICE TO BE PROVIDED BY PEDERNALES ELECTRIC COOPERATIVE.
7. SANITARY SEWER SERVICE IS TO BE PROVIDED BY CANYON RANCH MUD OF COMAL COUNTY.
8. NO PORTION OF THIS SUBDIVISION IS WITHIN SPECIAL FLOOD HAZARD ZONE AS DELINEATED ON THE FLOOD INSURANCE MAP (FIRM) FOR COMAL COUNTY, TEXAS ON MAP NUMBER 48091C0080F RESPECTIVELY, DATED SEPTEMBER 9, 2009 AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
9. DURING THE BUILDING PERMIT STAGE, THE INDIVIDUAL HOME BUILDER/OWNER SHALL BE RESPONSIBLE FOR CONSTRUCTION OF A 4' CONCRETE SIDEWALK ALONG THE FRONTAGE OF THE INDIVIDUAL LOT. THE DEVELOPER OF THIS PROJECT SHALL BE RESPONSIBLE FOR CONSTRUCTION OF CONCRETE SIDEWALK AT COMMON AREAS, DRAINAGE EASEMENT, AND ALL OTHER AREAS WHERE SIDEWALK IS REQUIRED TO BE CONSTRUCTED(SEE TYPICAL STREET SECTION FOR PLACEMENT OF SIDEWALK)
10. MAINTENANCE OF DRAINAGE EASEMENTS DESIGNATED WITH IN A LOT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER, ANY USE, OF ANY EASEMENT, OR ANY PORTION OF IT, INCLUDING LANDSCAPING OR DRAINAGE FEATURES IS SUBJECT TO AND SHALL NOT CONFLICT WITH THE TERMS AND CONDITIONS OF IN THE EASEMENT, MUST NOT ENDANGER OR INTERFERE WITH THE RIGHTS GRANTED BY THE EASEMENT TO THE UTILITIES, IT'S SUCCESSORS AND ASSIGNS, AND SHALL BE SUBJECT TO APPLICABLE PERMIT REQUIREMENTS OF HAYS COUNTY OR ANY OTHER GOVERNING BODY. THE PROPERTY OWNER MUST OBTAIN, IN ADVANCE, WRITTEN AGREEMENT WITH THE UTILITIES TO UTILIZE THE EASEMENT, OR ANY PART OF IT.
11. ALL STREETS WITHIN THE CANYON RANCH SUBDIVISION WILL BE BUILT TO THE COMAL COUNTY SPECIFICATIONS AND WILL BE DEDICATED TO THE COUNTY UPON COMPLETION AND ACCEPTANCE.
12. CONTRACTOR SHALL REFER TO THE RECOMMENDATIONS CONTAINED WITHIN THE GEOTECHNICAL INVESTIGATION REPORTS PREPARED BY INTEC (PROJECT NO. S201370) & PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0312-3287).

UTILITIES:

- WATER PROVIDED BY: THE TEXAS WATER COMPANY
- WASTEWATER: CANYON RANCH MUD OF COMAL COUNTY
- ELECTRIC: PEDERNALES ELECTRIC COOPERATIVE

DEVELOPER:
LENNAR
CONTACT: RICHARD MOTT
100 NE LP 410, SUITE 1155
SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6200

ENGINEER:
BGE INC.
7330 SAN PEDRO AVENUE, SUITE 202
SAN ANTONIO, TX 78216
PHONE: 210-581-3600

TOTAL ACREAGE: 30.698 ACRES

*COMAL COUNTY TO APPROVE, INSPECT, AND MAINTAIN ALL ROADWAY PAVEMENT

NOTE: SEE PLAT FOR EASEMENT DIMENSIONS & BUILDING SETBACKS

NOTE: REFERENCE C01.00 FOR REPORT INFORMATION AND ADDITIONAL NOTES.

UNIT 4 PROJECT LAND SUMMARY	
SITE ACREAGE	30.7 AC.
SINGLE FAMILY RESIDENTIAL LOTS:	177
LOCAL STREET (LF):	5,375 LF
COLLECTOR STREET (LF):	584 LF
DENSITY (LOT/AC):	5.77 LOT/AC

STREET CLASSIFICATION TABLE

STREET NAME	CLASSIFICATION	LF
ALMERIA AVE	LOCAL STREET	734
BARCELONA COVE	LOCAL STREET	570
CADIZ PKWY	LOCAL STREET	1,693
CANYON LOOP	COLLECTOR STREET	584
MADRID WAY	LOCAL STREET	841
MARBELLA STREET	LOCAL STREET	620
PALAMA POINT	LOCAL STREET	391
ROSINWEED DRIVE	LOCAL STREET	217
TOLEDO DRIVE	LOCAL STREET	310

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: RRA
REVIEWED BY: SSM
DRAWN BY: RRA

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinctx.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

OVERALL SITE PLAN

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C01.00

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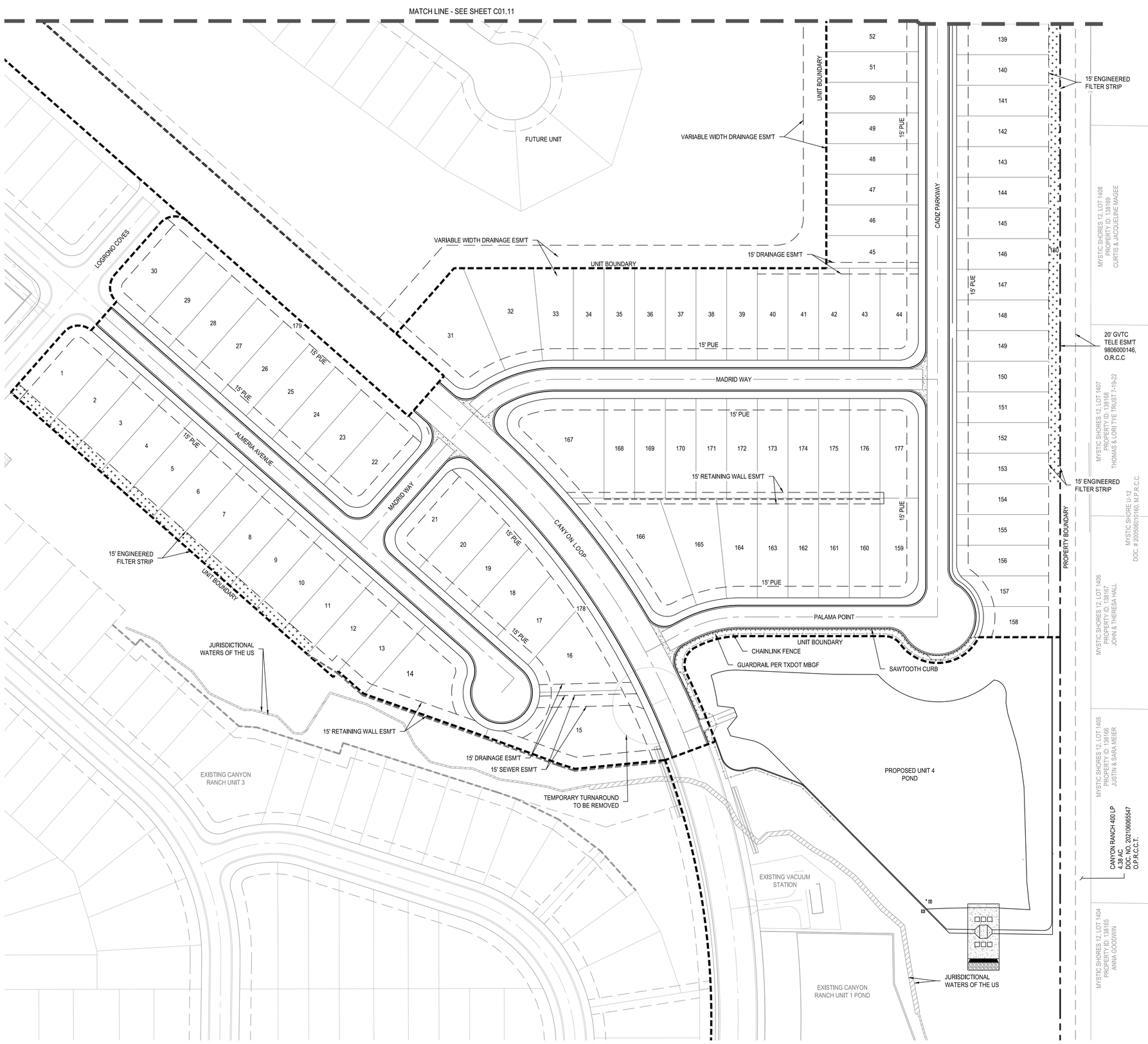

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET CXX.XX)
- CONCRETE VALLEY GUTTER
- RETAINING WALL
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- 1 LOT NUMBER
- ENGINEERED FILTER STRIP
- JURISDICTIONAL WATERS

GENERAL SITE PLAN NOTES

1. THIS DEVELOPMENT SHALL COMPLY WITH THE COMAL COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL AND THE DEVELOPMENT MANUAL.
2. THIS SITE PLAN SHALL MEET THE COMAL COUNTY STORM WATER REQUIREMENTS.
3. A HOMEOWNER'S ASSOCIATION WILL BE ESTABLISHED FOR THIS DEVELOPMENT.
4. WATER SERVICE IS TO BE PROVIDED BY THE TEXAS WATER COMPANY.
5. ALL ROADS WILL BE PUBLICLY OWNED
6. ELECTRIC SERVICE TO BE PROVIDED BY PEDERNALES ELECTRIC COOPERATIVE.
7. SANITARY SEWER SERVICE IS TO BE PROVIDED BY CANYON RANCH MUD OF COMAL COUNTY.
8. NO PORTION OF THIS SUBDIVISION IS WITHIN SPECIAL FLOOD HAZARD ZONE AS DELINEATED ON THE FLOOD INSURANCE MAP (FIRM) FOR COMAL COUNTY, TEXAS ON MAP NUMBER 48091C0080F RESPECTIVELY, DATED SEPTEMBER 9, 2009 AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
9. DURING THE BUILDING PERMIT STAGE, THE INDIVIDUAL HOME BUILDER/OWNER SHALL BE RESPONSIBLE FOR CONSTRUCTION OF A 4' CONCRETE SIDEWALK ALONG THE FRONTAGE OF THE INDIVIDUAL LOT. THE DEVELOPER OF THIS PROJECT SHALL BE RESPONSIBLE FOR CONSTRUCTION OF CONCRETE SIDEWALK AT COMMON AREAS, DRAINAGE EASEMENT, AND ALL OTHER AREAS WHERE SIDEWALK IS REQUIRED TO BE CONSTRUCTED(SEE TYPICAL STREET SECTION FOR PLACEMENT OF SIDEWALK)
10. MAINTENANCE OF DRAINAGE EASEMENTS DESIGNATED WITH IN A LOT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER, ANY USE, OF ANY EASEMENT, OR ANY PORTION OF IT. INCLUDING LANDSCAPING OR DRAINAGE FEATURES IS SUBJECT TO AND SHALL NOT CONFLICT WITH THE TERMS AND CONDITIONS OF IN THE EASEMENT, MUST NOT ENDANGER OR INTERFERE WITH THE RIGHTS GRANTED BY THE EASEMENT TO THE UTILITIES, IT'S SUCCESSORS AND ASSIGNS, AND SHALL BE SUBJECT TO APPLICABLE PERMIT REQUIREMENTS OF HAYS COUNTY OR ANY OTHER GOVERNING BODY. THE PROPERTY OWNER MUST OBTAIN, IN ADVANCE, WRITTEN AGREEMENT WITH THE UTILITIES TO UTILIZE THE EASEMENT, OR ANY PART OF IT.
11. ALL STREETS WITHIN THE CANYON RANCH SUBDIVISION WILL BE BUILT TO THE COMAL COUNTY SPECIFICATIONS AND WILL BE DEDICATED TO THE COUNTY UPON COMPLETION AND ACCEPTANCE.
12. CONTRACTOR SHALL REFER TO THE RECOMMENDATIONS CONTAINED WITHIN THE GEOTECHNICAL INVESTIGATION REPORTS PREPARED BY INTEC (PROJECT NO. S201370) & PROFESSIONAL SERVICE INDUSTRIES, INC. (PROJECT NO. 0312-3287).

UTILITIES:
- WATER PROVIDED BY: THE TEXAS WATER COMPANY
- WASTEWATER: CANYON RANCH MUD OF COMAL COUNTY
- ELECTRIC: PEDERNALES ELECTRIC COOPERATIVE

DEVELOPER:
LENNAR
CONTACT: RICHARD MOTT
100 NE LP 410, SUITE 1155
SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6200

ENGINEER:
BGE INC.
7339 SAN PEDRO AVENUE, SUITE 202
SAN ANTONIO, TX 78216
PHONE: 210-581-3600

TOTAL ACREAGE: 30.698 ACRES

*COMAL COUNTY TO APPROVE, INSPECT, AND MAINTAIN ALL ROADWAY PAVEMENT

NOTE: SEE PLAT FOR EASEMENT DIMENSIONS & BUILDING SETBACKS

NOTE: REFERENCE C01.00 FOR REPORT INFORMATION AND ADDITIONAL NOTES.

UNIT 4 PROJECT LAND SUMMARY	
SITE ACREAGE	30.7 AC.
SINGLE FAMILY RESIDENTIAL LOTS:	177
LOCAL STREET (LF):	5,375 LF
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DENSITY (LOT/AC):	5.77 LOT/AC

STREET CLASSIFICATION TABLE		
STREET NAME	CLASSIFICATION	LF
ALMERIA AVE	LOCAL STREET	734
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CADIZ PKWY	LOCAL STREET	1,693
CANYON LOOP	COLLECTOR STREET	584
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PALAMA POINT	LOCAL STREET	391
ROSINWEED DRIVE	LOCAL STREET	217
TOLEDO DRIVE	LOCAL STREET	310

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: ####
REVIEWED BY: ####
DRAWN BY: ####

NOT FOR CONSTRUCTION

BGE, INC.
7339 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetexas.com
TBPE Registration No. F-1046

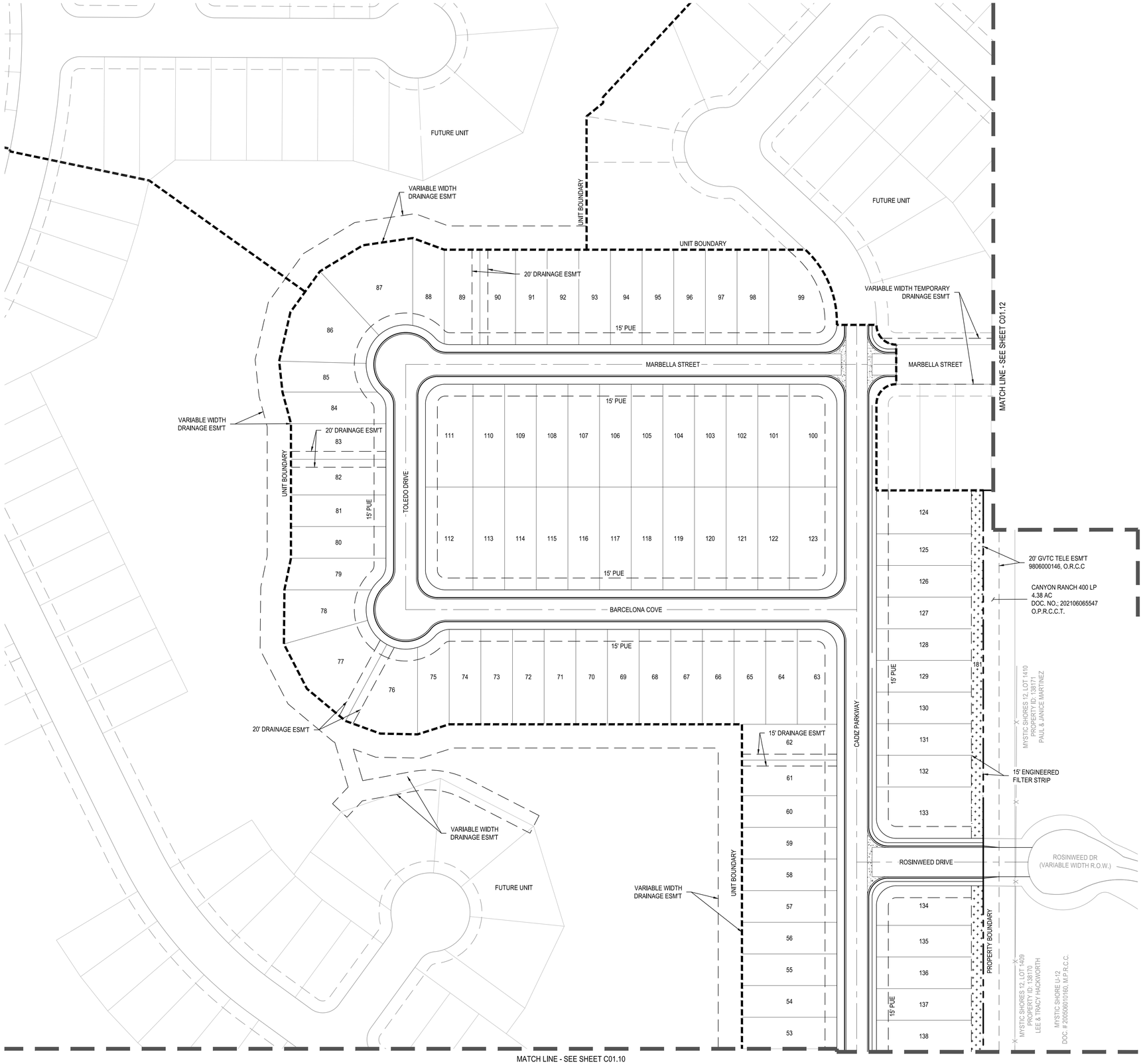
CANYON RANCH UNIT 4

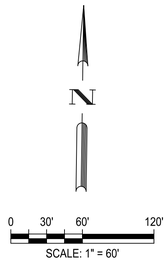
DETAILED SITE PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C01.10

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C01.10 - DETAILED SITE PLAN.dwg Layout: C01.10 DETAILED SITE PLAN (SHEET 1 OF 3) Plotted: 6/17/2025 1:26:32 PM By: Mhernandez





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET CXX.XX)
- CONCRETE VALLEY GUTTER
- RETAINING WALL
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- 1 LOT NUMBER
- ENGINEERED FILTER STRIP
- JURISDICTIONAL WATERS

GENERAL SITE PLAN NOTES

1. THIS DEVELOPMENT SHALL COMPLY WITH THE COMAL COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL AND THE DEVELOPMENT MANUAL.
2. THIS SITE PLAN SHALL MEET THE COMAL COUNTY STORM WATER REQUIREMENTS.
3. A HOMEOWNER'S ASSOCIATION WILL BE ESTABLISHED FOR THIS DEVELOPMENT.
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ENGINEER:
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PHONE: 210-581-3600

TOTAL ACREAGE: 30.698 ACRES

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NOTE: SEE PLAT FOR EASEMENT DIMENSIONS & BUILDING SETBACKS

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							APR
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◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: ####
REVIEWED BY: ####
DRAWN BY: ####

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

DETAILED SITE PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C01.11

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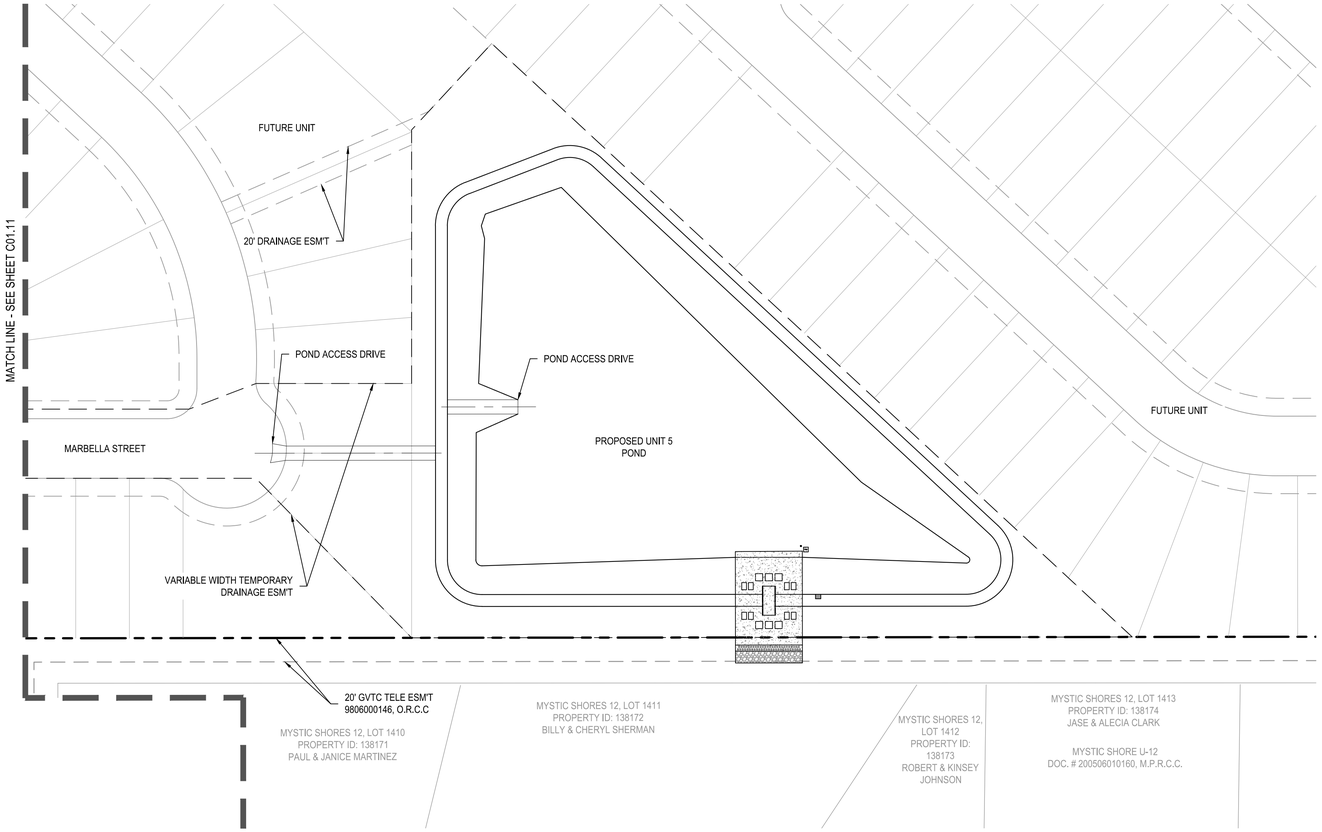

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
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TOTAL ACREAGE: 30.698 ACRES

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TOLEDO DRIVE	LOCAL STREET	310

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ####
REVIEWED BY: ####
DRAWN BY: ####

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

DETAILED SITE PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C01.12

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C01.10 - DETAILED SITE PLAN.dwg Layout: C01.12 DETAILED SITE PLAN (SHEET 3 OF 3) Plotted: 6/17/2025 1:26:47 PM By: Mhernandez

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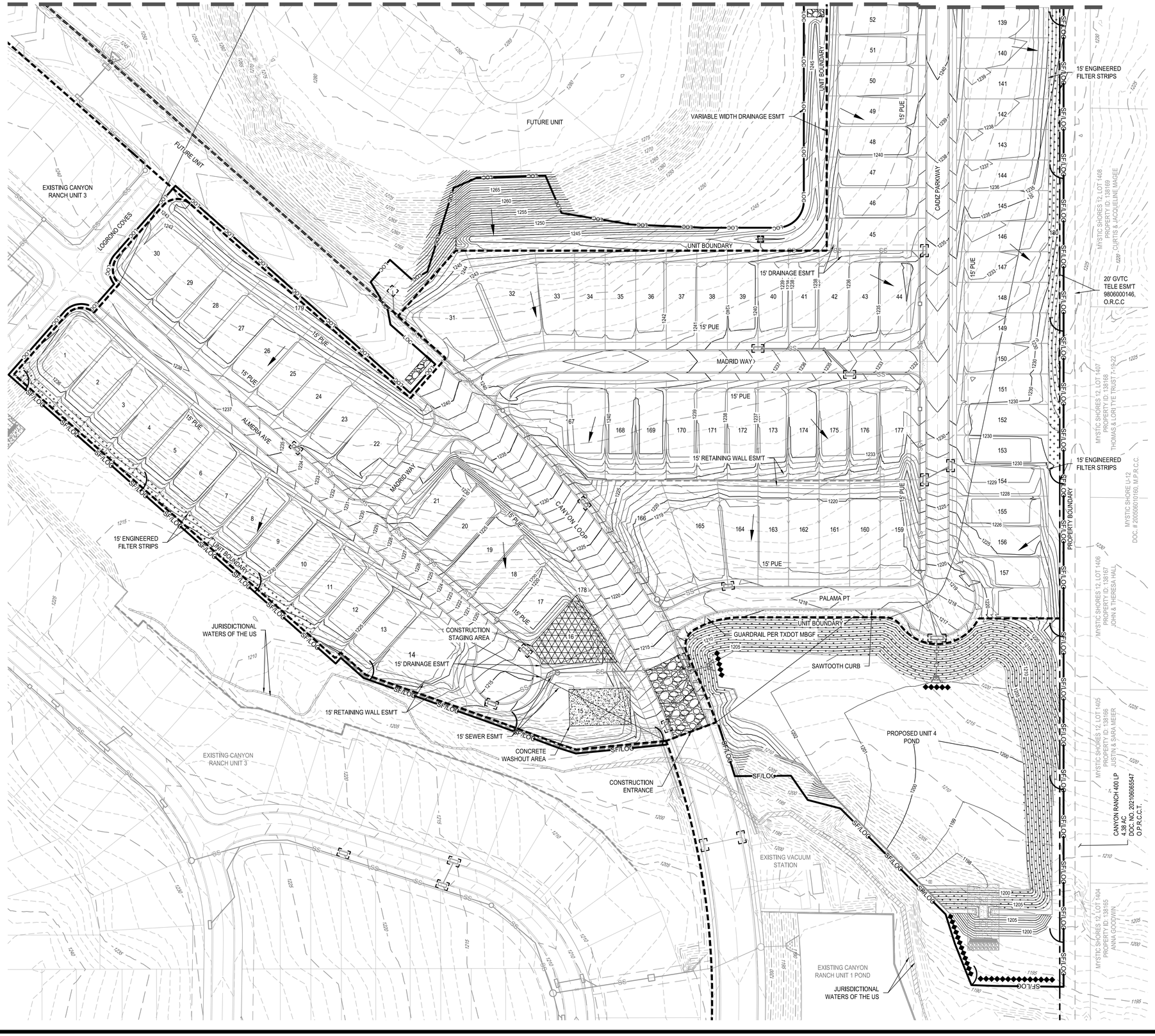
MATCH LINE - SEE SHEET C02.01



0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

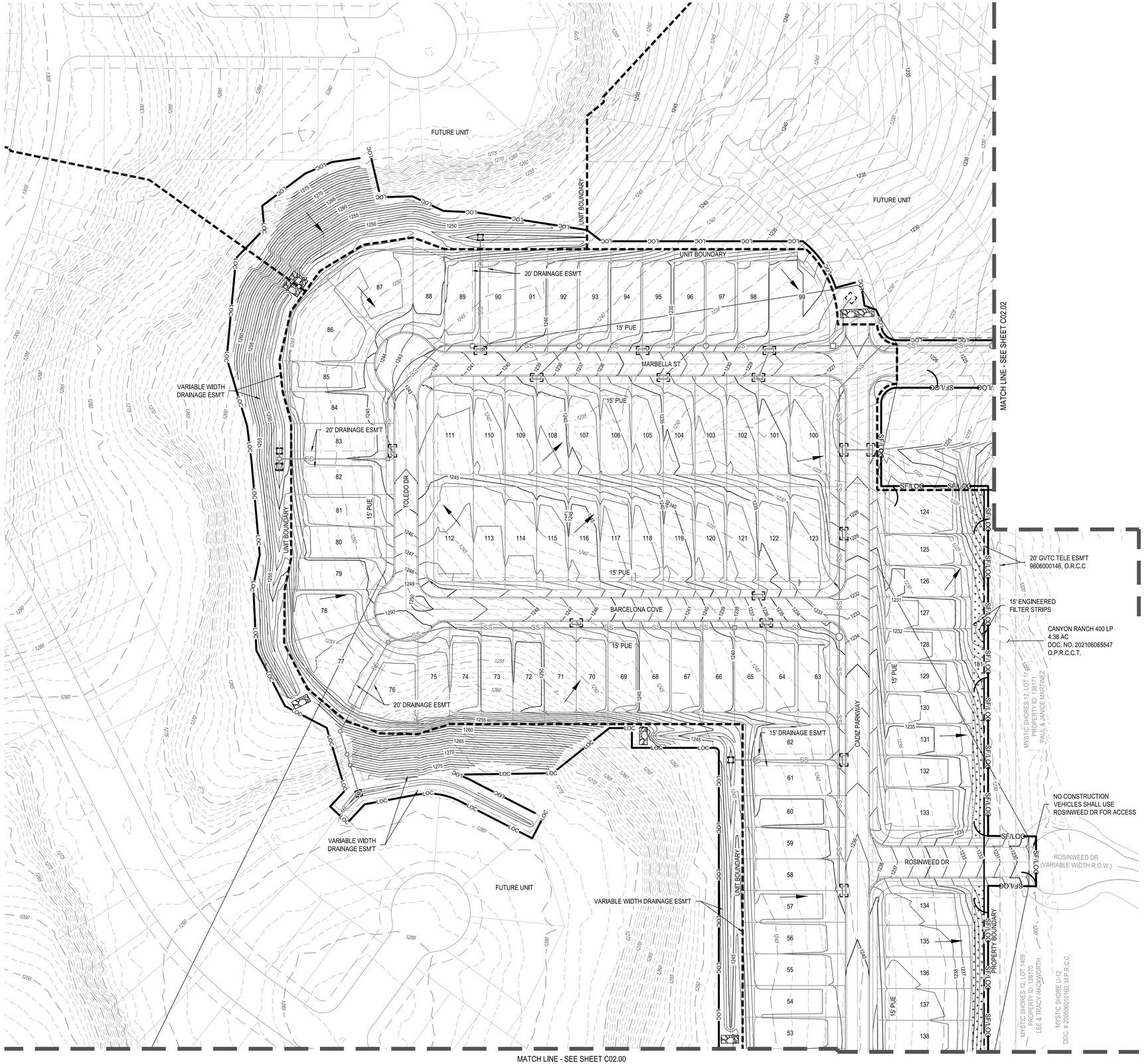
- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- LIMITS OF CONSTRUCTION
- SILT FENCE
- SILT FENCE/LIMITS OF CONSTRUCTION
- FLOW ARROW
- CONSTRUCTION ENTRANCE
- CONCRETE WASHOUT AREA
- CONSTRUCTION STAGING AREA
- INLET PROTECTION
- ROCK BERM
- ROCK RUBBLE
- J HOOKS
- 100 YEAR FEMA FLOODPLAIN
- JURISDICTIONAL WATERS OF THE US
- PROPOSED RETAINING WALL
- VEGETATIVE FILTER STRIP
- EROSION CONTROL MATTING

NOTES:

1. INTERIM OR FINAL GRADING MUST BE COMPLETED PRIOR TO SEEDING, MINIMIZING ALL STEEP SLOPES.
2. FERTILIZER SHOULD BE APPLIED AT THE RATE OF 40 POUNDS OF NITROGEN AND 40 POUNDS OF PHOSPHORUS PER ACRE. COMPOST CAN BE USED INSTEAD OF FERTILIZER AND APPLIED AT THE SAME TIME AS THE SEED.
3. ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDED OR OTHERWISE STABILIZED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR WHERE TEMPORARY CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 21 DAYS.
4. ADD J HOOKS PER CITY OF AUSTIN DETAIL ALONG THE SILT FENCE.
5. A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MUST BE PREPARED/AMENDED BY A TX PE, CPESC, OR QPSWPPP [CITY CODE SECTION 86.529(B)(2) OR 86.529(C)(3)], IMPLEMENTED, AND UPDATED TO MATCH SITE CONDITIONS DURING THE PROJECT. THE ASSOCIATED TPDES CONSTRUCTION SITE NOTICE MUST BE POSTED IN PUBLIC VIEW. TXR150000 PART III.D.2.
6. HAVE A CISEC, CESSWI, OR QCIS CONDUCT WEEKLY SWPPP INSPECTIONS AND DOCUMENT PER CITY CODE SECTIONS 86.523 AND 86.529(B)(9) OR 86.529(C)(10). MAINTAIN ALL ESC MEASURES AND ADDRESS ALL IDENTIFIED CORRECTIVE ACTIONS PER CITY CODE SECTION 86.529(C)(11).
7. THE LIMITS OF CONSTRUCTION (LOC) SHALL BE ADJUSTED AS NEEDED DURING THE PROJECT TO COVER ALL AREAS DISTURBED DURING DEMOLITION, GRADING, CONSTRUCTION, STORAGE, STOCKPILING, PARKING, ETC., PER TXR150000 PARTS I AND III.G.4.(C) AND (D). ADDITIONAL EROSION AND SEDIMENT CONTROLS MAY BE REQUIRED.
8. PER TXR150000 PART III.F.1.(M),, LOCATIONS OF THE FOLLOWING, AS APPLICABLE, MUST BE MARKED ON THIS ESCP IN THE FIELD: THE TPDES CONSTRUCTION SITE NOTICE POSTING IN PUBLIC VIEW, STAGING, SPOILS STORAGE, CONCRETE WASHOUT, DUMPSTERS, PORTABLE TOILET(S), FUELING POINT(S), AND/OR OTHER POTENTIAL CONTAMINANT SOURCES. THIS ESCP MUST ALSO BE UPDATED AS THESE POTENTIAL CONTAMINANT SOURCES MOVE OR OTHER CHANGES OCCUR ONSITE. PEN AND INK CHANGES ARE EXPECTED AND DON'T REQUIRE RESUBMITTAL; JUST DATE AND INITIAL.
9. IF THERE IS A BREAK OF MORE THAN 14 DAYS DURING THE PROJECT WHERE NO DIRT WORK IS DONE ON A SITE PORTION(S) WITHIN THE LIMITS OF CONSTRUCTION, TEMPORARY (OR PERMANENT) STABILIZATION IS REQUIRED PER TXR150000 PART III.F.2.(B).III/CITY CODE SECTION 86.529(A)(1)(G). SUCH DIRT WORK STOPPAGE INCLUDES TIME PERIODS BETWEEN ROUGH GRADING COMPLETION AND CONSTRUCTION START. DURING CONSTRUCTION, BETWEEN CONSTRUCTION AND FINAL STABILIZATION, ETC. USE TEMPORARY (OR PERMANENT) SEEDING, ROCK, GRAVEL (1" MINIMUM), CONCRETE RIP-RAP, DEGRADABLE STRAW MATTING, SHREDDED HARDWOOD MULCH, DEGRADABLE SOIL RETENTION BLANKETS, OR SIMILAR. NOTE THAT MATTING, MULCH, OR BLANKETS REQUIRE ONGOING MAINTENANCE.
10. ANY EXISTING STORM WATER INLETS WITHIN 200' OF THE LOC MUST HAVE INLET PROTECTION. STORM WATER INLET PROTECTION IS ALSO REQUIRED AS NEW STORM WATER INLETS ARE ADDED TO THE SITE, IF APPLICABLE.
11. POND OR OTHER DISTURBED SLOPES 3:1 OR FLATTER MUST BE STABILIZED WITH BIODEGRADABLE SOIL RETENTION BLANKETS WITH NO PLASTIC NETTING. DISTURBED SLOPES EXCEEDING 3:1 REQUIRE BLANKETS OR EQUIVALENT UNTIL RE-VEGETATION IS ESTABLISHED OR SOD.
12. DO NOT DISTURB THE JURISDICTIONAL STREAM. ANY DISTURBANCE TO THE STREAM WILL NEED TO BE RECTIFIED IMMEDIATELY.

ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDED OR OTHERWISE STABILIZED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR WHERE TEMPORARY CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 21 DAYS

	APR	DATE	DESCRIPTION



N

0 30' 60' 120'

SCALE: 1" = 60'

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9. IF THERE IS A BREAK OF MORE THAN 14 DAYS DURING THE PROJECT WHERE NO DIRT WORK IS DONE ON A SITE PORTION(S) WITHIN THE LIMITS OF CONSTRUCTION, TEMPORARY (OR PERMANENT) STABILIZATION IS REQUIRED PER TXR150000 PART III.F.2.(B).III/CITY CODE SECTION 86.529(A)(1)(G). SUCH DIRT WORK STOPPAGE INCLUDES TIME PERIODS BETWEEN ROUGH GRADING COMPLETION AND CONSTRUCTION START, DURING CONSTRUCTION, BETWEEN CONSTRUCTION AND FINAL STABILIZATION, ETC. USE TEMPORARY (OR PERMANENT) SEEDING, ROCK, GRAVEL (1" MINIMUM), CONCRETE RIP-RAP, DEGRADABLE STRAW MATTING, SHREDDED HARDWOOD MULCH, DEGRADABLE SOIL RETENTION BLANKETS, OR SIMILAR. NOTE THAT MATTING, MULCH, OR BLANKETS REQUIRE ONGOING MAINTENANCE.
10. ANY EXISTING STORM WATER INLETS WITHIN 200' OF THE LOC MUST HAVE INLET PROTECTION. STORM WATER INLET PROTECTION IS ALSO REQUIRED AS NEW STORM WATER INLETS ARE ADDED TO THE SITE, IF APPLICABLE.
11. POND OR OTHER DISTURBED SLOPES 3:1 OR FLATTER MUST BE STABILIZED WITH BIODEGRADABLE SOIL RETENTION BLANKETS WITH NO PLASTIC NETTING. DISTURBED SLOPES EXCEEDING 3:1 REQUIRE BLANKETS OR EQUIVALENT UNTIL RE-VEGETATION IS ESTABLISHED OR SOD.
12. DO NOT DISTURB THE JURISDICTIONAL STREAM. ANY DISTURBANCE TO THE STREAM WILL NEED TO BE RECTIFIED IMMEDIATELY.

ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDED OR OTHERWISE STABILIZED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR WHERE TEMPORARY CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 21 DAYS

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
EROSION & SEDIMENTATION CONTROL PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C02.01

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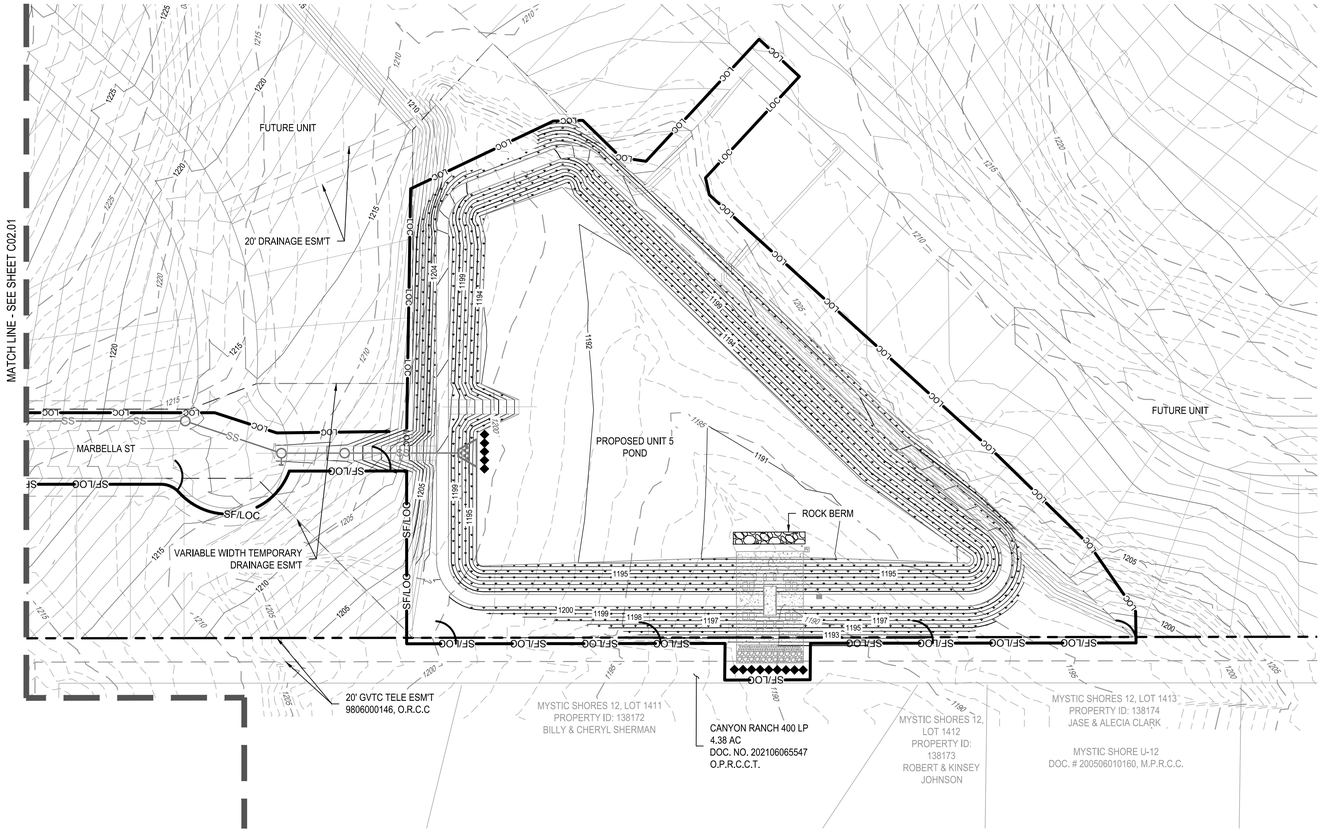

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- LOC LIMITS OF CONSTRUCTION
- SF SILT FENCE
- SF/LOC SILT FENCE/LIMITS OF CONSTRUCTION
- FLOW ARROW
- CONSTRUCTION ENTRANCE
- CONCRETE WASHOUT AREA
- CONSTRUCTION STAGING AREA
- INLET PROTECTION
- ROCK BERM
- ROCK RUBBLE
- J HOOKS
- 100 YEAR FEMA FLOODPLAIN
- JURISDICTIONAL WATERS OF THE US
- PROPOSED RETAINING WALL
- VEGETATIVE FILTER STRIP
- EROSION CONTROL MATTING

NOTES:

1. INTERIM OR FINAL GRADING MUST BE COMPLETED PRIOR TO SEEDING, MINIMIZING ALL STEEP SLOPES.
2. FERTILIZER SHOULD BE APPLIED AT THE RATE OF 40 POUNDS OF NITROGEN AND 40 POUNDS OF PHOSPHORUS PER ACRE. COMPOST CAN BE USED INSTEAD OF FERTILIZER AND APPLIED AT THE SAME TIME AS THE SEED.
3. ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDED OR OTHERWISE STABILIZED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR WHERE TEMPORARY CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 21 DAYS.
4. ADD J HOOKS PER CITY OF AUSTIN DETAIL ALONG THE SILT FENCE.
5. A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MUST BE PREPARED/AMENDED BY A TX PE, CPESC, OR QPSWPPP [CITY CODE SECTION 86.529(B)(2) OR 86.529(C)(3)], IMPLEMENTED, AND UPDATED TO MATCH SITE CONDITIONS DURING THE PROJECT. THE ASSOCIATED TPDES CONSTRUCTION SITE NOTICE MUST BE POSTED IN PUBLIC VIEW. TXR150000 PART III.D.2.
6. HAVE A CISEC, CESSWI, OR QCIS CONDUCT WEEKLY SWPPP INSPECTIONS AND DOCUMENT PER CITY CODE SECTIONS 86.523 AND 86.529(B)(9) OR 86.529(C)(10). MAINTAIN ALL ESC MEASURES AND ADDRESS ALL IDENTIFIED CORRECTIVE ACTIONS PER CITY CODE SECTION 86.529(C)(11).
7. THE LIMITS OF CONSTRUCTION (LOC) SHALL BE ADJUSTED AS NEEDED DURING THE PROJECT TO COVER ALL AREAS DISTURBED DURING DEMOLITION, GRADING, CONSTRUCTION, STORAGE, STOCKPILING, PARKING, ETC., PER TXR150000 PARTS I AND III.G.4.(C) AND (D). ADDITIONAL EROSION AND SEDIMENT CONTROLS MAY BE REQUIRED.
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CANYON RANCH UNIT 4
EROSION & SEDIMENTATION CONTROL PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C02.02

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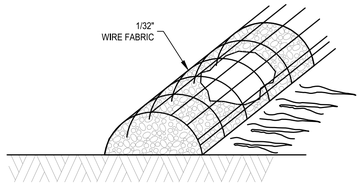
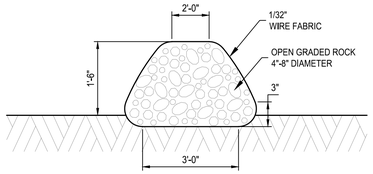


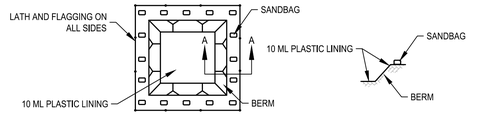


NOTES:

1. USE ONLY OPEN GRADED ROCK 4-8 INCHES DIAMETER FOR STREAM FLOW 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 OPENING AND MINIMUM WIRE DIAMETER OF 1/32 INCH.
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 12 INCHES, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED SITE AND IN A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
5. DAILY INSPECTION SHALL BE MADE ON SERVE 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.

ROCK BERM DETAIL

N.T.S.



CONCRETE WASHOUT NOTES:

1. THE LINED WASHOUT PIT SHALL BE SUFFICIENTLY LARGE ENOUGH TO HOLD EXPECTED VOLUME OF WASHOUT MATERIAL.
2. WHEN FACILITY IS NO LONGER REQUIRED, HARDENED CONCRETE SHALL PROPERLY REMOVED AND DISPOSED OF.
3. CONTRACTOR TO BACKFIELD PIT UPON REMOVAL OF LINING.

SAND BAG NOTES:

1. THE SAND BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC. MINIMUM UNIT WEIGHT 4 OZ/YD2, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. 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.
4. OUTLET PIPE SHOULD BE SCHEDULE 40 OR STRONGER POLYVINYL CHLORIDE (PVC) HAVING A NOMINAL INTERNAL DIAMETER OF 4 INCHES.

IN-GROUND CONCRETE WASHOUT PIT DETAIL

N.T.S.

COMPLIANCE CHECKLIST:

1. PERIMETER CONTROLS: INSTALL ESC'S (EROSION SEDIMENT CONTROLS) ALONG THE BACK OF THE CURB AND ALONG THE LOT LINE OF ADJACENT PROPERTIES, WHICH ARE DOWNHILL AND RECEIVE RUNOFF FROM YOUR LOT. FOLLOWING SIDEWALK INSTALLATION, ESC'S SHOULD BE REMOVED TO THE BACK OF THE SIDEWALK TO PREVENT SEDIMENT FROM REACHING THE SIDEWALK. MAINTAIN ESC'S TO ENSURE PROPER FUNCTION, INCLUDING REPAIR OR REPLACEMENT OF TORN, DEGRADED OR OTHERWISE INEFFECTIVE MATERIALS. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE PROTECTION.
2. STOCKPILES: INSTALL SEDIMENT CONTROLS AROUND STOCKPILES TO PREVENT SEDIMENT FROM REACHING THE STREET AND ADJACENT PROPERTIES. LOCATE STOCKPILES AWAY FROM THE STREET, PROPERTY LINES AND DRAINAGE WAYS.
3. LOT ACCESS: REQUIRED FOR EACH INDIVIDUAL LOT. MAINTAIN A SURFACE SUITABLE FOR PARKING AND UNLOADING TO PREVENT THE TRACKING OF MUD AND ROCK ONTO THE STREET. A MINIMUM 6-INCH DEPTH OF 3- TO 5-INCH AGGREGATE IS SUGGESTED. ALL VEHICLES THAT ACCESS THE LOT MUST USE THE CONSTRUCTION ENTRANCE. ANY SOILS THAT ARE TRUCKED ONTO THE STREET MUST BE REMOVED BY THE END OF THE DAY.
4. INTERMEDIATE CONTROL: LONG OR STEEP DRAINAGE PATHS MAY REQUIRE INTERMEDIATE OR INTERIOR ESC'S TO HELP SLOW THE FLOW OF RUNOFF. FAILURE OF PERIMETER CONTROLS DUE TO THE FORCE OF RUNOFF OFTEN DETERMINE THE NEED FOR INTERMEDIATE CONTROLS.
5. HOUSEKEEPING: PROVIDE ADEQUATE SANITARY FACILITIES, TRASH/REFUSE BINS, AND DESIGNATED CONCRETE WASHOUT.

CONTRACTOR/BUILDERS RESPONSIBILITY:

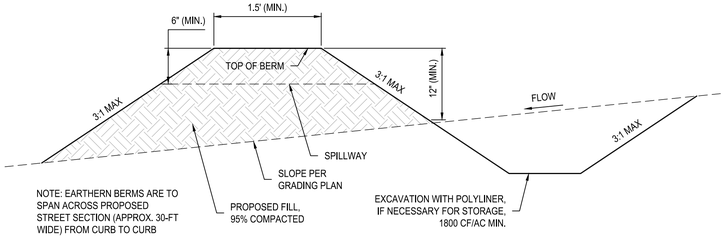
1. INSTALL NEEDED EROSION AND SEDIMENT CONTROL PRACTICES PRIOR TO ANY LAND DISTURBANCE TO PREVENT EXCESSIVE SEDIMENT FROM LEAVING THE SITE.
2. PERIODIC INSPECTION AND MAINTENANCE ARE VITAL TO THE PERFORMANCE OF EROSION AND SEDIMENT CONTROLS. IT IS RECOMMENDED THAT ALL TEMPORARY EROSION CONTROLS BE INSPECTED WEEKLY AND AFTER EVERY RAINFALL.
3. MAINTENANCE: ESC (EROSION SEDIMENT CONTROLS) SHOULD BE ROUTINELY INSPECTED AND MAINTAINED UNTIL SITE IS PERMANENTLY VEGETATED. SOMETIMES ROUTINE INSPECTIONS MAY SHOW A NEED FOR ADJUSTMENTS OR ADDITIONAL ESC'S.
4. SUBMIT A NOTICE OF TERMINATION (NOT) TO THE TCEQ AND LOCAL MS4 WHEN CONSTRUCTION IS COMPLETE.
5. REVEGETATE THE SITE: PREVENT EROSION ON INDIVIDUAL LOTS WITH GROUND COVER. EXISTING TREES AND VEGETATION SHOULD BE PROTECTED TO HELP MAINTAIN A STABLE GROUND SURFACE AND PREVENT LOSS OF VALUABLE TOPSOIL. EROSION CONTROL BLANKETS, MATTING AND MULCHES CAN HELP STABILIZE THE AREA UNTIL PERMANENT VEGETATION IS ESTABLISHED. THE SITE NEEDS TO HAVE AT LEAST 70 PERCENT COVER OF PERMANENT VEGETATION BEFORE ESC'S CAN BE REMOVED.

ENGINEERING FILTER STRIPS

1. THE FILTER STRIP SHOULD EXTEND ALONG THE ENTIRE LENGTH OF THE CONTRIBUTING AREA AND THE SLOPE SHOULD NOT EXCEED 20%. THE MINIMUM DIMENSION OF THE FILER STRIP (IN THE DIRECTION OF FLOW) SHOULD BE NO LESS THAN 15 FEET. THE MAXIMUM WIDTH (IN THE FLOW OF DIRECTION) OF THE CONTRIBUTING IMPERVIOUS AREA SHOULD NOT EXCEED 72 FEET. FOR ROADWAYS WITH A VEGETATED STRIP ALONG BOTH SIDES OF THE TOTAL WIDTH OF THE ROADWAY SHOULD NOT EXCEED 144 FEET.
2. THE MINIMUM VEGETATED COVER FOR ENGINEERED STRIPS IS 80%.
3. THE AREA CONTRIBUTING RUNOFF TO A FILTER STRIP SHOULD BE RELATIVELY FLAT SO THAT THE RUNOFF IS DISTRIBUTED EVENLY TO THE VEGETATED AREA WITHOUT THE USE OF A LEVEL SPREADER.
4. THE AREA TO BE USED FOR THE STRIP SHOULD BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW.
5. THE TOP EDGE OF THE FILTER STRIP ALONG THE PAVEMENT WILL BE DESIGNED TO AVOID THE SITUATION WHERE RUNOFF WOULD TRAVEL ALONG THE TOP OF THE FILTER STRIP, RATHER THAN THROUGH IT.
6. TOP EDGE OF THE FILTER STRIP SHOULD BE LEVEL, OTHERWISE RUNOFF WILL TEND TO FORM A CHANNEL IN THE LOW SPOT. A LEVEL SPREADER SHOULD NOT BE USED TO DISTRIBUTE RUNOFF TO AND ENGINEERED FILTER STRIP.
7. FILTER STRIPS SHOULD BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.

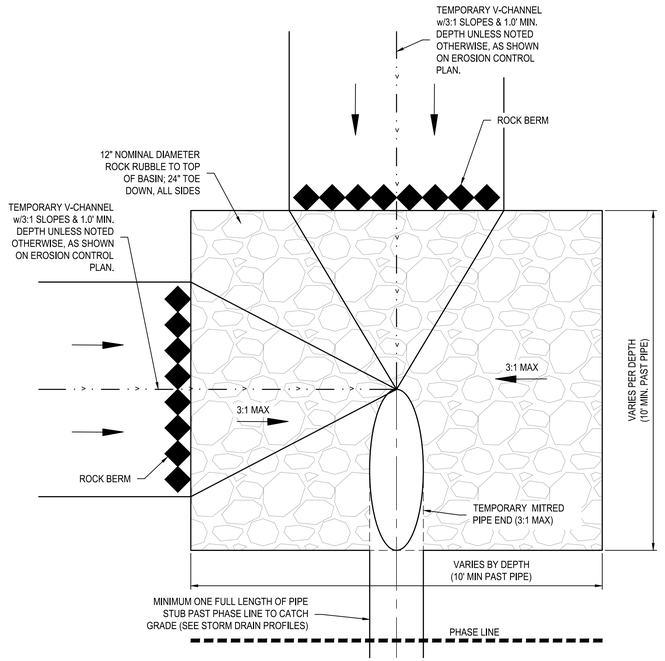
INTERIM FILTER STRIPS

1. THE FILTER STRIP AREA MUST BE 50% OF THE SIZE OF THE CONTRIBUTING IMPERVIOUS COVER.
2. TOP EDGE OF THE FILTER STRIP SHOULD BE LEVEL; OTHERWISE, RUNOFF WILL TEND TO FORM A CHANNEL IN THE LOW SPOT. IF A LEVEL SPREADER IS USED (IS IS ONLY ALLOWED FOR INTERIM USE) TO DISTRIBUTE RUNOFF TO THE FILTER STRIP, IT MUST BE LINED OR BE CONSTRUCTED OF IMPERMEABLE MATERIALS (CONCRETE).
3. THE AREA TO BE USED FOR THE STRIP SHOULD BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW.
4. FILTER STRIPS SHOULD BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED AND VEGETATION COVERAGE SHOULD BE AT LEAST 80%.



EARTHEN BERM W/ POLYLINER AND SPILLWAY

N.T.S.



TEMPORARY V-CHANNEL & HEADWALL

N.T.S.

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

NOT FOR CONSTRUCTION

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CANYON RANCH UNIT 4

EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C02.20

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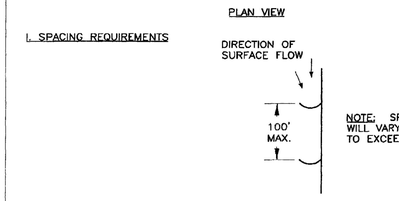
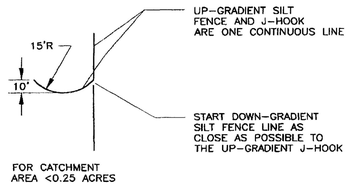
PLAN VIEW

I. SPACING REQUIREMENTS

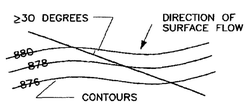


NOTE: SPACING DISTANCES WILL VARY, BUT ARE NOT TO EXCEED 100 FEET.

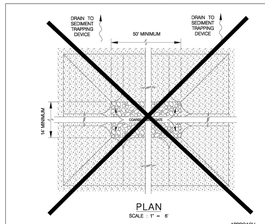
II. SIZING REQUIREMENTS:



FOR CATCHMENT AREA <0.25 ACRES



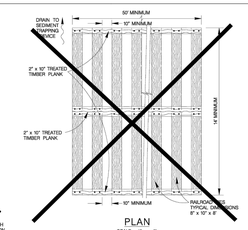
NOTE:
J-HOOKS SHALL ALSO BE USED WHEN THE SILT FENCE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS.



GENERAL NOTES

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 WELL GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHALL 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 MATERIAL AS 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.

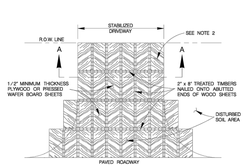
CONSTRUCTION EXIT – TYPE 1



GENERAL NOTES

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 FASTENED TO THE RAILROAD TIES WITH 1-1/2" x 6" MIN LAG BOLTS. OTHER FASTENING 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 SHOULD 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.

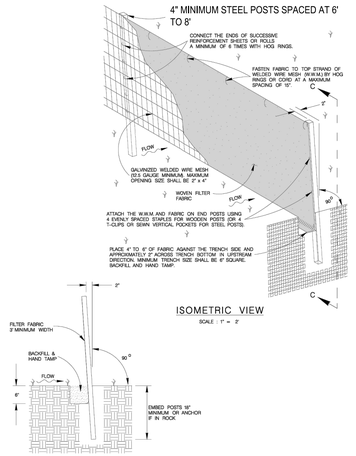
CONSTRUCTION EXIT – TYPE 2



GENERAL NOTES

1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED 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 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES 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.

CONSTRUCTION EXIT – TYPE 3



SEDIMENT CONTROL FENCE USAGE GUIDELINES

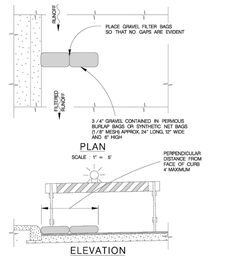
A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM / FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

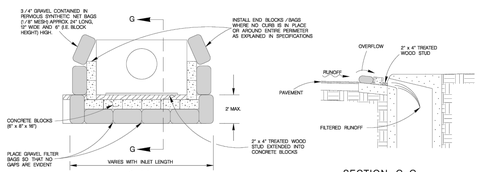
1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

TEMPORARY SEDIMENT CONTROL FENCE



NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE I BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION DETAILS. PLACE BAGS 2' MINIMUM AWAY FROM GUTTER FLOW WITH OUTSIDE EDGE OF BAG CONFIGURATION.

GRAVEL FILTER BAGS

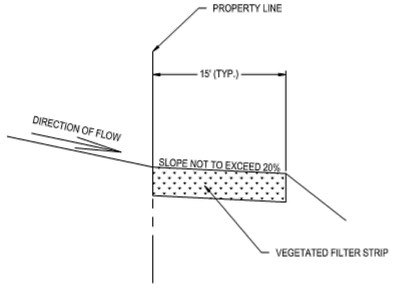


CURB INLET GRAVEL FILTER

JANUARY 2005
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

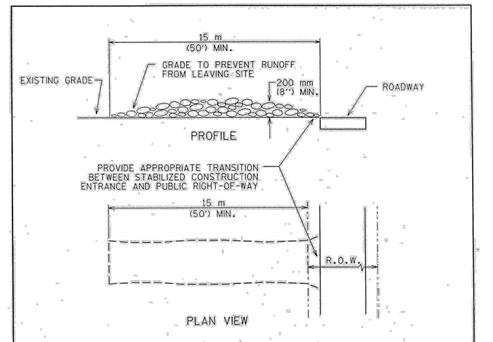
N SUBMITTAL PROJECT NO.: DATE:
DRAWN BY: V. VASQUEZ DSGN. BY: CHKD. BY: SHEET NO.: OF



ENGINEERED VEGETATED FILTER STRIP DETAIL (TYP.)
N.T.S.

V.F.S. NOTES (TCEQ RG348)

1. THE FILTER STRIP SHOULD EXTEND ALONG THE ENTIRE LENGTH OF THE CONTRIBUTING AREA AND THE SLOPE SHOULD NOT EXCEED 20%. THE MINIMUM DIMENSION OF THE FILTER STRIP (IN THE DIRECTION OF FLOW) SHOULD BE NO LESS THAN 15 FEET. THE MAXIMUM WIDTH (IN THE DIRECTION OF FLOW) OF THE CONTRIBUTING IMPERVIOUS AREA SHOULD NOT EXCEED 72 FEET. FOR ROADWAYS WITH A VEGETATED STRIP ALONG BOTH SIDES THE TOTAL WIDTH OF THE ROADWAY SHOULD NOT EXCEED 144 FEET (I.E., 72 FEET DRAINING TO EACH SIDE).
2. THE MINIMUM VEGETATED COVER FOR ENGINEERED STRIPS IS 80%.
3. THE AREA CONTRIBUTING RUNOFF TO A FILTER STRIP SHOULD BE RELATIVELY FLAT SO THAT THE RUNOFF IS DISTRIBUTED EVENLY TO THE VEGETATED AREA WITHOUT THE USE OF A LEVEL SPREADER.
4. THE AREA TO BE USED FOR THE STRIP SHOULD BE FREE OF GULLIES OR RILLS THAT CAN CONCENTRATE OVERLAND FLOW (SCHUELER, 1987).
5. THE TOP EDGE OF THE FILTER STRIP ALONG THE PAVEMENT WILL BE DESIGNED TO AVOID THE SITUATION WHERE RUNOFF WOULD TRAVEL ALONG THE TOP OF THE FILTER STRIP, RATHER THAN THROUGH IT.
6. TOP EDGE OF THE FILTER STRIP SHOULD BE LEVEL, OTHERWISE RUNOFF WILL TEND TO FORM A CHANNEL IN THE LOW SPOT. A LEVEL SPREADER SHOULD NOT BE USED TO DISTRIBUTE RUNOFF TO AN ENGINEERED FILTER STRIP.
7. FILTER STRIPS SHOULD BE LANDSCAPED AFTER OTHER PORTIONS OF THE PROJECT ARE COMPLETED.



NOTES:
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND 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 A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE
5/23/00 ADOPTED — THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S-1

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁	◁	REV
DESIGNED BY:	NA						
REVIEWED BY:	ACR						
DRAWN BY:	SSM						

NOT FOR CONSTRUCTION

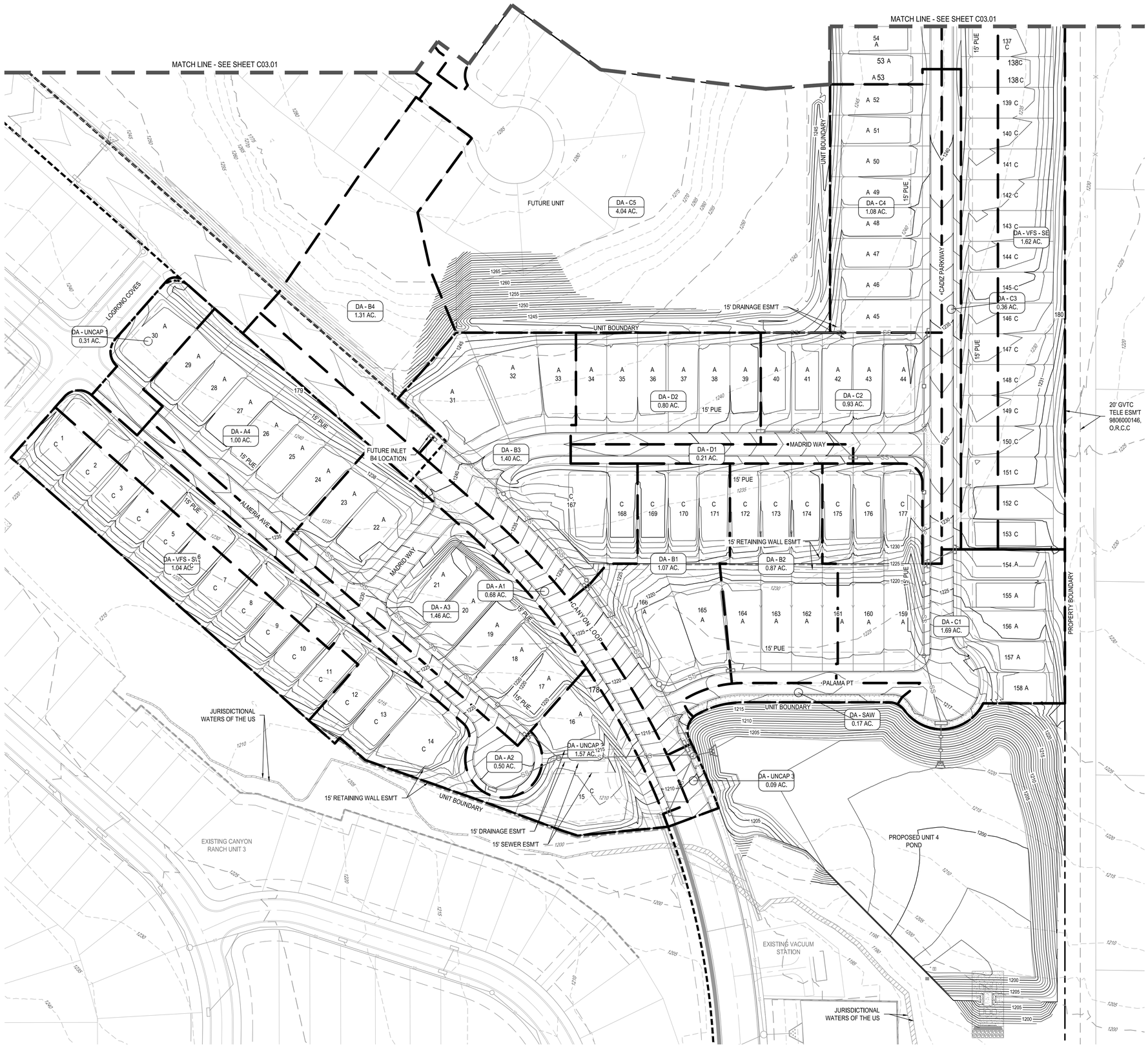
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 2 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C02.21



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- DRAINAGE AREA BOUNDARY
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- 3 LOT NUMBER
- DA - 37 / 0.79 AC. DRAINAGE AREA LABEL

NOTE:

1. PROPOSED DRAINAGE PATTERNS ARE TO FOLLOW THE FINISHED LOT/PAD GRADING BASED ON THE LOT TYPE DESIGNATION AND DETAIL SHOWN ON SHEET C03.11.
2. REFERENCE GRADING DETAIL ON SHEET C03.11

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE DRAINAGE PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C03.00

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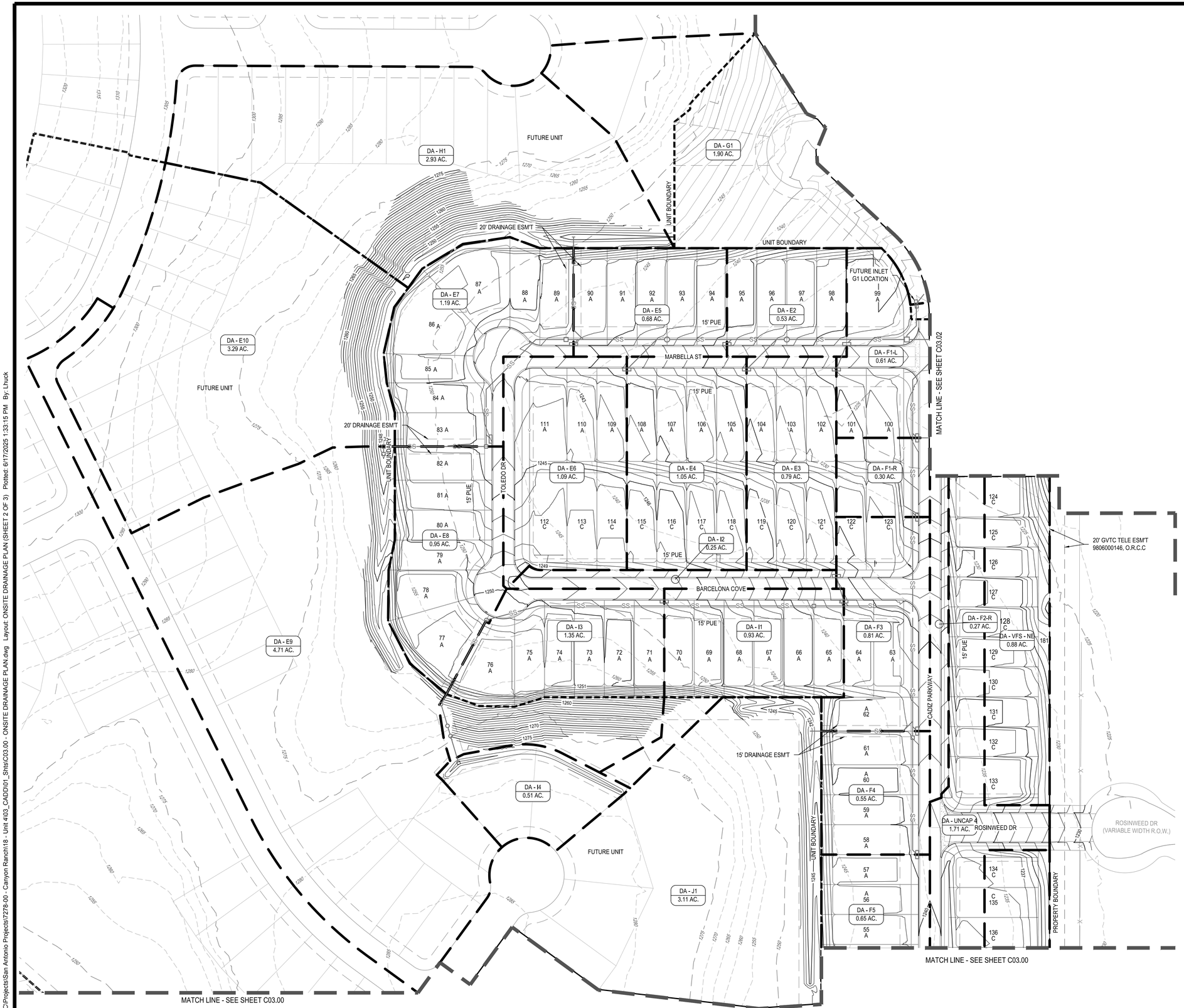

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- DRAINAGE AREA BOUNDARY
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
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2. REFERENCE GRADING DETAIL ON SHEET C03.11

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

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7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE DRAINAGE PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C03.01

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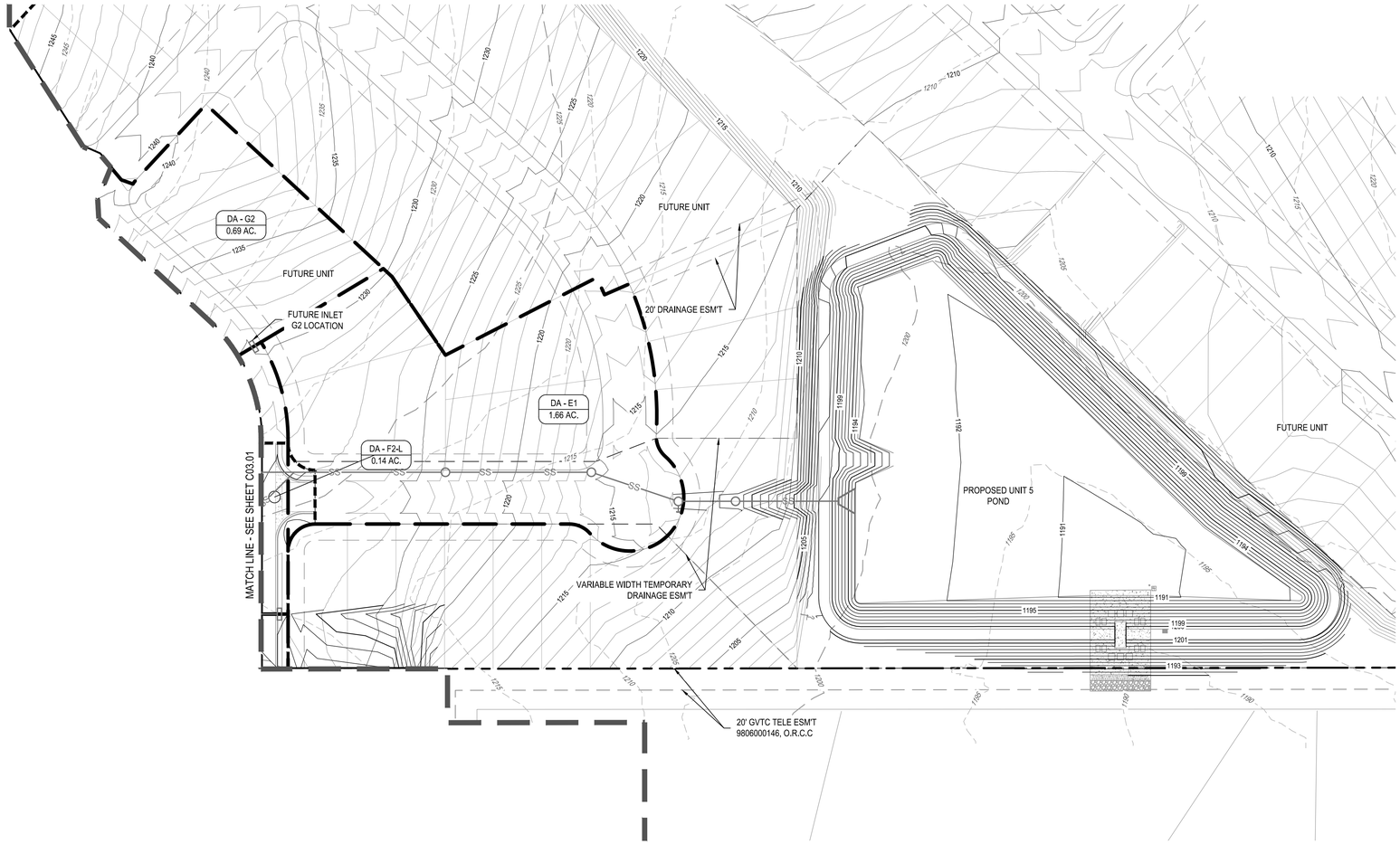

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- DRAINAGE AREA BOUNDARY
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- 3 LOT NUMBER
- DA - 37 / 0.79 AC. DRAINAGE AREA LABEL

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2. REFERENCE GRADING DETAIL ON SHEET C03.11

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

NOT FOR CONSTRUCTION

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE DRAINAGE PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C03.02

G:\TX\CI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.00 - ONSITE DRAINAGE PLAN.dwg Layout: ONSITE DRAINAGE PLAN (SHEET 3 OF 3) Plotted: 6/17/2025 1:33:29 PM By: Lhuck

Runoff Coeffecients	10 Yr	25 Yr	100 Yr
Asphalt	0.81	0.86	0.95
Conc. / Roof	0.83	0.88	0.97
Grass (2-7%) good	0.35	0.39	0.46

Avg. Imperv. per lot
4,000 sf

			STREET								IMPERVIOUS				GRASS					
Drainage Area	Total Area (Ac)	Total Area (sf)	Street Width (ft)	Sidewalk Width (ft)	% of Street	Street Length (lf)	Sidewalk Length (lf)	Area Street (sf)	Area Street (Ac)	Area Street (%)	Num Homes in Area	Area Imper. (sf)	Area Imper. (Ac)	Area Imper. (%)	Area Grass (sf)	Area Grass (Ac)	Area Grass (%)	Composite 10 Yr "C"	Composite 25 Yr "C"	Composite 100 Yr "C"
A1	0.68	29,621	51	4	50%	565	565	16,678	0.38	56.3%	0	0	0.00	0.0%	12,943	0.30	43.7%	**0.61**	**0.65**	**0.74**
A2	0.50	21,780	31	4	50%	701	782	13,989	0.32	64.2%	0	0	0.00	0.0%	7,791	0.18	35.8%	**0.65**	**0.69**	**0.77**
A3	1.46	63,598	31	4	65%	564	529	14,027	0.32	22.1%	7	28,000	0.64	44.0%	21,571	0.50	33.9%	**0.66**	**0.71**	**0.79**
A4	1.00	43,560	31	4	50%	237	0	3,667	0.08	8.4%	6	24,000	0.55	55.1%	15,893	0.36	36.5%	**0.65**	**0.70**	**0.78**
B1	1.07	46,609	31	4	50%	118	124	8,405	0.19	18.0%	5	20,000	0.46	42.9%	18,204	0.42	39.1%	**0.64**	**0.69**	**0.77**
			51	4	50%	238	0													
B2	0.87	37,897	31	4	50%	136	136	2,643	0.06	7.0%	6.5	26,000	0.60	68.6%	9,254	0.21	24.4%	**0.71**	**0.76**	**0.84**
B3	1.40	60,984	31	4	100%	159	93	12,246	0.28	20.1%	5	20,000	0.46	32.8%	28,738	0.66	47.1%	**0.60**	**0.65**	**0.73**
			51	4	50%	258	0													
B4	1.31	57,064	51	4	50%	290	0	7,406	0.17	13.0%	2	8,000	0.18	14.0%	41,658	0.96	73.0%	**0.48**	**0.52**	**0.60**
C1	1.69	73,616	31	4	100%	342	250	12,619	0.29	17.1%	10.5	42,000	0.96	57.1%	18,998	0.44	25.8%	**0.70**	**0.75**	**0.83**
C2	0.93	40,511	31	4	61%	535	339	11,720	0.27	28.9%	5	20,000	0.46	49.4%	8,790	0.20	21.7%	**0.72**	**0.77**	**0.85**
C3	0.36	15,682	31	4	50%	624	0	9,666	0.22	61.6%	0	0	0.00	0.0%	6,015	0.14	38.4%	**0.63**	**0.68**	**0.76**
C4	1.08	47,045	31	4	50%	342	342	6,673	0.15	14.2%	8	32,000	0.73	68.0%	8,372	0.19	17.8%	**0.74**	**0.79**	**0.88**
C5	4.04	175,982	31	4	100%	173	413	8,680	0.20	4.9%	7	28,000	0.64	15.9%	139,303	3.20	79.2%	**0.45**	**0.49**	**0.57**
D1	0.21	9,148	31	4	50%	367	0	5,685	0.13	62.2%	0	0	0.00	0.0%	3,462	0.08	37.8%	**0.64**	**0.68**	**0.76**
D2	0.80	34,848	31	4	50%	247	247	4,813	0.11	13.8%	6	24,000	0.55	68.9%	6,035	0.14	17.3%	**0.74**	**0.79**	**0.88**
E1	1.66	72,310	31	4	100%	541	576	21,368	0.49	29.6%	3	12,000	0.28	16.6%	38,942	0.89	53.9%	**0.57**	**0.61**	**0.69**
E2	0.53	23,087	31	4	50%	160	160	3,120	0.07	13.5%	4	16,000	0.37	69.3%	3,967	0.09	17.2%	**0.74**	**0.79**	**0.88**
E3	0.79	34,412	31	4	50%	120	0	1,860	0.04	5.4%	6	24,000	0.55	69.7%	8,552	0.20	24.9%	**0.71**	**0.76**	**0.84**
E4	1.05	45,738	31	4	50%	160	0	2,480	0.06	5.4%	8	32,000	0.73	70.0%	11,258	0.26	24.6%	**0.71**	**0.76**	**0.84**
E5	0.68	29,621	31	4	50%	205	205	3,998	0.09	13.5%	5	20,000	0.46	67.5%	5,623	0.13	19.0%	**0.74**	**0.78**	**0.87**
E6	1.09	47,480	31	4	50%	400	0	6,200	0.14	13.1%	6	24,000	0.55	50.5%	17,280	0.40	36.4%	**0.65**	**0.70**	**0.78**
E7	1.19	51,836	31	4	50%	214	299	4,510	0.10	8.7%	7	28,000	0.64	54.0%	19,326	0.44	37.3%	**0.65**	**0.70**	**0.78**
E8	0.95	41,382	31	4	50%	218	251	4,381	0.10	10.6%	0	0	0.00	0.0%	37,001	0.85	89.4%	**0.40**	**0.44**	**0.51**
E9	4.71	205,168	31	4	50%	1,159	1,123	22,449	0.52	10.9%	13	52,000	1.19	25.3%	130,719	3.00	63.7%	**0.52**	**0.57**	**0.64**
E10	3.29	143,312	31	4	50%	0	0	0	0.00	0.0%	9	36,000	0.83	25.1%	107,312	2.46	74.9%	**0.47**	**0.51**	**0.59**
F1-L	0.61	26,572	31	4	71%	292	246	7,788	0.18	29.3%	2	8,000	0.18	30.1%	10,784	0.25	40.6%	**0.63**	**0.68**	**0.76**
F1-R	0.30	13,068	31	4	61%	106	106	2,530	0.06	19.4%	2	8,000	0.18	61.2%	2,538	0.06	19.4%	**0.73**	**0.78**	**0.87**
F2-L	0.14	6,098	31	4	50%	243	34	3,906	0.09	64.0%	0	0	0.00	0.0%	2,193	0.05	36.0%	**0.64**	**0.69**	**0.77**
F2-R	0.27	11,761	31	4	50%	486	0	7,540	0.17	64.1%	0	0	0.00	0.0%	4,221	0.10	35.9%	**0.64**	**0.69**	**0.77**
F3	0.81	35,284	31	4	50%	526	357	9,583	0.22	27.2%	4	16,000	0.37	45.3%	9,701	0.22	27.5%	**0.69**	**0.74**	**0.82**
F4	0.55	23,958	31	4	50%	165	165	3,218	0.07	13.4%	4	16,000	0.37	66.8%	4,741	0.11	19.8%	**0.73**	**0.78**	**0.87**
F5	0.65	28,314	31	4	50%	180	180	3,516	0.08	12.4%	5	20,000	0.46	70.6%	4,798	0.11	16.9%	**0.75**	**0.79**	**0.88**
SAW	0.17	7,405	31	4	50%	313	0	4,855	0.11	65.6%	0	0	0.00	0.0%	2,550	0.06	34.4%	**0.65**	**0.70**	**0.78**
G1	1.90	82,764	31	4	50%	310	310	6,048	0.14	7.3%	3	12,000	0.28	14.5%	64,716	1.49	78.2%	**0.45**	**0.50**	**0.57**
G2	0.92	40,075	31	4	50%	287	287	5,598	0.13	14.0%	5	20,000	0.46	49.9%	14,477	0.33	36.1%	**0.65**	**0.70**	**0.78**
H1	2.93	127,631	31	4	0%	0	0	0	0.00	0.0%	11	44,000	1.01	34.5%	83,631	1.92	65.5%	**0.52**	**0.56**	**0.64**
I1	0.93	40,511	31	4	50%	240	240	4,680	0.11	11.6%	6	24,000	0.55	59.2%	11,831	0.27	29.2%	**0.69**	**0.73**	**0.82**
I2	0.25	10,890	31	4	50%	441	441	8,592	0.20	78.9%	0	0	0.00	0.0%	2,298	0.05	21.1%	**0.71**	**0.76**	**0.85**
I3	1.35	58,806	31	4	50%	237	240	4,626	0.11	7.9%	6	24,000	0.55	40.8%	30,180	0.69	51.3%	**0.58**	**0.63**	**0.71**
I4	0.51	22,216	31	4	0%	0	0	0	0.00	0.0%	2	8,000	0.18	36.0%	14,216	0.33	64.0%	**0.52**	**0.57**	**0.64**
J1	3.11	135,472	31	4	100%	238	526	11,577	0.27	8.5%	3	12,000	0.28	8.9%	111,894	2.57	82.6%	**0.43**	**0.47**	**0.55**
UNCAP 1	0.31	13,504	31	4	100%	79	39	2,761	0.06	20.4%	1	4,000	0.09	29.6%	6,742	0.15	49.9%	**0.59**	**0.63**	**0.71**
UNCAP 2	1.57	68,389	31	4	0%	0	0	0	0.00	0.0%	9	36,000	0.83	52.6%	32,389	0.74	47.4%	**0.60**	**0.65**	**0.73**
UNCAP 3	0.09	3,920	51	4	61%	88	19	2,803	0.06	71.5%	0	0	0.00	0.0%	1,117	0.03	28.5%	**0.68**	**0.73**	**0.81**
UNCAP 4	1.71	74,488	31	4	69%	268	268	7,267	0.17	9.8%	15	60,000	1.38	80.6%	7,220	0.17	9.7%	**0.78**	**0.83**	**0.92**
VFS - NE	0.88	38,333	31	4	69%	0	0	0	0.00	0.0%	5	20,000	0.46	52.2%	18,333	0.42	47.8%	**0.60**	**0.65**	**0.73**
VFS - SE	1.62	70,567	31	4	69%	0	0	0	0.00	0.0%	10	40,000	0.92	56.7%	30,567	0.70	43.3%	**0.62**	**0.67**	**0.75**
VFS - SW	1.04	45,302	31	4	69%	0	0	0	0.00	0.0%	5.5	22,000	0.51	48.6%	23,302	0.53	51.4%	**0.58**	**0.63**	**0.71**

n Values	
Concrete =	0.013
Short grass prairie =	0.15
Dense grasses =	0.24

Inlet Flow Calculations

Basin				Sheet Flow (Max 100 feet)						Grass Shallow Conc. Flow						Street Shallow Conc. Flow							10-year			25-year			100-year		
From	To	Area (Ac)	Area (sf)	L (ft)	Elev 1	Elev 2	n	S (%)	T_c (min)	L (ft)	Elev 1	Elev 2	n	S (%)	T_c (min)	L (ft)	Elev 1	Elev 2	n	S (%)	T_c (min)	T_c (min)	C	I (in/hr)	Q (cfs)	C	I (in/hr)	Q (cfs)	C	I (in/hr)	Q (cfs)
A1	INLET	0.68	29,621	31.8	1249.15	1248.61	0.013	1.70%	0.52							817.1	1248.61	1208.59	0.013	4.90%	3.03	10.00	0.61	7.50	3.11	0.65	9.12	4.06	0.74	11.70	5.85
A2	INLET	0.50	21,780	19.7	1238.28	1237.96	0.013	1.63%	0.36							654.5	1237.96	1214.11	0.013	3.64%	2.81	10.00	0.65	7.50	2.42	0.69	9.12	3.15	0.77	11.70	4.53
A3	INLET	1.46	63,598	45.5	1241.02	1239.37	0.15	3.63%	3.64	116.7	1239.37	1234.31	0.15	4.34%	0.58	395.4	1234.31	1215.64	0.013	4.72%	1.49	10.00	0.66	7.50	7.26	0.71	9.12	9.45	0.79	11.70	13.54
A4	INLET	1.00	43,560	19.1	1240.49	1240.21	0.15	1.46%	2.62	116.1	1240.21	1237.97	0.15	1.93%	0.86	223.1	1237.97	1234.55	0.013	1.53%	1.48	10.00	0.65	7.50	4.90	0.70	9.12	6.38	0.78	11.70	9.15
B1	INLET	1.07	46,609	41.1	1239.49	1238.24	0.15	3.04%	3.61	265.8	1238.24	1216.64	0.15	8.13%	0.96	126.5	1216.64	1212.60	0.013	3.19%	0.58	10.00	0.64	7.50	5.13	0.69	9.12	6.68	0.77	11.70	9.60
B2	INLET	0.87	37,897	40.3	1236.77	1235.56	0.15	3.00%	3.56	251.5	1235.56	1217.88	0.15	7.03%	0.98	111.9	1217.88	1216.90	0.013	0.88%	0.98	10.00	0.71	7.50	4.64	0.76	9.12	6.02	0.84	11.70	8.59
B3	INLET	1.40	60,984	47.9	1247.42	1246.21	0.15	2.53%	4.39	111.4	1246.21	1240.65	0.15	4.99%	0.52	354.7	1240.65	1227.81	0.013	3.62%	1.53	10.00	0.60	7.50	6.30	0.65	9.12	8.24	0.73	11.70	11.89
B4	INLET	1.31	57,064	16.7	1286.72	1286.52	0.15	1.20%	2.54	342.0	1286.52	1248.67	0.20	11.07%	1.06	263.6	1248.67	1242.17	0.013	2.47%	1.38	10.00	0.48	7.50	4.69	0.52	9.12	6.21	0.60	11.70	9.12
C1	INLET	1.69	73,616	40.3	1235.87	1234.78	0.15	2.70%	3.72	252.5	1234.78	1217.87	0.15	6.70%	1.01	151.2	1217.87	1216.10	0.013	1.17%	1.15	10.00	0.70	7.50	8.91	0.75	9.12	11.56	0.83	11.70	16.51
C2	INLET	0.93	40,511	39.6	1242.17	1240.76	0.15	3.56%	3.28	112.0	1240.76	1236.16	0.15	4.11%	0.57	334.7	1236.16	1227.43	0.013	2.61%	1.70	10.00	0.72	7.50	5.02	0.77	9.12	6.51	0.85	11.70	9.29
C3	INLET	0.36	15,682	14.6	1240.68	1240.39	0.013	1.98%	0.26							612.1	1240.39	1228.43	0.013	1.95%	3.59	10.00	0.63	7.50	1.71	0.68	9.12	2.23	0.76	11.70	3.21
C4	INLET	1.08	47,045	17.8	1246.42	1245.65	0.15	4.33%	1.60	142.5	1245.65	1240.23	0.15	3.80%	0.75	279.1	1240.23	1234.72	0.013	1.97%	1.63	10.00	0.74	7.50	6.01	0.79	9.12	7.78	0.88	11.70	11.07
C5	INLET	4.04	175,982	26.1	1286.50	1286.18	0.15	1.22%	3.61	832.3	1286.18	1239.86	0.22	5.57%	3.64							10.00	0.45	7.50	13.61	0.49	9.12	18.10	0.57	11.70	26.72
D1	INLET	0.21	9,148	15.0	1240.94	1240.65	0.013	1.93%	0.27							352.1	1240.65	1234.42	0.013	1.77%	2.17	10.00	0.64	7.50	1.00	0.68	9.12	1.31	0.76	11.70	1.88
D2	INLET	0.80	34,848	37.0	1246.67	1245.70	0.15	2.62%	3.51	112.1	1245.70	1240.54	0.15	4.60%	0.54	197.6	1240.54	1237.11	0.013	1.74%	1.23	10.00	0.74	7.50	4.46	0.79	9.12	5.78	0.88	11.70	8.23
E1	INLET	1.66	72,310	7.4	1229.86	1229.62	0.15	3.23%	0.90	145.8	1229.62	1226.05	0.15	2.45%	0.96	323.7	1226.05	1213.84	0.013	3.77%	1.37	10.00	0.57	7.50	7.04	0.61	9.12	9.24	0.69	11.70	13.39
E2	INLET	0.53	23,087	40.1	1238.93	1230.71	0.15	20.50%	1.65	111.5	1236.48	1230.71	0.15	5.17%	0.51	115.6	1230.71	1227.50	0.013	2.78%	0.57	10.00	0.74	7.50	2.96	0.79	9.12	3.83	0.88	11.70	5.45
E3	INLET	0.79	34,412	26.3	1244.06	1242.36	0.15	6.46%	1.87	270.4	1242.36	1229.59	0.15	4.72%	1.29	76.9	1229.59	1227.63	0.013	2.55%	0.40	10.00	0.71	7.50	4.20	0.76	9.12	5.46	0.84	11.70	7.78
E4	INLET	1.05	45,738	26.3	1249.23	1248.10	0.15	4.29%	2.20	270.4	1248.10	1236.66	0.15	4.23%	1.36	116.9	1236.66	1231.47	0.013	4.44%	0.45	10.00	0.71	7.50	5.60	0.76	9.12	7.26	0.84	11.70	10.36
E5	INLET	0.68	29,621	20.8	1247.25	1246.19	0.15	5.10%	1.70	133.0	1246.19	1239.46	0.15	5.06%	0.61	157.1	1239.46	1232.63	0.013	4.35%	0.62	10.00	0.74	7.50	3.75	0.78	9.12	4.86	0.87	11.70	6.93
E6	INLET	1.09	47,480	32.0	1250.12	1248.01	0.15	6.59%	2.17	78.0	1248.01	1244.45	0.15	4.57%	0.38	292.9	1244.45	1238.56	0.013	2.01%	1.69	10.00	0.65	7.50	5.34	0.70	9.12	6.95	0.78	11.70	9.97
E7	INLET	1.19	51,836	45.8	1250.18	1247.87	0.15	5.05%	3.21	84.4	1247.87	1243.44	0.15	5.25%	0.38	278.3	1243.44	1240.83	0.013	0.94%	2.36	10.00	0.65	7.50	5.80	0.70	9.12	7.55	0.78	11.70	10.83
E8	INLET	0.95	41,382	18.2	1257.18	1256.17	0.24	5.54%	2.15	105.73	1256.17	1250.65	0.22	5.22%	0.48	219.0	1250.65	1243.57	0.013	3.23%	1.00	10.00	0.40	7.50	2.84	0.44	9.12	3.81	0.51	11.70	5.69
E9	INLET	4.71	205,168	14.1	1308.63	1308.32	0.013	2.20%	0.25	544.6	1277.08	1247.80	0.19	5.38%	2.43	697.3	1308.32	1277.08	0.013	4.48%	2.70	10.00	0.52	7.50	18.44	0.57	9.12	24.30	0.64	11.70	35.43
E10	INLET	3.29	143,312	32.0	1308.49	1307.25	0.15	3.88%	2.67	578.0	1307.25	1254.36	0.15	9.15%	1.97							10.00	0.47	7.50	11.61	0.51	9.12	15.40	0.59	11.70	22.64
F1-L	INLET	0.61	26,572	23.4	1234.15	1232.82	0.15	5.68%	1.79	107.1	1232.82	1227.43	0.15	5.03%	0.49	210.9	1227.43	1225.88	0.013	0.74%	2.02	10.00	0.63	7.50	2.88	0.68	9.12	3.76	0.76	11.70	5.40
F1-R	INLET	0.30	13,068	24.4	1235.80	1234.74	0.15	4.35%	2.06	122.4	1234.74	1226.39	0.15	6.82%	0.48	41.7	1226.39	1225.88	0.013	1.22%	0.31	10.00	0.73	7.50	1.65	0.78	9.12	2.14	0.87	11.70	3.04
F2-L	INLET	0.14	6,098	16.4	1229.50	1228.84	0.013	4.02%	0.22							236.9	1228.84	1225.88	0.013	1.25%	1.74	10.00	0.64	7.50	0.68	0.69	9.12	0.88	0.77	11.70	1.27
F2-R	INLET	0.27	11,761	15.5	1239.00	1238.48	0.013	3.35%	0.22							474.1	1238.48	1225.88	0.013	2.66%	2.38	10.00	0.64	7.50	1.31	0.69	9.12	1.70	0.77	11.70	2.45
F3	INLET	0.81	35,284	18.6	1243.45	1242.61	0.15	4.51%	1.64	144.5	1242.61	1237.47	0.15	3.56%	0.79	237.6	1237.47	1228.64	0.013	3.72%	1.01	10.00	0.69	7.50	4.21	0.74	9.12	5.47	0.82	11.70	7.81
F4	INLET	0.55	23,958	39.6	1245.92	1245.06	0.15	2.17%	4.00	112.4	1245.06	1238.95	0.15	5.44%	0.50	122.7	1238.95	1238.03	0.013	0.75%	1.16	10.00	0.73	7.50	3.02	0.78	9.12	3.91	0.87	11.70	5.58
F5	INLET	0.65	28,314	17.8	1246.40	1245.64	0.15	4.27%	1.61	141.5	1245.64	1240.35	0.15	3.74%	0.76	158.5	1240.35	1239.26	0.013	0.69%	1.57	10.00	0.75	7.50	3.64	0.79	9.12	4.71	0.88	11.70	6.70
SAW	INLET	0.17	7,405	14.5	1217.32	1217.00	0.013	2.21%	0.25							13.7	1217.00	1216.96	0.013	0.29%	0.21	10.00	0.65	7.50	0.83	0.70	9.12	1.08	0.78	11.70	1.55
G1	INLET	1.90	82,764	22.6	1278.52	1277.92	0.15	2.65%	2.36	333.0	1277.92	1240.76	0.18	11.16%	1.03	303.4	1240.76	1227.34	0.013	4.42%	1.18	10.00	0.45	7.50	6.46	0.50	9.12	8.58	0.57	11.70	12.67
G2	INLET	0.92	40,075	53.8	1239.32	1239.16	0.15	0.30%	11.32	108.4	1239.16	1236.69	0.15	2.28%	0.74	170.3	1236.69	1227.87	0.013	5.18%	0.61	12.67	0.65	6.97	4.19	0.70	8.45	5.44	0.78	10.83	7.80
H1	INLET	2.93	127,631	53.8	1307.46	1301.36	0.15	11.34%	2.64	644.7	1301.36	1250.73	0.18	7.85%	2.38							10.00	0.52	7.50	11.33	0.56	9.12	14.94	0.64	11.70	21.80
I1	INLET	0.93	40,511	52.9	1278.30	1275.60	0.15	5.11%	3.58	259.0	1275.60	1244.78	0.15	11.90%	0.78	157.5	1244.78	1237.77	0.013	4.45%	0.61	10.00	0.69	7.50	4.80	0.73	9.12	6.23	0.82	11.70	8.91
I2	INLET	0.25	10,890	29.5	1250.09	1249.53	0.013	1.90%	0.47							370.1	1249.53	1238.26	0.013	3.05%	1.74	10.00	0.71	7.50	1.34	0.76	9.12	1.73	0.85	11.70	2.48
I3	INLET	1.35	58,806	72.7	1276.81	1259.33	0.15	24.04%	2.49	113.5	1259.33	1250.39	0.15	7.88%	0.42	204.1	1250.39	1247.61	0.013	1.36%	1.43	10.00	0.58	7.50	5.89	0.63	9.12	7.72	0.71	11.70	11.16
I4	INLET	0.51	22,216	24.2	1282.84	1282.02	0.15	3.38%	2.26	308.8	1282.02	1278.00	0.15	1.30%	2.80							10.00	0.52	7.50	2.00	0.57	9.12	2.63	0.64	11.70	3.84
J1	INLET	3.11	135,472	30.9	1285.25	1283.99	0.15	4.07%	2.55	739.4	1283.99	1244.30	0.18	5.37%	3.30							10.00	0.43	7.50	10.07	0.47	9.12	13.43	0.55	11.70	19.91
UNCAP 1	UNCAP	0.31	13,504	32.5	1244.28	1242.17	0.15	6.50%	2.20	158.2	1242.17	1238.12	0.15	2.56%	1.02	42.9	1238.12	1238.10	0.013	0.05%	1.63	10.00	0.59	7.50	1.36	0.63	9.12	1.78	0.71	11.70	2.58
UNCAP 2	UNCAP	1.57	68,389	53.2	1222.35	1218.35	0.15	7.51%	3.09	168.2	1218.35	1200.84	0.15	10.41%	0.54							10.00	0.60	7.50	7.10	0.65	9.12	9.28	0.73	11.70	13.38
UNCAP 3	UNCAP	0.09	3,920	74.7	1212.79	1208.35	0.013	5.94%	0.63							18.33	1208.35	1207.48	0.013	4.75%	0.07	10.00	0.68	7.50	0.46	0.73	9.12	0.60	0.81	11.70	0.85
UNCAP 4	UNCAP	1.71	74,488	10.8	1241.11	1240.38	0.013	6.77%	0.13							330.98	1240.38	1231.53	0.013	2.67%	1.66	10.00	0.78	7.50	10.02	0.83	9.12	12.95	0.92	11.70	18.38
VFS - NE	UNCAP	0.88	38,333	46.0	1229.87	1229.41	0.013	1.00%	0.87	41.0	1229.41	1225.40	0.15	9.78%	0.14							10.00	0.60	7.50	3.96	0.65	9.12	5.18	0.73	11.70	7.48
VFS - SE	UNCAP	1.62	70,567	46.0	1230.18	1229.95	0.013	0.50%	1.15	41.0	1229.95	1228.96	0.15	2.41%	0.27							10.00	0.62	7.50	7.56	0.67	9.12	9.87	0.75	11.70	14.20
VFS - SW	UNCAP	1.04	45,302	51.5	1236.85	1236.34	0.013	0.99%	0.95	35.5	1236.34	1219.56	0.15	47.21%	0.05							10.00	0.58	7.50	4.55	0.63	9.12	5.96	0.71	11.70	8.61

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STREET FLOW AND INLET CALCULATIONS

25 YEAR STORM

n = 0.013
S_x = 0.02

						STREET CAPACITY								INLET ON GRADE CAPACITY									SUMP INLET CAPACITY									
Drainage Area	Inlet	Area (Ac)	$Q_{(25)}$ (cfs)	$Q_{(pass)}$ (cfs)	$Q_{(basin)}$ (cfs)	FOC to FOC (ft)	Crown Type	Street Slope (ft/ft)	a (ft)	Z	Y_o (ft)	Ponded Width (ft)	Reduction Factor (%)	Q_a/L_a (ft)	L_a (ft)	Length (ft)	L/L_a	a/Y_o	Q/Q_a	Q_a (cfs)	$Q_{(pass)}$ (cfs)	Pass to Inlet #	Clogging Factor (%)	$Q_{(total)}$ (cfs)	Length (ft)	W (ft)	Opening Height (ft)	C_w	C_o	h (ft)	Weir eq. h (ft)	Orfice eq. h (ft)
A1	ON GRADE	0.68	4.06	0.00	4.06	50	S	0.064	0.58	50	0.16	7.97	0%	0.95	4.29	10	2.33	3.66	0.43	9.5	0.00										
A2	SUMP	0.50	3.15	0.00	3.15	30	S	0.070	0.58	50	0.14	7.12											10%	3.2	10	2	0.583	2.3	0.67	0.23	0.23	0.30
A3	ON GRADE	1.46	9.45	0.00	9.45	30	S	0.070	0.58	50	0.21	10.75	0%	1.01	9.37	10	1.07	2.71	0.94	10.1	0.00										
A4	ON GRADE	1.00	6.38	0.00	6.38	30	S	0.040	0.58	50	0.21	10.30	0%	1.00	6.39	10	1.56	2.83	0.64	10.0	0.00										
B1	ON GRADE	1.07	6.68	0.00	6.68	30	S		0.58	50																					
						50		0.064	0.58	50	0.19	9.61	0%	0.98	6.80	15	2.20	3.04	0.45	14.7	0.00										
B2	ON GRADE	0.87	6.02	0.00	6.02	30	S	0.010	0.58	50	0.26	13.07	0%	1.06	5.68	10	1.76	2.23	0.57	10.6	0.00										
B3	ON GRADE	1.40	8.24	0.00	8.24	30	S		0.58	50																					
						50		0.064	0.58	50	0.21	10.39	0%	1.00	8.24	10	1.21	2.81	0.82	10.0	0.00										
B4	ON GRADE	1.31	6.21	0.00	6.21	50	S	0.030	0.58	50	0.22	10.78	0%	1.01	6.16	10	1.62	2.70	0.62	10.1	0.00										
C1	SUMP	1.69	11.56	0.00	11.56	30	S	0.008	0.58	50	0.35	17.62											10%	11.6	15	2	0.583	2.3	0.67	0.29	0.29	0.37
C2	ON GRADE	0.93	6.51	0.00	6.51	30	S	0.065	0.58	50	0.19	9.48	0%	0.98	6.65	10	1.50	3.08	0.66	9.8	0.00										
C3	ON GRADE	0.36	2.23	0.00	2.23	30	S	0.065	0.58	50	0.13	6.34	0%	0.91	2.45	10	4.08	4.60	0.24	9.1	0.00										
C4	ON GRADE	1.08	7.78	0.00	7.78	30	S	0.028	0.58	50	0.24	11.91	0%	1.03	7.53	10	1.33	2.45	0.75	10.3	0.00										
D1	ON GRADE	0.21	1.31	0.00	1.31	30	S	0.023	0.58	50	0.13	6.33	0%	0.91	1.43	10	6.97	4.61	0.14	9.1	0.00										
D2	ON GRADE	0.80	5.78	0.00	5.78	30	S	0.023	0.58	50	0.22	11.06	0%	1.01	5.70	10	1.76	2.64	0.57	10.1	0.00										
E1	ON GRADE	1.66	9.24	0.00	9.24	30	S	0.038	0.58	50	0.24	11.97	0%	1.04	8.92	10	1.12	2.44	0.89	10.4	0.00										
E2	ON GRADE	0.53	3.83	0.00	3.83	30	S	0.008	0.58	50	0.23	11.65	0%	1.03	3.73	10	2.68	2.50	0.37	10.3	0.00										
E3	ON GRADE	0.79	5.46	0.00	5.46	30	S	0.008	0.58	50	0.27	13.30	0%	1.07	5.12	10	1.95	2.19	0.51	10.7	0.00										
E4	ON GRADE	1.05	7.26	0.00	7.26	30	S	0.044	0.58	50	0.21	10.61	0%	1.00	7.23	10	1.38	2.75	0.72	10.0	0.00										
E5	ON GRADE	0.68	4.86	0.00	4.86	30	S	0.044	0.58	50	0.18	9.13	0%	0.97	5.00	10	2.00	3.19	0.50	9.7	0.00										
E6	ON GRADE	1.09	6.95	0.00	6.95	30	S	0.044	0.58	50	0.21	10.45	0%	1.00	6.94	10	1.44	2.79	0.69	10.0	0.00										
E7	ON GRADE	1.19	7.55	0.00	7.55	30	S	0.020	0.58	50	0.25	12.50	0%	1.05	7.21	10	1.39	2.33	0.72	10.5	0.00										
E8	ON GRADE	0.95	3.81	0.00	3.81	30	S	0.080	0.58	50	0.15	7.46	0%	0.94	4.07	10	2.45	3.91	0.41	9.4	0.00										
F1-L	SUMP	0.61	3.76	0.00	3.76	30	S	0.008	0.58	50	0.23	11.56											10%	5.9	10	2	0.583	2.3	0.67	0.35	0.35	0.34
F1-R	SUMP	0.30	2.14	0.00	2.14	30	S	0.008	0.58	50	0.19	9.36																			
F2-L	SUMP	0.14	0.88	0.00	0.88	30	S	0.008	0.58	50	0.13	6.71											10%	2.6	10	2	0.583	2.3	0.67	0.20	0.20	0.30
F2-R	SUMP	0.27	1.70	0.00	1.70	30	S	0.008	0.58	50	0.17	8.59																			
F3	ON GRADE	0.81	5.47	0.00	5.47	30	S	0.040	0.58	50	0.19	9.72	0%	0.98	5.55	10	1.80	3.00	0.55	9.8	0.00										
F4	ON GRADE	0.55	3.91	0.00	3.91	30	S	0.008	0.58	50	0.23	11.74	0%	1.03	3.80	10	2.63	2.48	0.38	10.3	0.00										
F5	ON GRADE	0.65	4.71	0.00	4.71	30	S	0.008	0.58	50	0.25	12.58	0%	1.05	4.49	10	2.23	2.32	0.45	10.5	0.00										
G1	ON GRADE	1.90	8.58	0.00	8.58	30	S	0.055	0.58	50	0.22	10.85	0%	1.01	8.50	10	1.18	2.69	0.85	10.1	0.00										
G2	ON GRADE	0.92	5.44	0.00	5.44	30	S	0.055	0.58	50	0.18	9.14	0%	0.97	5.60	10	1.79	3.19	0.56	9.7	0.00										
I1	ON GRADE	0.93	6.23	0.00	6.23	30	S	0.450	0.58	50	0.13	6.49	0%	0.91	6.81	10	1.47	4.50	0.68	9.1	0.00										
I2	ON GRADE	0.25	1.73	0.00	1.73	30	S	0.450	0.58	50	0.08	4.02	0%	0.86	2.01	10	4.97	7.26	0.20	8.6	0.00										
I3	ON GRADE	1.35	7.72	0.00	7.72	30	S	0.018	0.58	50	0.26	12.92	0%	1.06	7.30	10	1.37	2.26	0.73	10.6	0.00										
SAW	---	0.17	1.08	0.00	1.08																										
UNCAP 1	---	0.31	1.78	0.00	1.78																										
UNCAP 2	---	1.57	9.28	0.00	9.28																										
UNCAP 3	---	0.09	0.60	0.00	0.60																										
UNCAP 4	---	1.71	12.95	1.00	13.95																										
VFS - NE	---	0.88	5.18	2.00	7.18																										
VFS - SE	---	1.62	9.87	3.00	12.87																										
VFS - SW	---	1.04	5.96	4.00	9.96																										

STREET FLOW AND INLET CALCULATIONS

100 YEAR STORM

n = 0.013
S_x = 0.02

						STREET CAPACITY								INLET ON GRADE CAPACITY									SUMP INLET CAPACITY									
Drainage Area	Inlet	Area (Ac)	$Q_{(100)}$ (cfs)	$Q_{(pass)}$ (cfs)	$Q_{(basin)}$ (cfs)	FOC to FOC (ft)	Crown Type	Street Slope (ft/ft)	a (ft)	Z	Y_o (ft)	Ponded Width (ft)	Reduction Factor (%)	Q_a/L_a (ft)	L_a (ft)	Length (ft)	L/L_a	a/Y_o	Q/Q_a	Q_a (cfs)	$Q_{(pass)}$ (cfs)	Pass to Inlet #	Clogging Factor (%)	$Q_{(total)}$ (cfs)	Length (ft)	W (ft)	Opening Height (ft)	C_w	C_o	h (ft)	Weir eq. h (ft)	Orfice eq. h (ft)
A1	ON GRADE	0.68	5.85	0.00	5.85	50	S	0.064	0.58	50	0.18	9.14	0%	0.97	6.02	10	1.66	3.19	0.60	9.7	0.00										
A2	SUMP	0.50	4.53	3.11	7.64	30	S	0.070	0.58	50	0.20	9.93											10%	7.6	10	2	0.583	2.3	0.67	0.42	0.42	0.36
A3	ON GRADE	1.46	13.54	0.00	13.54	30	S	0.070	0.58	50	0.25	12.30	0%	1.04	12.98	10	0.77	2.37	1.30	10.4	3.11	A2										
A4	ON GRADE	1.00	9.15	0.00	9.15	30	S	0.040	0.58	50	0.24	11.79	0%	1.03	8.87	10	1.13	2.47	0.89	10.3	0.00										
B1	ON GRADE	1.07	9.60	1.54	11.15	30	S		0.58	50																					
						50		0.064	0.58	50	0.23	11.64	0%	1.03	12.22	15	1.23	2.51	0.81	15.4	0.00										
B2	ON GRADE	0.87	8.59	0.00	8.59	30	S	0.010	0.58	50	0.30	14.94	0%	1.10	6.51	10	1.54	1.95	0.65	11.0	0.00										
B3	ON GRADE	1.40	11.89	0.00	11.89	30	S		0.58	50																					
						50		0.064	0.58	50	0.24	11.92	0%	1.03	11.49	10	0.87	2.45	1.15	10.3	1.54	B1										
B4	ON GRADE	1.31	9.12	0.00	9.12	50	S	0.030	0.58	50	0.25	12.46	0%	1.05	8.72	10	1.15	2.34	0.87	10.5	0.00										
C1	SUMP	1.69	16.51	0.00	16.51	30	S	0.008	0.58	50	0.40	20.14											10%	16.5	15	2	0.583	2.3	0.67	0.41	0.41	0.44
C2	ON GRADE	0.93	9.29	0.35	9.64	30	S	0.065	0.58	50	0.22	10.98	0%	1.01	9.52	10	1.05	2.66	0.95	10.1	0.00										
C3	ON GRADE	0.36	3.21	0.00	3.21	30	S	0.065	0.58	50	0.15	7.27	0%	0.93	3.45	10	2.90	4.01	0.34	9.3	0.00										
C4	ON GRADE	1.08	11.07	0.00	11.07	30	S	0.028	0.58	50	0.27	13.59	0%	1.07	10.33	10	0.97	2.15	1.03	10.7	0.35	C2										
D1	ON GRADE	0.21	1.88	0.00	1.88	30	S	0.023	0.58	50	0.15	7.26	0%	0.93	2.02	10	4.96	4.02	0.20	9.3	0.00										
D2	ON GRADE	0.80	8.23	0.00	8.23	30	S	0.023	0.58	50	0.25	12.62	0%	1.05	7.83	10	1.28	2.31	0.78	10.5	0.00										
E1	ON GRADE	1.66	13.39	0.00	13.39	30	S	0.038	0.58	50	0.28	13.75	0%	1.08	12.44	15	1.21	2.12	0.83	16.1	0.00										
E2	ON GRADE	0.53	5.45	0.00	5.45	30	S	0.008	0.58	50	0.27	13.30	0%	1.07	5.12	10	1.95	2.19	0.51	10.7	0.00										
E3	ON GRADE	0.79	7.78	0.00	7.78	30	S	0.008	0.58	50	0.30	15.19	0%	1.11	5.61	10	1.78	1.92	0.56	11.1	0.00										
E4	ON GRADE	1.05	10.36	0.00	10.36	30	S	0.044	0.58	50	0.24	12.12	0%	1.04	9.97	10	1.00	2.41	1.00	10.4	0.00										
E5	ON GRADE	0.68	6.93	0.00	6.93	30	S	0.044	0.58	50	0.21	10.42	0%	1.00	7.60	10	1.32	2.80	0.76	10.0	0.00										
E6	ON GRADE	1.09	9.97	0.00	9.97	30	S	0.044	0.58	50	0.24	11.96	0%	1.04	9.63	10	1.04	2.44	0.96	10.4	0.00										
E7	ON GRADE	1.19	10.83	0.00	10.83	30	S	0.020	0.58	50	0.29	14.31	0%	1.09	9.33	10	1.07	2.04	0.93	10.9	0.00										
E8	ON GRADE	0.95	5.69	0.00	5.69	30	S	0.080	0.58	50	0.17	8.67	0%	0.96	5.92	10	1.69	3.37	0.59	9.6	0.00										
F1-L	SUMP	0.61	5.40	2.18	7.58	30	S	0.008	0.58	50	0.30	15.05											10%	12.2	10	2	0.583	2.3	0.67	0.57	0.57	0.48
F1-R	SUMP	0.30	3.04	0.00	3.04	30	S	0.008	0.58	50	0.21	10.68																			
F2-L	SUMP	0.14	1.27	0.00	1.27	30	S	0.008	0.58	50	0.15	7.69											10%	3.7	10	2	0.583	2.3	0.67	0.26	0.26	0.31
F2-R	SUMP	0.27	2.45	0.00	2.45	30	S	0.008	0.58	50	0.20	9.84																			
F3	ON GRADE	0.81	7.81	1.22	9.03	30	S	0.040	0.58	50	0.23	11.74	0%	1.03	8.77	10	1.14	2.48	0.88	10.3	0.00										
F4	ON GRADE	0.55	5.58	0.00	5.58	30	S	0.008	0.58	50	0.27	13.41	0%	1.07	5.67	10	1.76	2.18	0.57	10.7	0.00										
F5	ON GRADE	0.65	6.70	0.00	6.70	30	S	0.008	0.58	50	0.29	14.36	0%	1.09	5.71	10	1.75	2.03	0.57	10.9	0.00										
G1	ON GRADE	1.90	12.67	0.00	12.67	30	S	0.055	0.58	50	0.25	12.55	0%	1.05	12.08	10	0.83	2.32	1.21	10.5	2.18	F1-L										
G2	ON GRADE	0.92	7.80	0.00	7.80	30	S	0.055	0.58	50	0.21	10.47	0%	1.00	7.79	10	1.28	2.79	0.78	10.0	0.00										
I1	ON GRADE	0.93	8.91	0.00	8.91	30	S	0.450	0.58	50	0.15	7.42	0%	0.93	11.31	10	0.88	3.93	1.13	9.3	1.22	F3										
I2	ON GRADE	0.25	2.48	0.00	2.48	30	S	0.450	0.58	50	0.09	4.59	0%	0.87	2.83	10	3.53	6.36	0.28	8.7	0.00										
I3	ON GRADE	1.35	11.16	0.00	11.16	30	S	0.018	0.58	50	0.30	14.84	0%	1.10	8.63	10	1.16	1.97	0.86	11.0	0.00										
SAW	---	0.17	1.55	0.00	1.55																										
UNCAP 1	---	0.31	2.58	0.00	2.58																										
UNCAP 2	---	1.57	13.38	0.00	13.38																										
UNCAP 3	---	0.09	0.85	0.00	0.85																										
UNCAP 4	---	1.71	18.38	1.00	19.38																										
VFS - NE	---	0.88	7.48	2.00	9.48																										
VFS - SE	---	1.62	14.20	3.00	17.20																										
VFS - SW	---	1.04	8.61	4.00	12.61																										

	APR
	DATE
	DESCRIPTION
◁ ◁ ◁ ◁ ◁ ◁	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

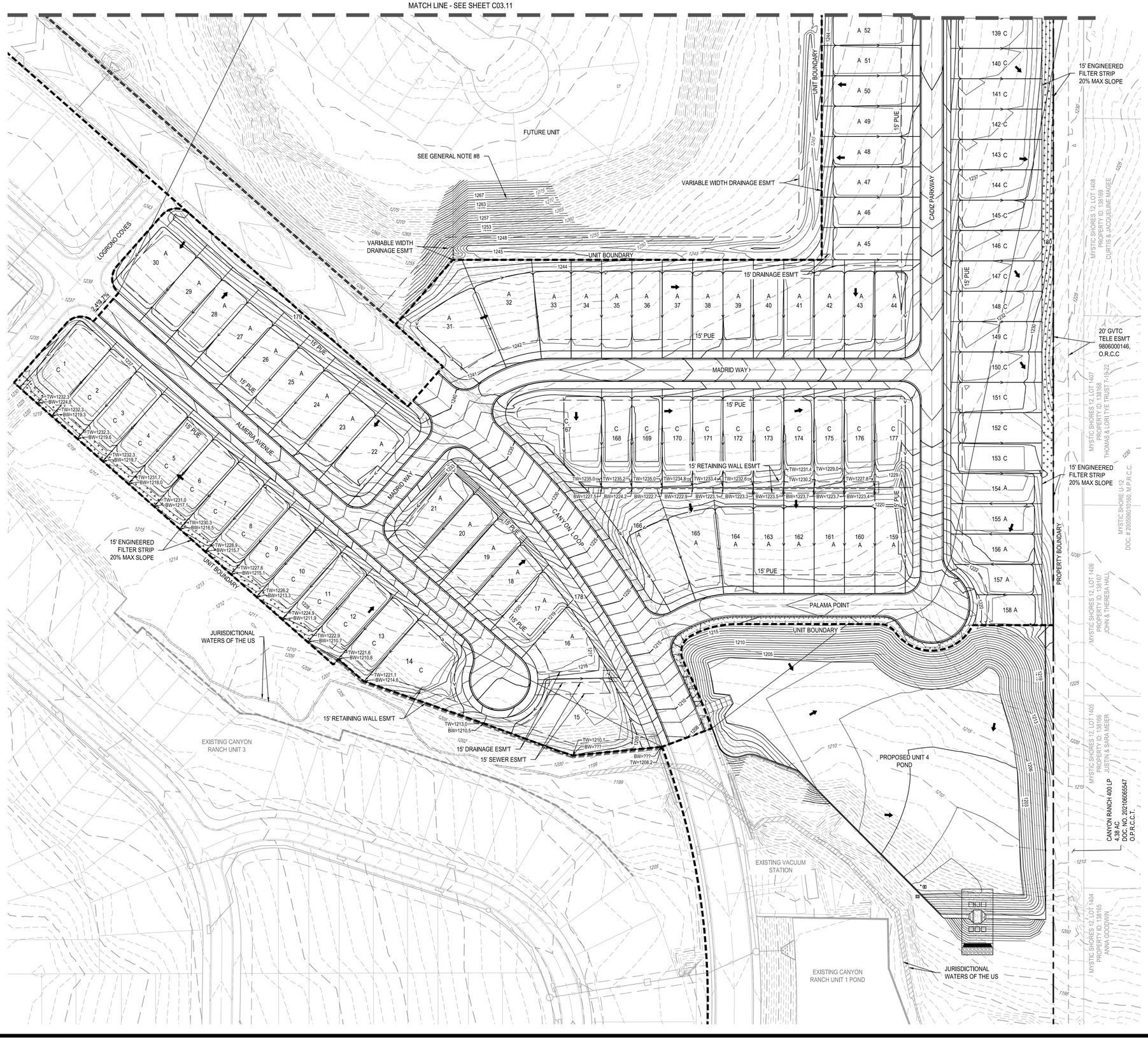
CANYON RANCH UNIT 4

ONSITE DRAINAGE CALCULATIONS
(SHEET 2 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C03.04

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.00 - ONSITE DRAINAGE CALCULATIONS (SHEET 2 OF 2) Plotted: 6/17/2025 1:33:40 PM By: Lhuck
G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.00 - ONSITE DRAINAGE PLAN.dwg Layout: ONSITE DRAINAGE CALCULATIONS (SHEET 2 OF 2)



G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.10 - OVERALL GRADING PLAN.dwg Layout: C03.10 OVERALL GRADING PLAN (SHEET 1 OF 3) Plotted: 6/17/2025 3:44:41 PM By: Mhernandez

GENERAL NOTES:

1. HOME BUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
2. AS SOON AS PRACTICAL, HOME BUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC...) TO PREVENT EROSION FROM OCCURRING.
3. CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
4. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS AND TOWARDS THE PROPER DRAINAGE EASEMENT OF STREET RIGHT OF WAY ACCORDING TO THE MASTER DRAINAGE PLAN FOR THE PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW PONDING OF WATER.
5. GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
6. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.
7. EARTHEN GRADING SLOPES SHALL BE NO GREATER THAN 3:1.
8. SLOPES GREATER THAN 3:1 ARE ASSUMED TO BE MILLED ROCK. IF SITE CONDITIONS VARY FROM THIS, NOTIFY ENGINEER IMMEDIATELY.
9. SEE SHEET C03.12 OR ###### FOR TYPICAL LOT GRADING TYPE DETAILS.

LOT FILL NOTES:

1. ALL LOTS WITH FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE 79G PROCEDURE THAT MEETS THE REQUIREMENTS OF THE FHA DATA SHEET, DOCUMENTATION AND THE EVIDENCE OF COMPACTED SHALL BE FURNISHED TO THE ENGINEER & OWNER.

FINISHED FLOOR ELEVATIONS

THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND OR FINISHED FLOOR ELEVATION WHICH EVER IS HIGHER, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORM WATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO THE STORM WATER CONVEYANCE STRUCTURES MUST HAVE FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE STRUCTURE.

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

NOT FOR CONSTRUCTION

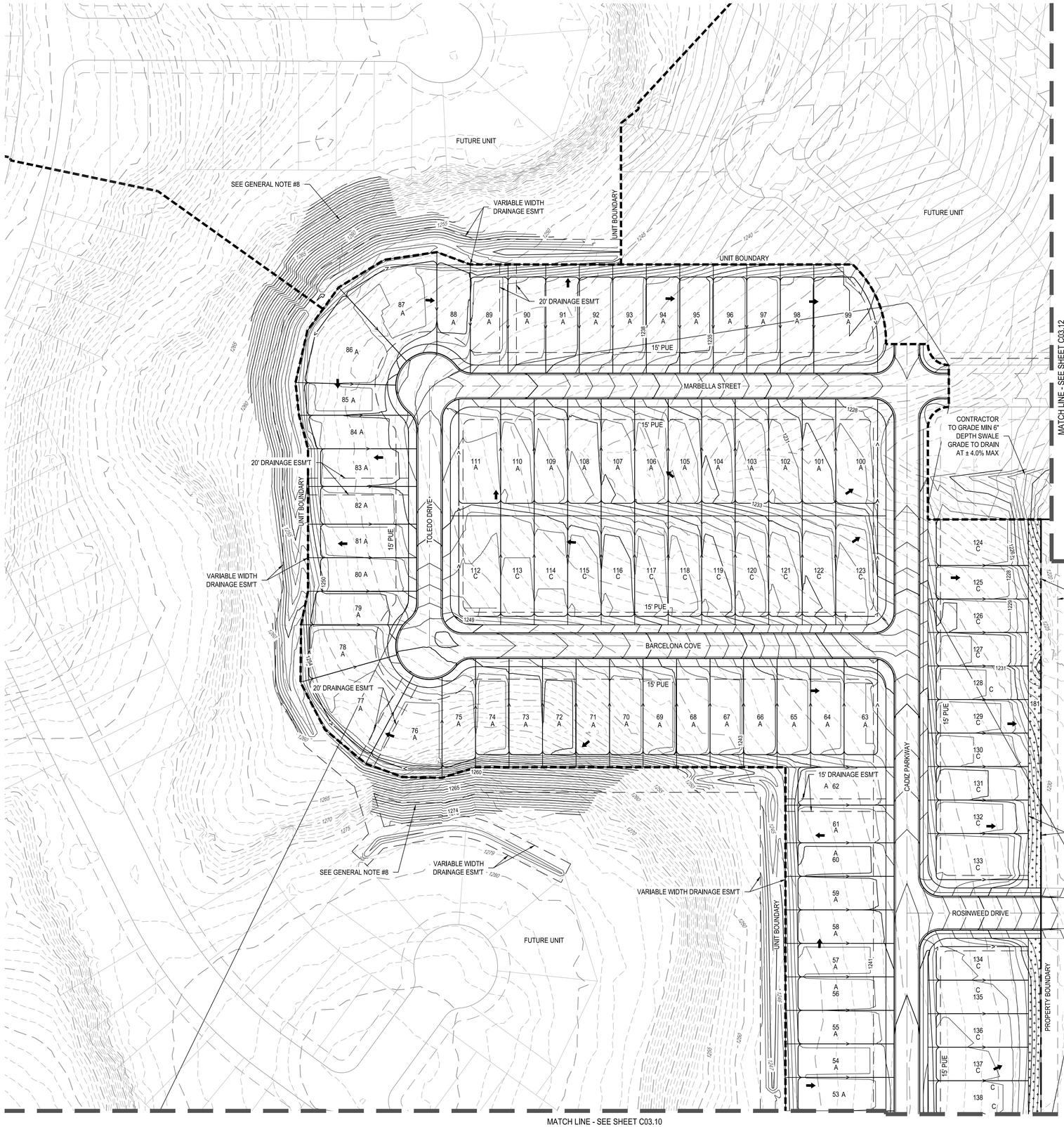
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

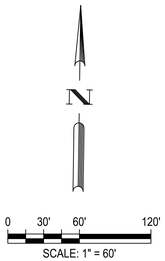
CANYON RANCH UNIT 4

OVERALL GRADING PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C03.10





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- RAMP (SEE SHEET C06.52)
- LOW POINT/HIGH POINT
- LOT NUMBER AND GRADING TYPE
- DIRECTION OF FLOW
- RETAINING WALL
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS OF THE US

GENERAL NOTES:

1. HOME BUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
2. AS SOON AS PRACTICAL, HOME BUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC...) TO PREVENT EROSION FROM OCCURRING.
3. CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
4. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS AND TOWARDS THE PROPER DRAINAGE EASEMENT OF STREET RIGHT OF WAY ACCORDING TO THE MASTER DRAINAGE PLAN FOR THE PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW PONDING OF WATER.
5. GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
6. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.
7. EARTHEN GRADING SLOPES SHALL BE NO GREATER THAN 3:1.
8. SLOPES GREATER THAN 3:1 ARE ASSUMED TO BE MILLED ROCK. IF SITE CONDITIONS VARY FROM THIS, NOTIFY ENGINEER IMMEDIATELY.
9. SEE SHEET C03.12 OR ###### FOR TYPICAL LOT GRADING TYPE DETAILS.

LOT FILL NOTES:

1. ALL LOTS WITH FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE 79G PROCEDURE THAT MEETS THE REQUIREMENTS OF THE FHA DATA SHEET. DOCUMENTATION AND THE EVIDENCE OF COMPACTED SHALL BE FURNISHED TO THE ENGINEER & OWNER.

FINISHED FLOOR ELEVATIONS

THE ELEVATION OF THE LOWEST FLOOR SHALL BE AT LEAST 10 INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND OR FINISHED FLOOR ELEVATION WHICH EVER IS HIGHER, WHICH SHALL BE SLOPED IN A FASHION SO AS TO DIRECT STORM WATER AWAY FROM THE STRUCTURE. PROPERTIES ADJACENT TO THE STORM WATER CONVEYANCE STRUCTURES MUST HAVE FLOOR SLAB ELEVATION OR BOTTOM OF FLOOR JOISTS A MINIMUM OF ONE FOOT ABOVE THE 100-YEAR WATER FLOW ELEVATION IN THE STRUCTURE. DRIVEWAYS SERVING HOUSES ON THE DOWNHILL SIDE OF THE STREET SHALL HAVE PROPERLY SIZED CROSS SWALE PREVENTING RUNOFF FROM ENTERING THE STRUCTURE.

							APR
							DATE
							DESCRIPTION
							REV
DESIGNED BY:						ACR	
REVIEWED BY:						SSM	
DRAWN BY:						ACR	

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

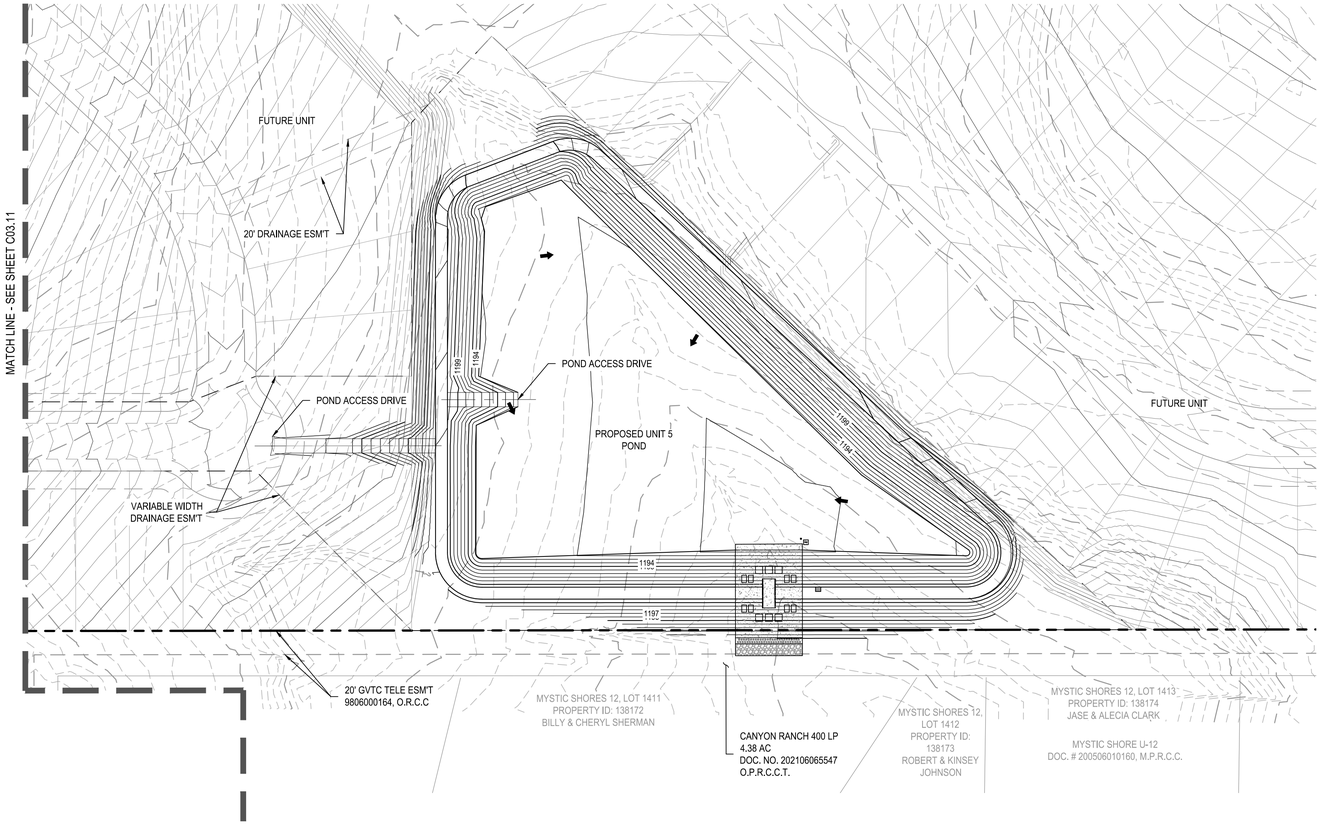
CANYON RANCH UNIT 4

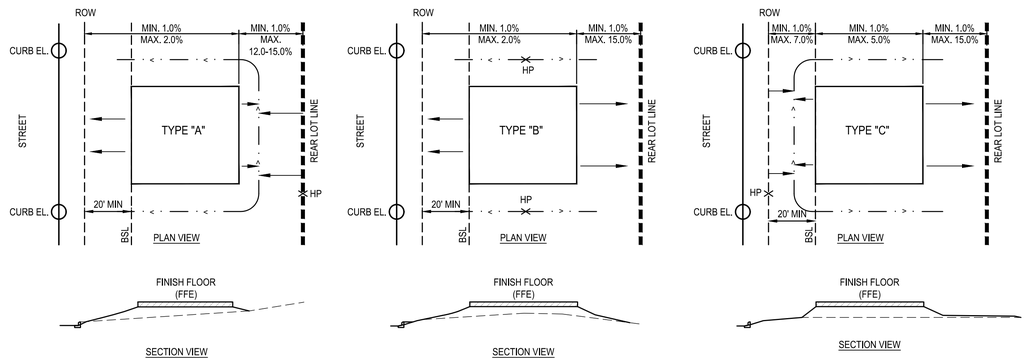
OVERALL GRADING PLAN (SHEET 2 OF 3)

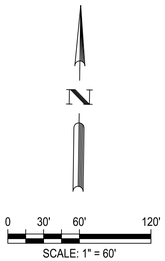
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C03.11

G:\TX\CP\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.10 - OVERALL GRADING PLAN.dwg Layout: C03.11 OVERALL GRADING PLAN (SHEET 2 OF 3) Plotted: 6/17/2025 3:45:00 PM By: Mhernandez







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- EASEMENT
- 831 — EXISTING MINOR CONTOUR
- 831 — EXISTING MAJOR CONTOUR
- 681 — PROPOSED MINOR CONTOUR
- 686 — PROPOSED MAJOR CONTOUR
- SS — PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- RAMP (SEE SHEET C06.52)
- LP / HP — LOW POINT/HIGH POINT
- 1 / A — LOT NUMBER AND GRADING TYPE
- DIRECTION OF FLOW
- RETAINING WALL
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS OF THE US

GENERAL NOTES:

1. HOME BUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
2. AS SOON AS PRACTICAL, HOME BUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC...) TO PREVENT EROSION FROM OCCURRING.
3. CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
4. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS AND TOWARDS THE PROPER DRAINAGE EASEMENT OF STREET RIGHT OF WAY ACCORDING TO THE MASTER DRAINAGE PLAN FOR THE PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW PONDING OF WATER.
5. GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
6. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.
7. EARTHEN GRADING SLOPES SHALL BE NO GREATER THAN 3:1.
8. SLOPES GREATER THAN 3:1 ARE ASSUMED TO BE MILLED ROCK. IF SITE CONDITIONS VARY FROM THIS, NOTIFY ENGINEER IMMEDIATELY.
9. SEE SHEET C03.12 OR ###### FOR TYPICAL LOT GRADING TYPE DETAILS.

LOT FILL NOTES:

1. ALL LOTS WITH FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE 79G PROCEDURE THAT MEETS THE REQUIREMENTS OF THE FHA DATA SHEET. DOCUMENTATION AND THE EVIDENCE OF COMPACTED SHALL BE FURNISHED TO THE ENGINEER & OWNER.

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REV	DESCRIPTION	DATE	APR

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REVIEWED BY: SSM
DRAWN BY: ACR

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CANYON RANCH UNIT 4

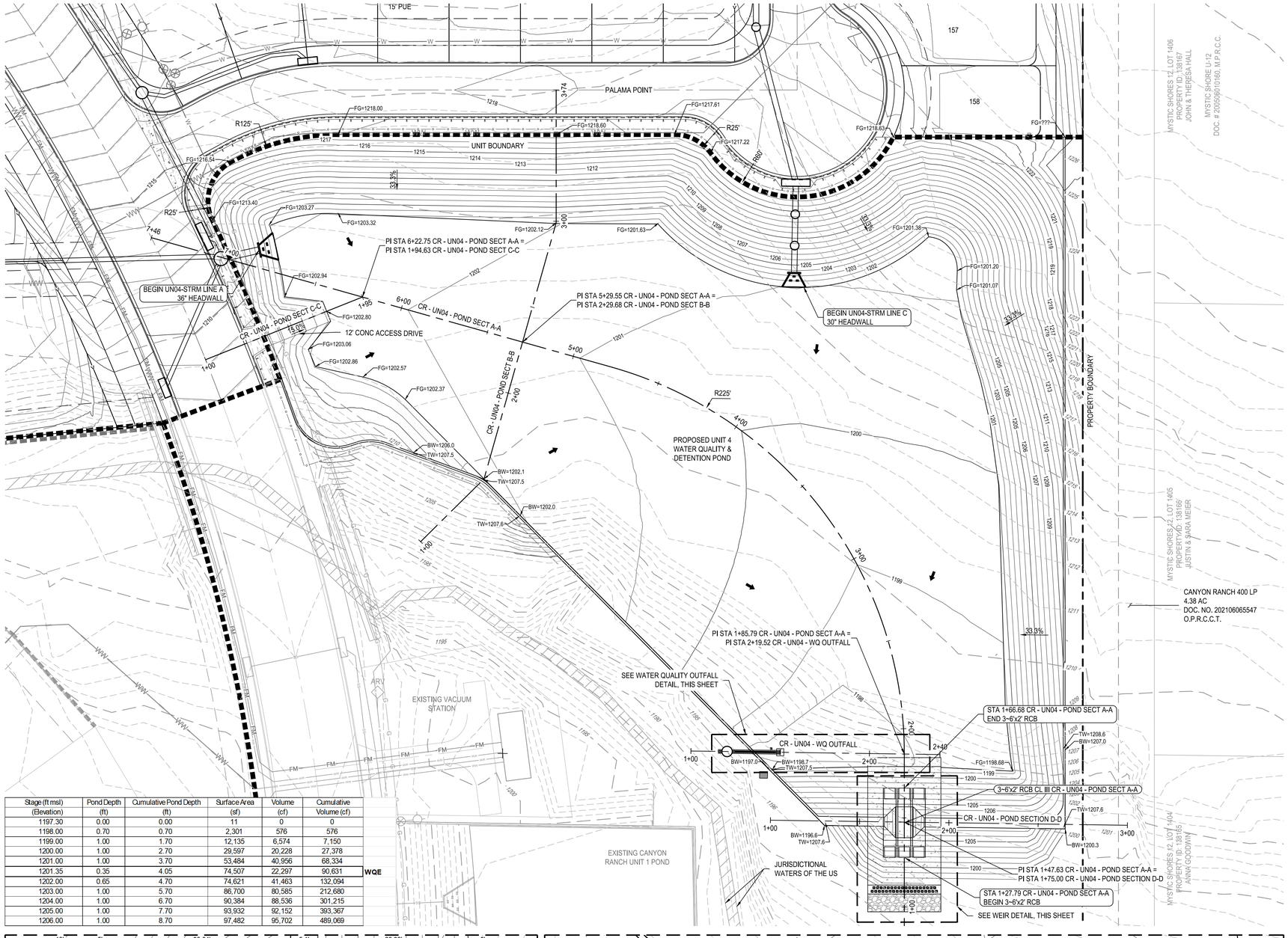
OVERALL GRADING PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

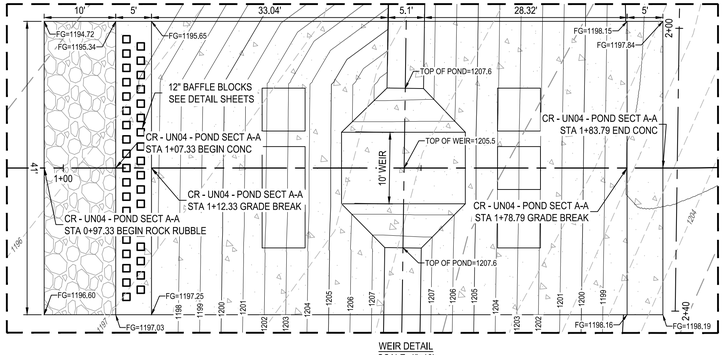
06/17/2025

SHEET
C03.12

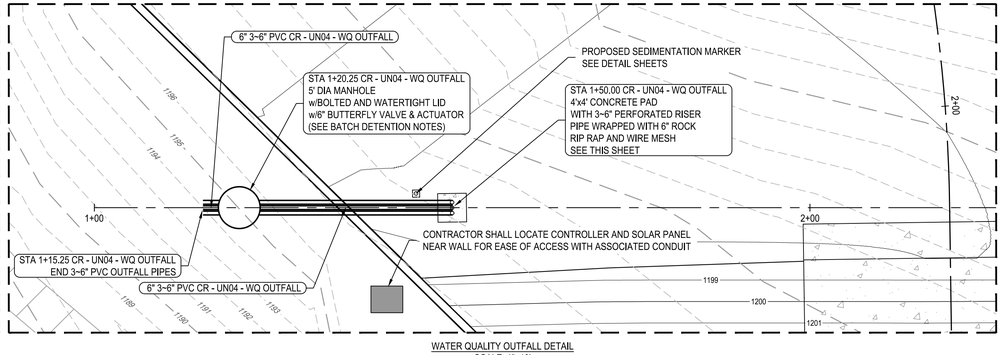
G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C03.10 - OVERALL GRADING PLAN.dwg Layout: OVERALL GRADING PLAN (SHEET 3 OF 3) Plotted: 6/17/2025 3:46:01 PM By: Mhernandez



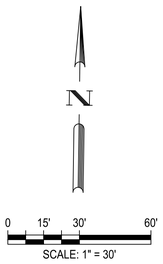
Stage (ft msl) (Elevation)	Pond Depth (ft)	Cumulative Pond Depth (ft)	Surface Area (sf)	Volume (cf)	Cumulative Volume (cf)	
1197.30	0.00	0.00	11	0	0	
1198.00	0.70	0.70	2,301	576	576	
1199.00	1.00	1.70	12,135	6,574	7,150	
1200.00	1.00	2.70	29,597	20,228	27,378	
1201.00	1.00	3.70	53,484	40,956	68,334	
1201.35	0.35	4.05	74,507	22,297	90,631	WQE
1202.00	0.65	4.70	74,621	41,463	132,094	
1203.00	1.00	5.70	86,700	80,585	212,680	
1204.00	1.00	6.70	90,384	88,536	301,215	
1205.00	1.00	7.70	93,932	92,152	393,367	
1206.00	1.00	8.70	97,482	95,702	489,069	



WEIR DETAIL
SCALE: 1"=10'



WATER QUALITY OUTFALL DETAIL
SCALE: 1"=10'



LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED CURB INLET
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- DIRECTION OF FLOW
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

NOT FOR CONSTRUCTION

NOTE: UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF ACCEPTANCE OR OCCUPANCY BY THE PERMIT CENTER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION FACILITY, FILTRATION FACILITIES AND/OR WATER QUALITY FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.

NOTES:

1. POND SHALL MAINTAINED BY CANYON RANCH MUD OF COMAL COUNTY.
2. POND IS TO HAVE 12" TOPSOIL BOTTOM.
3. THE REQUIRED WATER QUALITY VOLUME IS 90,631 CF AND THE PROVIDED WATER QUALITY VOLUME IS 90,631 CF.

BATCH DETENTION NOTES:

1. OVERVIEW: THE BASIN IS TYPICALLY FILLED QUICKLY BY STORMWATER CONVEYED THROUGH A STORM DRAIN, MAKING THE INFLOW TIME RELATIVELY SHORT. THE RESIDENCE TIME OF THE STORMWATER IS 12 HOURS AND IS CONTROLLED BY THE CONTROL VALVE (NORMALLY SHUT OFF) AND ACTUATOR INSTALLED ON THE OUTLET STRUCTURE. THE CONTROL VALVE OPENS ONCE THE DESIRED RESIDENCE TIME IS ACHIEVED AFTER A STORM EVENT. THE TREATED WATER IS RELEASED SLOWLY OVER A TIME OF 24 TO 48 HOURS.
2. VALVE/ACTUATOR: THE VALVE/ACTUATOR ASSEMBLY CONSISTS OF A BUTTERFLY VALVE WITH A SMALL 12VDC ACTUATOR. THE VALVE IS A QUARTER TURN VALVE. THE ACTUATOR OPERATES THE VALVE BETWEEN THE FULL OPEN AND FULL CLOSED POSITIONS. A MECHANICAL HAND CLANK ALLOWS A PHYSICAL OVERRIDE OF THE VALVE SYSTEM.
3. THE VALVE IS A KEYSTONE 6-INCH(100MM) BUTTERFLY VALVE MATED WITH A EPI-6 12VDC ACTUATOR. THE EPI-6 ACTUATOR REQUIRES AN OPEN OR CLOSE SIGNAL OF 10 SECONDS. THE ACTUATOR HAS LIMIT SWITCHES THAT DETECT END OF TRAVEL AND SHOT OFF THE INCOMING OPEN OR CLOSE SIGNAL TO THE ACTUATOR ONCE THE VALVES REACHES THE FULL OPEN OR CLOSED POSITION. OVER TORQUE SENSORS WILL SHUT DOWN THE ACTUATOR IN THE EVENT OF AN OVER TORQUE SITUATION.
4. CONTROLLER SYSTEM SPECIFICATIONS:
   - 4.1. POWER - THE CONTROLLER SHALL BE POWERED BY A SHIELD-CONTAINED RENEWABLE POWER SOURCE (SUCH AS SOLAR POWER) IF ELECTRICAL POWER IS NOT AVAILABLE. A SINGLE SUPPLY VOLTAGE FOR ALL COMPONENTS IS DESIRABLE.
   - 4.2. PROGRAMMABILITY - THE CONTROLLED SHALL BE PROGRAMMABLE. IT SHALL BE POSSIBLE TO UPDATE PROGRAMS IN THE FIELD. THE DETENTION TIME AND DRAW-DOWN TIME SHALL BE ADJUSTABLE IN HOURS FROM 0 HOURS TO 72 HOURS.
   - 4.3. EVENT SENSING - THE CONTROLLER SHALL BE ABLE TO SENSE THE BEGINNING OF A STORM (WATER FILLING THE BASIN), AND THE END OF A STORM (WATER HAS DRAINED FROM THE BASIN).
   - 4.4. ENVIRONMENT - THE CONTROLLER SHALL OPERATE IN TEMPERATURES FROM 0 DEGREES CELSIUS TO 55 DEGREES CELSIUS, IN HUMIDITY FROM 10% TO 90% (NON-CONDENSING). THE CONTROLLER SHALL OPERATE DURING PERIODS OF RAINFALL.
   - 4.5. SAFETY/SECURITY - THE SYSTEM COMPONENTS SHALL BE LOCKED IN ENCLOSURE TO PREVENT ACCIDENTAL CONTACT THAT COULD COMPROMISED THE FUNCTION OF THE APPARATUS OR CAUSE INJURY.
   - 4.6. MAINTENANCE - THE CONTROLLER SHALL REQUIRE MINIMAL PERIODIC MAINTENANCE TO CONTROLLER PROGRAM SHALL BE FIELD UPGRADEABLE. THE ABILITY TO MANUALLY OPERATE THE VALVE SHALL BE PROVIDED.
   - 4.7. RELIABILITY - 40,000 HOURS(4.6 YEARS) OR GREATER.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN OF SENSOR, AUTOMATIC VALVE, CONTROLLER, ETC.TO ENGINEER FOR REVIEW AND APPROVAL.

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
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TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
UN04 DETENTION AND WATER QUALITY POND PLAN

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.00

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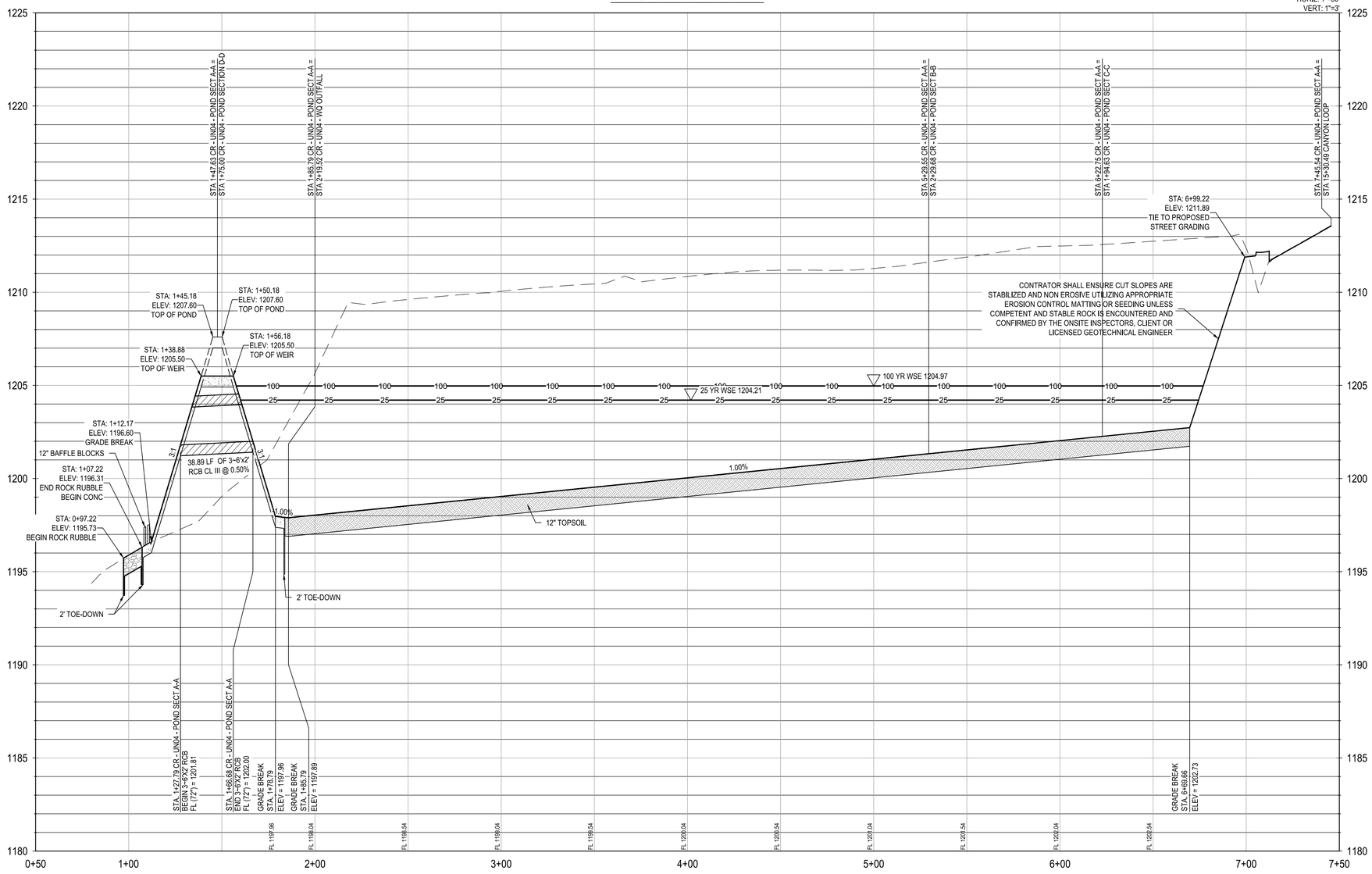
CR - UN04 - POND SECT A-A

SCALE:
HORIZ: 1"=30'
VERT: 1"=3



0 15' 30' 60'
SCALE: 1" = 30'

PROFILE LEGEND

- PROPOSED STORM PIPE
- WATER SURFACE ELEVATION
- PROPOSED GRADE
- EXISTING GRADE

NOTE: UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF ACEPTANCE OR OCCUPANCY BY THE PERMIT CENTER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION FACILITY, FILTRATION FACILITIES AND/OR WATER QUALITY FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.

NOTES:

1. POND SHALL MAINTAINED BY CANYON RANCH MUD OF COMAL COUNTY.
2. POND IS TO HAVE 12" TOPSOIL BOTTOM.
3. THE REQUIRED WATER QUALITY VOLUME IS 90,631 CF AND THE PROVIDED WATER QUALITY VOLUME IS 90,631 CF.

BATCH DETENTION NOTES:

1. OVERVIEW: THE BASIN IS TYPICALLY FILLED QUICKLY BY STORMWATER CONVEYED THROUGH A STORM DRAIN, MAKING THE INFLOW TIME RELATIVELY SHORT. THE RESIDENCE TIME OF THE STORMWATER IS 12 HOURS AND IS CONTROLLED BY THE CONTROL VALVE (NORMALLY SHUT OFF) AND ACTUATOR INSTALLED ON THE OUTLET STRUCTURE. THE CONTROL VALVE OPENS ONCE THE DESIRED RESIDENCE TIME IS ACHIEVED AFTER A STORM EVENT. THE TREATED WATER IS RELEASED SLOWLY OVER A TIME OF 24 TO 48 HOURS.
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5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN OF SENSOR, AUTOMATIC VALVE, CONTROLLER, ETC.TO ENGINEER FOR REVIEW AND APPROVAL.

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CANYON RANCH UNIT 4

UN04 POND SECTIONS (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.01

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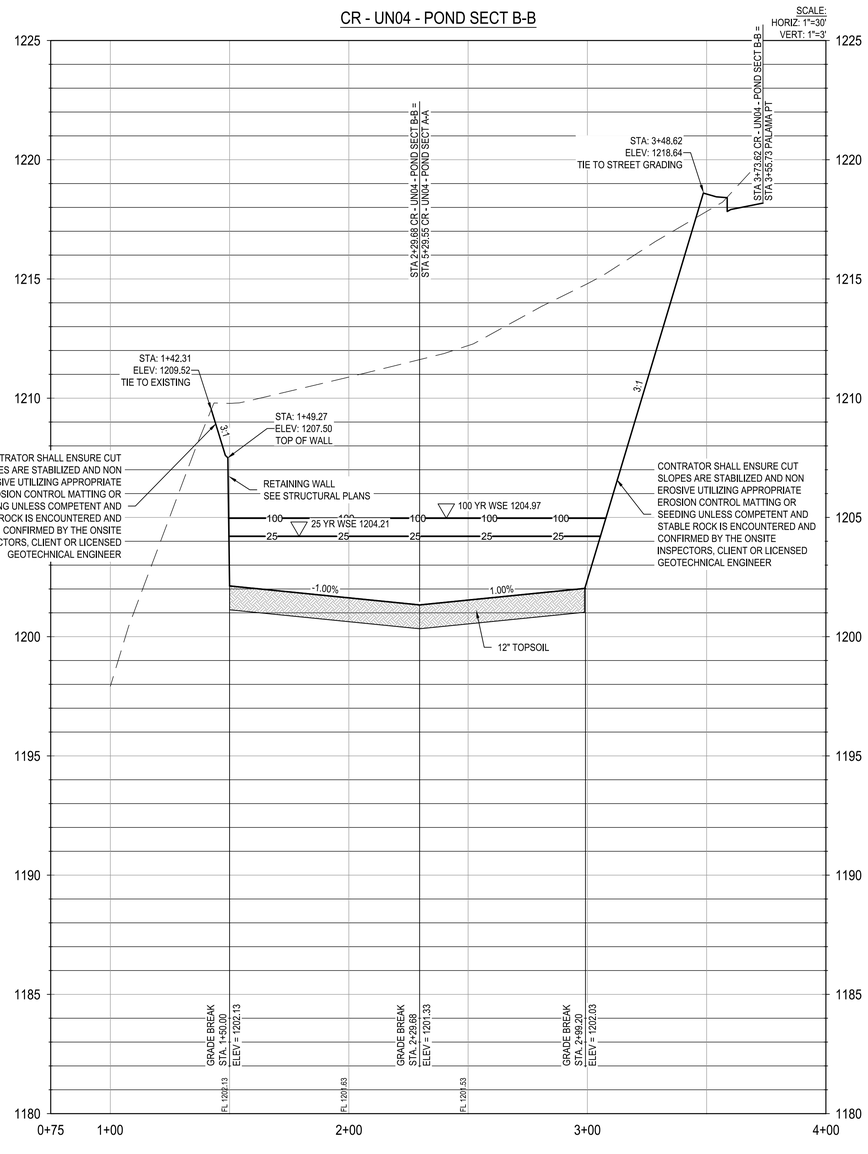
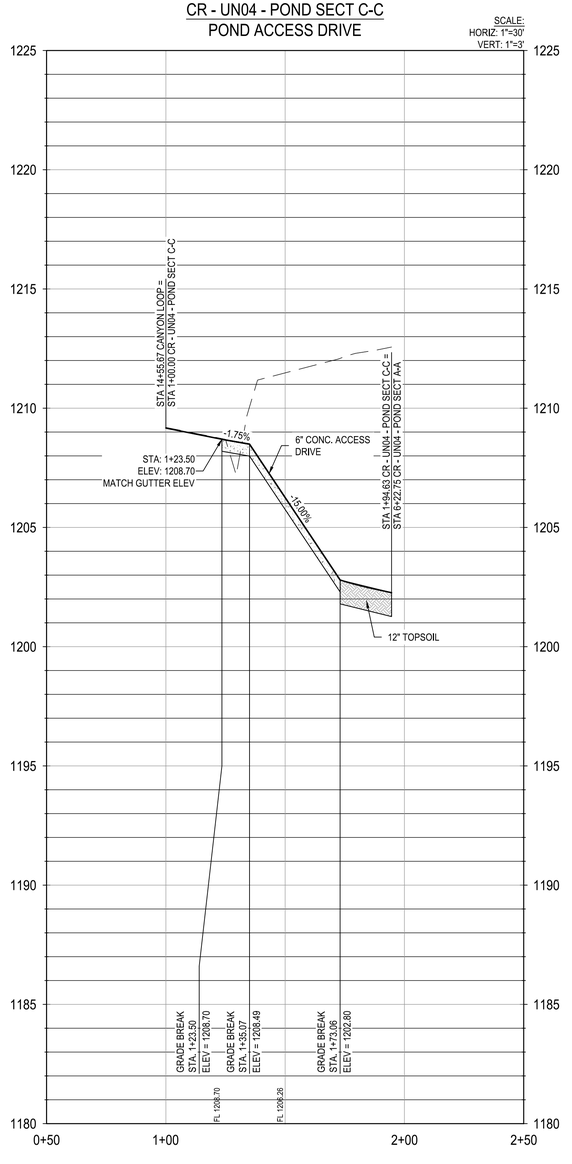
CR - UN04 - POND SECT B-B



CR - UN04 - POND SECT C-C
POND ACCESS DRIVE



0 15' 30' 60'
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7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

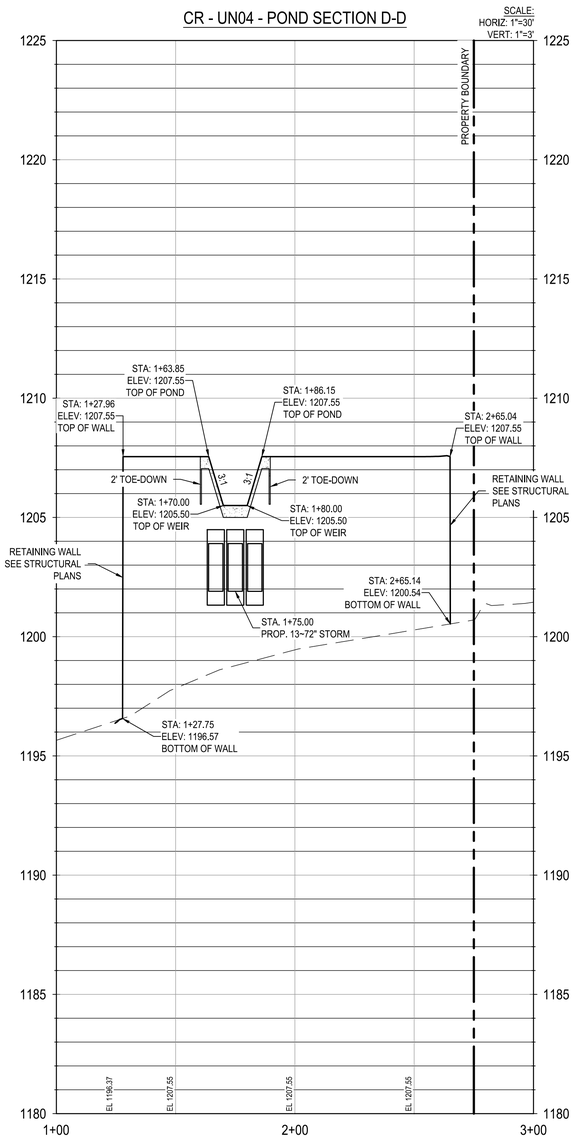
UN04 POND SECTIONS (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

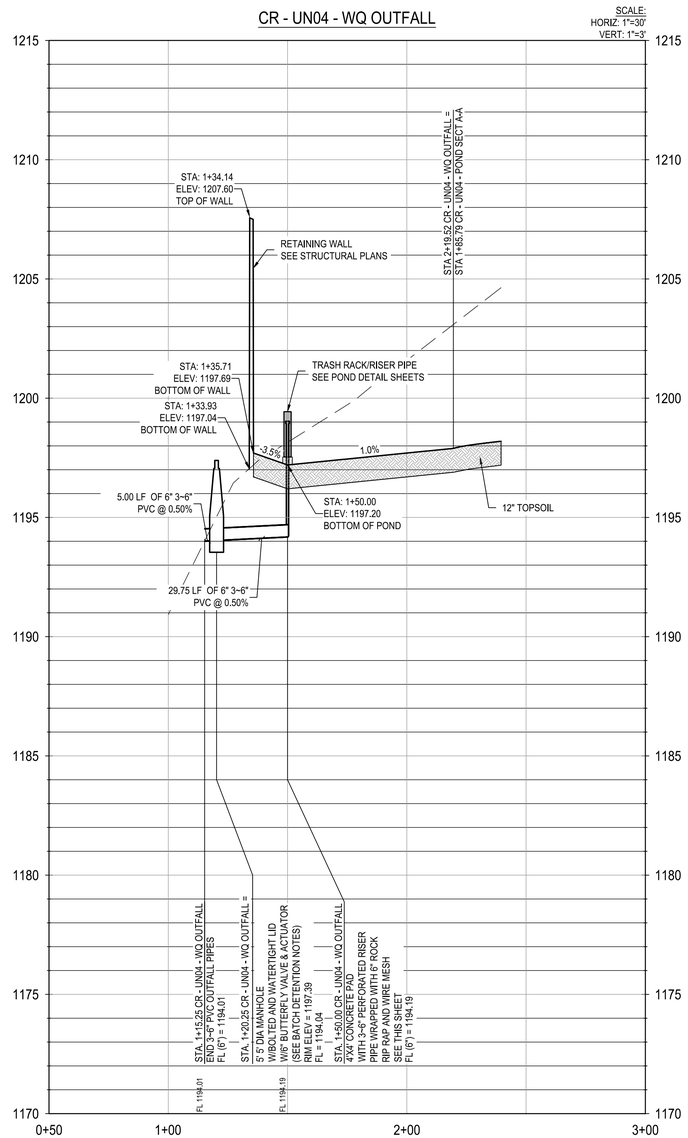
SHEET
C04.02

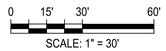
G:\TX\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C04.00 - UN04 DETENTION AND WATER QUALITY POND PLAN.dwg Layout: UN04 POND SECTIONS (SHEET 3 OF 3) Plotted: 6/17/2025 1:47:52 PM By: Lhuck

CR - UN04 - POND SECTION D-D



CR - UN04 - WQ OUTFALL





PROFILE LEGEND

- PROPOSED STORM PIPE
- WATER SURFACE ELEVATION
- PROPOSED GRADE
- EXISTING GRADE

NOTE: UPON COMPLETION OF THE PROPOSED SITE IMPROVEMENTS, AND PRIOR TO THE RELEASE OF THE CERTIFICATE OF ACCEPTANCE OR OCCUPANCY BY THE PERMIT CENTER, THE DESIGN ENGINEER SHALL CERTIFY IN WRITING THAT THE PROPOSED DETENTION FACILITY, FILTRATION FACILITIES AND/OR WATER QUALITY FACILITIES WERE CONSTRUCTED IN CONFORMANCE WITH THE APPROVED PLANS.

NOTES:

1. POND SHALL MAINTAINED BY CANYON RANCH MUD OF COMAL COUNTY.
2. POND IS TO HAVE 12" TOPSOIL BOTTOM.
3. THE REQUIRED WATER QUALITY VOLUME IS 90,631 CF AND THE PROVIDED WATER QUALITY VOLUME IS 90,631 CF.

BATCH DETENTION NOTES:

1. OVERVIEW: THE BASIN IS TYPICALLY FILLED QUICKLY BY STORMWATER CONVEYED THROUGH A STORM DRAIN, MAKING THE INFLOW TIME RELATIVELY SHORT. THE RESIDENCE TIME OF THE STORMWATER IS 12 HOURS AND IS CONTROLLED BY THE CONTROL VALVE (NORMALLY SHUT OFF) AND ACTUATOR INSTALLED ON THE OUTLET STRUCTURE. THE CONTROL VALVE OPENS ONCE THE DESIRED RESIDENCE TIME IS ACHIEVED AFTER A STORM EVENT. THE TREATED WATER IS RELEASED SLOWLY OVER A TIME OF 24 TO 48 HOURS.
2. VALVE/ACTUATOR: THE VALVE/ACTUATOR ASSEMBLY CONSISTS OF A BUTTERFLY VALVE WITH A SMALL 12VDC ACTUATOR. THE VALVE IS A QUARTER TURN VALVE. THE ACTUATOR OPERATES THE VALVE BETWEEN THE FULL OPEN AND FULL CLOSED POSITIONS. A MECHANICAL HAND CLANK ALLOWS A PHYSICAL OVERRIDE OF THE VALVE SYSTEM.
3. THE VALVE IS A KEYSTONE 6-INCH(100MM) BUTTERFLY VALVE MATED WITH A EPI-6 12VDC ACTUATOR. THE EPI-6 ACTUATOR REQUIRES AN OPEN OR CLOSE SIGNAL OF 10 SECONDS. THE ACTUATOR HAS LIMIT SWITCHES THAT DETECT END OF TRAVEL AND SHOT OFF THE INCOMING OPEN OR CLOSE SIGNAL TO THE ACTUATOR ONCE THE VALVES REACHES THE FULL OPEN OR CLOSED POSITION. OVER TORQUE SENSORS WILL SHUT DOWN THE ACTUATOR IN THE EVENT OF AN OVER TORQUE SITUATION.
4. CONTROLLER SYSTEM SPECIFICATIONS.
   - 4.1. POWER - THE CONTROLLER SHALL BE POWERED BY A SHIELD-CONTAINED RENEWABLE POWER SOURCE (SUCH AS SOLAR POWER) IF ELECTRICAL POWER IS NOT AVAILABLE. A SINGLE SUPPLY VOLTAGE FOR ALL COMPONENTS IS DESIRABLE.
   - 4.2. PROGRAMMABILITY - THE CONTROLLED SHALL BE PROGRAMMABLE. IT SHALL BE POSSIBLE TO UPDATE PROGRAMS IN THE FIELD. THE DETENTION TIME AND DRAW-DOWN TIME SHALL BE ADJUSTABLE IN HOURS FROM 0 HOURS TO 72 HOURS.
   - 4.3. EVENT SENSING - THE CONTROLLER SHALL BE ABLE TO SENSE THE BEGINNING OF A STORM (WATER FILLING THE BASIN), AND THE END OF A STORM (WATER HAS DRAINED FROM THE BASIN).
   - 4.4. ENVIRONMENT - THE CONTROLLER SHALL OPERATE IN TEMPERATURES FROM 0 DEGREES CELSIUS TO 55 DEGREES CELSIUS, IN HUMIDITY FROM 10% TO 90% (NON-CONDENSING), THE CONTROLLER SHALL OPERATE DURING PERIODS OF RAINFALL.
   - 4.5. SAFETY/SECURITY - THE SYSTEM COMPONENTS SHALL BE LOCKED IN ENCLOSURE TO PREVENT ACCIDENTAL CONTACT THAT COULD COMPROMISED THE FUNCTION OF THE APPARATUS OR CAUSE INJURY.
   - 4.6. MAINTENANCE - THE CONTROLLER SHALL REQUIRE MINIMAL PERIODIC MAINTENANCE TO CONTROLLER PROGRAM SHALL BE FIELD UPGRADEABLE. THE ABILITY TO MANUALLY OPERATE THE VALVE SHALL BE PROVIDED.
   - 4.7. RELIABILITY - 40,000 HOURS(4.6 YEARS) OR GREATER.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN OF SENSOR, AUTOMATIC VALVE, CONTROLLER, ETC.TO ENGINEER FOR REVIEW AND APPROVAL.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

UN04 POND SECTIONS (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
06/17/2025

SHEET
C04.03

Texas Commission on Environmental Quality — **UNIT 4 POND- UNIT 4 CONDITIONS**

TSS Removal Calculations 04-20-2009

Project Name: Canyon Ranch
Date Prepared: 2/4/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 — Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
- $L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
- A_N = Net increase in impervious area for the project
- P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	30.70	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	20.03	acres
Total post-development impervious cover fraction * =	0.65	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17979	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = Unit 4 pond

Total drainage basin/outfall area =	12.19	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	8.02	acres
Post-development impervious fraction within drainage basin/outfall area =	0.66	
$L_{M\ THIS\ BASIN}$ =	7199	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:
- A_C = Total On-Site drainage area in the BMP catchment area
- A_I = Impervious area proposed in the BMP catchment area
- A_P = Pervious area remaining in the BMP catchment area
- L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	12.19	acres
A_I =	8.02	acres
A_P =	4.17	acres
L_R =	8401	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ =	8358	lbs.
F =	0.99	

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 — Pages 3-34 to 3-36

Rainfall Depth =	3.66	inches
Post Development Runoff Coefficient =	0.47	
On-site Water Quality Volume =	75525	cubic feet

Calculations from RG-348 — Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	15105	
Total Capture Volume (required water quality volume(s) x 1.20) =	90631	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

Texas Commission on Environmental Quality — **UNIT 4 VFS - NORTHEAST**

TSS Removal Calculations 04-20-2009

Project Name: Canyon Ranch
Date Prepared: 2/4/2025

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where:
- $L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
- A_N = Net increase in impervious area for the project
- P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	30.70	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	20.03	acres
Total post-development impervious cover fraction * =	0.65	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17979	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = U4 northeast VFS

Total drainage basin/outfall area =	0.88	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.40	acres
Post-development impervious fraction within drainage basin/outfall area =	0.45	
$L_{M\ THIS\ BASIN}$ =	359	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Vegetated Filter Strips
Removal efficiency = 85 percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

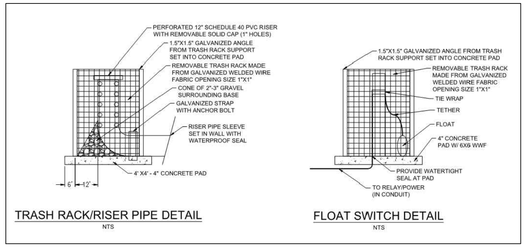
RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

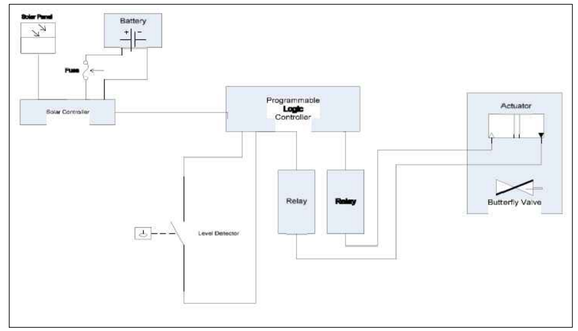
where:
- A_C = Total On-Site drainage area in the BMP catchment area
- A_I = Impervious area proposed in the BMP catchment area
- A_P = Pervious area remaining in the BMP catchment area
- L_R = TSS Load removed from this catchment area by the proposed BMP

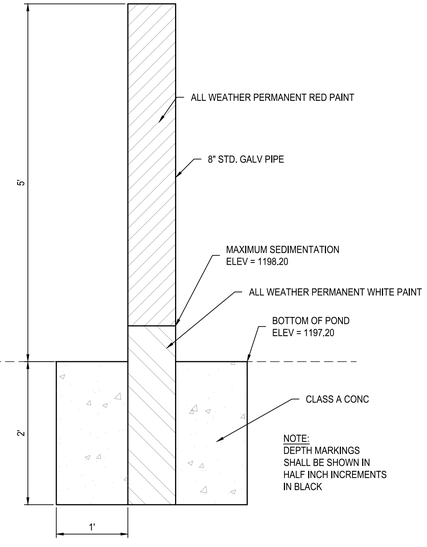
A_C =	0.88	acres
A_I =	0.40	acres
A_P =	0.48	acres
L_R =	395	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ =	397	lbs.
F =	1.00	







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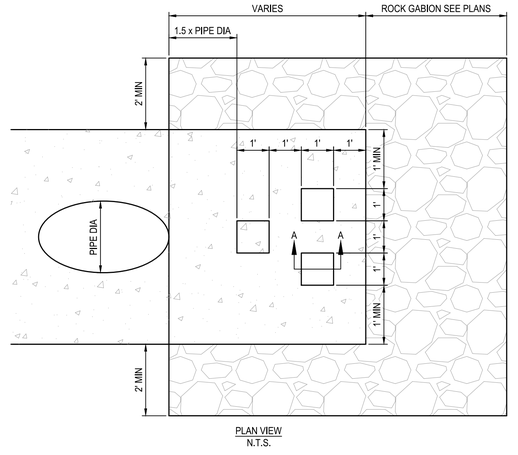
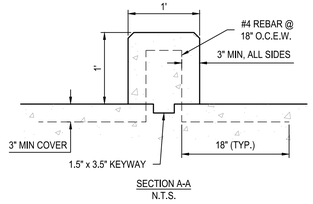


PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

ENERGY DISSIPATOR DETAILS
N.T.S.

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
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CANYON RANCH UNIT 4

UN04 POND DETAILS (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.04

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Texas Commission on Environmental Quality — **UNIT 4 VFS - SOUTHEAST**

TSS Removal Calculations 04-20-2009

Project Name: Canyon Ranch
Date Prepared: 2/4/2025

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
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where:
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- A_N = Net increase in impervious area for the project
- P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	30.70	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	20.03	acres
Total post-development impervious cover fraction * =	0.65	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17979	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = U4 southeast VFS

Total drainage basin/outfall area =	1.62	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.80	acres
Post-development impervious fraction within drainage basin/outfall area =	0.49	
$L_{M\ THIS\ BASIN}$ =	718	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	Vegetated Filter Strips	
Removal efficiency =	85	percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
- A_C = Total On-Site drainage area in the BMP catchment area
- A_I = Impervious area proposed in the BMP catchment area
- A_P = Pervious area remaining in the BMP catchment area
- L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	1.62	acres
A_I =	0.80	acres
A_P =	0.82	acres
L_R =	789	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 792 lbs.

F = 1.00

Texas Commission on Environmental Quality — **UNIT 4 VFS - SOUTHWEST**

TSS Removal Calculations 04-20-2009

Project Name: Canyon Ranch
Date Prepared: 2/4/2025

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Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
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Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	20.03	acres
Total post-development impervious cover fraction * =	0.65	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17979	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = U4 southwest VFS

Total drainage basin/outfall area =	1.04	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.44	acres
Post-development impervious fraction within drainage basin/outfall area =	0.42	
$L_{M\ THIS\ BASIN}$ =	395	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	Vegetated Filter Strips	
Removal efficiency =	85	percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:
- A_C = Total On-Site drainage area in the BMP catchment area
- A_I = Impervious area proposed in the BMP catchment area
- A_P = Pervious area remaining in the BMP catchment area
- L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	1.04	acres
A_I =	0.44	acres
A_P =	0.60	acres
L_R =	436	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 438 lbs.

F = 1.00

Unit 4 Pond Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs	Storm Event
0.00	0	1,197.30	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
0.70	576	1,198.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
1.70	7,150	1,199.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
2.70	27,378	1,200.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
3.70	68,334	1,201.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
4.13	95,702	1,201.43	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
4.70	132,094	1,202.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
4.80	140,152	1,202.10	1.94 ic	---	---	---	0.00	---	---	---	---	---	1.94	---
4.90	148,209	1,202.20	5.48 ic	---	---	---	0.00	---	---	---	---	---	5.48	---
5.00	156,267	1,202.30	10.07 ic	---	---	---	0.00	---	---	---	---	---	10.07	---
5.10	164,325	1,202.40	15.51 ic	---	---	---	0.00	---	---	---	---	---	15.51	---
5.20	172,382	1,202.50	21.67 ic	---	---	---	0.00	---	---	---	---	---	21.67	---
5.30	180,440	1,202.60	28.48 ic	---	---	---	0.00	---	---	---	---	---	28.48	---
5.40	188,498	1,202.70	35.56 oc	---	---	---	0.00	---	---	---	---	---	35.56	---
5.50	196,556	1,202.80	41.36 oc	---	---	---	0.00	---	---	---	---	---	41.36	---
5.60	204,613	1,202.90	47.16 oc	---	---	---	0.00	---	---	---	---	---	47.16	---
5.70	212,680	1,203.00	52.97 oc	---	---	---	0.00	---	---	---	---	---	52.97	---
5.80	221,524	1,203.10	58.77 oc	---	---	---	0.00	---	---	---	---	---	58.77	---
5.90	230,376	1,203.20	64.58 oc	---	---	---	0.00	---	---	---	---	---	64.58	---
6.00	239,229	1,203.30	70.40 oc	---	---	---	0.00	---	---	---	---	---	70.40	---
6.10	248,082	1,203.40	76.20 oc	---	---	---	0.00	---	---	---	---	---	76.20	---
6.20	256,934	1,203.50	82.01 oc	---	---	---	0.00	---	---	---	---	---	82.01	---
6.30	265,787	1,203.60	87.82 oc	---	---	---	0.00	---	---	---	---	---	87.82	---
6.40	274,640	1,203.70	93.62 oc	---	---	---	0.00	---	---	---	---	---	93.62	---
6.42	276,773	1,203.72	95.02 oc	---	---	---	0.00	---	---	---	---	---	95.02	10
6.50	283,492	1,203.80	99.43 oc	---	---	---	0.00	---	---	---	---	---	99.43	---
6.60	292,345	1,203.90	105.24 oc	---	---	---	0.00	---	---	---	---	---	105.24	---
6.70	301,215	1,204.00	105.94 oc	---	---	---	0.00	---	---	---	---	---	105.94	---
6.80	310,412	1,204.10	125.34 oc	---	---	---	0.00	---	---	---	---	---	125.34	---
6.90	319,626	1,204.20	142.12 oc	---	---	---	0.00	---	---	---	---	---	142.12	---
6.91	320,511	1,204.21	143.56 oc	---	---	---	0.00	---	---	---	---	---	143.56	25
7.00	328,841	1,204.30	157.14 oc	---	---	---	0.00	---	---	---	---	---	157.14	---
7.10	338,055	1,204.40	170.82 oc	---	---	---	0.00	---	---	---	---	---	170.82	---
7.20	347,269	1,204.50	183.49 oc	---	---	---	0.00	---	---	---	---	---	183.49	---
7.30	356,484	1,204.60	195.33 oc	---	---	---	0.00	---	---	---	---	---	195.33	---
7.40	365,698	1,204.70	206.50 oc	---	---	---	0.00	---	---	---	---	---	206.50	---
7.50	374,912	1,204.80	217.11 oc	---	---	---	0.00	---	---	---	---	---	217.11	---
7.60	384,127	1,204.90	227.21 oc	---	---	---	0.00	---	---	---	---	---	227.21	---
7.67	390,305	1,204.97	233.69 oc	---	---	---	0.00	---	---	---	---	---	233.69	100
7.70	393,367	1,205.00	236.88 oc	---	---	---	0.00	---	---	---	---	---	236.88	---
7.80	402,910	1,205.10	246.17 oc	---	---	---	0.00	---	---	---	---	---	246.17	---
7.90	412,479	1,205.20	255.12 oc	---	---	---	0.00	---	---	---	---	---	255.12	---
8.00	422,048	1,205.30	262.88 ic	---	---	---	0.00	---	---	---	---	---	262.88	---
8.10	431,618	1,205.40	268.54 ic	---	---	---	0.00	---	---	---	---	---	268.54	---
8.20	441,187	1,205.50	274.07 ic	---	---	---	0.00	---	---	---	---	---	274.07	---
8.30	450,756	1,205.60	279.50 ic	---	---	---	1.05	---	---	---	---	---	280.55	---
8.40	460,325	1,205.70	284.82 ic	---	---	---	2.98	---	---	---	---	---	287.80	---
8.50	469,894	1,205.80	290.05 ic	---	---	---	5.47	---	---	---	---	---	295.53	---
8.60	479,464	1,205.90	295.19 ic	---	---	---	8.43	---	---	---	---	---	303.61	---
8.70	489,069	1,206.00	300.23 ic	---	---	---	11.77	---	---	---	---	---	312.01	---

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV
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				◁
				◁

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
UN04 POND DETAILS (SHEET 2 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.05

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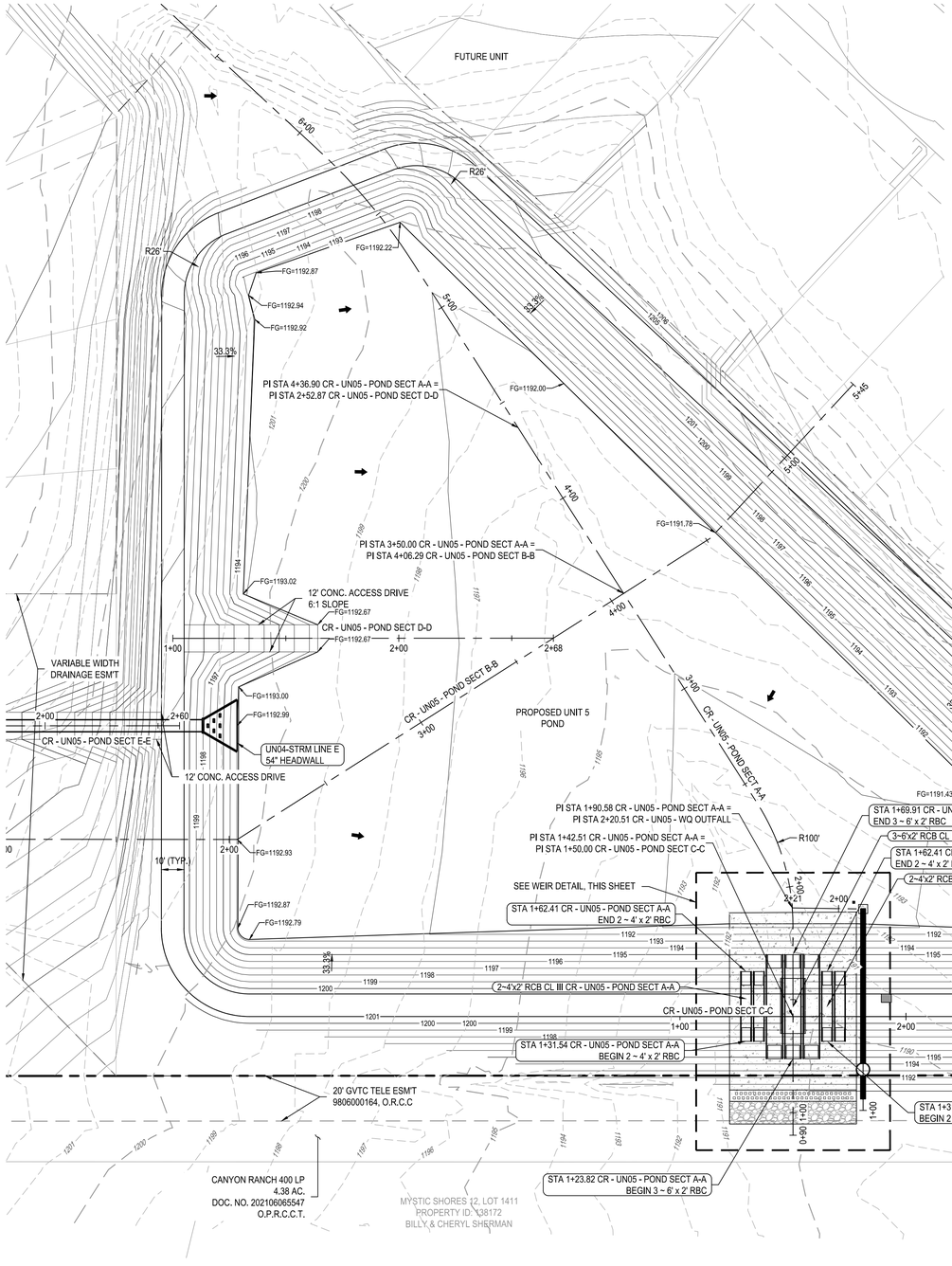

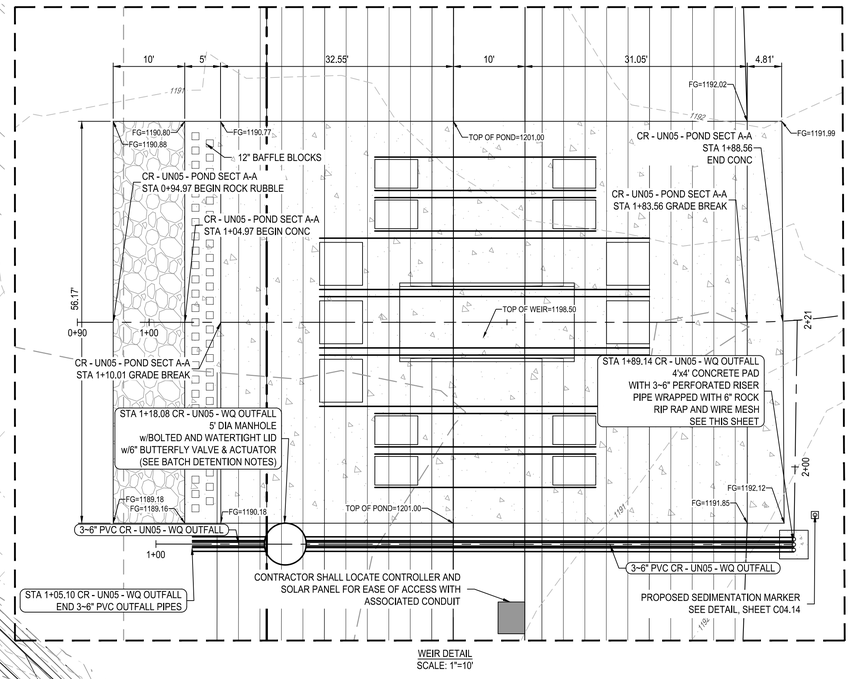

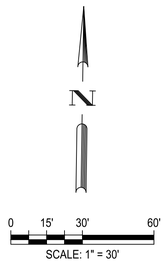

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN LINE
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED CURB INLET
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- DIRECTION OF FLOW
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED STORM PIPE
- WATER SURFACE ELEVATION
- PROPOSED GRADE
- EXISTING GRADE

Stage (ft msl) (Elevation)	Pond Depth (ft)	Cumulative Pond Depth (ft)	Surface Area (sf)	Volume (cf)	Cumulative Volume (cf)	
1190.30	0.00	0.00	36	0	0	
1191.00	0.70	0.70	8,908	2,218	2,218	
1192.00	1.00	1.70	44,678	24,512	26,730	
1193.00	1.00	2.70	73,279	58,392	85,122	
1194.00	1.00	3.70	77,146	75,205	160,327	
1194.90	0.90	4.60	80,768	71,055	231,382	WQE
1195.00	0.10	4.70	80,915	7,968	239,350	
1196.00	1.00	5.70	84,710	82,805	322,155	
1197.00	1.00	6.70	88,533	86,614	408,769	
1198.00	1.00	7.70	92,384	90,451	499,221	
1199.00	1.00	8.70	96,267	94,319	593,540	
1200.00	1.00	9.70	100,191	98,222	691,762	
1201.00	1.00	10.70	118,760	109,344	801,106	

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NOTES:

1. POND SHALL MAINTAINED BY CANYON RANCH MUD OF COMAL COUNTY.
2. POND IS TO HAVE 12" TOPSOIL BOTTOM.
3. THE REQUIRED WATER QUALITY VOLUME IS 160,848 CF AND THE PROVIDED WATER QUALITY VOLUME IS 231,382 CF.

BATCH DETENTION NOTES:

1. OVERVIEW: THE BASIN IS TYPICALLY FILLED QUICKLY BY STORMWATER CONVEYED THROUGH A STORM DRAIN, MAKING THE INFLOW TIME RELATIVELY SHORT. THE RESIDENCE TIME OF THE STORMWATER IS 12 HOURS AND IS CONTROLLED BY THE CONTROL VALVE (NORMALLY SHUT OFF) AND ACTUATOR INSTALLED ON THE OUTLET STRUCTURE. THE CONTROL VALVE OPENS ONCE THE DESIRED RESIDENCE TIME IS ACHIEVED AFTER A STORM EVENT. THE TREATED WATER IS RELEASED SLOWLY OVER A TIME OF 24 TO 48 HOURS.
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3. THE VALVE IS A KEYSTONE 6-INCH(100MM) BUTTERFLY VALVE MATED WITH A EPI-6 12VDC ACTUATOR. THE EPI-6 ACTUATOR REQUIRES AN OPEN OR CLOSE SIGNAL OF 10 SECONDS. THE ACTUATOR HAS LIMIT SWITCHES THAT DETECT END OF TRAVEL AND SHOT OFF THE INCOMING OPEN OR CLOSE SIGNAL TO THE ACTUATOR ONCE THE VALVES REACHES THE FULL OPEN OR CLOSED POSITION. OVER TORQUE SENSORS WILL SHUT DOWN THE ACTUATOR IN THE EVENT OF AN OVER TORQUE SITUATION.
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5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN OF SENSOR, AUTOMATIC VALVE, CONTROLLER, ETC.TO ENGINEER FOR REVIEW AND APPROVAL.

	DESCRIPTION	DATE	APR
REV			

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

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BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
UN05 DETENTION AND WATER QUALITY POND PLAN

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.10

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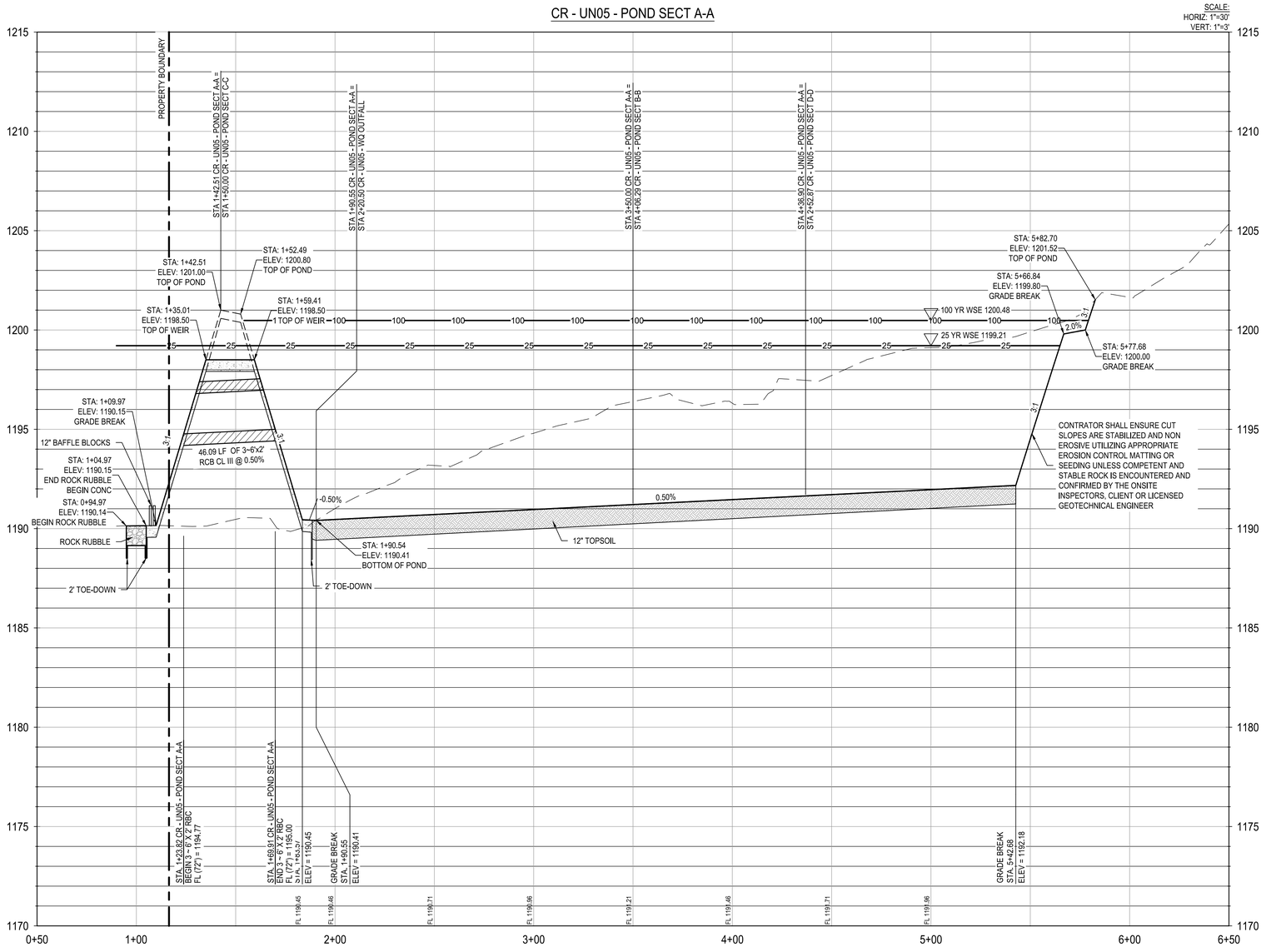

0 15' 30' 60'

SCALE: 1" = 30'

NOT FOR CONSTRUCTION

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							DESCRIPTION
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DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

UN05 POND SECTIONS (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.11

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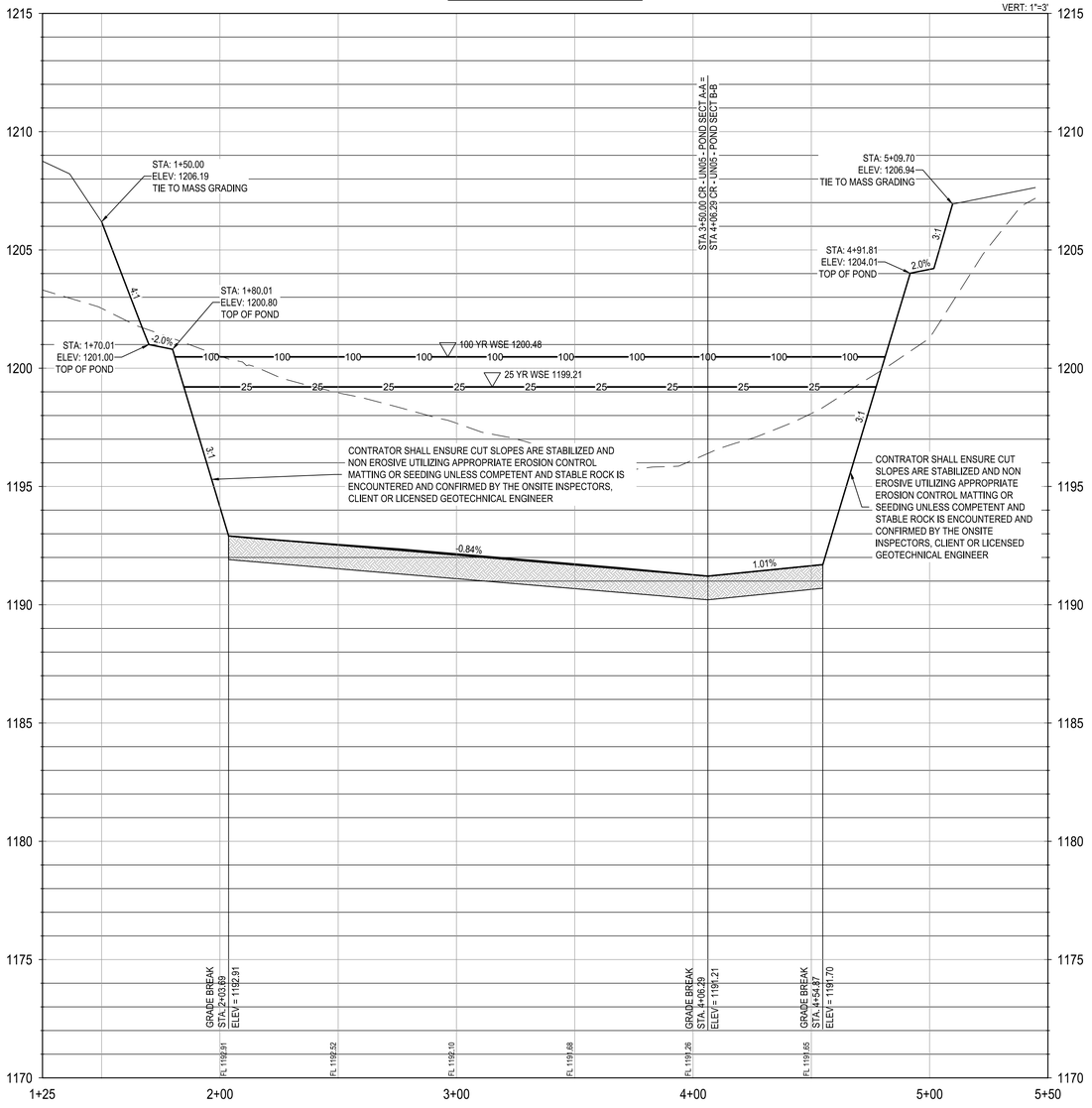
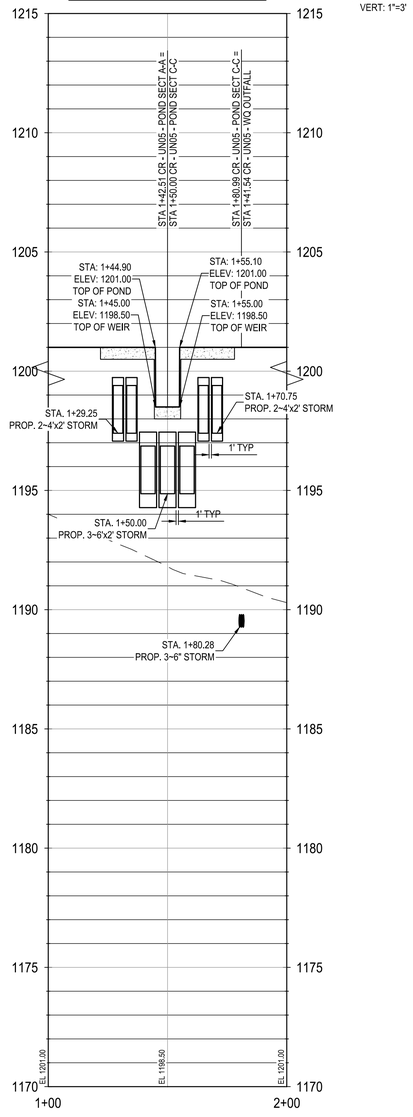
CR - UN05 - POND SECT B-B

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



CR - UN05 - POND SECT C-C

SCALE:
HORIZ: 1"=30'
VERT: 1"=3'



0 15' 30' 60'
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CANYON RANCH UNIT 4

UN05 POND SECTIONS (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
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06/17/2025

SHEET
C04.12

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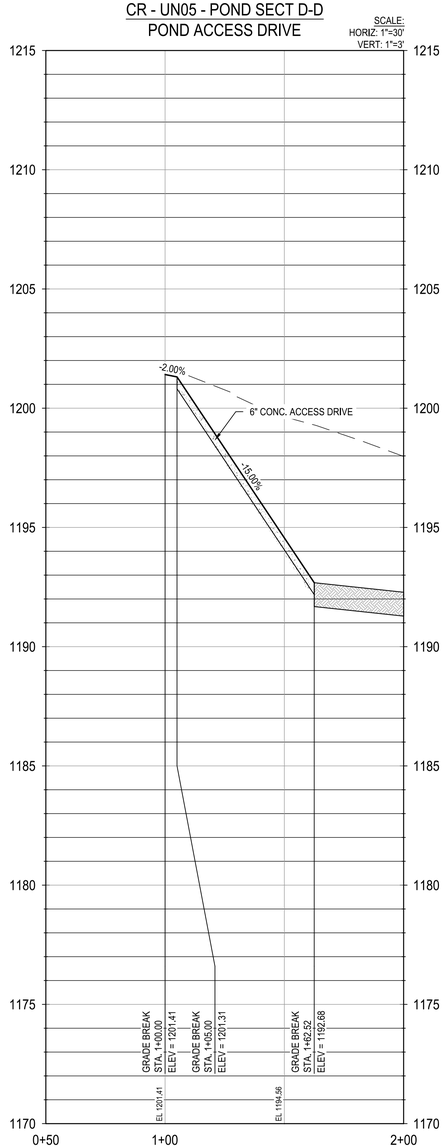

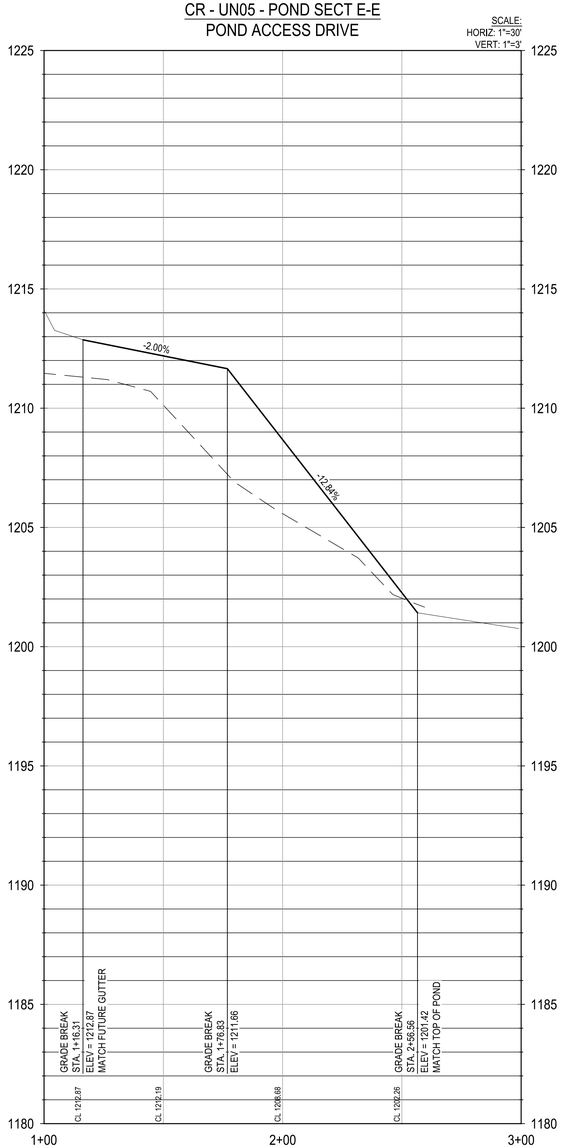

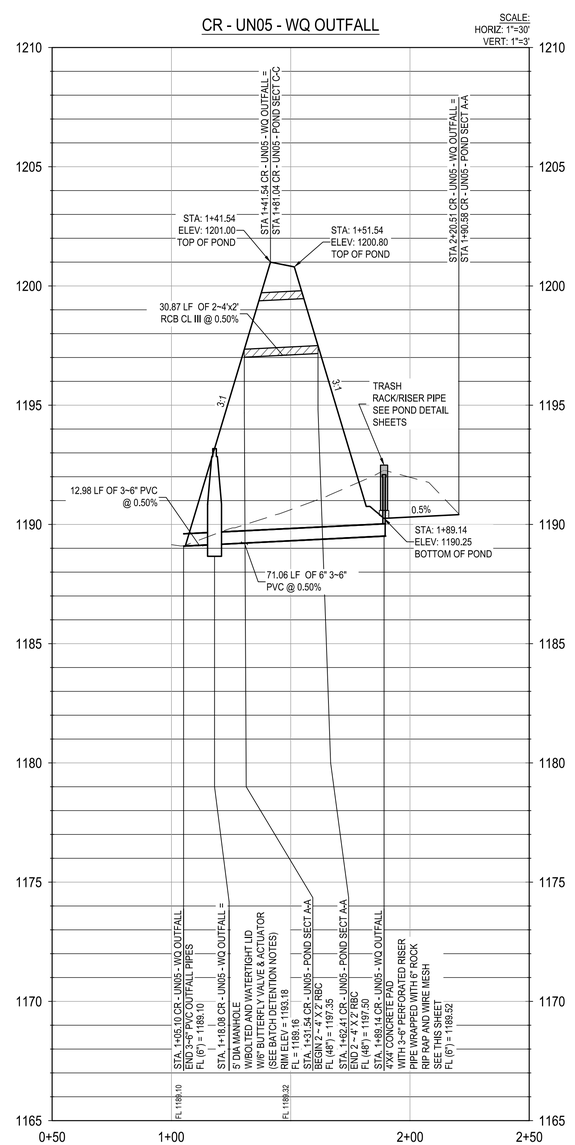

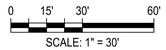

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3. THE REQUIRED WATER QUALITY VOLUME IS 160,848 CF AND THE PROVIDED WATER QUALITY VOLUME IS 231,382 CF.

BATCH DETENTION NOTES:

1. OVERVIEW: THE BASIN IS TYPICALLY FILLED QUICKLY BY STORMWATER CONVEYED THROUGH A STORM DRAIN, MAKING THE INFLOW TIME RELATIVELY SHORT. THE RESIDENCE TIME OF THE STORMWATER IS 12 HOURS AND IS CONTROLLED BY THE CONTROL VALVE (NORMALLY SHUT OFF) AND ACTUATOR INSTALLED ON THE OUTLET STRUCTURE. THE CONTROL VALVE OPENS ONCE THE DESIRED RESIDENCE TIME IS ACHIEVED AFTER A STORM EVENT. THE TREATED WATER IS RELEASED SLOWLY OVER A TIME OF 24 TO 48 HOURS.
2. VALVE/ACTUATOR: THE VALVE/ACTUATOR ASSEMBLY CONSISTS OF A BUTTERFLY VALVE WITH A SMALL 12VDC ACTUATOR. THE VALVE IS A QUARTER TURN VALVE. THE ACTUATOR OPERATES THE VALVE BETWEEN THE FULL OPEN AND FULL CLOSED POSITIONS. A MECHANICAL HAND CLANK ALLOWS A PHYSICAL OVERRIDE OF THE VALVE SYSTEM.
3. THE VALVE IS A KEYSTONE 6-INCH(100MM) BUTTERFLY VALVE MATED WITH A EPI-6 12VDC ACTUATOR. THE EPI-6 ACTUATOR REQUIRES AN OPEN OR CLOSE SIGNAL OF 10 SECONDS. THE ACTUATOR HAS LIMIT SWITCHES THAT DETECT END OF TRAVEL AND SHOT OFF THE INCOMING OPEN OR CLOSE SIGNAL TO THE ACTUATOR ONCE THE VALVES REACHES THE FULL OPEN OR CLOSED POSITION. OVER TORQUE SENSORS WILL SHUT DOWN THE ACTUATOR IN THE EVENT OF AN OVER TORQUE SITUATION.
4. CONTROLLER SYSTEM SPECIFICATIONS:
   - 4.1. POWER - THE CONTROLLER SHALL BE POWERED BY A SHIELD-CONTAINED RENEWABLE POWER SOURCE (SUCH AS SOLAR POWER) IF ELECTRICAL POWER IS NOT AVAILABLE. A SINGLE SUPPLY VOLTAGE FOR ALL COMPONENTS IS DESIRABLE.
   - 4.2. PROGRAMMABILITY - THE CONTROLLED SHALL BE PROGRAMMABLE. IT SHALL BE POSSIBLE TO UPDATE PROGRAMS IN THE FIELD. THE DETENTION TIME AND DRAW-DOWN TIME SHALL BE ADJUSTABLE IN HOURS FROM 0 HOURS TO 72 HOURS.
   - 4.3. EVENT SENSING - THE CONTROLLER SHALL BE ABLE TO SENSE THE BEGINNING OF A STORM (WATER FILLING THE BASIN), AND THE END OF A STORM (WATER HAS DRAINED FROM THE BASIN).
   - 4.4. ENVIRONMENT - THE CONTROLLER SHALL OPERATE IN TEMPERATURES FROM 0 DEGREES CELSIUS TO 55 DEGREES CELSIUS, IN HUMIDITY FROM 10% TO 90% (NON-CONDENSING). THE CONTROLLER SHALL OPERATE DURING PERIODS OF RAINFALL.
   - 4.5. SAFETY/SECURITY - THE SYSTEM COMPONENTS SHALL BE LOCKED IN ENCLOSURE TO PREVENT ACCIDENTAL CONTACT THAT COULD COMPROMISED THE FUNCTION OF THE APPARATUS OR CAUSE INJURY.
   - 4.6. MAINTENANCE - THE CONTROLLER SHALL REQUIRE MINIMAL PERIODIC MAINTENANCE TO CONTROLLER PROGRAM SHALL BE FIELD UPGRADEABLE. THE ABILITY TO MANUALLY OPERATE THE VALVE SHALL BE PROVIDED.
   - 4.7. RELIABILITY - 40,000 HOURS(4.6 YEARS) OR GREATER.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN OF SENSOR, AUTOMATIC VALVE, CONTROLLER, ETC.TO ENGINEER FOR REVIEW AND APPROVAL.

REV	DESCRIPTION	DATE	APR
△			
△			
△			
△			
△			

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

UN05 POND SECTIONS (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.13

Texas Commission on Environmental Quality — **UNIT 5 POND - UNIT 4 CONDITIONS**

TSS Removal Calculations 04-20-2009

Project Name: **Canyon Ranch**
Date Prepared: **2/4/2025**

Additional information is provided for cells with a red triangle in the upper right corner. Place the cursor over the cell.
Text shown in blue indicate location of instructions in the Technical Guidance Manual - RG-348.
Characters shown in red are data entry fields.
Characters shown in black (Bold) are calculated fields. Changes to these fields will remove the equations used in the spreadsheet.

1. The Required Load Reduction for the total project: Calculations from RG-348 — Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:
$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Comal	
Total project area included in plan * =	30.70	acres
Predevelopment impervious area within the limits of the plan * =	0.00	acres
Total post-development impervious area within the limits of the plan* =	20.03	acres
Total post-development impervious cover fraction * =	0.65	
P =	33	inches
$L_{M\ TOTAL\ PROJECT}$ =	17979	lbs.

* The values entered in these fields should be for the total project area.

Number of drainage basins / outfalls areas leaving the plan area = 1

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = unit 5 pond

Total drainage basin/outfall area =	11.50	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	7.83	acres
Post-development impervious fraction within drainage basin/outfall area =	0.68	
$L_{M\ THIS\ BASIN}$ =	7028	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = Batch Detention
Removal efficiency = 91 percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:
A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	11.50	acres
A_I =	7.83	acres
A_P =	3.67	acres
L_R =	8195	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = 8236 lbs.

F = 1.00

6. Calculate Capture Volume required by the BMP Type for this drainage basin / outfall area. Calculations from RG-348 — Pages 3-34 to 3-36

Rainfall Depth =	4.00	inches
Post Development Runoff Coefficient =	0.49	
On-site Water Quality Volume =	81338	cubic feet

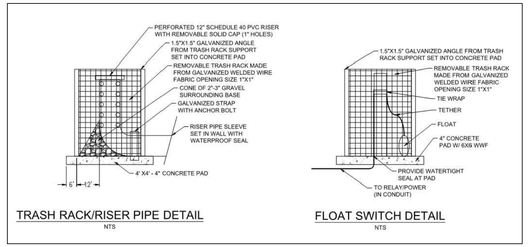
Calculations from RG-348 — Pages 3-36 to 3-37

Off-site area draining to BMP =	0.00	acres
Off-site Impervious cover draining to BMP =	0.00	acres
Impervious fraction of off-site area =	0	
Off-site Runoff Coefficient =	0.00	
Off-site Water Quality Volume =	0	cubic feet
Storage for Sediment =	16268	
Total Capture Volume (required water quality volume(s) x 1.20) =	97605	cubic feet

The following sections are used to calculate the required water quality volume(s) for the selected BMP.
The values for BMP Types not selected in cell C45 will show NA.

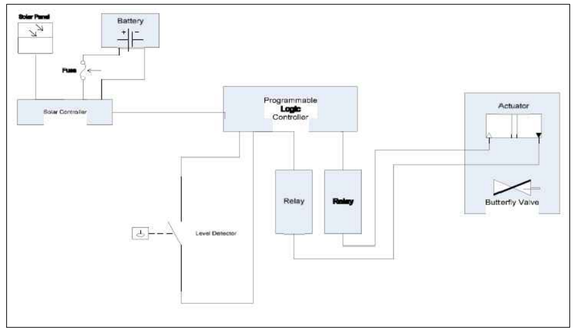
Unit 5 Pond Stage / Storage / Discharge Table

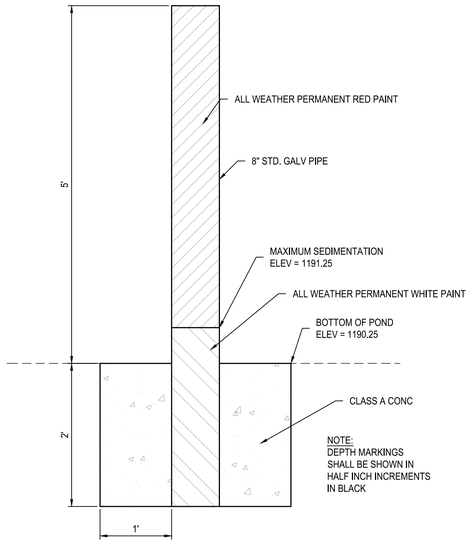
Stage ft	Storage cu ft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs	Storm Event
0.00	0	1,190.30	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
0.70	2,218	1,191.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
1.70	26,730	1,192.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
2.70	85,122	1,193.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
3.70	160,327	1,194.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00	---
4.70	239,350	1,195.00	0.00	0.00	---	---	0.00	0.00	---	---	---	---	0.00	---
4.80	247,630	1,195.10	1.94 ic	0.00	---	---	0.00	0.00	---	---	---	---	1.94	---
4.90	255,909	1,195.20	5.48 ic	0.00	---	---	0.00	0.00	---	---	---	---	5.48	---
5.00	264,189	1,195.30	10.07 ic	0.00	---	---	0.00	0.00	---	---	---	---	10.07	---
5.10	272,469	1,195.40	15.50 ic	0.00	---	---	0.00	0.00	---	---	---	---	15.50	---
5.20	280,748	1,195.50	21.66 ic	0.00	---	---	0.00	0.00	---	---	---	---	21.66	---
5.30	289,028	1,195.60	28.47 ic	0.00	---	---	0.00	0.00	---	---	---	---	28.47	---
5.40	297,308	1,195.70	35.56 oc	0.00	---	---	0.00	0.00	---	---	---	---	35.56	---
5.50	305,588	1,195.80	41.35 oc	0.00	---	---	0.00	0.00	---	---	---	---	41.35	---
5.60	313,867	1,195.90	47.15 oc	0.00	---	---	0.00	0.00	---	---	---	---	47.15	---
5.70	322,155	1,196.00	52.97 oc	0.00	---	---	0.00	0.00	---	---	---	---	52.97	---
5.80	330,808	1,196.10	58.77 oc	0.00	---	---	0.00	0.00	---	---	---	---	58.77	---
5.90	339,468	1,196.20	64.58 oc	0.00	---	---	0.00	0.00	---	---	---	---	64.58	---
6.00	348,129	1,196.30	70.39 oc	0.00	---	---	0.00	0.00	---	---	---	---	70.39	---
6.10	356,789	1,196.40	76.20 oc	0.00	---	---	0.00	0.00	---	---	---	---	76.20	---
6.20	365,450	1,196.50	82.00 oc	0.00	---	---	0.00	0.00	---	---	---	---	82.00	---
6.30	374,110	1,196.60	87.81 oc	0.00	---	---	0.00	0.00	---	---	---	---	87.81	---
6.40	382,771	1,196.70	93.62 oc	0.00	---	---	0.00	0.00	---	---	---	---	93.62	---
6.50	391,432	1,196.80	99.42 oc	0.00	---	---	0.00	0.00	---	---	---	---	99.42	---
6.60	400,092	1,196.90	105.22 oc	0.00	---	---	0.00	0.00	---	---	---	---	105.22	---
6.70	408,769	1,197.00	105.94 oc	0.00	---	---	0.00	0.00	---	---	---	---	105.94	---
6.80	417,797	1,197.10	125.34 oc	0.00	---	---	0.00	0.00	---	---	---	---	125.34	---
6.90	426,841	1,197.20	142.12 oc	0.00	---	---	0.00	0.00	---	---	---	---	142.12	---
7.00	435,886	1,197.30	157.12 oc	0.00	---	---	0.00	0.00	---	---	---	---	157.12	---
7.10	444,930	1,197.40	170.80 oc	0.00	---	---	0.00	0.00	---	---	---	---	170.80	---
7.20	453,974	1,197.50	183.47 oc	0.00	---	---	0.00	0.00	---	---	---	---	183.47	---
7.30	463,018	1,197.60	195.32 oc	1.72 ic	---	---	0.00	0.00	---	---	---	---	197.04	---
7.40	472,063	1,197.70	206.49 oc	4.87 ic	---	---	0.00	0.00	---	---	---	---	211.36	---
7.50	481,107	1,197.80	217.08 oc	8.94 ic	---	---	0.00	0.00	---	---	---	---	226.03	---
7.60	490,151	1,197.90	227.19 oc	13.77 ic	---	---	0.00	0.00	---	---	---	---	240.96	---
7.70	499,221	1,198.00	236.88 oc	19.26 ic	---	---	0.00	0.00	---	---	---	---	256.14	---
7.80	508,626	1,198.10	246.17 oc	25.32 ic	---	---	0.00	0.00	---	---	---	---	271.49	---
7.90	518,057	1,198.20	255.12 oc	31.11 oc	---	---	0.00	0.00	---	---	---	---	286.23	---
8.00	527,488	1,198.30	262.88 ic	36.17 oc	---	---	0.00	0.00	---	---	---	---	299.05	---
8.05	532,255	1,198.35	266.51 ic	39.43 oc	---	---	0.00	0.00	---	---	---	---	305.94	10
8.10	536,919	1,198.40	268.53 ic	41.24 oc	---	---	0.00	0.00	---	---	---	---	309.77	---
8.20	546,350	1,198.50	274.07 ic	46.32 oc	---	---	0.00	0.00	---	---	---	---	320.39	---
8.30	555,781	1,198.60	279.49 ic	51.41 oc	---	---	1.05	0.00	---	---	---	---	331.95	---
8.40	565,212	1,198.70	284.82 ic	56.49 oc	---	---	2.97	0.00	---	---	---	---	344.28	---
8.50	574,643	1,198.80	290.04 ic	61.58 oc	---	---	5.47	0.00	---	---	---	---	357.08	---
8.60	584,074	1,198.90	295.17 ic	66.66 oc	---	---	8.42	0.00	---	---	---	---	370.25	---
8.70	593,540	1,199.00	300.23 ic	71.76 oc	---	---	11.77	0.00	---	---	---	---	383.77	---
8.80	603,326	1,199.10	305.19 ic	76.85 oc	---	---	15.48	0.00	---	---	---	---	397.52	---
8.91	614,162	1,199.21	306.14 ic	77.85 oc	---	---	16.30	0.00	---	---	---	---	400.30	25
9.00	622,969	1,199.30	314.88 ic	87.02 oc	---	---	23.82	0.00	---	---	---	---	425.73	---
9.10	632,790	1,199.40	319.62 ic	92.11 oc	---	---	28.43	0.00	---	---	---	---	440.15	---
9.20	642,611	1,199.50	324.28 ic	97.19 oc	---	---	33.29	0.00	---	---	---	---	454.77	---
9.30	652,432	1,199.60	328.88 ic	109.61 oc	---	---	38.41	0.00	---	---	---	---	476.90	---
9.40	662,254	1,199.70	333.42 ic	124.29 oc	---	---	43.76	0.00	---	---	---	---	501.47	---
9.50	672,075	1,199.80	337.89 ic	137.41 oc	---	---	49.35	0.00	---	---	---	---	524.65	---
9.60	681,896	1,199.90	342.31 ic	149.38 oc	---	---	55.15	0.00	---	---	---	---	546.84	---
9.70	691,762	1,200.00	346.68 ic	160.49 oc	---	---	61.18	0.00	---	---	---	---	568.35	---
9.80	702,651	1,200.10	350.98 ic	170.85 oc	---	---	67.39	0.00	---	---	---	---	589.23	---
9.90	713,584	1,200.20	355.24 ic	180.62 oc	---	---	73.81	0.00	---	---	---	---	609.67	---
10.00	724,517	1,200.30	359.44 ic	189.89 oc	---	---	80.41	0.00	---	---	---	---	629.74	---
10.10	735,451	1,200.40	363.60 ic	198.72 oc	---	---	87.20	0.00	---	---	---	---	649.52	---
10.18	743,803	1,200.48	366.3 ic	204.29 oc	---	---	91.79	0.00	---	---	---	---	662.38	100
10.20	746,384	1,200.50	367.70 ic	207.18 oc	---	---	94.18	0.00	---	---	---	---	669.06	---
10.30	757,317	1,200.60	371.77 ic	215.31 oc	---	---	101.33	0.00	---	---	---	---	688.40	---
10.40	768,251	1,200.70	375.78 ic	223.14 oc	---	---	108.65	0.00	---	---	---	---	707.57	---
10.50	779,184	1,200.80	379.76 ic	230.71 oc	---	---	116.14	0.00	---	---	---	---	726.60	---
10.60	790,117	1,200.90	383.69 ic	238.03 oc	---	---	123.79	0.00	---	---	---	---	745.52	---
10.70	801,106	1,201.00	387.60 ic	243.62 ic	---	---	131.63	0.00	---	---	---	---	762.85	---



TRASH RACK/RISER PIPE DETAIL
NTS

FLOAT SWITCH DETAIL
NTS





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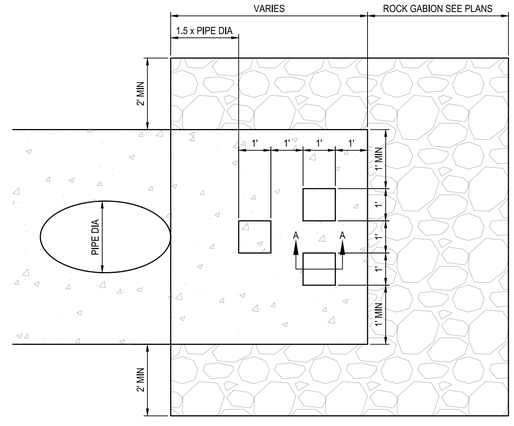
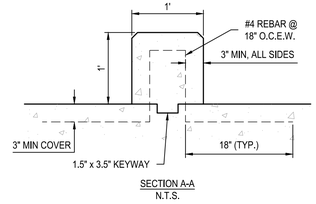
N.T.S.



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

ENERGY DISSIPATOR DETAILS
N.T.S.

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

	APR
	DATE
	DESCRIPTION
10	REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

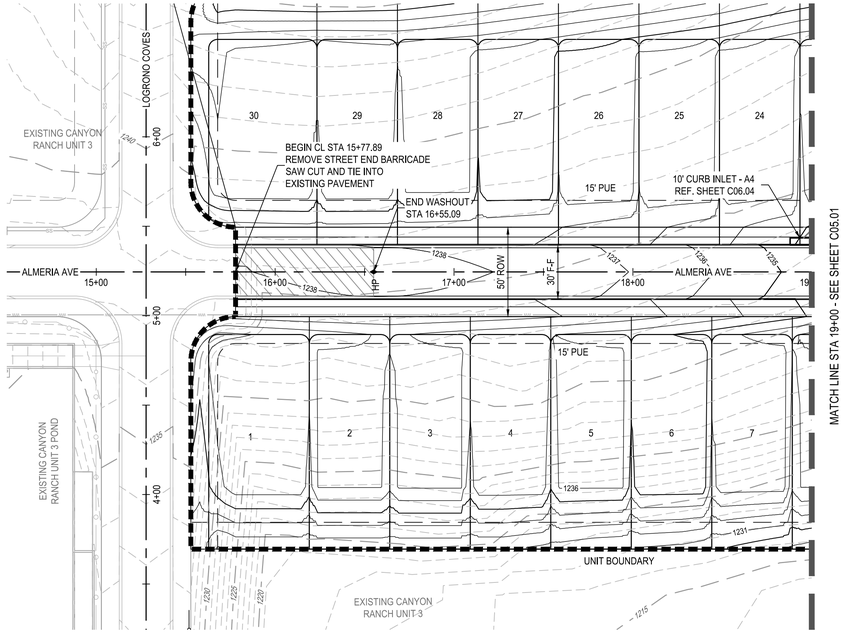
CANYON RANCH UNIT 4

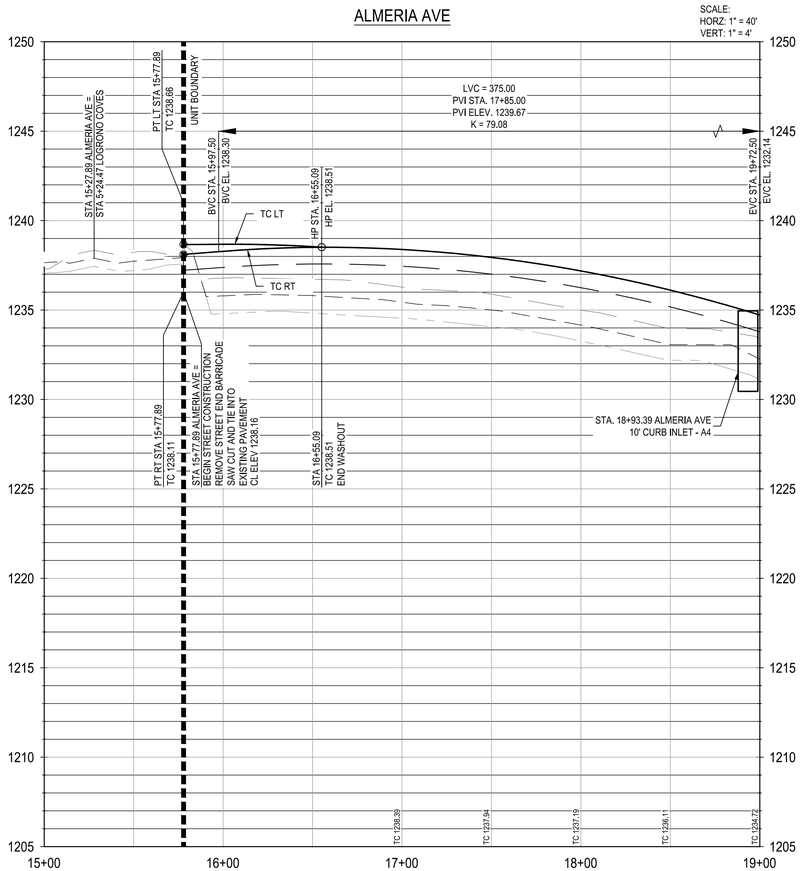
UN05 POND DETAILS

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C04.14

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C04.10 - UN05 DETENTION AND WATER QUALITY POND PLAN.dwg Layout: UN05 POND DETAILS Plotted: 6/17/2025 1:53:41 PM By: Lhuck







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

NOTES:

1. CONTRACTOR TO SEE DETAIL SHEET FOR TYPICAL ROAD CROSS-SECTIONS.
2. CONTRACTOR SHALL CLEAR AND GRUB THE ENTIRE STREET RIGHT OF WAY WITH THE EXCEPTION OF TREES TO REMAIN AND COORDINATE WITH OWNER AND ENGINEER TO SELECT CLEAR P.U.E. WHERE APPLICABLE FOR DRY UTILITY INSTALLATION.
3. CONTRACTOR TO GRADE OR REGRADE ALL AREAS WITHIN ROAD ROW INCLUDING DITCHES FOR POSITIVE DRAINAGE.
4. CONTRACTOR SHALL GRADE TO DRAIN AREAS UPSTREAM AND DOWNSTREAM OF ALL PROPOSED CHANNELS.
5. CONTRACTOR TO COORDINATE WITH DEVELOPER REGARDING TREE WELLS TO ENSURE TREES TO REMAIN ARE SAVED. CONTRACTOR TO REFERENCE LANDSCAPE PLANS FOR TREE WELL FINISHES.
6. CONTRACTOR SHALL HYDROMULCH OR WOODMULCH ALL DISTURBED AREAS, INCLUDING RIGHT-OF-WAY, STEEP SLOPES, DRAINAGE DITCHES WHERE SOIL SUBGRADE IS ENCOUNTERED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SUFFICIENT WATERING IN HYDROMULCH AREAS TO ESTABLISH VEGETATION.
7. ALL TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL STRIPING TO BE THERMOPLASTIC.
8. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
9. SIDEWALKS ADJACENT TO SINGLE FAMILY LOTS ARE TO BE CONSTRUCTED CONCURRENTLY WITH EACH SINGLE FAMILY HOUSE BY THE HOME BUILDER.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOTE:
CONTRACTOR SHALL ENSURE THAT PROPOSED A.D.A. RAMPS AND ACCESSIBLE ROUTES ALONG ROAD CROSSING COMPLY WITH SPECIFICATIONS FOR BOTH RUNNING SLOPE AND CROSS SLOPE. CONTRACTOR SHALL PROVIDE 5'X5' PAD EVERY 200' FOR ADA TURNAROUND REQUIREMENTS.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

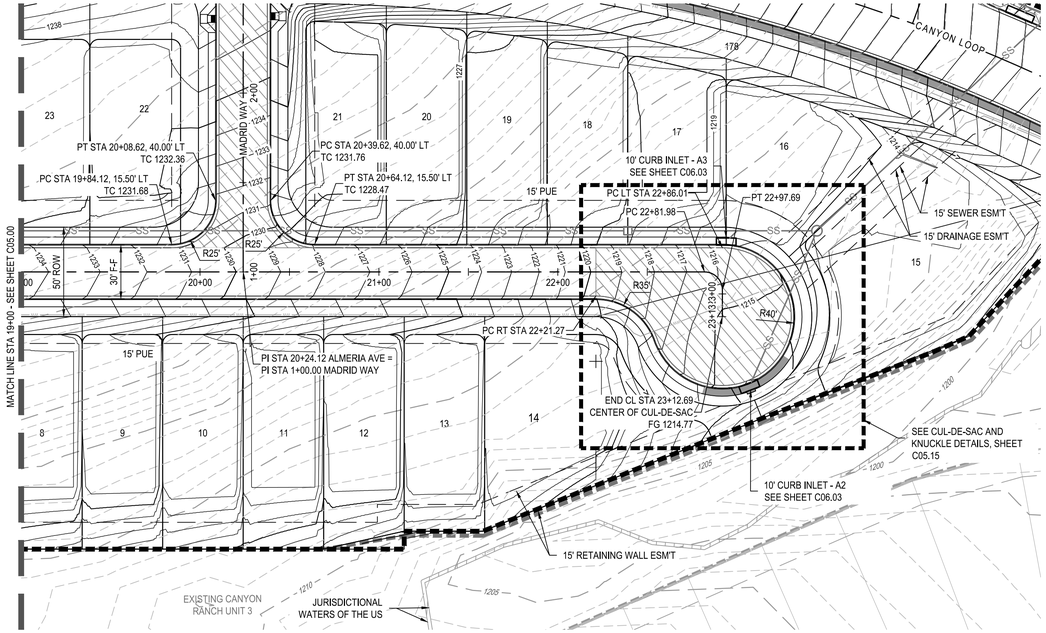
CANYON RANCH UNIT 4

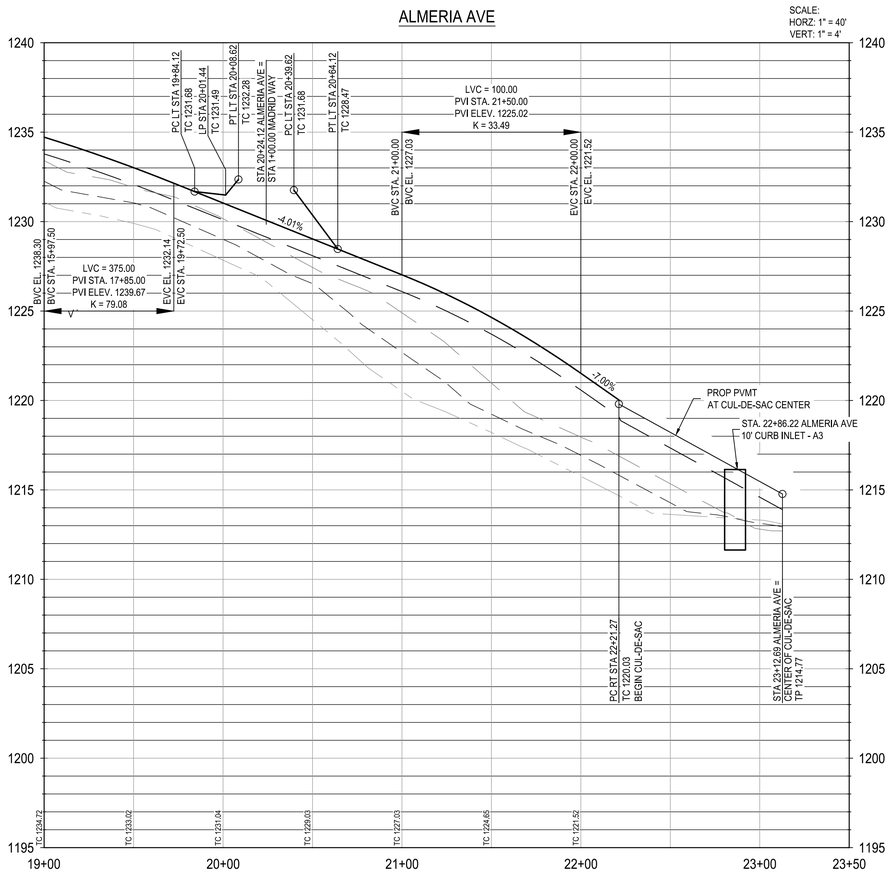
ALMERIA AVE PLAN AND PROFILE
STA 15+00 TO 19+00

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.00

G:\TXCO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.00 - ALMERIA AVE PLAN AND PROFILE.dwg Layout: C05.00 ALMERIA AVE PLAN AND PROFILE STA 15+00 TO 19+00 Plotted: 6/17/2025 1:56:09 PM By: Motheung







SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP — LOW POINT/HIGH POINT
- TC — TOP OF CURB ELEVATION
- GB — GRADE BREAK
- SS — PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

NOTES:

1. CONTRACTOR TO SEE DETAIL SHEET FOR TYPICAL ROAD CROSS-SECTIONS.
2. CONTRACTOR SHALL CLEAR AND GRUB THE ENTIRE STREET RIGHT OF WAY WITH THE EXCEPTION OF TREES TO REMAIN AND COORDINATE WITH OWNER AND ENGINEER TO SELECT CLEAR P.U.E. WHERE APPLICABLE FOR DRY UTILITY INSTALLATION.
3. CONTRACTOR TO GRADE OR REGRADE ALL AREAS WITHIN ROAD ROW INCLUDING DITCHES FOR POSITIVE DRAINAGE.
4. CONTRACTOR SHALL GRADE TO DRAIN AREAS UPSTREAM AND DOWNSTREAM OF ALL PROPOSED CHANNELS.
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							APR
							DATE
							DESCRIPTION
							REV

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CANYON RANCH UNIT 4

ALMERIA AVE PLAN AND PROFILE
STA 19+00 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.01

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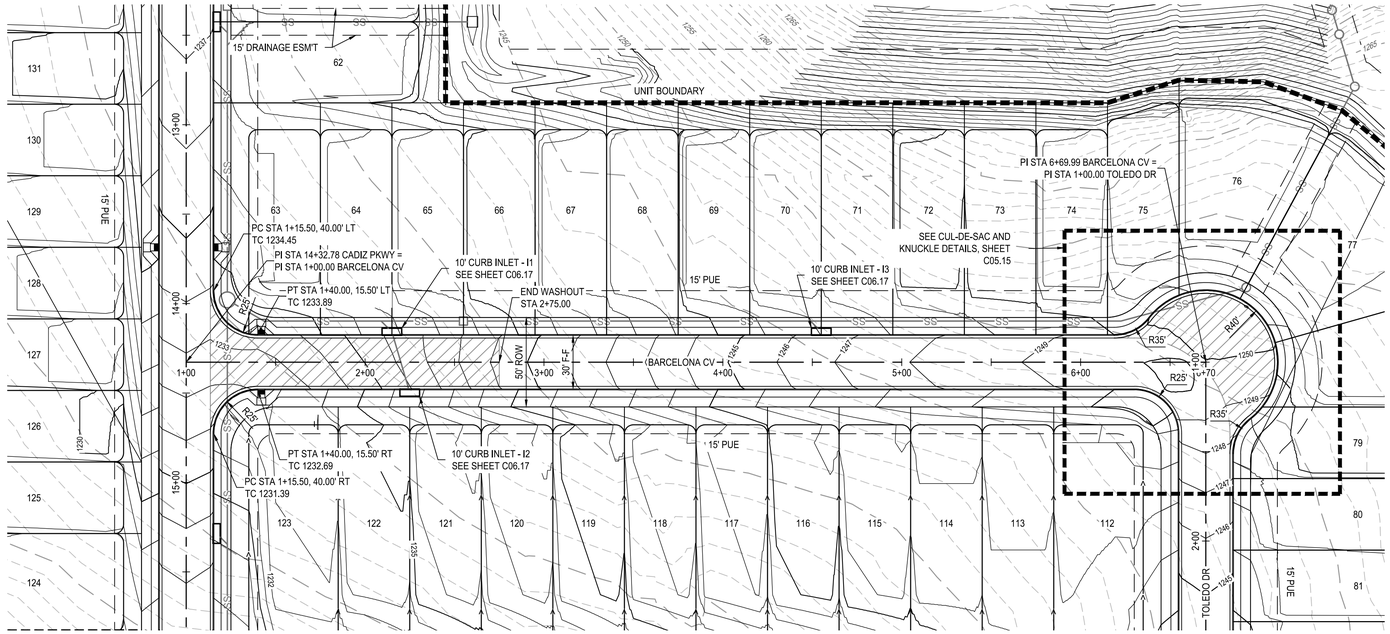

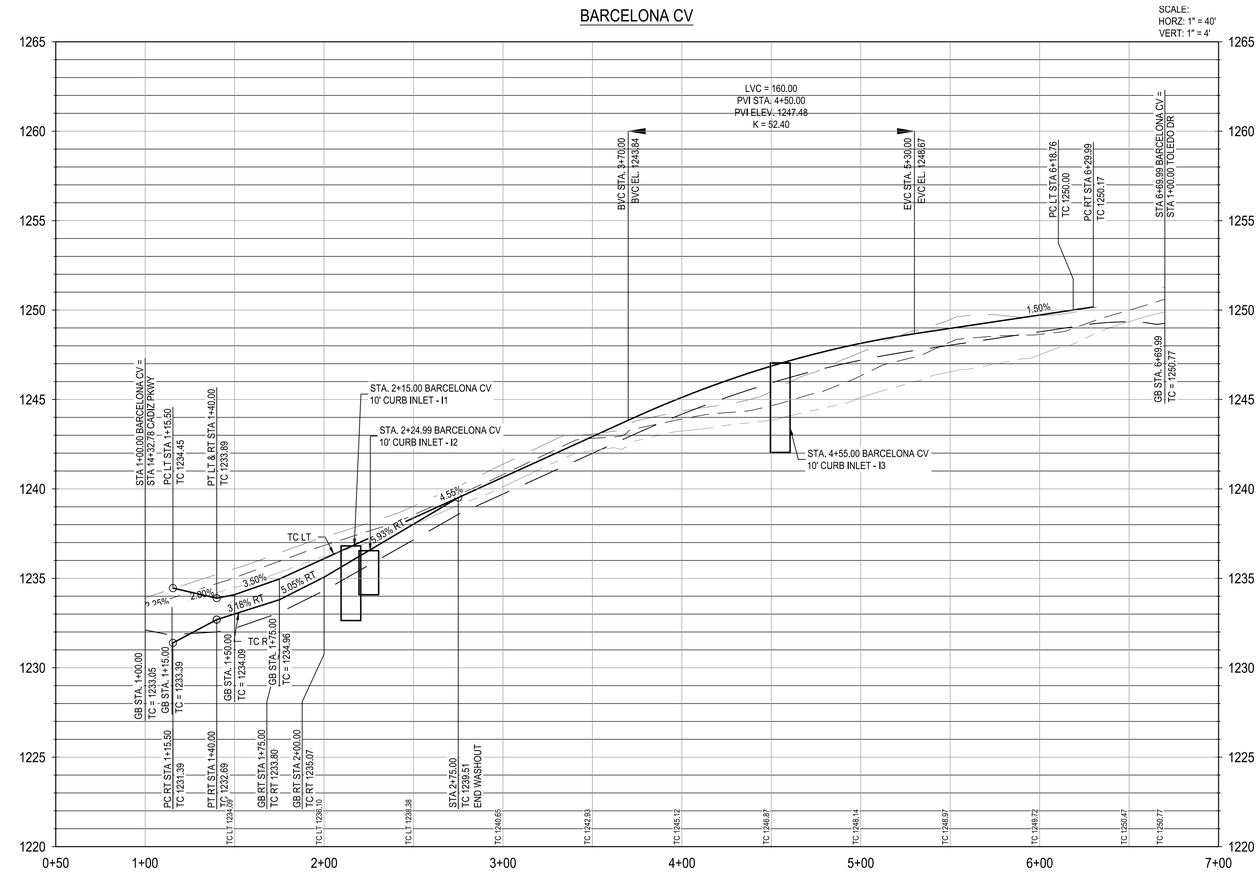



0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

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REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
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TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

BARCELONA CV PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.02

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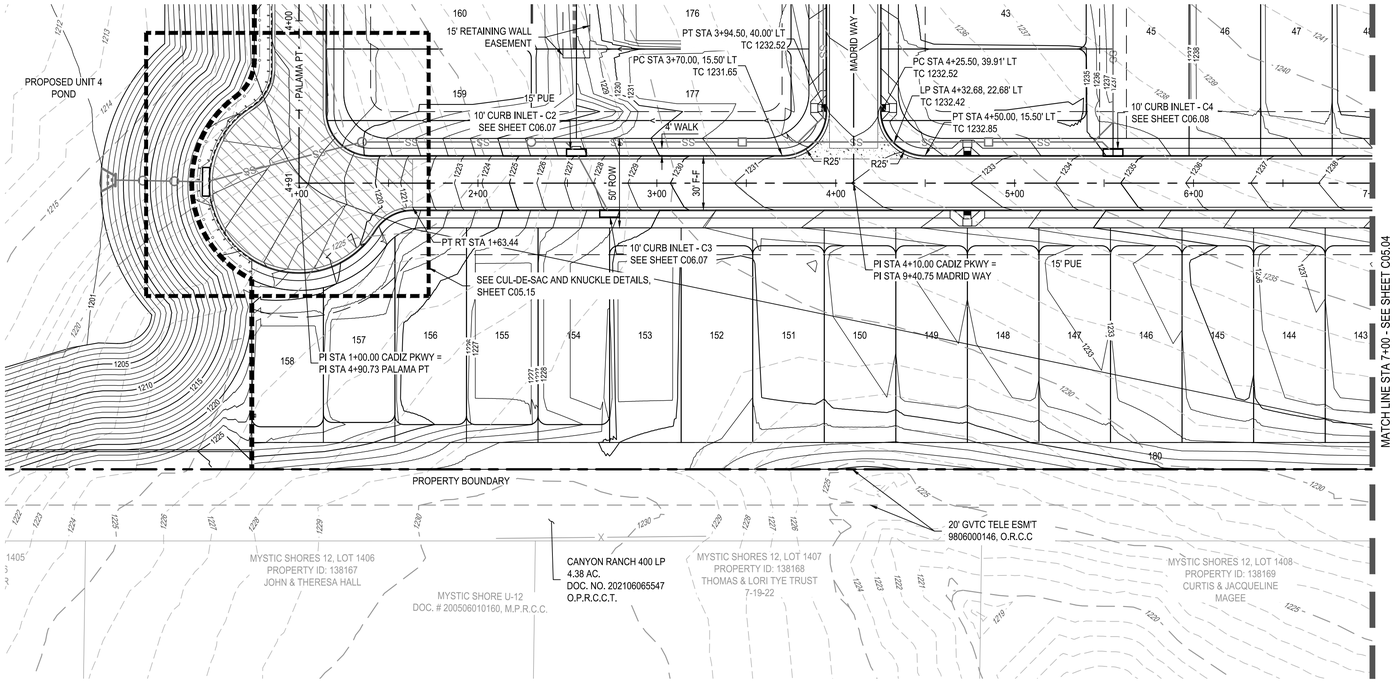

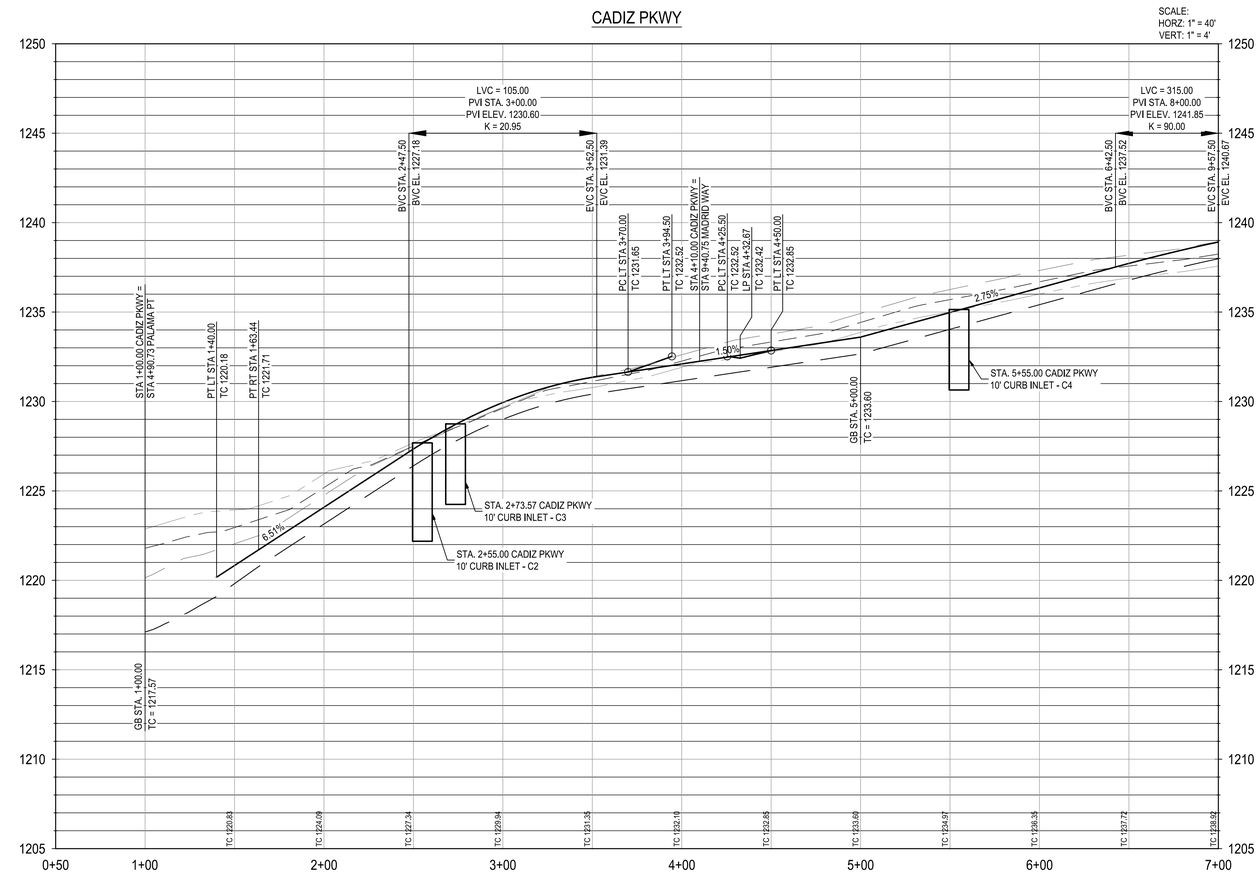



0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
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- 686 PROPOSED MAJOR CONTOUR
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- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
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- RAMP (SEE SHEET C06.52)
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- CHAIN LINK FENCE
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- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
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San Antonio, TX 78216
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TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CADIZ PKWY PLAN AND PROFILE STA 0+50 TO 7+00

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.03

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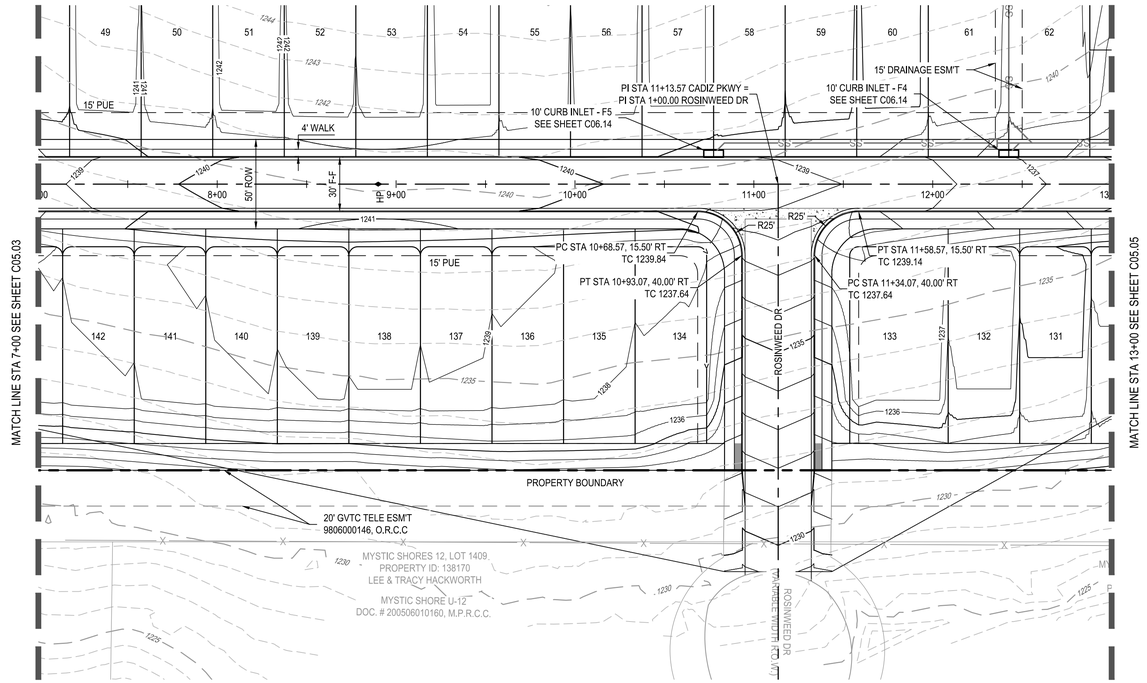

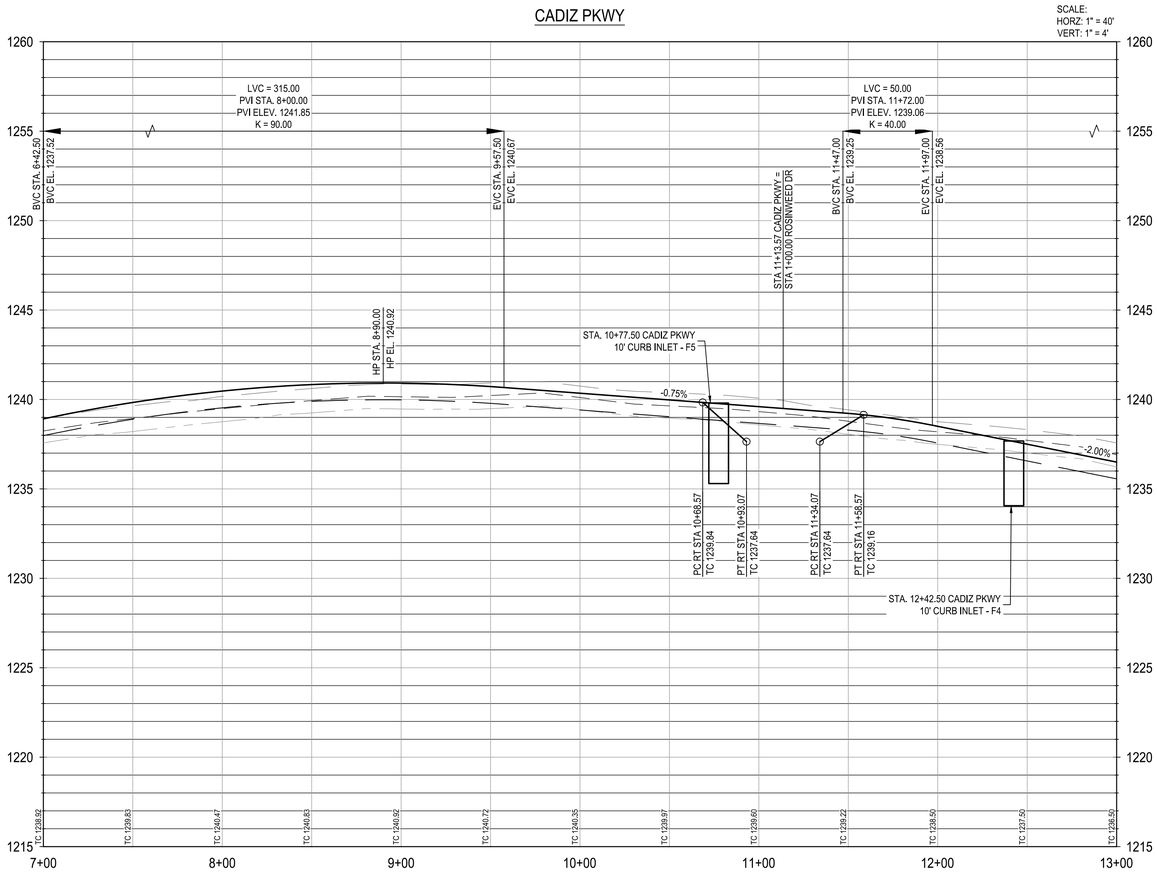

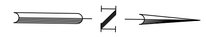

0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- EXISTING MINOR CONTOUR (831)
- EXISTING MAJOR CONTOUR (831)
- PROPOSED MINOR CONTOUR (681)
- PROPOSED MAJOR CONTOUR (686)
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
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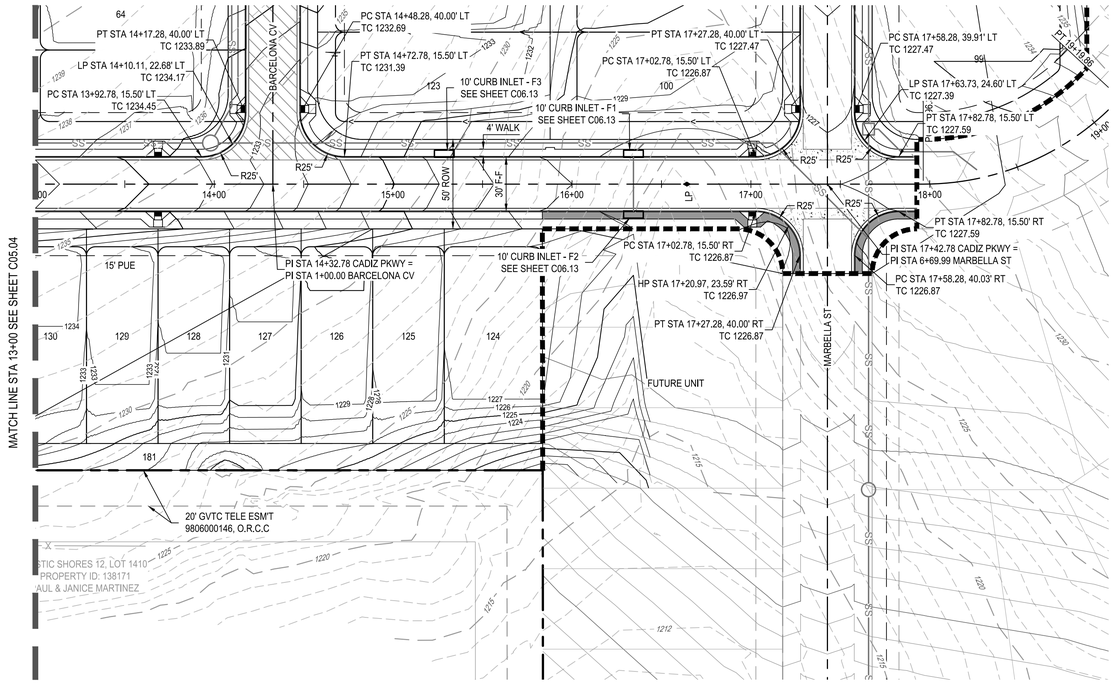
G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.03 - CADIZ PARKWAY PLAN AND PROFILE.dwg Layout: C05.04 CADIZ PKWY PLAN AND PROFILE STA 7+00 TO 13+00 Plotted: 6/17/2025 2:01:15 PM By: Mhernandez





0 20' 40' 80'

SCALE: 1" = 40'

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- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

NOTES:

1. CONTRACTOR TO SEE DETAIL SHEET FOR TYPICAL ROAD CROSS-SECTIONS.
2. CONTRACTOR SHALL CLEAR AND GRUB THE ENTIRE STREET RIGHT OF WAY WITH THE EXCEPTION OF TREES TO REMAIN AND COORDINATE WITH OWNER AND ENGINEER TO SELECT CLEAR P.U.E. WHERE APPLICABLE FOR DRY UTILITY INSTALLATION.
3. CONTRACTOR TO GRADE OR REGRADE ALL AREAS WITHIN ROAD ROW INCLUDING DITCHES FOR POSITIVE DRAINAGE.
4. CONTRACTOR SHALL GRADE TO DRAIN AREAS UPSTREAM AND DOWNSTREAM OF ALL PROPOSED CHANNELS.
5. CONTRACTOR TO COORDINATE WITH DEVELOPER REGARDING TREE WELLS TO ENSURE TREES TO REMAIN ARE SAVED. CONTRACTOR TO REFERENCE LANDSCAPE PLANS FOR TREE WELL FINISHES.
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7. ALL TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL STRIPING TO BE THERMOPLASTIC.
8. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
9. SIDEWALKS ADJACENT TO SINGLE FAMILY LOTS ARE TO BE CONSTRUCTED CONCURRENTLY WITH EACH SINGLE FAMILY HOUSE BY THE HOME BUILDER.

TRENCH EXCAVATION SAFETY PROTECTION

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

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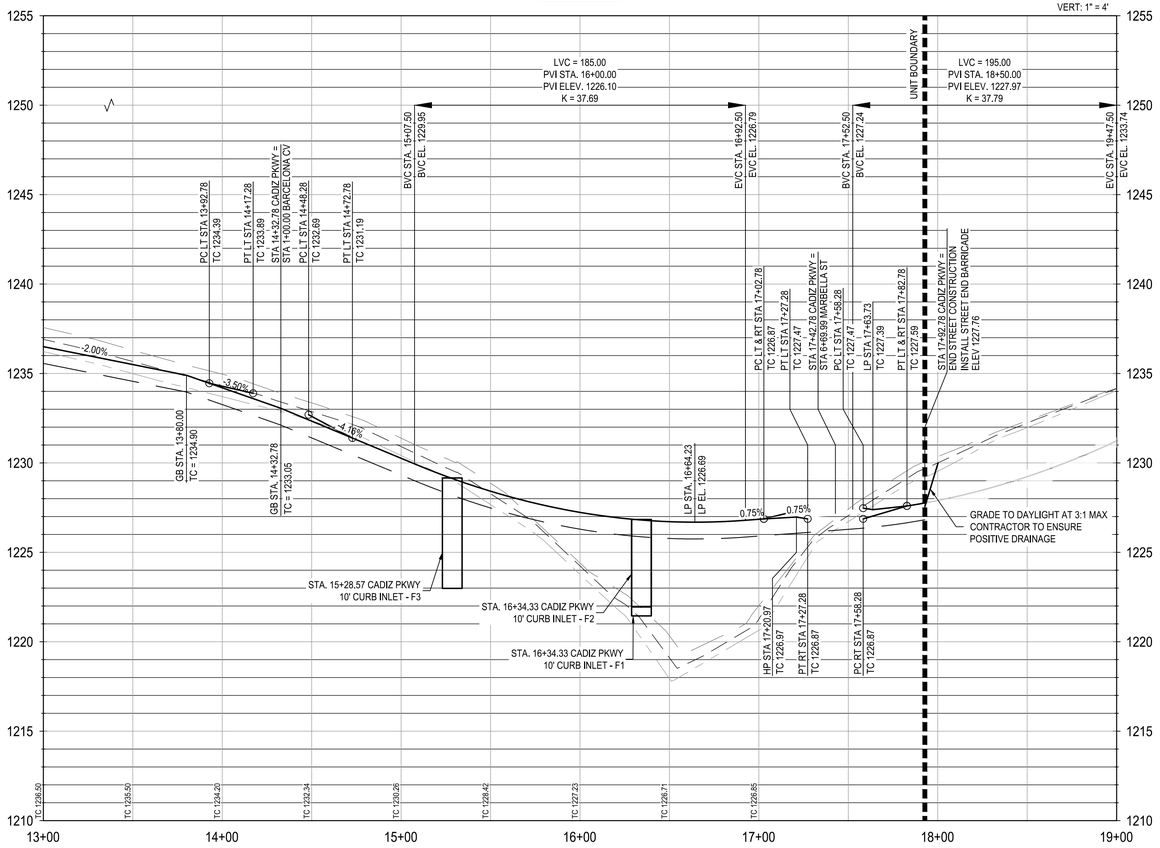
CADIZ PKWY

SCALE:
HORZ: 1" = 40'
VERT: 1" = 4'



NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

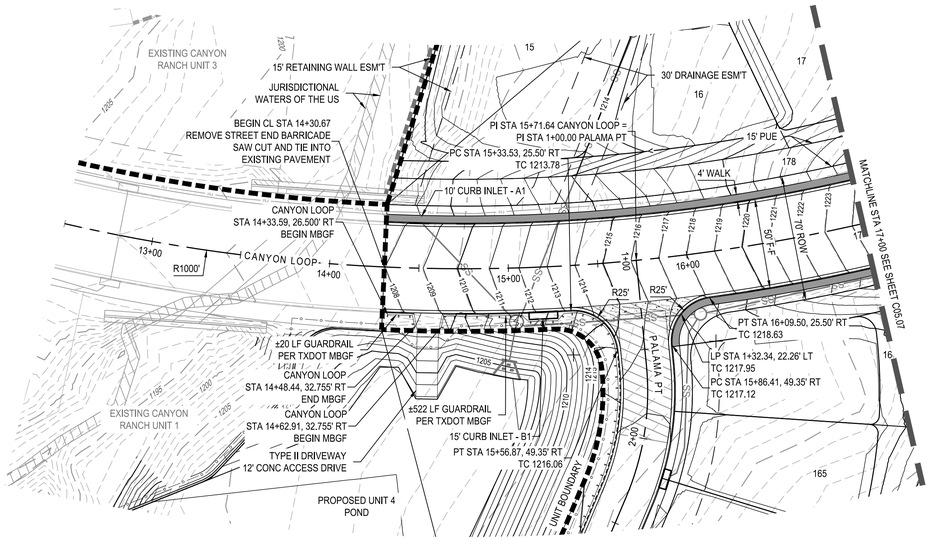
CANYON RANCH UNIT 4

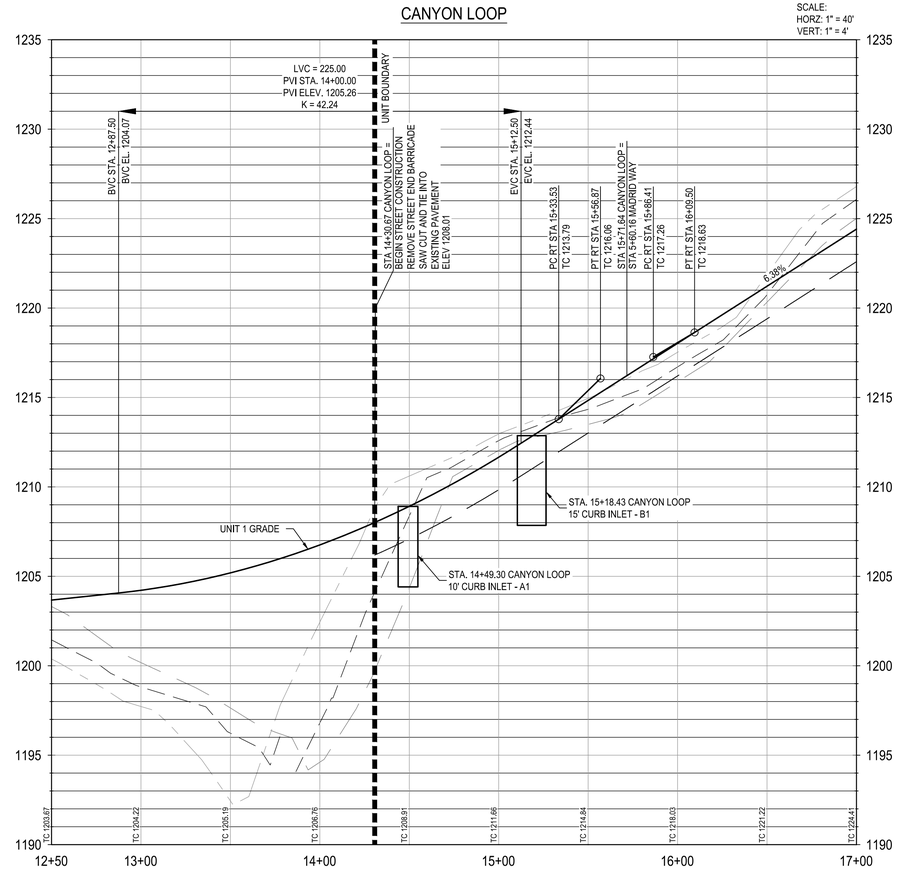
CADIZ PKWY PLAN AND PROFILE
STA 13+00 TO 19+00

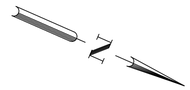
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.05

G:\TXCO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.03 - CADIZ PARKWAY PLAN AND PROFILE.dwg Layout: C05.05 CADIZ PKWY PLAN AND PROFILE STA 13+00 TO 19+00 Plotted: 6/17/2025 2:01:45 PM By: Mhernandez







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

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NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CANYON LOOP PLAN AND PROFILE
STA 12+50 TO 17+00

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.06

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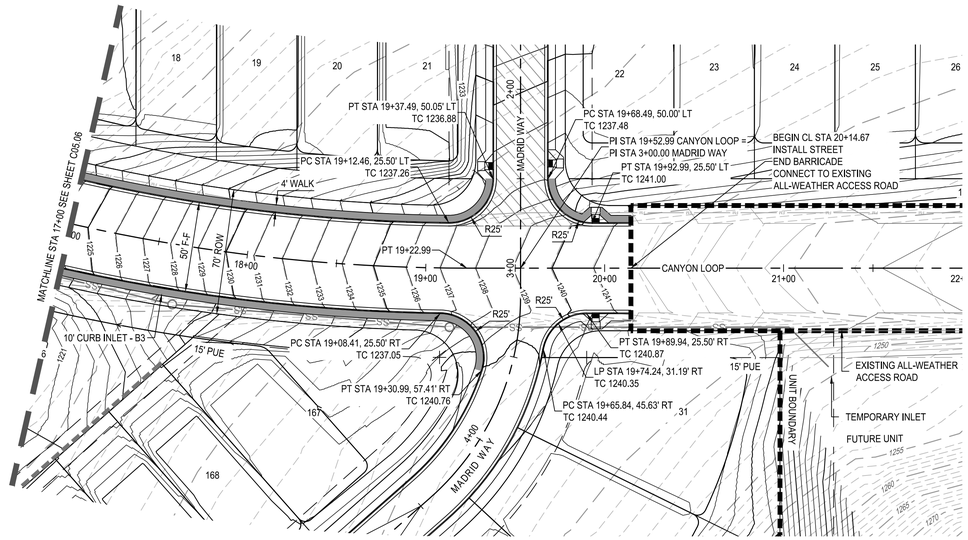

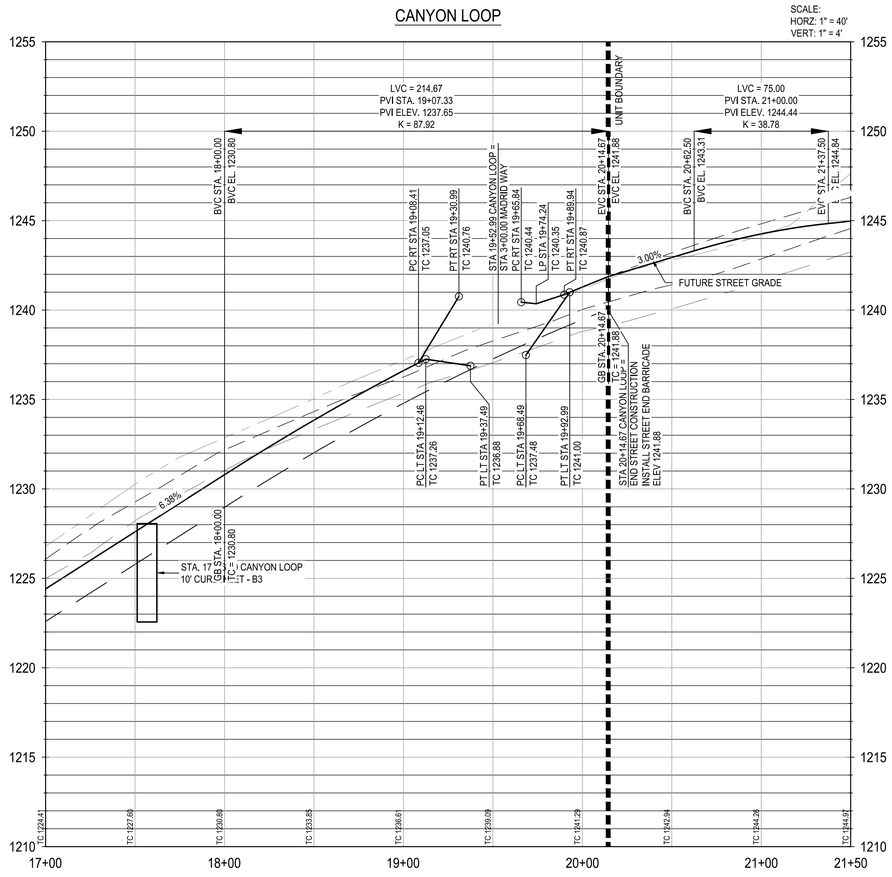

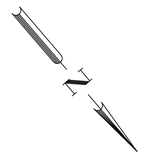

0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
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- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
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- TC — TOP OF CURB ELEVATION
- GB — GRADE BREAK
- SS — PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

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NOT FOR CONSTRUCTION

							APR
							DATE
							DESCRIPTION
							REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CANYON LOOP PLAN AND PROFILE
STA 17+00 TO 21+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.07

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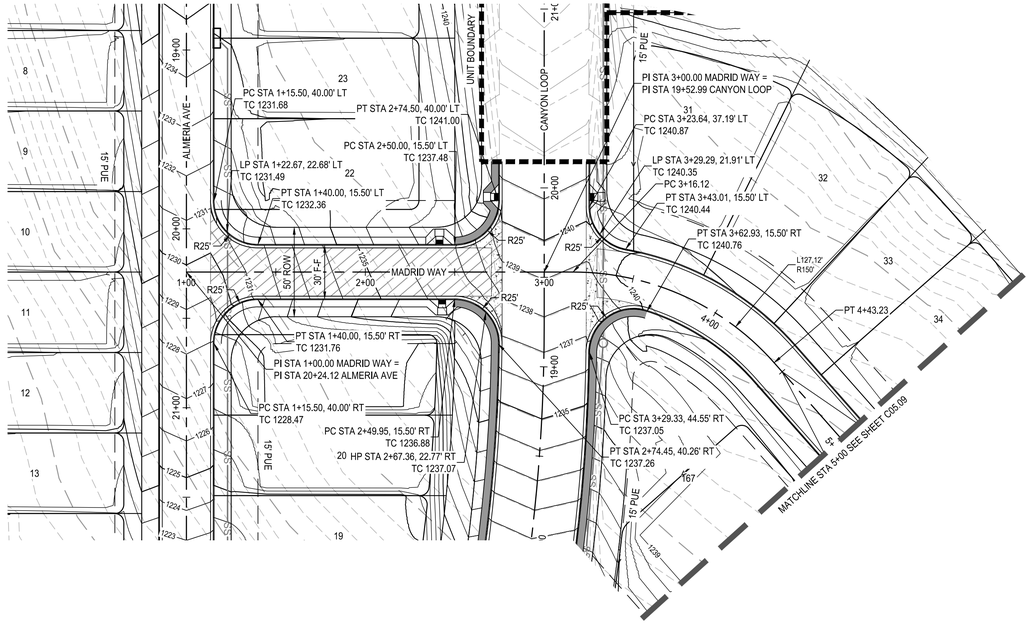

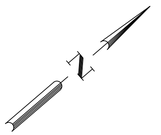

0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- EXISTING MINOR CONTOUR (831)
- EXISTING MAJOR CONTOUR (831)
- PROPOSED MINOR CONTOUR (681)
- PROPOSED MAJOR CONTOUR (686)
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
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- GB — GRADE BREAK
- SS — PROPOSED STORM LINE WITH MANHOLE
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- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
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- EXISTING GROUND @ CENTERLINE
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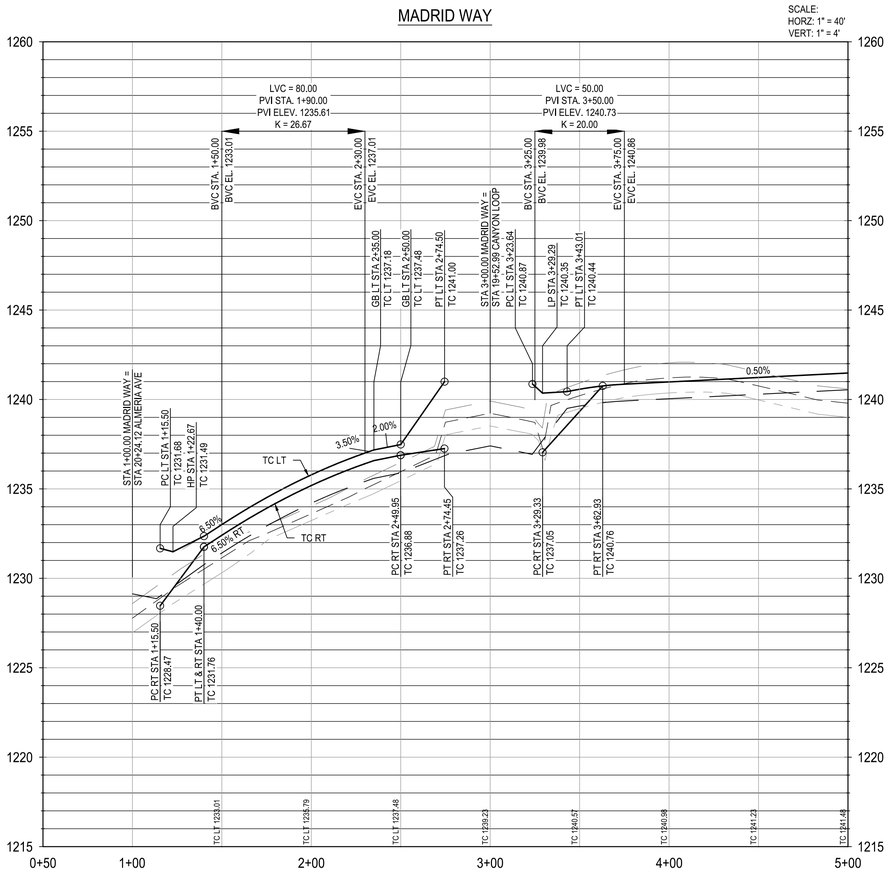

						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
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TBPE Registration No. F-1046

NOT FOR CONSTRUCTION

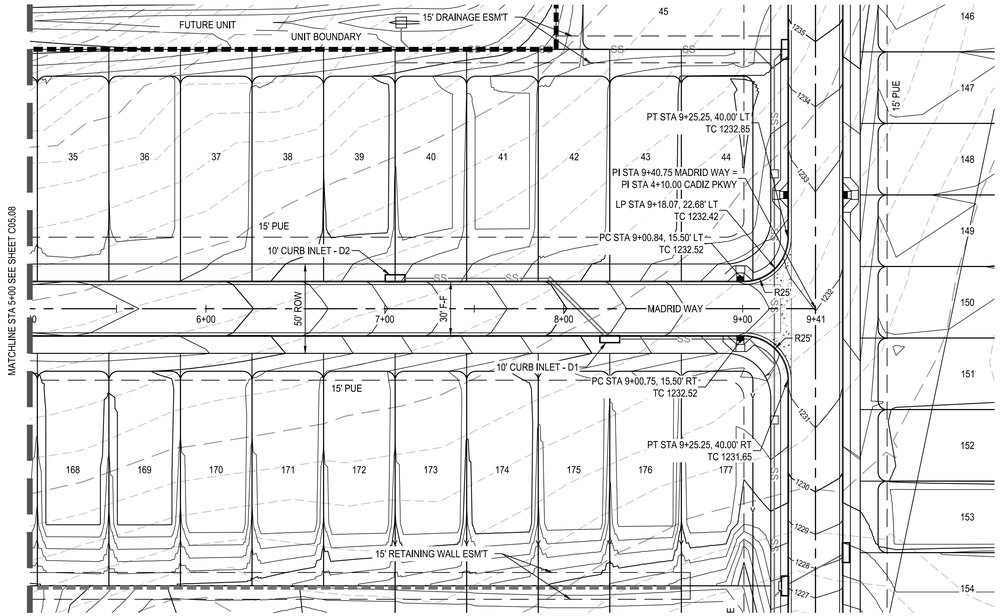
CANYON RANCH UNIT 4

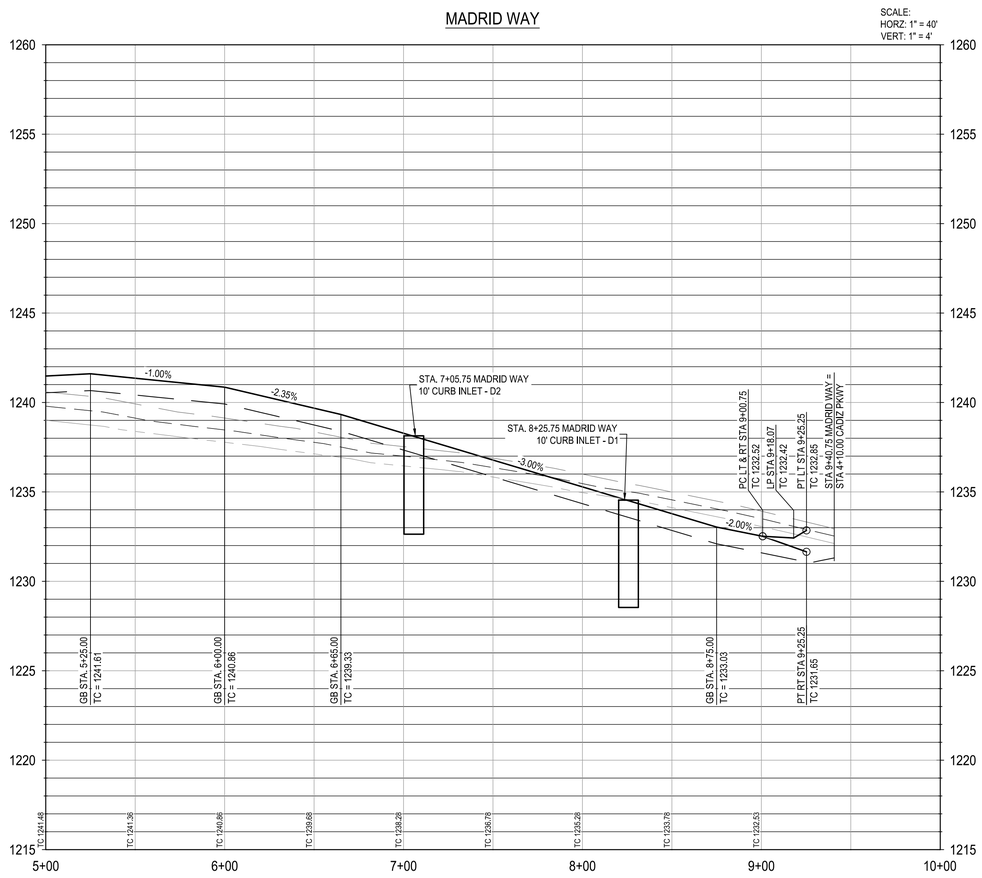
MADRID WAY PLAN AND PROFILE STA 0+50 TO 5+00

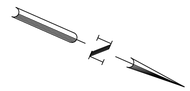
STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.08

G:\TX\CP\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.08 - MADRID WAY PLAN AND PROFILE.dwg Layout: C05.08 MADRID WAY PLAN AND PROFILE STA 0+50 TO 5+00 Plotted: 6/17/2025 2:06:26 PM By: Mvelasquez







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

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- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
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5. CONTRACTOR TO COORDINATE WITH DEVELOPER REGARDING TREE WELLS TO ENSURE TREES TO REMAIN ARE SAVED. CONTRACTOR TO REFERENCE LANDSCAPE PLANS FOR TREE WELL FINISHES.
6. CONTRACTOR SHALL HYDROMULCH OR WOODMULCH ALL DISTURBED AREAS, INCLUDING RIGHT-OF-WAY, STEEP SLOPES, DRAINAGE DITCHES WHERE SOIL SUBGRADE IS ENCOUNTERED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SUFFICIENT WATERING IN HYDROMULCH AREAS TO ESTABLISH VEGETATION.
7. ALL TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL STRIPING TO BE THERMOPLASTIC.
8. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
9. SIDEWALKS ADJACENT TO SINGLE FAMILY LOTS ARE TO BE CONSTRUCTED CONCURRENTLY WITH EACH SINGLE FAMILY HOUSE BY THE HOME BUILDER.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOTE:
CONTRACTOR SHALL ENSURE THAT PROPOSED A.D.A. RAMPS AND ACCESSIBLE ROUTES ALONG ROAD CROSSING COMPLY WITH SPECIFICATIONS FOR BOTH RUNNING SLOPE AND CROSS SLOPE. CONTRACTOR SHALL PROVIDE 5'X5' PAD EVERY 200' FOR ADA TURNAROUND REQUIREMENTS.

NOT FOR CONSTRUCTION

						APR
						DATE
						DESCRIPTION
						REV
DESIGNED BY: ACR						
REVIEWED BY: SSM						
DRAWN BY: ACR						

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

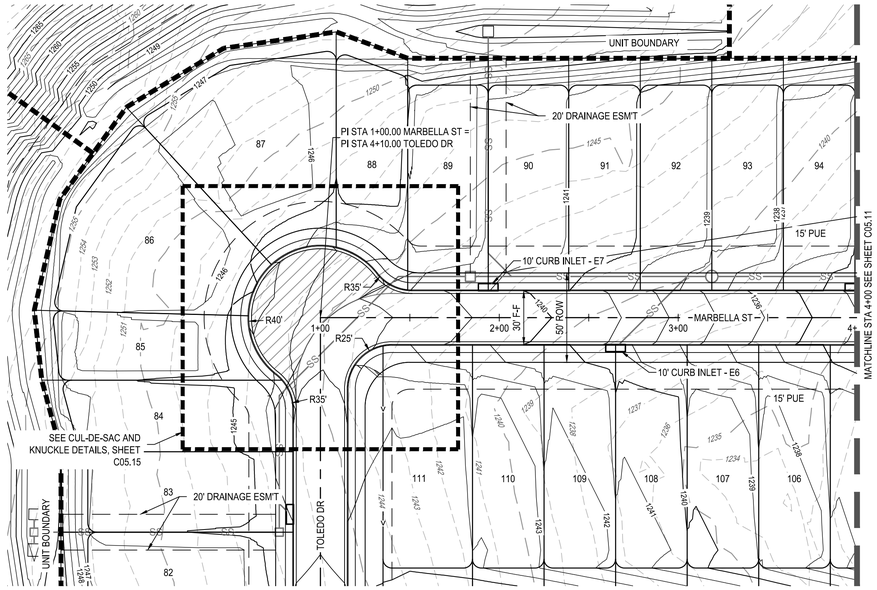
CANYON RANCH UNIT 4

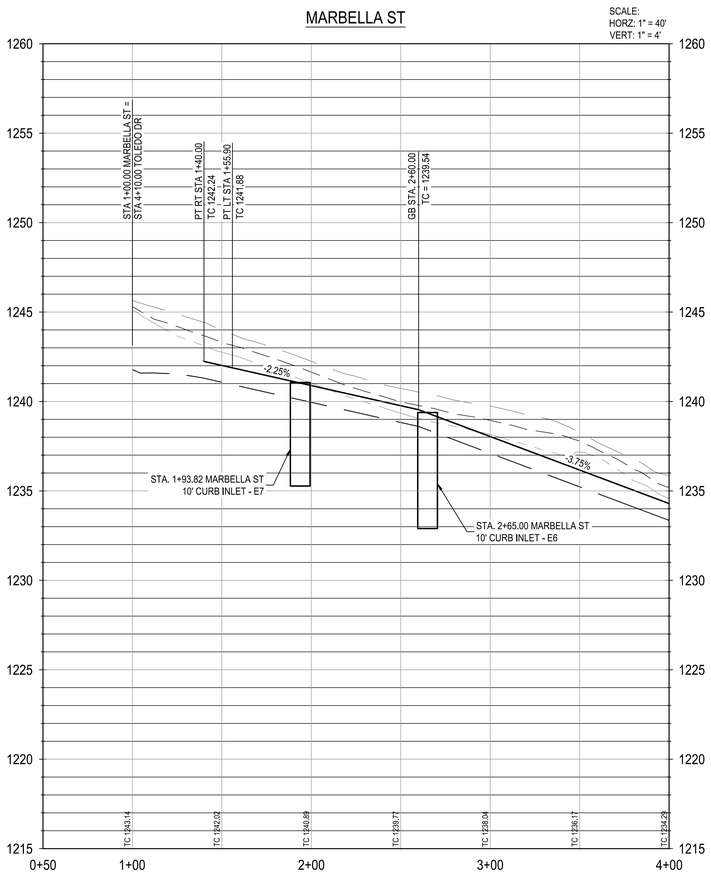
MADRID WAY PLAN AND PROFILE STA 5+00 TO END

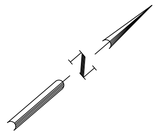
STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.09

G:\TX\CP\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.08 - MADRID WAY PLAN AND PROFILE.dwg Layout: C05.09 MADRID WAY PLAN AND PROFILE STA 5+00 TO END Plotted: 6/17/2025 2:07:05 PM By: Mvelasquez







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- EXISTING MINOR CONTOUR (831)
- EXISTING MAJOR CONTOUR (831)
- PROPOSED MINOR CONTOUR (681)
- PROPOSED MAJOR CONTOUR (686)
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP — LOW POINT/HIGH POINT
- TC — TOP OF CURB ELEVATION
- GB — GRADE BREAK
- SS — PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

NOTES:

1. CONTRACTOR TO SEE DETAIL SHEET FOR TYPICAL ROAD CROSS-SECTIONS.
2. CONTRACTOR SHALL CLEAR AND GRUB THE ENTIRE STREET RIGHT OF WAY WITH THE EXCEPTION OF TREES TO REMAIN AND COORDINATE WITH OWNER AND ENGINEER TO SELECT CLEAR P.U.E. WHERE APPLICABLE FOR DRY UTILITY INSTALLATION.
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NOT FOR CONSTRUCTION

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							DATE
							DESCRIPTION
							REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

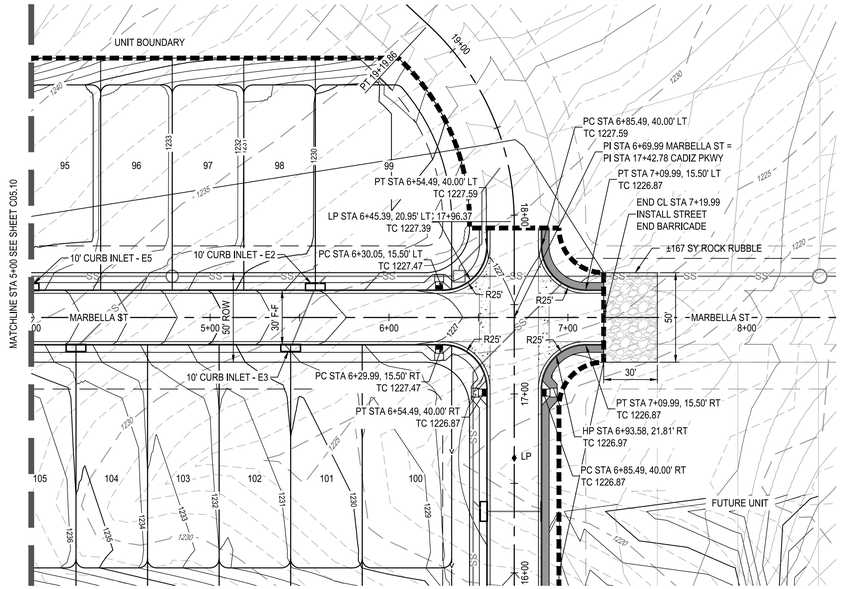
CANYON RANCH UNIT 4

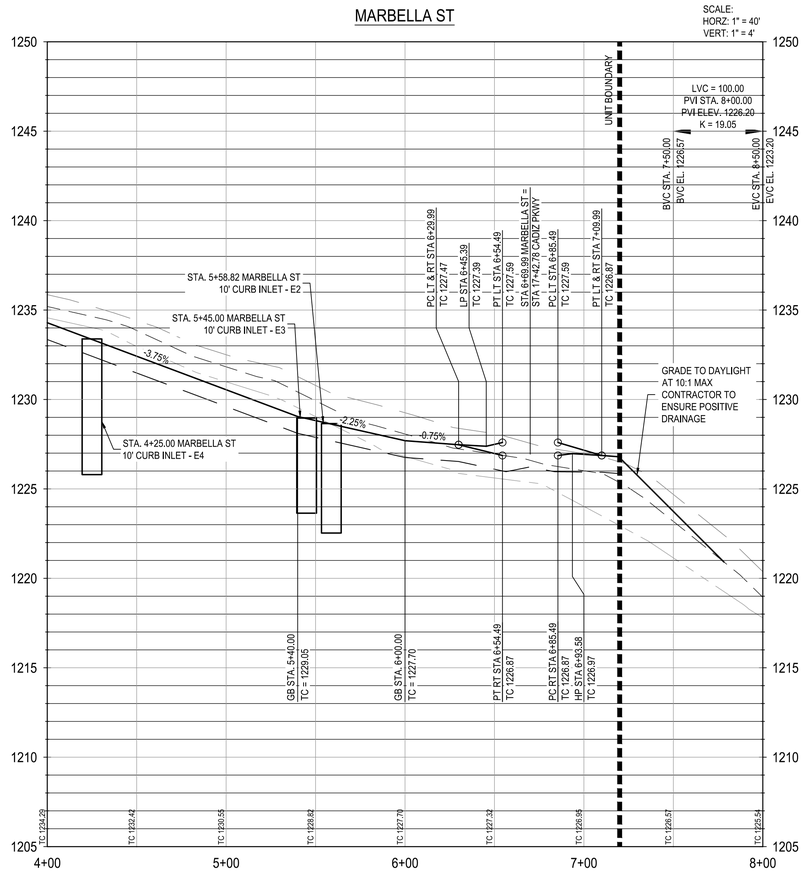
MARBELLA ST PLAN AND PROFILE
STA 0+50 TO 4+00

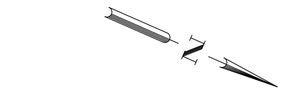
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.10

G:\TXCO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.10 - MARBELLA STREET PLAN AND PROFILE.dwg Layout: C05.10 MARBELLA ST PLAN AND PROFILE STA 0+50 TO 4+00 Plotted: 6/17/2025 2:09:09 PM By: Mvelasquez







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

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NOT FOR CONSTRUCTION

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

MARBELLA ST PLAN AND PROFILE
STA 4+00 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.11

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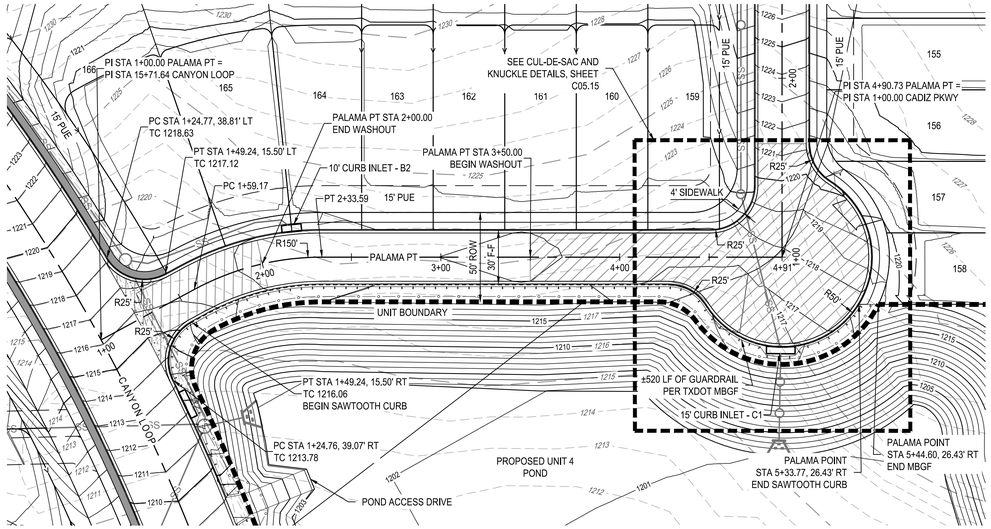

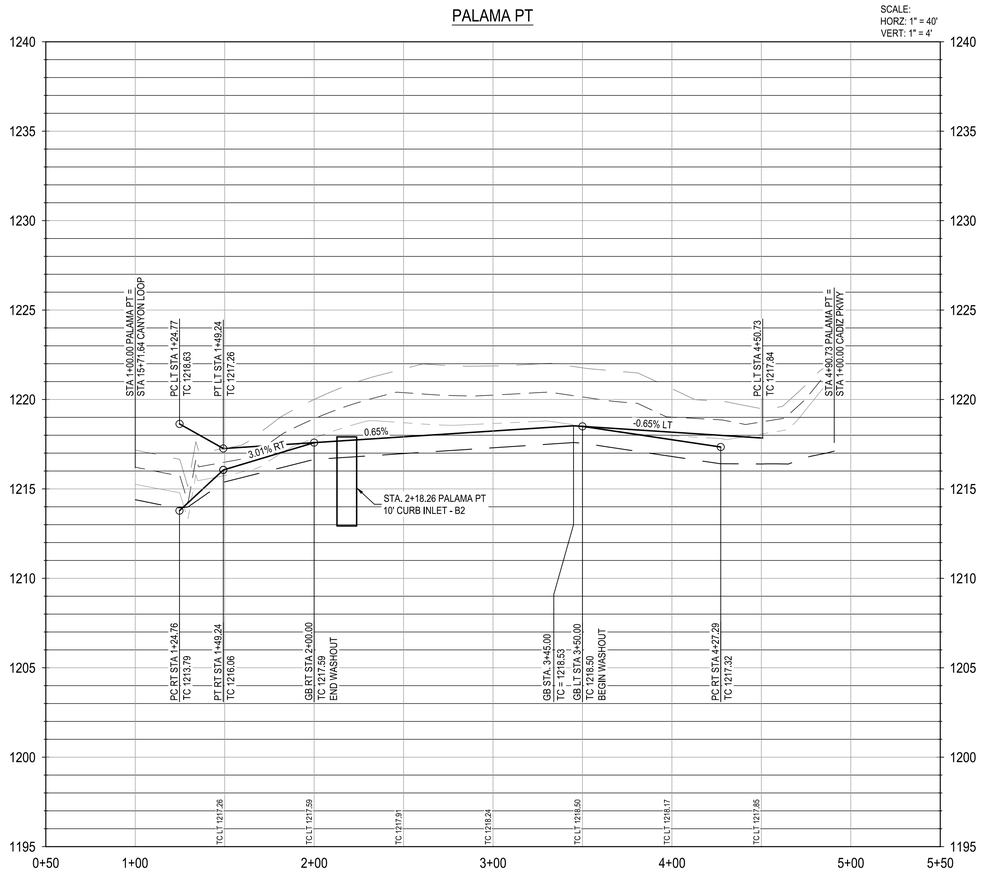

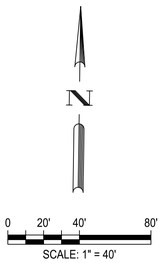

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
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NOTES:

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NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

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San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

PALAMA PT PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.12

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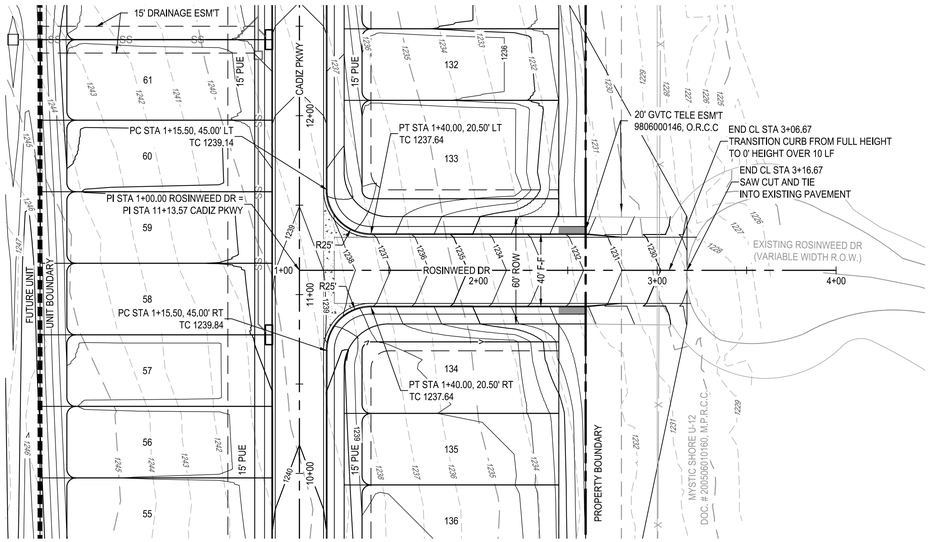

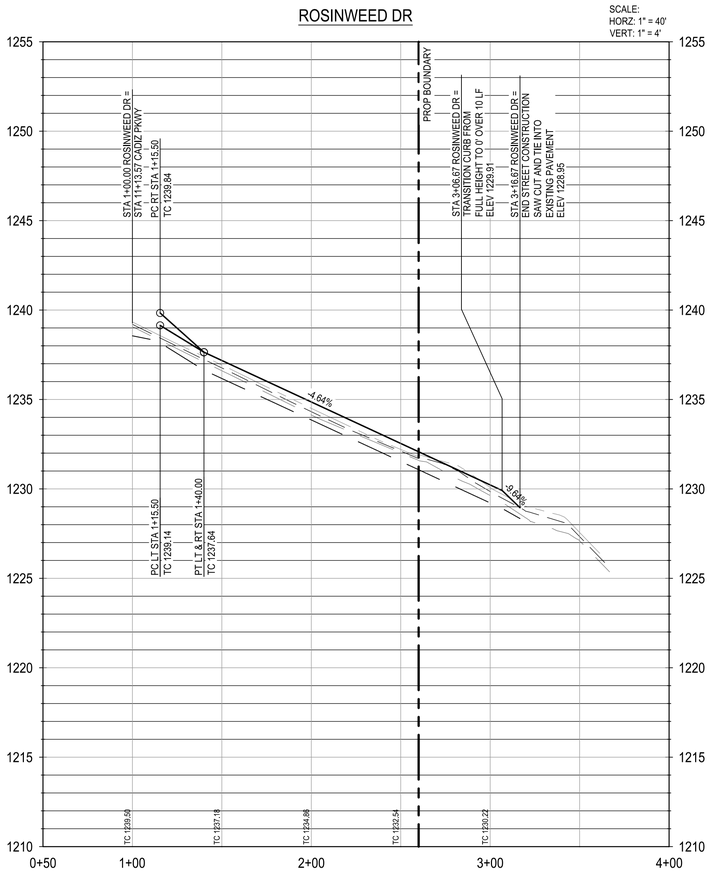

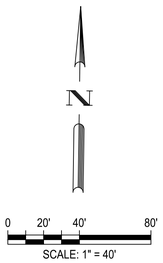

LEGEND

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- 831 EXISTING MINOR CONTOUR
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- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

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9. SIDEWALKS ADJACENT TO SINGLE FAMILY LOTS ARE TO BE CONSTRUCTED CONCURRENTLY WITH EACH SINGLE FAMILY HOUSE BY THE HOME BUILDER.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOTE:
CONTRACTOR SHALL ENSURE THAT PROPOSED A.D.A. RAMPS AND ACCESSIBLE ROUTES ALONG ROAD CROSSING COMPLY WITH SPECIFICATIONS FOR BOTH RUNNING SLOPE AND CROSS SLOPE. CONTRACTOR SHALL PROVIDE 5'X5' PAD EVERY 200' FOR ADA TURNAROUND REQUIREMENTS.

	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	ACR
REVIEWED BY:	SSM
DRAWN BY:	ACR

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

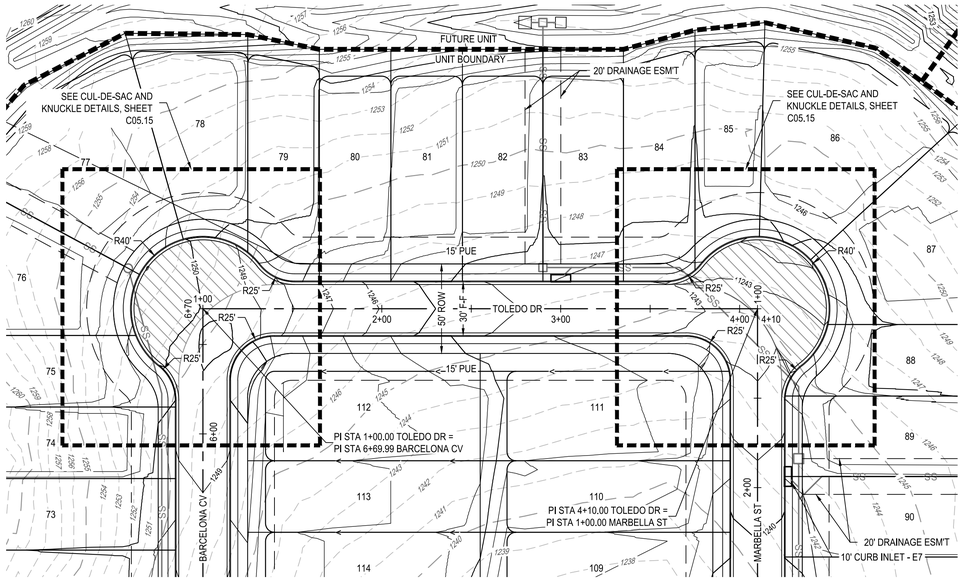
ROSINWEED DR PLAN AND PROFILE

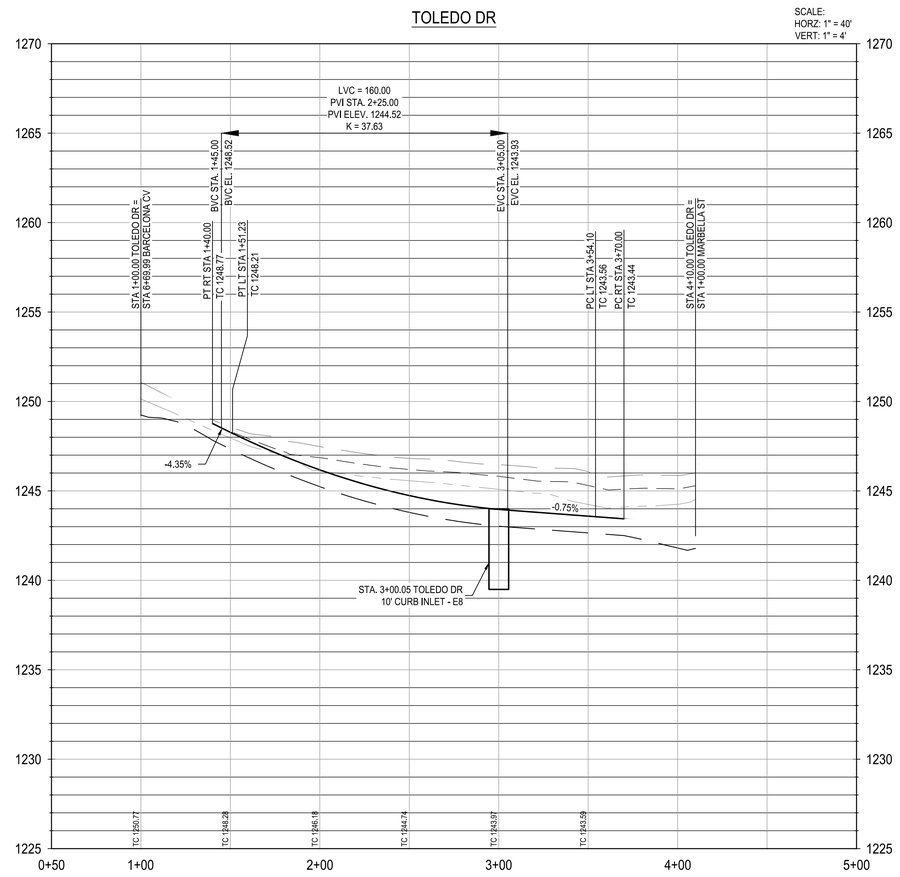
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C05.13

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.13 - ROSINWEED DRIVE PLAN AND PROFILE.dwg Layout: C05.13 ROSINWEED DR PLAN AND PROFILE Plotted: 6/17/2025 2:14:00 PM By: Arath







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION
- GB GRADE BREAK
- SS PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- JURISDICTIONAL WATERS OF THE US

PROFILE LEGEND

- PROPOSED TOP OF CURB LT AND RT
- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

NOTES:

1. CONTRACTOR TO SEE DETAIL SHEET FOR TYPICAL ROAD CROSS-SECTIONS.
2. CONTRACTOR SHALL CLEAR AND GRUB THE ENTIRE STREET RIGHT OF WAY WITH THE EXCEPTION OF TREES TO REMAIN AND COORDINATE WITH OWNER AND ENGINEER TO SELECT CLEAR P.U.E. WHERE APPLICABLE FOR DRY UTILITY INSTALLATION.
3. CONTRACTOR TO GRADE OR REGRADE ALL AREAS WITHIN ROAD ROW INCLUDING DITCHES FOR POSITIVE DRAINAGE.
4. CONTRACTOR SHALL GRADE TO DRAIN AREAS UPSTREAM AND DOWNSTREAM OF ALL PROPOSED CHANNELS.
5. CONTRACTOR TO COORDINATE WITH DEVELOPER REGARDING TREE WELLS TO ENSURE TREES TO REMAIN ARE SAVED. CONTRACTOR TO REFERENCE LANDSCAPE PLANS FOR TREE WELL FINISHES.
6. CONTRACTOR SHALL HYDROMULCH OR WOODMULCH ALL DISTURBED AREAS, INCLUDING RIGHT-OF-WAY, STEEP SLOPES, DRAINAGE DITCHES WHERE SOIL SUBGRADE IS ENCOUNTERED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SUFFICIENT WATERING IN HYDROMULCH AREAS TO ESTABLISH VEGETATION.
7. ALL TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL STRIPING TO BE THERMOPLASTIC.
8. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
9. SIDEWALKS ADJACENT TO SINGLE FAMILY LOTS ARE TO BE CONSTRUCTED CONCURRENTLY WITH EACH SINGLE FAMILY HOUSE BY THE HOME BUILDER.

TRENCH EXCAVATION SAFETY PROTECTION

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NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
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TEL: 210-581-3600 www.bgetgay.com
TBPE Registration No. F-1046

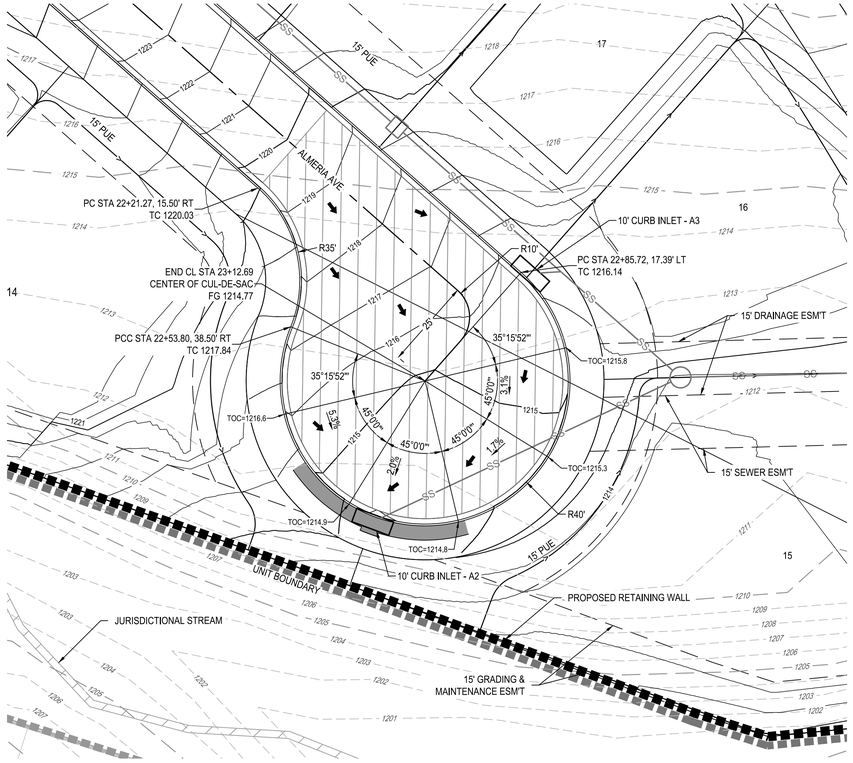
CANYON RANCH UNIT 4

TOLEDO DR PLAN AND PROFILE

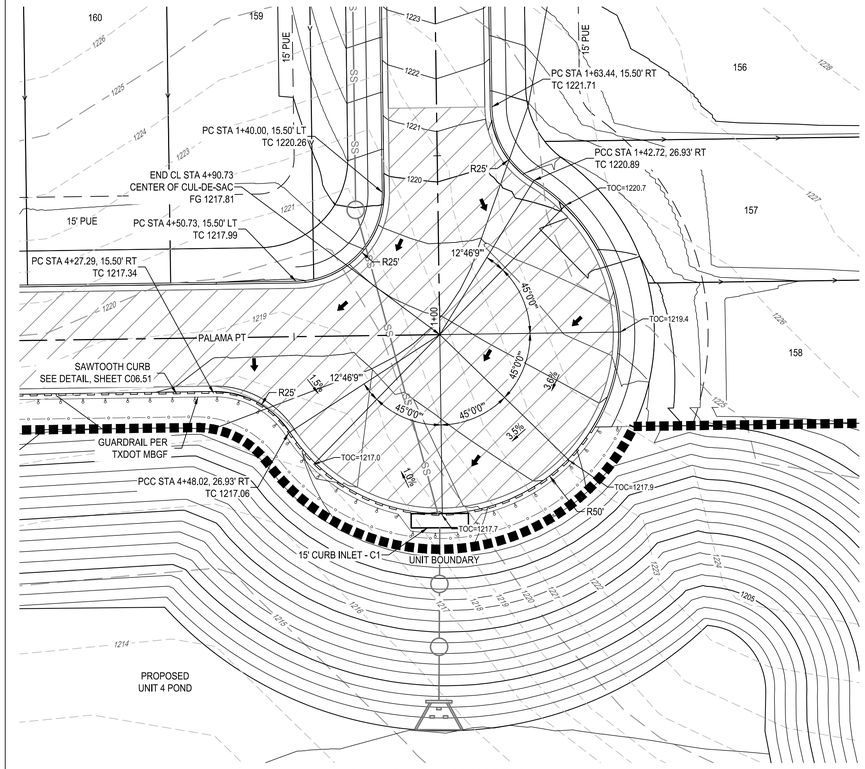
STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.14

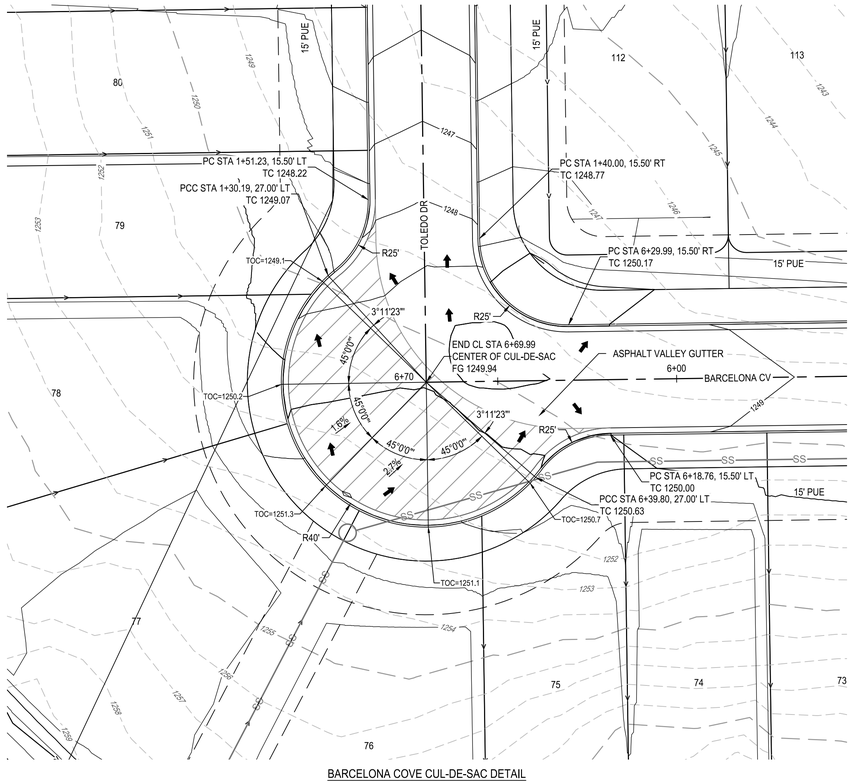
G:\TX\Cl\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.14 - TOLEDO DRIVE PLAN AND PROFILE.dwg Layout: C05.14 TOLEDO DR PLAN AND PROFILE Plotted: 6/17/2025 2:15:54 PM By: Mvelasquez



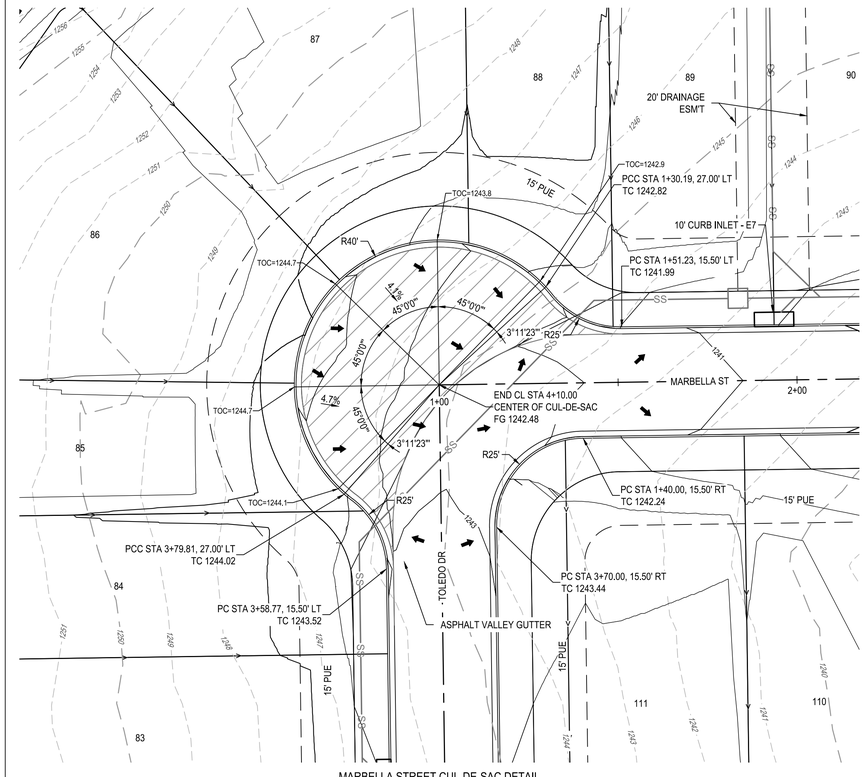
ALMERIA AVENUE CUL-DE-SAC DETAIL



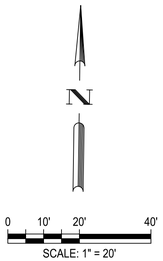
PALAMA POINT CUL-DE-SAC DETAIL



BARCELONA COVE CUL-DE-SAC DETAIL



MARBELLA STREET CUL-DE-SAC DETAIL



LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- PROPOSED EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- ROAD CENTERLINE
- PROPOSED CURB & GUTTER
- WASHOUT STREET SECTION
- CONTRACTOR SIDEWALK
- HOME BUILDER SIDEWALK
- RAMP (SEE SHEET C06.52)
- ASPHALT VALLEY GUTTER
- METAL BEAM GUARD FENCE
- CHAIN LINK FENCE
- LP / HP LOW POINT/HIGH POINT
- TC TOP OF CURB ELEVATION

- PROPOSED SUBGRADE
- EXISTING GROUND @ CENTERLINE
- EXISTING GROUND @ LEFT ROW
- EXISTING GRADE @ RIGHT ROW

NOTES:

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2. CONTRACTOR SHALL CLEAR AND GRUB THE ENTIRE STREET RIGHT OF WAY WITH THE EXCEPTION OF TREES TO REMAIN AND COORDINATE WITH OWNER AND ENGINEER TO SELECT CLEAR P.U.E. WHERE APPLICABLE FOR DRY UTILITY INSTALLATION.
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NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: ACR
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
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San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

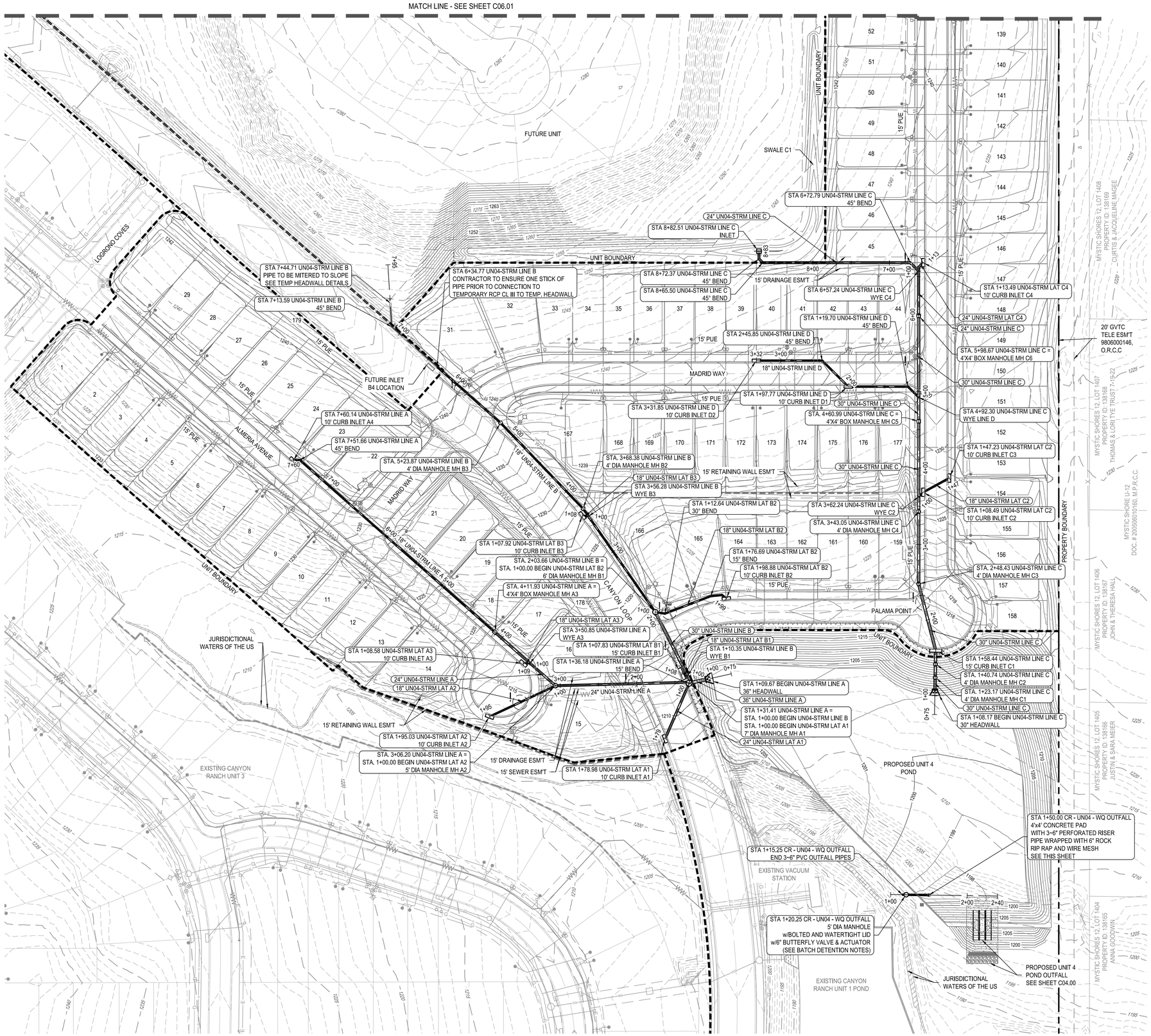
CUL-DE-SAC AND KNUCKLE DETAIL SHEET

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C05.15

G:\TX\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C05.15 - CUL-DE-SAC AND KNUCKLE DETAILS.dwg Layout: C05.15 CUL-DE-SAC AND KNUCKLE DETAIL SHEET Plotted: 6/17/2025 2:17:47 PM By: Mhernandez

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.00 - STORM DRAIN COLLECTION PLAN (SHEET 1 OF 3) Plotted: 6/17/2025 2:19:50 PM By: Mhernandez
Layout: C06.00 STORM DRAIN COLLECTION PLAN.dwg



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

✳ ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

	APR
	DATE
	DESCRIPTION
◁	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

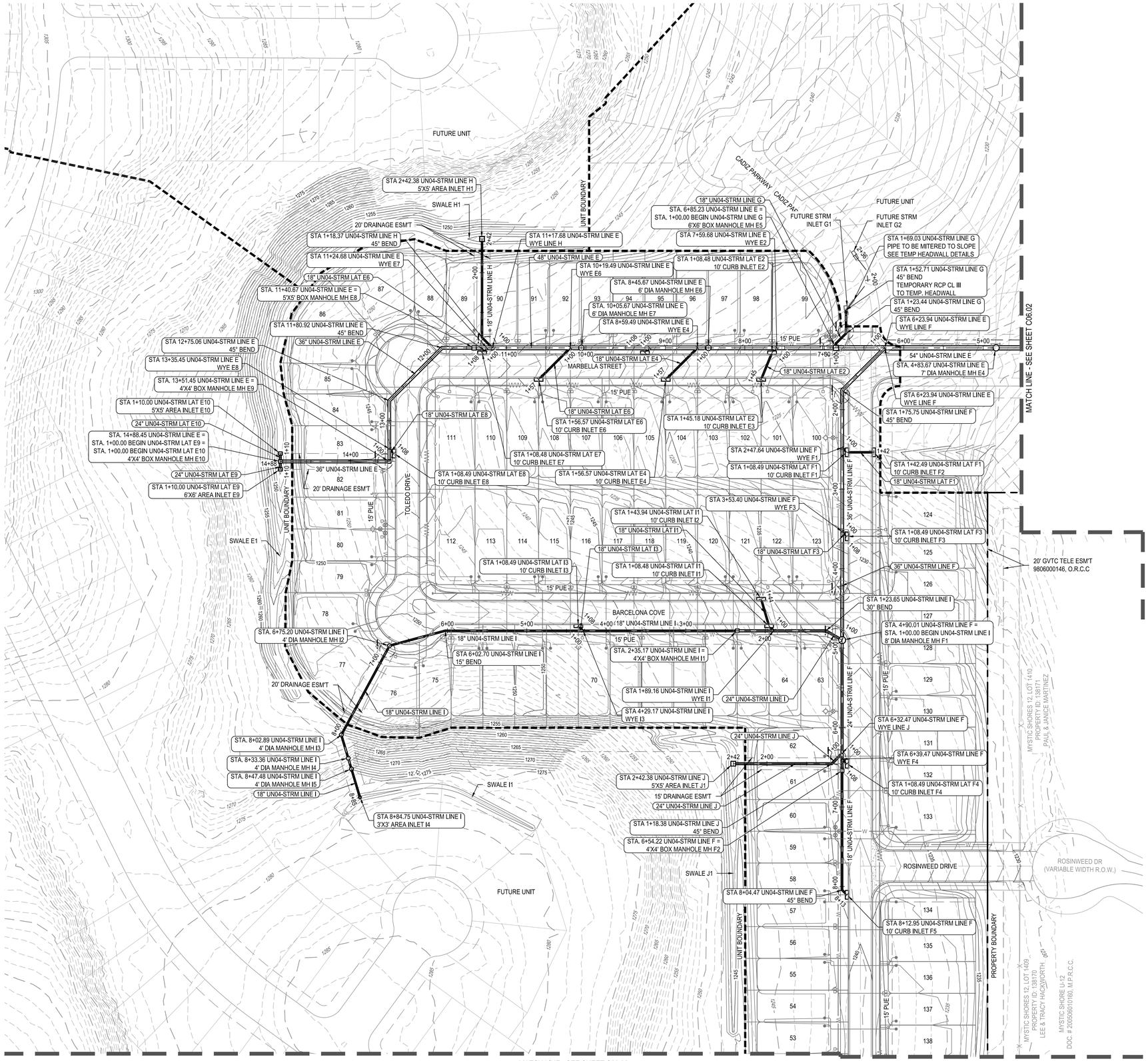
CANYON RANCH UNIT 4

STORM DRAIN COLLECTION PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

06/17/2025

SHEET
C06.00



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
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- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

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NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
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DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

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BGE, INC.
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San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

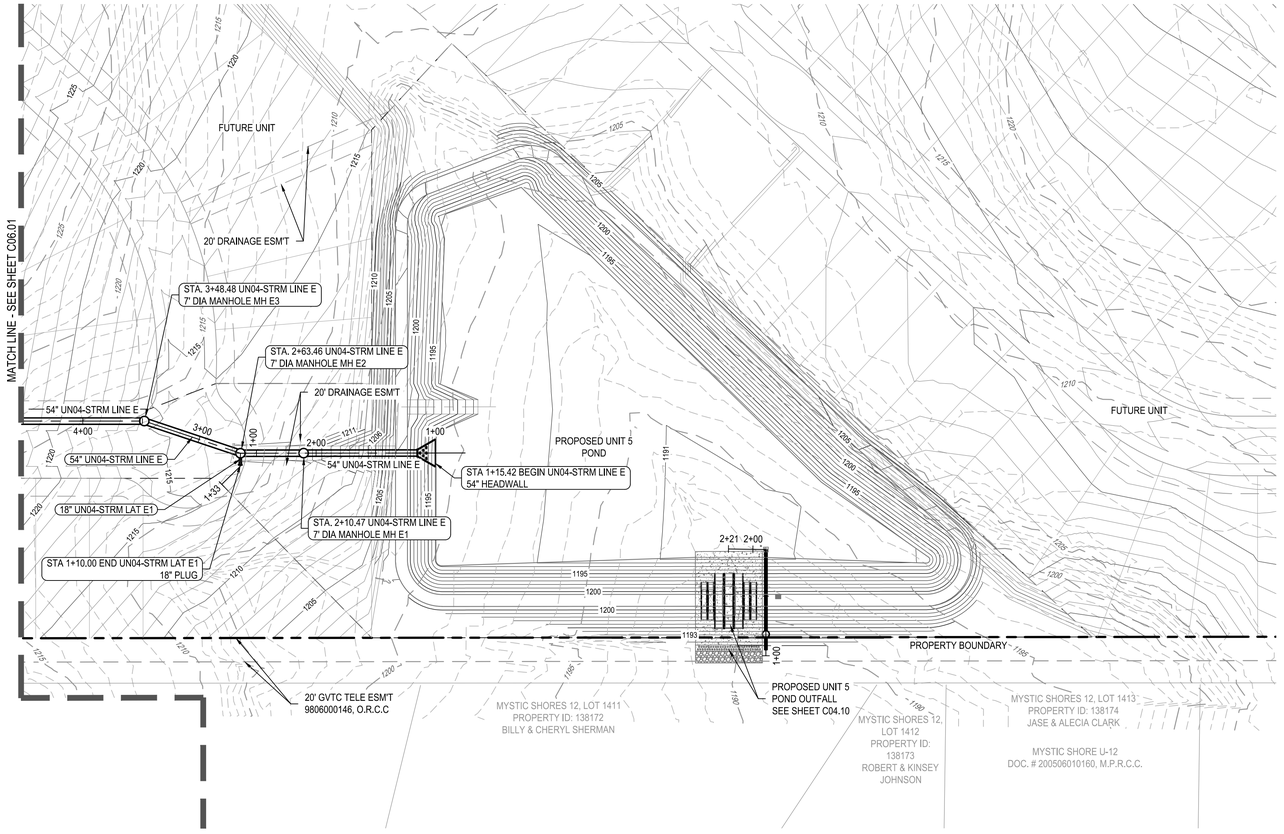
STORM DRAIN COLLECTION PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C06.01

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.00 - STORM DRAIN COLLECTION PLAN.dwg Layout: C06.01 STORM DRAIN COLLECTION PLAN (SHEET 2 OF 3) Plotted: 6/17/2025 2:20:07 PM By: Mhernandez



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
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- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
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- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
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2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

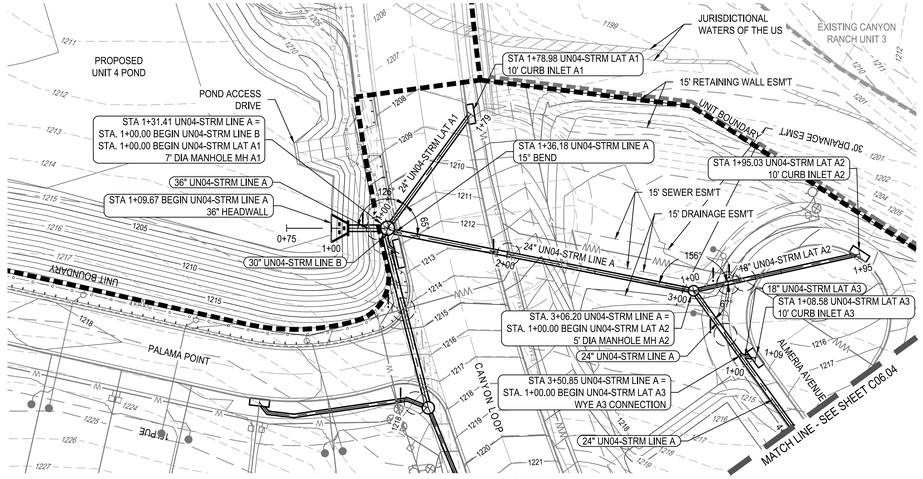
STORM DRAIN COLLECTION PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

06/17/2025

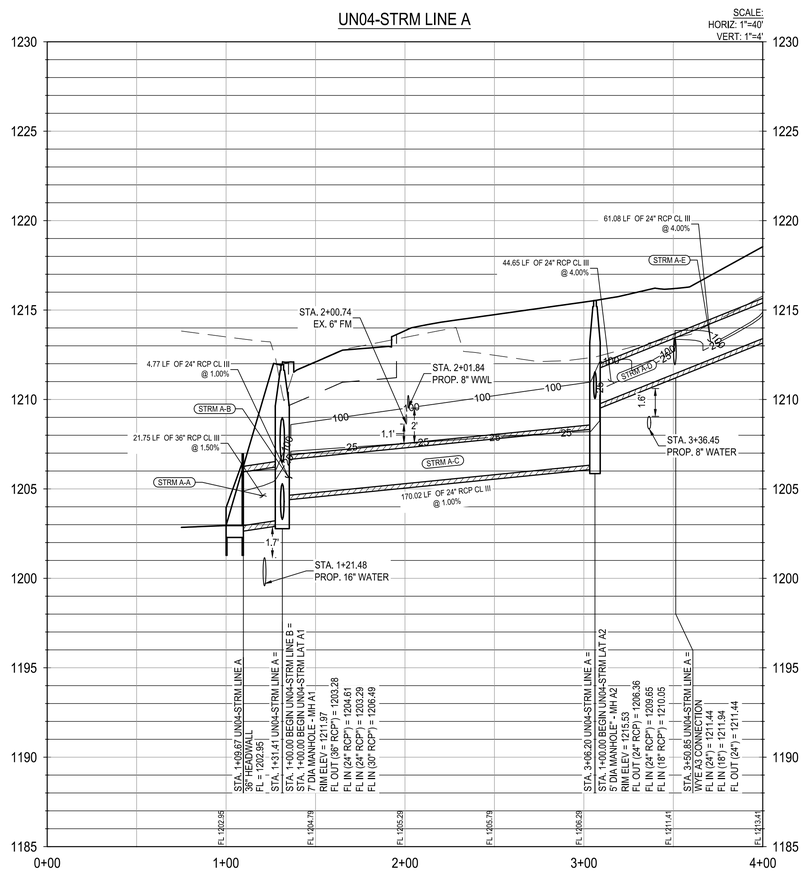
SHEET
C06.02

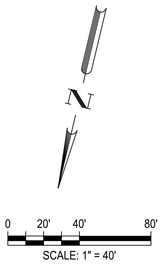
G:\TX\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.00 - STORM DRAIN COLLECTION PLAN.dwg Layout: C06.02 STORM DRAIN COLLECTION PLAN (SHEET 3 OF 3) Plotted: 6/17/2025 2:20:22 PM By: Mhernandez



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM A-A	70.35	12.96	3.00
STRM A-B	26.42	8.41	3.10
STRM A-C	26.76	8.52	3.94
STRM A-D	22.37	14.35	2.45
STRM A-E	9.06	11.99	2.42

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM A-A	48.75	12.03	1.93
STRM A-B	18.44	5.87	2.06
STRM A-C	18.69	8.05	2.45
STRM A-D	15.63	13.07	0.89
STRM A-E	6.33	10.81	1.92





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
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5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

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TRENCH EXCAVATION SAFETY PROTECTION

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NOT FOR CONSTRUCTION

	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE A PLAN AND PROFILE
STA 1+00 TO 4+00

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.03

G:\TX\Cl\Projects\San Antonio Projects\7276-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.03 - STORM DRAIN LINE A PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE A PLAN AND PROFILE STA 1+00 TO 4+00 Plotted: 6/17/2025 2:22:51 PM By: Mhernandez

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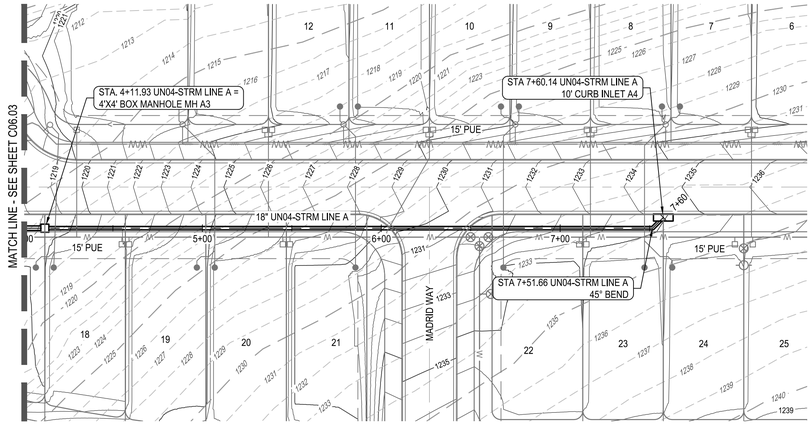
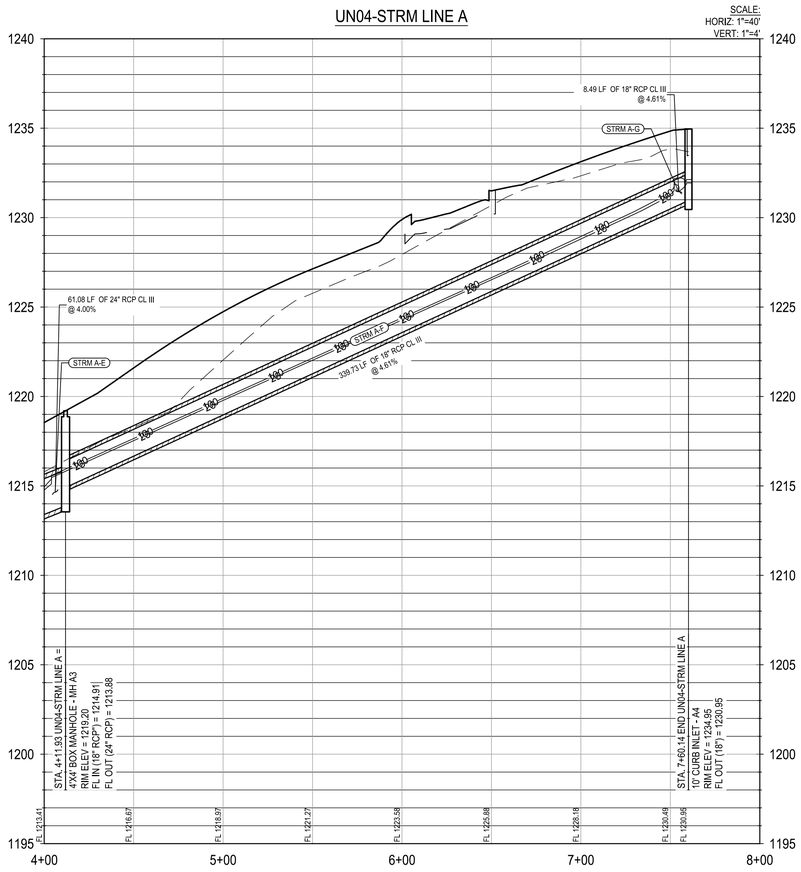
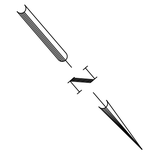


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM A-E	9.06	11.99	2.42
STRM A-F	9.23	11.98	0.67
STRM A-G	9.23	12.11	1.62

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM A-E	6.33	10.81	1.92
STRM A-F	6.45	10.89	0.55
STRM A-G	6.46	11.01	1.31





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
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UTILITY TRENCH COMPACTION

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TRENCH EXCAVATION SAFETY PROTECTION

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NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

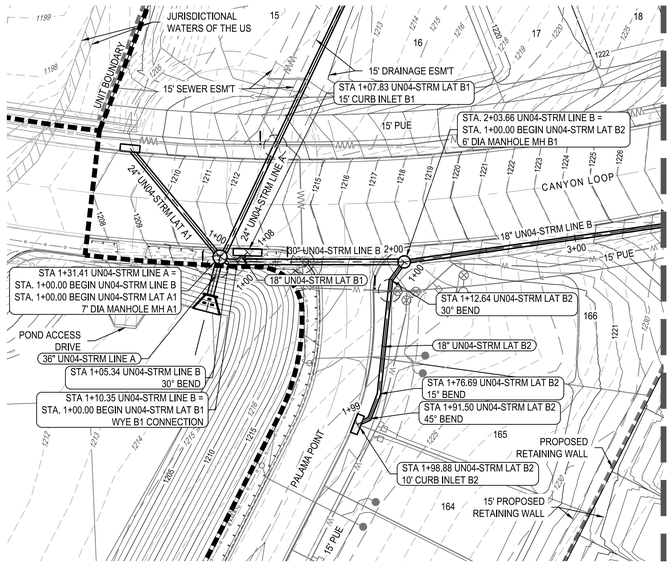
CANYON RANCH UNIT 4

STORM DRAIN LINE A PLAN AND PROFILE
STA 4+00 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

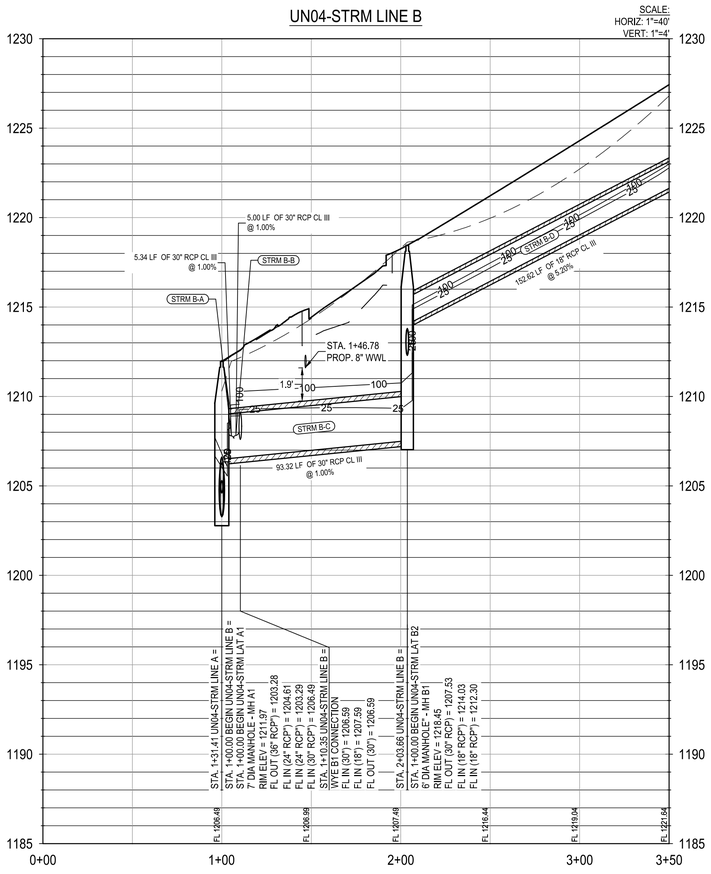
06/17/2025

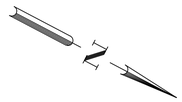
SHEET
C06.04

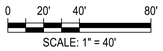


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM B-A	38.37	9.54	2.02
STRM B-B	38.39	7.82	2.98
STRM B-C	29.28	5.97	3.69
STRM B-D	20.94	15.27	1.09

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM B-A	26.61	8.92	1.64
STRM B-B	26.62	8.88	2.36
STRM B-C	20.20	8.32	2.69
STRM B-D	14.33	14.15	0.84







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
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UTILITY TRENCH COMPACTION

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NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

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TBPE Registration No. F-1046

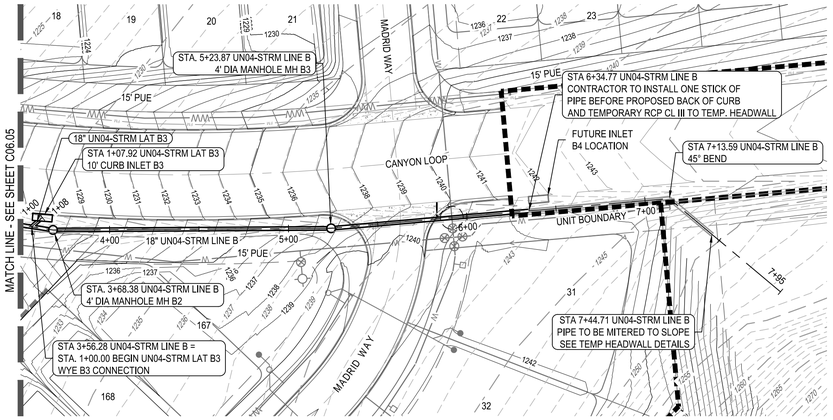
CANYON RANCH UNIT 4

STORM DRAIN LINE B PLAN AND PROFILE
STA 1+00 TO 3+50

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

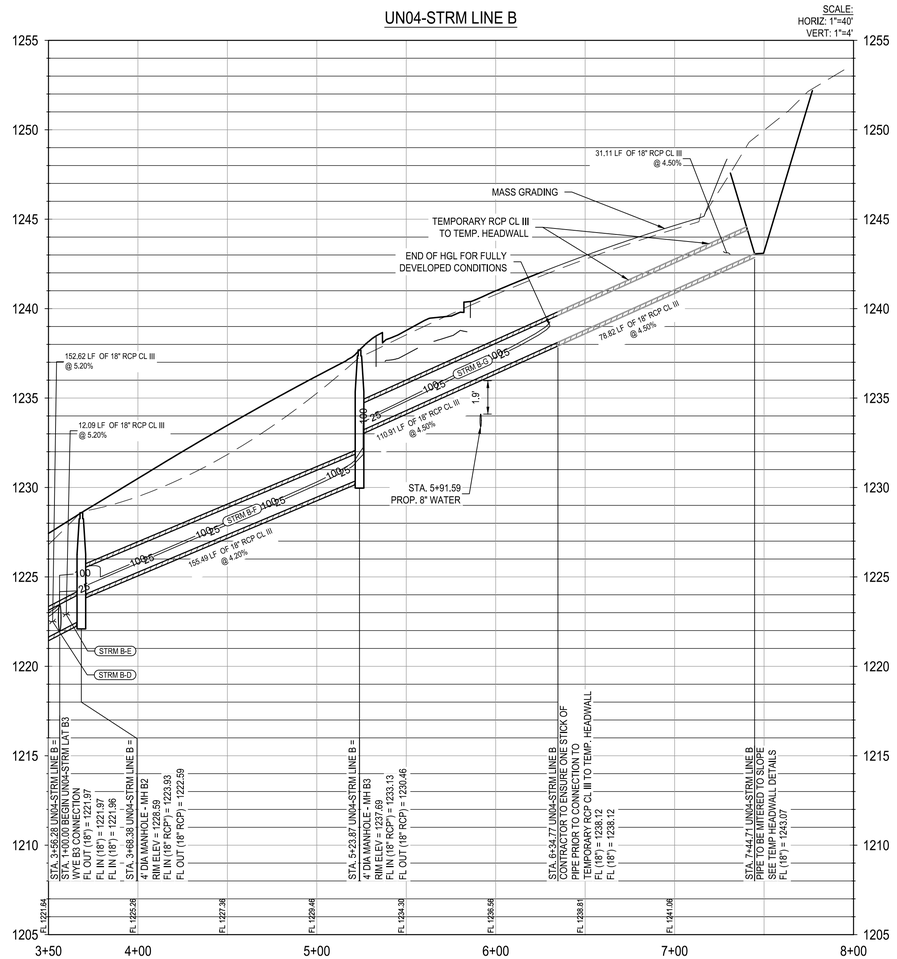
SHEET
C06.05

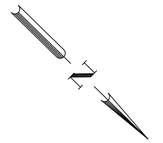
G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.05 - STORM DRAIN LINE B PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE B PLAN AND PROFILE STA 1+00 TO 3+50 Plotted: 6/17/2025 2:25:46 PM By: Mhernandez



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM B-D	20.94	15.27	1.09
STRM B-E	9.12	5.16	3.12
STRM B-F	9.20	11.69	1.66
STRM B-G	9.25	12.20	0.67

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM B-D	14.33	14.15	0.84
STRM B-E	6.15	3.48	2.21
STRM B-F	6.21	10.53	0.55
STRM B-G	6.25	10.98	0.54





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL

ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOT FOR CONSTRUCTION

						APR
						DATE
						DESCRIPTION
△	△	△	△	△	△	REV

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

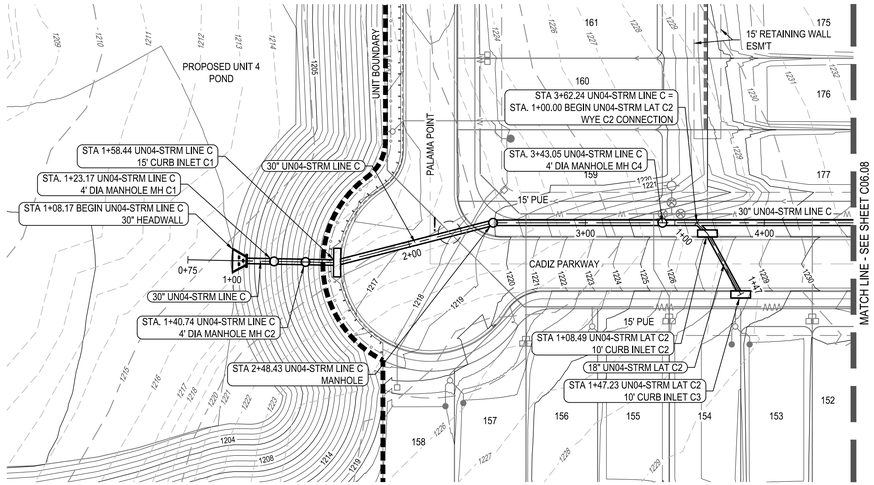
STORM DRAIN LINE B PLAN AND PROFILE
STA 3+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

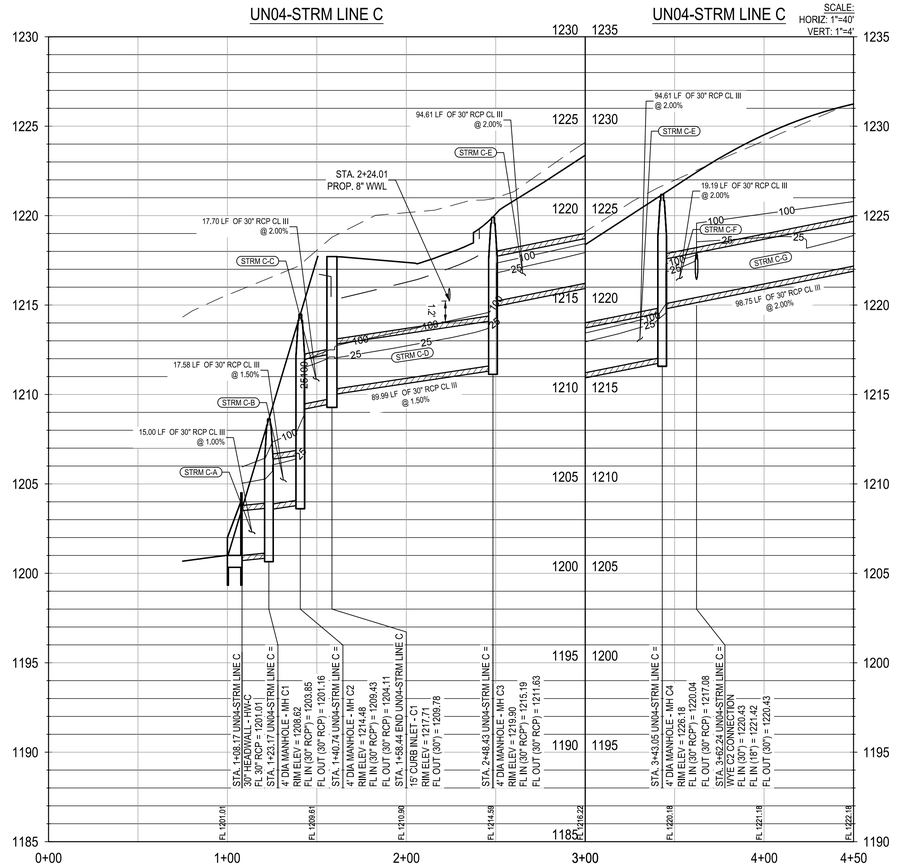
SHEET
C06.06

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.05 - STORM DRAIN LINE B PLAN AND PROFILE STA 3+50 TO END Plotted: 6/17/2025 2:26:17 PM By: Mhernandez
Layout: STORM DRAIN LINE B PLAN AND PROFILE.dwg



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM C-A	74.63	15.20	4.95
STRM C-B	74.69	15.22	3.50
STRM C-C	74.74	15.23	2.45
STRM C-D	59.13	12.05	2.39
STRM C-E	59.40	13.45	2.16
STRM C-F	59.45	13.45	2.27
STRM C-G	47.61	9.70	4.15

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM C-A	51.48	10.49	4.03
STRM C-B	51.53	11.63	2.21
STRM C-C	51.57	13.35	2.08
STRM C-D	40.59	11.39	1.75
STRM C-E	40.78	12.80	1.61
STRM C-F	40.82	12.80	1.81
STRM C-G	32.45	12.15	3.11





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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NOT FOR CONSTRUCTION

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						DATE
						DESCRIPTION
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DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE

BGE, INC.
7330 San Pedro, Suite 202
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TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

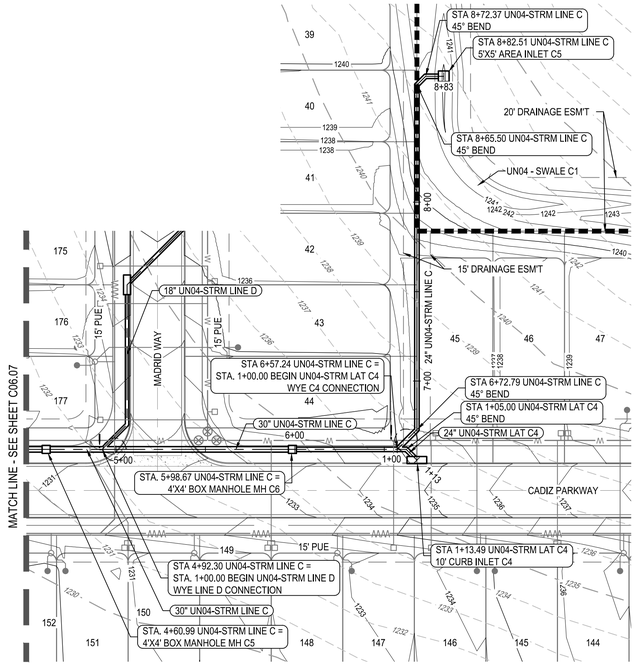
CANYON RANCH UNIT 4

STORM DRAIN LINE C PLAN AND PROFILE
STA 1+00 TO 4+50

STATE OF TEXAS
STACY MULHOLLAND
146417
06/17/2025

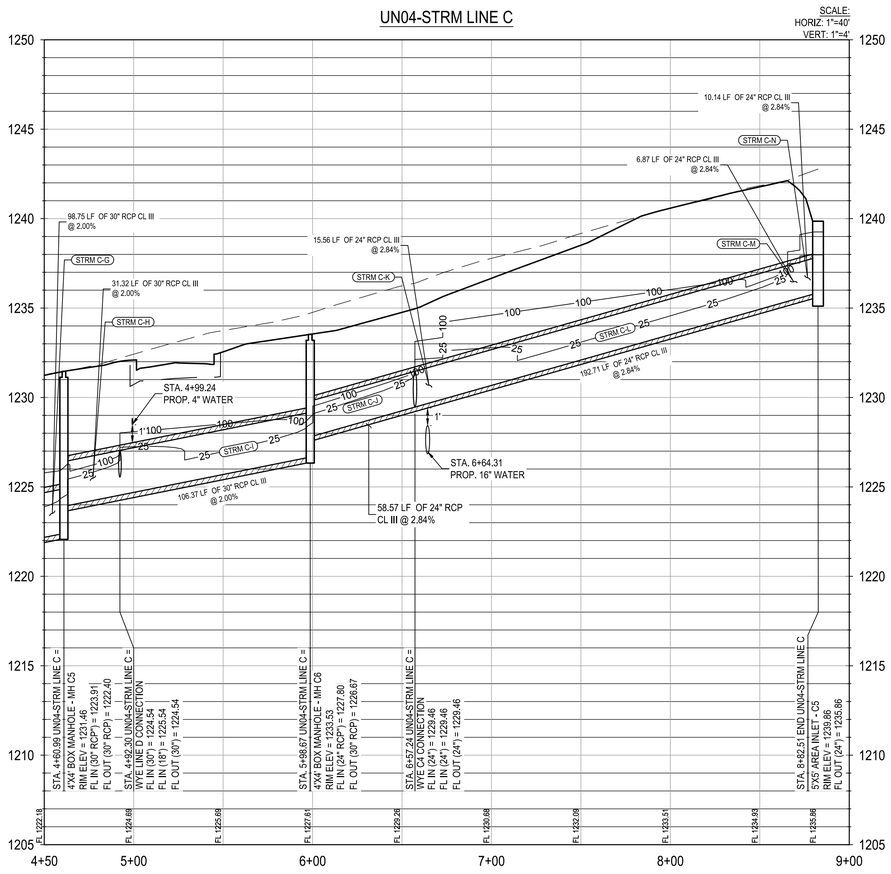
SHEET
C06.07

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.07 - STORM DRAIN LINE C PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE C PLAN AND PROFILE STA 1+00 TO 4+50 Plotted: 6/17/2025 2:28:39 PM By: Mhernandez



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM C-G	47.61	9.70	4.15
STRM C-H	47.69	13.19	2.36
STRM C-I	37.87	12.59	3.48
STRM C-J	37.97	13.84	1.72
STRM C-K	26.88	8.55	3.67
STRM C-L	27.12	13.16	4.30
STRM C-M	27.14	8.64	2.77
STRM C-N	27.16	8.64	3.54

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM C-G	32.45	12.15	3.11
STRM C-H	32.50	12.15	1.52
STRM C-I	25.66	11.46	2.68
STRM C-J	25.73	13.03	1.29
STRM C-K	17.99	5.73	2.66
STRM C-L	18.17	11.97	2.70
STRM C-M	18.18	12.10	2.11
STRM C-N	18.20	5.79	2.34





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW WW PROPOSED WASTEWATER LINE
- W W PROPOSED WATER LINE
- FM FM EXISTING FORCE MAIN
- E E E PROPOSED ELECTRIC
- G G G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
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NOTES:

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	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE C PLAN AND PROFILE
STA 4+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.08

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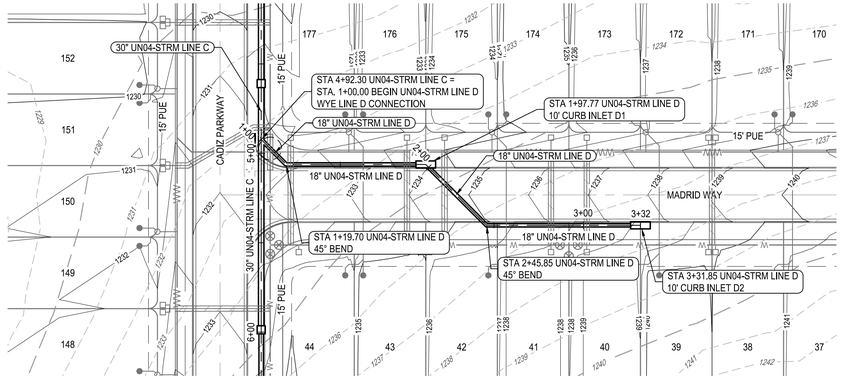
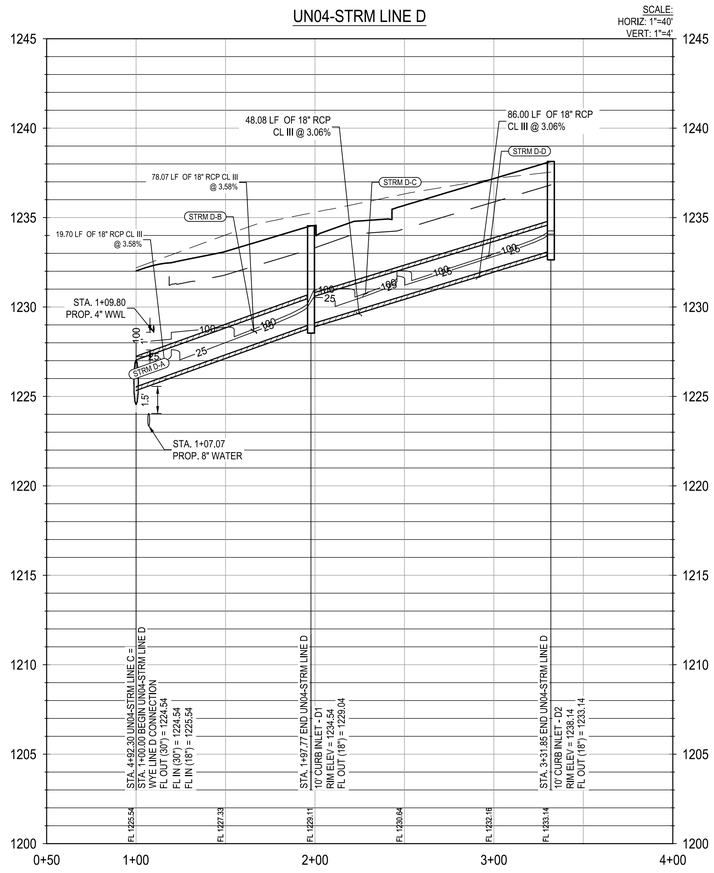
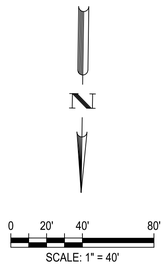


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM D-A	10.12	10.89	2.48
STRM D-B	10.12	10.89	1.72
STRM D-C	8.33	10.37	1.87

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM D-A	7.07	9.93	1.68
STRM D-B	7.07	9.93	1.38
STRM D-C	5.83	9.42	1.38





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
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- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 / 100 YEAR HGL
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NOTES:

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CANYON RANCH UNIT 4

STORM DRAIN LINE D PLAN AND PROFILE

STATE OF TEXAS
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06/17/2025

SHEET
C06.09

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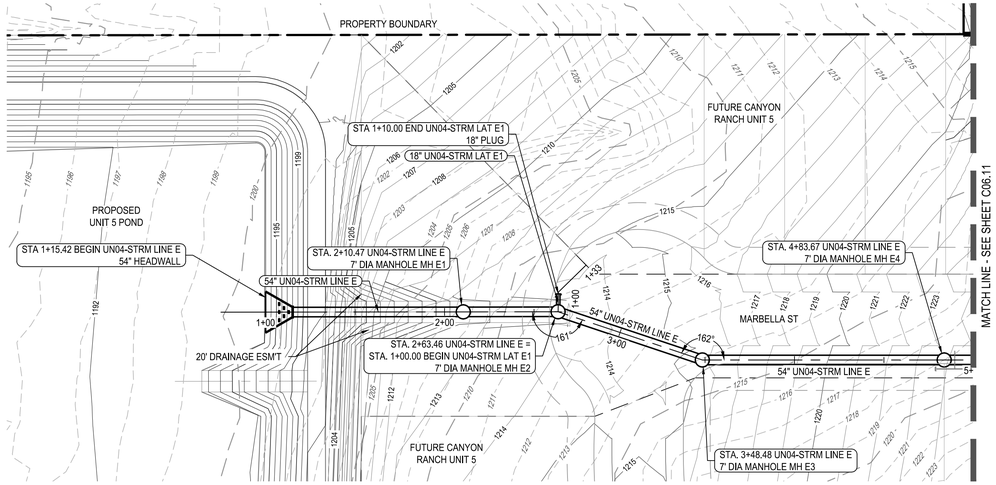
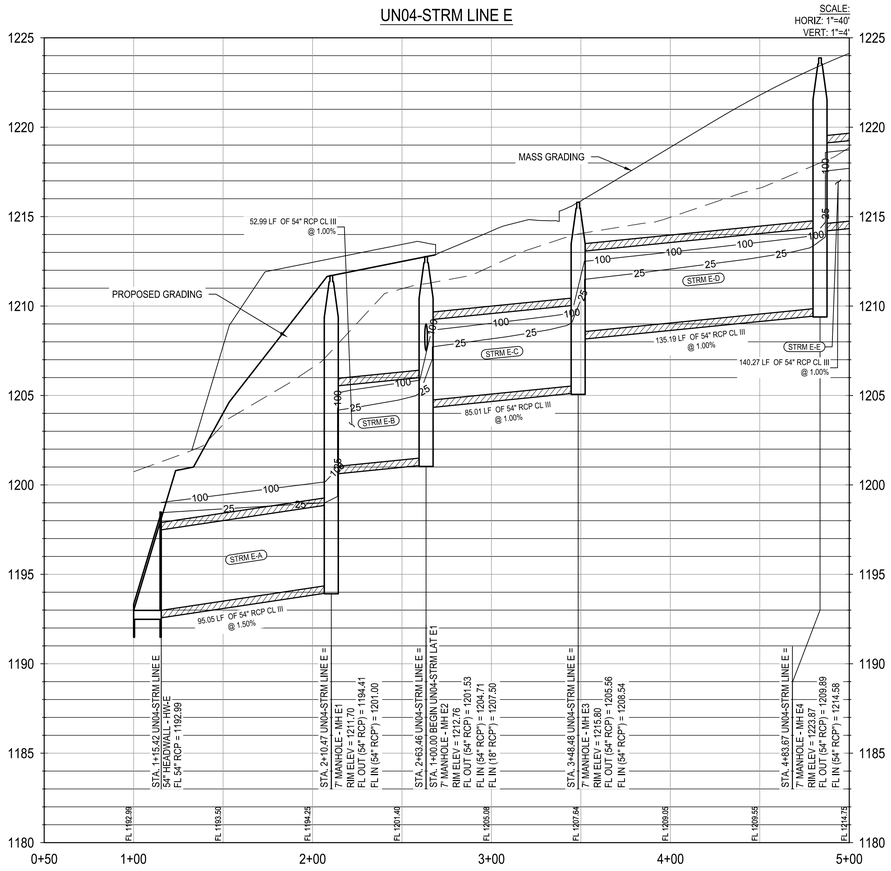
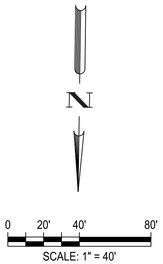


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM E-A	216.33	13.60	6.03
STRM E-B	216.87	13.64	4.14
STRM E-C	205.96	14.01	4.11
STRM E-D	207.23	13.99	3.96
STRM E-E	208.55	13.94	4.01

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM E-A	150.36	9.45	5.46
STRM E-B	150.74	13.63	3.17
STRM E-C	143.20	13.49	3.01
STRM E-D	144.12	13.51	2.96
STRM E-E	145.08	13.52	2.97





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- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 / 100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

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2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
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TRENCH EXCAVATION SAFETY PROTECTION

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NOT FOR CONSTRUCTION

	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE E PLAN AND PROFILE
STA 1+00 TO 5+00

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.10

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.10 - STORM DRAIN LINE E PLAN AND PROFILE STA 1+00 TO 5+00 Plotted: 6/17/2025 2:33:59 PM By: Mhernandez Layout: STORM DRAIN LINE E PLAN AND PROFILE.dwg

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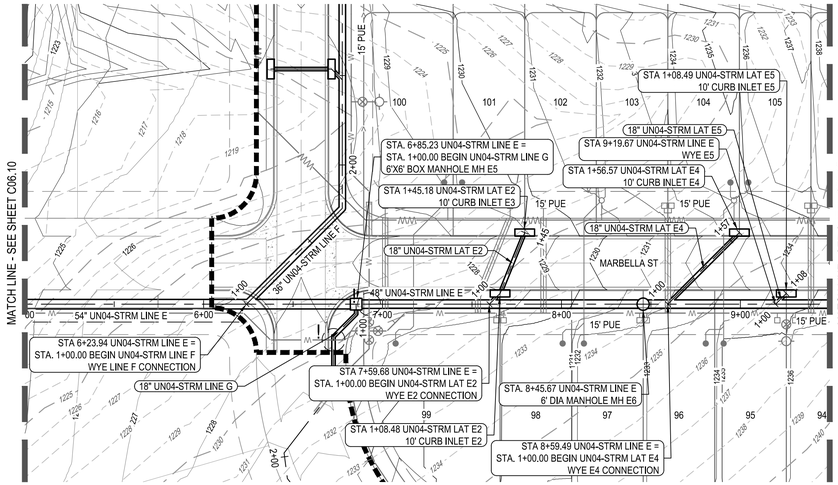
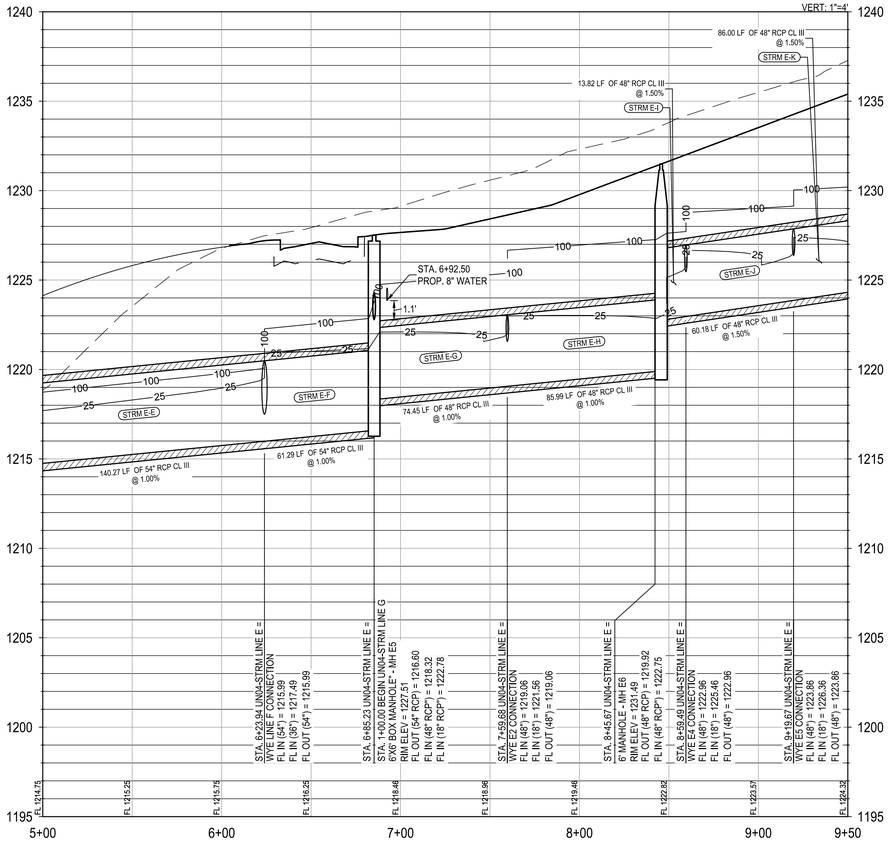


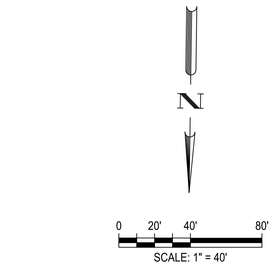
PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM E-E	208.55	13.94	4.01
STRM E-F	139.01	11.06	6.29
STRM E-G	131.72	10.48	6.43
STRM E-H	119.70	9.53	7.60
STRM E-I	119.81	9.53	4.87
STRM E-J	110.33	8.78	5.82
STRM E-K	104.26	8.30	6.17

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM E-E	145.08	13.52	2.97
STRM E-F	96.93	7.71	4.90
STRM E-G	91.77	12.09	3.77
STRM E-H	83.15	11.85	3.93
STRM E-I	83.20	13.82	2.40
STRM E-J	76.34	13.50	3.70
STRM E-K	71.88	13.29	3.52

UN04-STRM LINE E

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
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- PROPOSED WATER SERVICES
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- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
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						DESCRIPTION
△	△	△	△	△	△	REV
DESIGNED BY:					LNH	
REVIEWED BY:					SSM	
DRAWN BY:					JDC	

NOT FOR CONSTRUCTION

BGE
BGE, INC.
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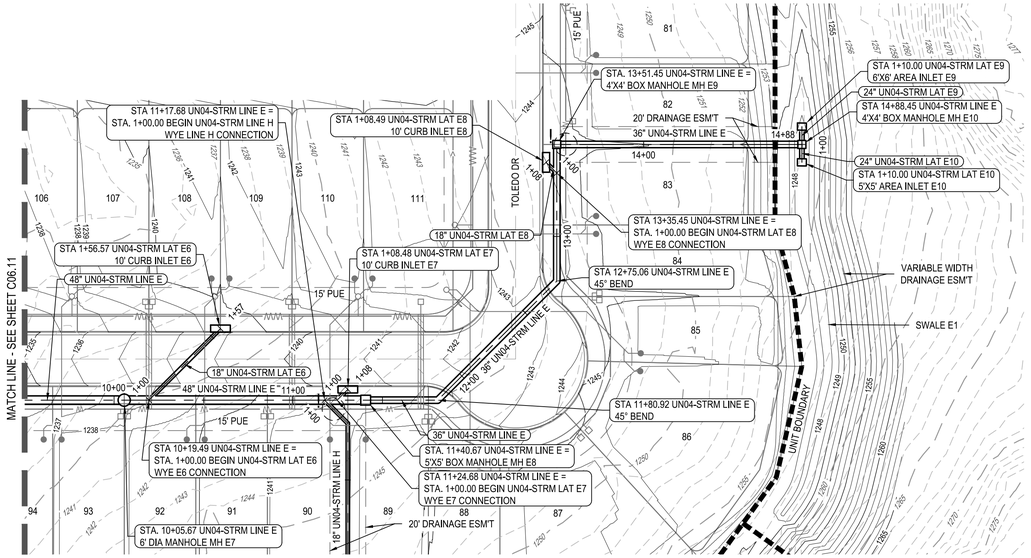
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE E PLAN AND PROFILE
STA 5+00 TO 9+50

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.11

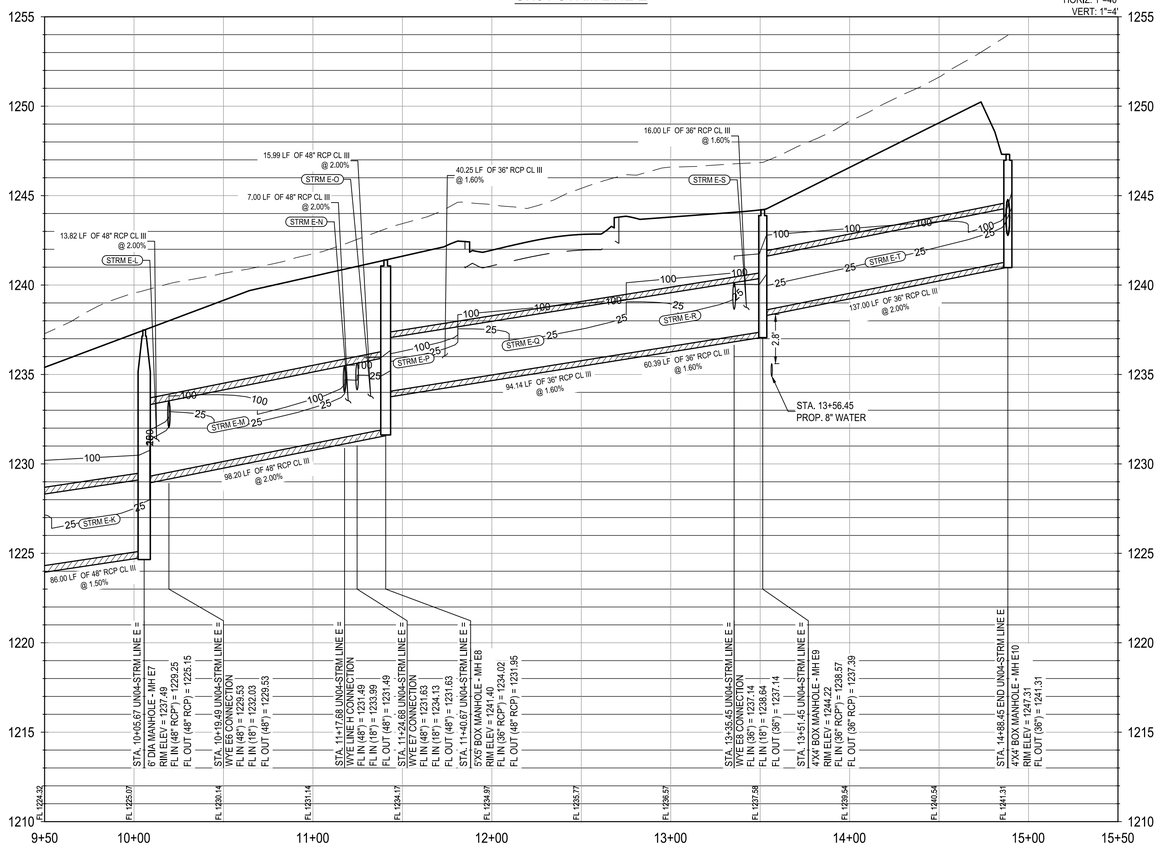


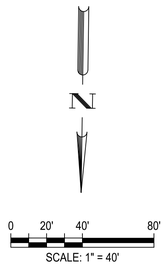
PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM E-K	104.26	8.30	6.17
STRM E-L	104.32	16.29	2.65
STRM E-M	94.96	15.89	4.26
STRM E-N	73.34	14.85	4.02
STRM E-O	62.82	5.00	4.29
STRM E-P	62.94	13.09	2.13
STRM E-Q	63.36	8.96	3.68
STRM E-R	63.63	9.00	3.96
STRM E-S	58.02	8.21	4.48
STRM E-T	58.38	14.05	4.22

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM E-K	71.88	13.29	3.52
STRM E-L	71.92	14.79	2.14
STRM E-M	65.37	14.40	3.40
STRM E-N	50.58	13.42	3.21
STRM E-O	43.13	12.82	3.33
STRM E-P	43.22	12.01	1.69
STRM E-Q	43.43	12.02	2.89
STRM E-R	43.57	12.05	2.90
STRM E-S	39.79	11.66	2.90
STRM E-T	40.05	12.80	1.40

UN04-STRM LINE E

SCALE:
HORIZ: 1"=40'
VERT: 1"=4'





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
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NOTES:

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NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

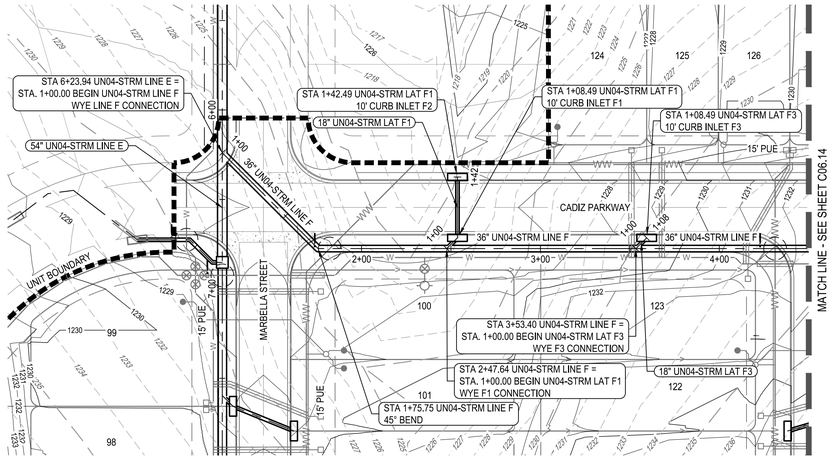
CANYON RANCH UNIT 4

STORM DRAIN LINE E PLAN AND PROFILE
STA 9+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

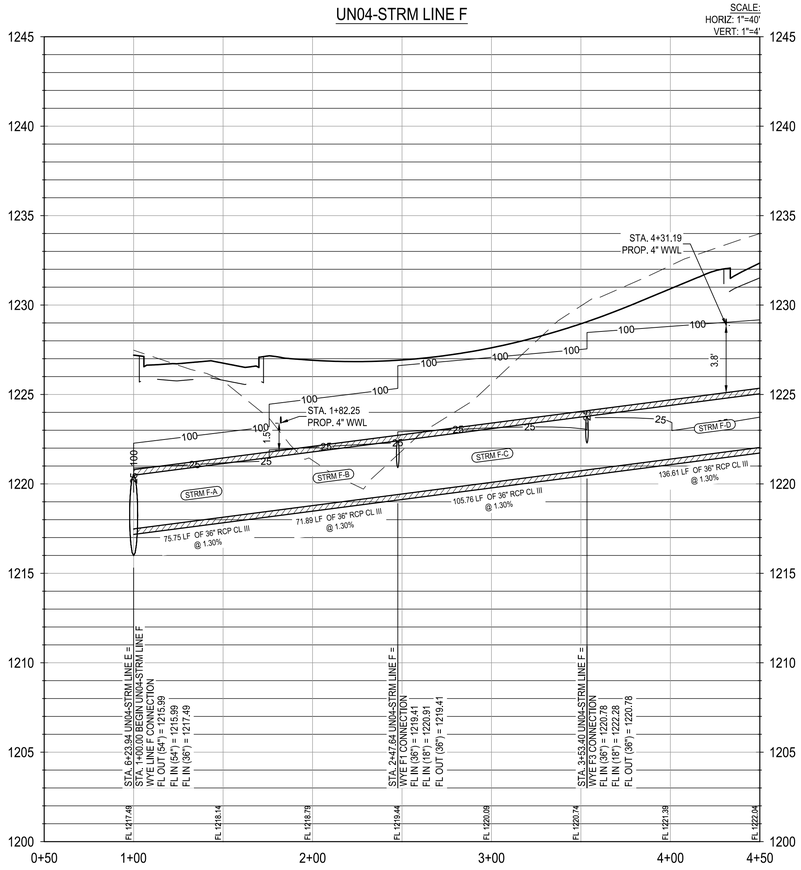
SHEET
C06.12

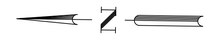
G:\TX\C\Projects\San Antonio Projects\7276-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.10 - STORM DRAIN LINE E PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE E PLAN AND PROFILE STA 9+50 TO END Plotted: 6/17/2025 2:35:00 PM By: Mhernandez



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM F-A	73.50	10.40	4.79
STRM F-B	73.84	10.45	5.98
STRM F-C	62.79	8.88	7.20
STRM F-D	56.08	7.93	7.69

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM F-A	50.67	11.52	3.40
STRM F-B	50.88	11.52	3.43
STRM F-C	43.09	11.09	3.51
STRM F-D	38.25	10.77	2.92





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
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- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
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STORM DRAIN LINE F PLAN AND PROFILE
STA 1+00 TO 4+50

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

06/17/2025

SHEET
C06.13

G:\TX\Cl\Projects\San Antonio Projects\7276-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.13 - STORM DRAIN LINE F PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE F PLAN AND PROFILE STA 1+00 TO 4+50 Plotted: 6/17/2025 2:37:24 PM By: Mhernandez

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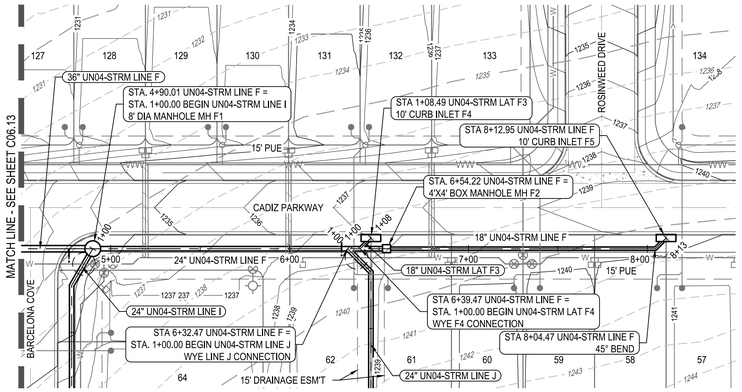
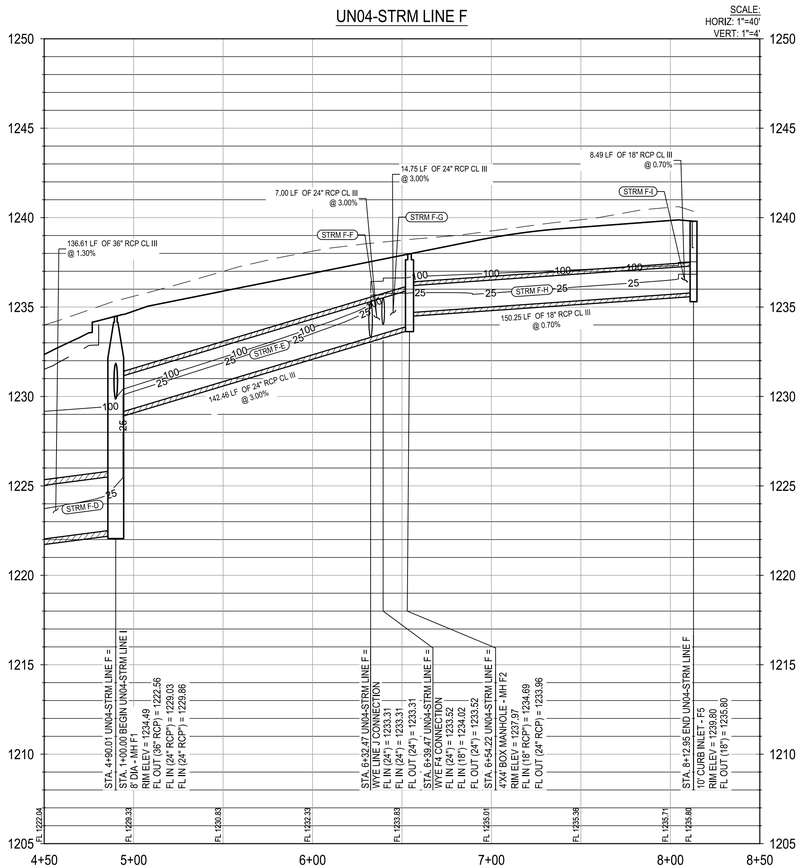
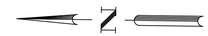


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM F-D	56.08	7.93	7.69
STRM F-E	31.56	13.88	1.38
STRM F-F	12.05	3.84	3.12
STRM F-G	6.62	2.11	3.10
STRM F-H	6.78	3.84	2.01
STRM F-I	6.79	3.84	1.76

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM F-D	38.25	10.77	2.92
STRM F-E	21.63	12.79	1.06
STRM F-F	8.51	2.71	2.36
STRM F-G	4.66	8.37	2.25
STRM F-H	4.75	5.07	1.12
STRM F-I	4.75	5.12	1.09





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW WW PROPOSED WASTEWATER LINE
- W W PROPOSED WATER LINE
- FM FM EXISTING FORCE MAIN
- E E E PROPOSED ELECTRIC
- G G G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

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

NOT FOR CONSTRUCTION

						APR
						DATE
						DESCRIPTION
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DESIGNED BY:	LNH					
REVIEWED BY:	SSM					
DRAWN BY:	JDC					

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

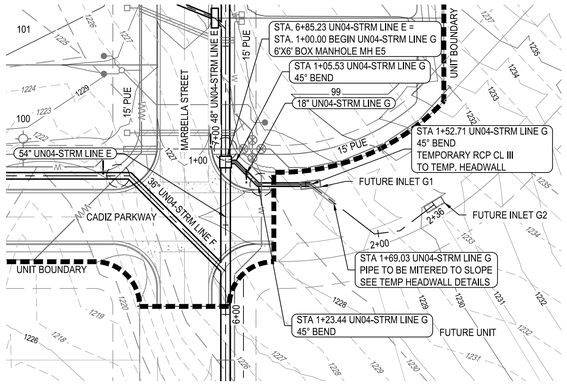
CANYON RANCH UNIT 4

STORM DRAIN LINE F PLAN AND PROFILE
STA 4+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

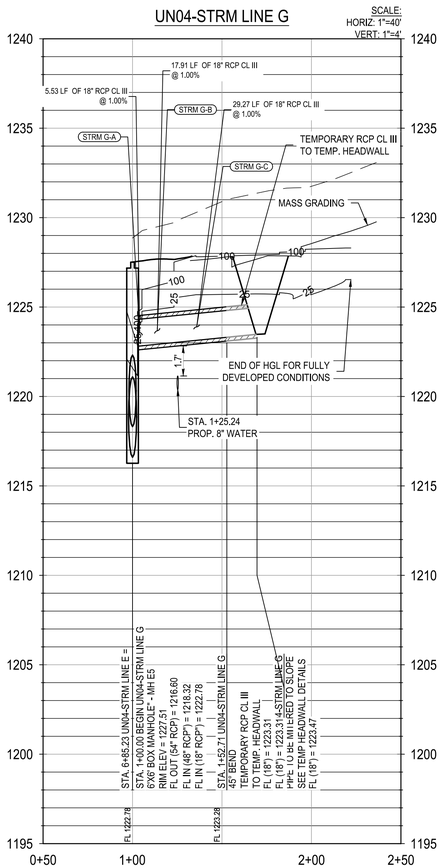
06/17/2025

SHEET
C06.14



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM G-A	16.96	9.60	1.97
STRM G-B	16.98	9.61	3.13
STRM G-C	17.00	9.62	4.50

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM G-A	11.81	6.68	1.31
STRM G-B	11.83	6.69	1.93
STRM G-C	11.84	6.70	2.50





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SCALE: 1" = 40'

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- UNIT BOUNDARY
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- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
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- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
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NOT FOR CONSTRUCTION

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							DATE
							DESCRIPTION
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DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

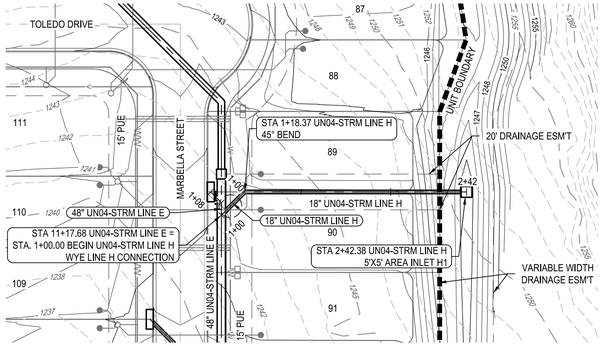
STORM DRAIN LINE G PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

06/17/2025

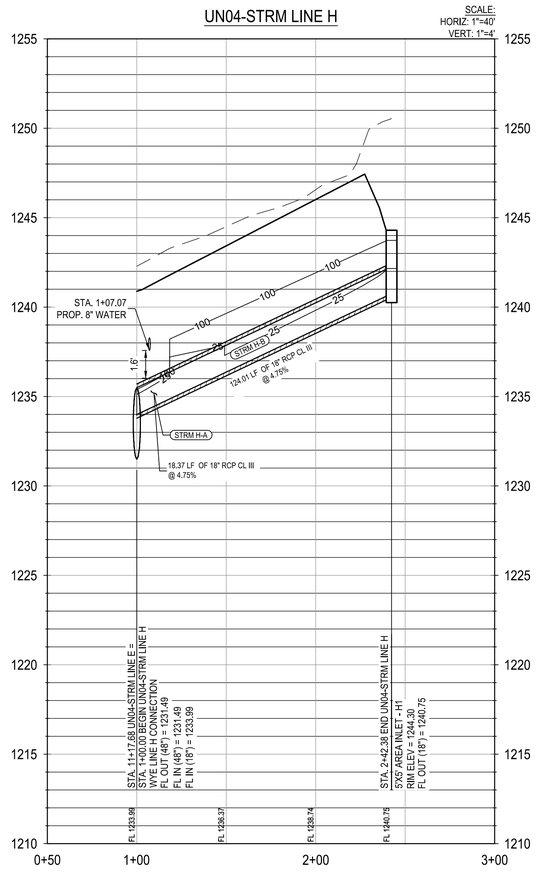
SHEET
C06.15

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.15 - STORM DRAIN LINE G PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE G PLAN AND PROFILE Plotted: 6/17/2025 2:40:25 PM By: Mhernandez



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM H-A	22.01	14.68	1.34
STRM H-B	22.15	12.54	3.30

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM H-A	15.02	13.76	1.06
STRM H-B	15.11	13.79	2.29





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

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- EASEMENT
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- PROPOSED WATER SERVICES
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- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

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- PROPOSED GROUND
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DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
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TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE H PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

06/17/2025

SHEET
C06.16

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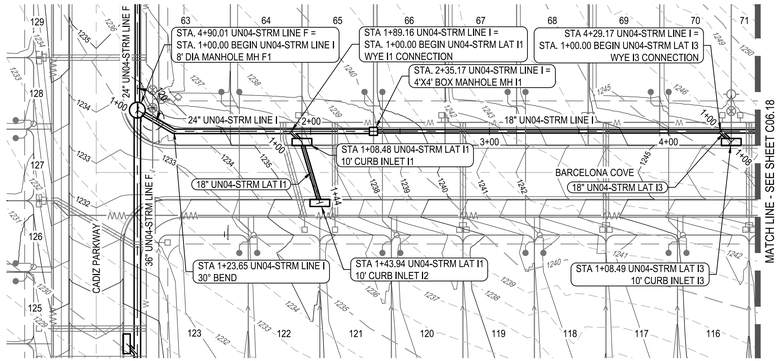
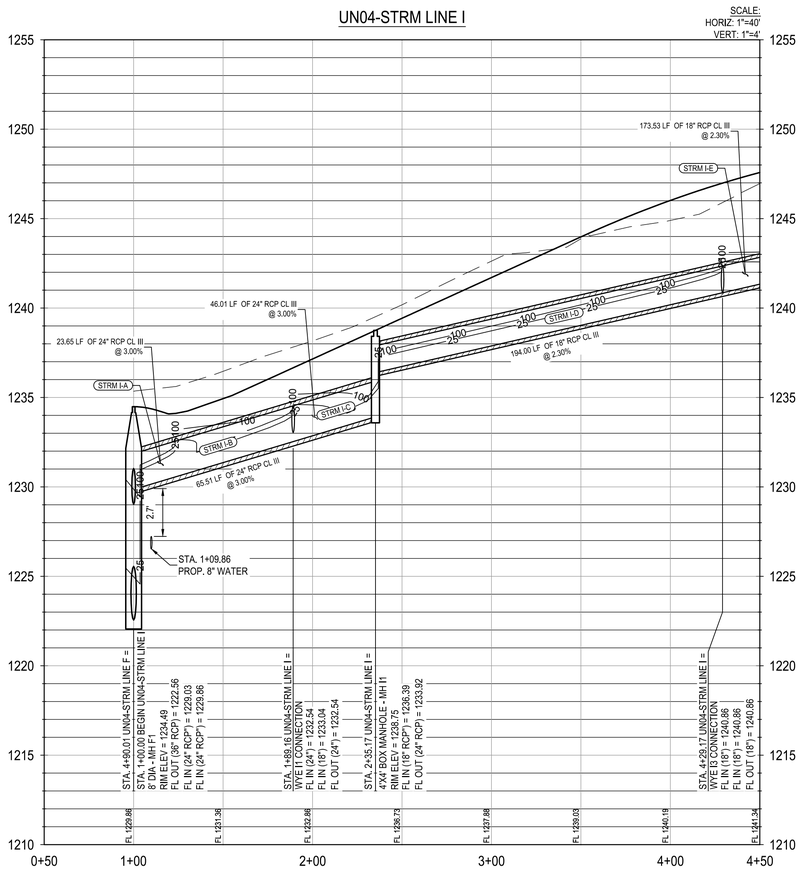
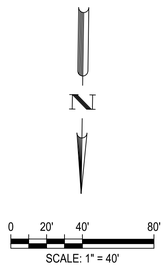


PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM I-A	25.22	13.25	1.37
STRM I-B	25.30	13.27	2.63
STRM I-C	14.45	11.53	2.64
STRM I-D	14.63	10.23	1.13
STRM I-E	3.79	7.39	2.25

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM I-A	17.41	12.11	1.09
STRM I-B	17.47	12.12	2.05
STRM I-C	9.96	10.42	2.06
STRM I-D	10.09	9.54	0.87
STRM I-E	2.63	6.66	1.72





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DESIGNED BY: LNH
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DRAWN BY: JDC

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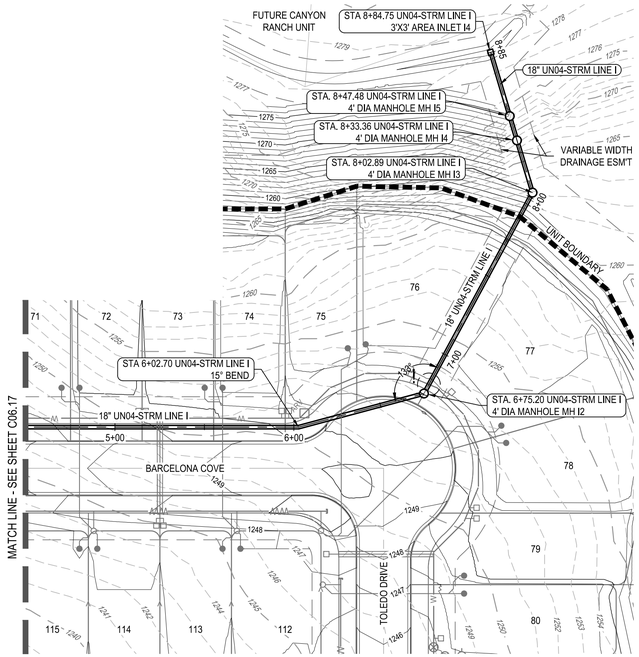
CANYON RANCH UNIT 4

STORM DRAIN LINE I PLAN AND PROFILE
STA 1+00 TO 4+50

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

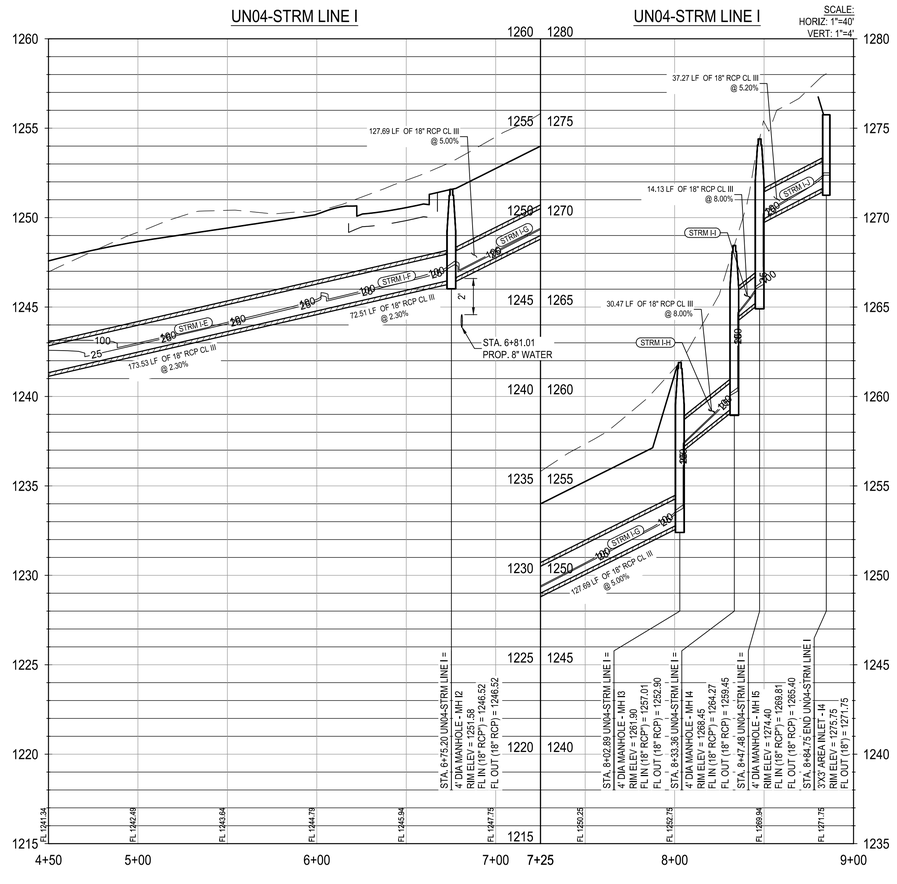
SHEET
C06.17

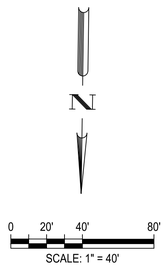
G:\TX\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.17 - STORM DRAIN LINE I PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE I PLAN AND PROFILE STA 1+00 TO 4+50 Plotted: 6/17/2025 2:44:58 PM By: Mhernandez



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM I-E	3.79	7.39	2.25
STRM I-F	3.82	7.41	0.96
STRM I-G	3.85	9.80	1.04
STRM I-H	3.86	11.58	0.38
STRM I-I	3.86	11.59	0.43
STRM I-J	3.87	9.96	0.42

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM I-E	2.63	6.66	1.72
STRM I-F	2.65	6.68	0.79
STRM I-G	2.67	8.82	0.85
STRM I-H	2.68	10.41	0.31
STRM I-I	2.68	10.42	0.34
STRM I-J	2.69	8.96	0.34





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 — 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

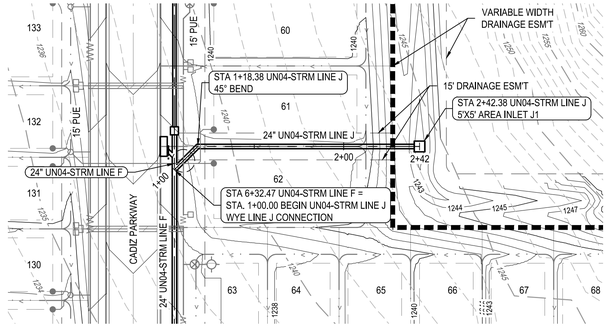
CANYON RANCH UNIT 4

STORM DRAIN LINE I PLAN AND PROFILE
STA 4+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

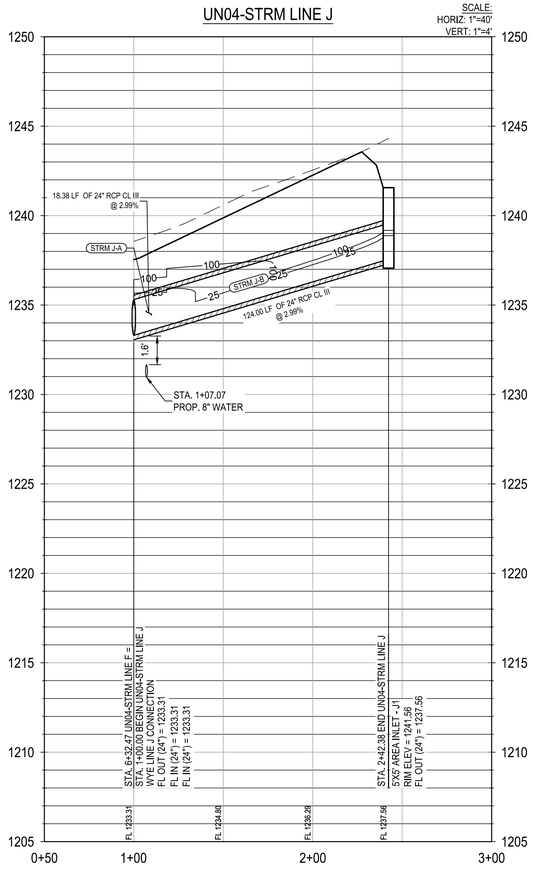
SHEET
C06.18

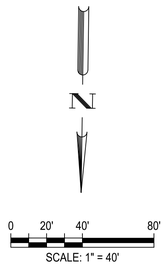
G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.17 - STORM DRAIN LINE I PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE I PLAN AND PROFILE STA 4+50 TO END Plotted: 6/17/2025 2:45:24 PM By: Mhernandez



PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM J-A	20.03	6.38	3.12
STRM J-B	20.16	12.50	3.15

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM J-A	13.33	11.53	2.36
STRM J-B	13.43	11.24	2.04





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	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
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San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LINE J PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

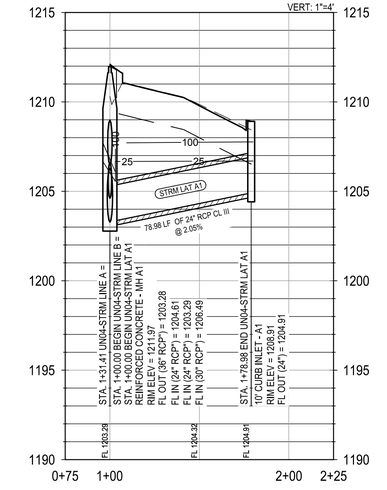
SHEET
C06.19

G:\TX\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.19 - STORM DRAIN LINE J PLAN AND PROFILE.dwg Layout: STORM DRAIN LINE J PLAN AND PROFILE Plotted: 6/17/2025 2:47:40 PM By: Mhernandez

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.40 - STORM DRAIN LATERAL PROFILES (SHEET 1 OF 2) Plotted: 6/17/2025 2:49:12 PM By: Mhernandez Layout: STORM DRAIN LATERAL PROFILES (SHEET 1 OF 2)

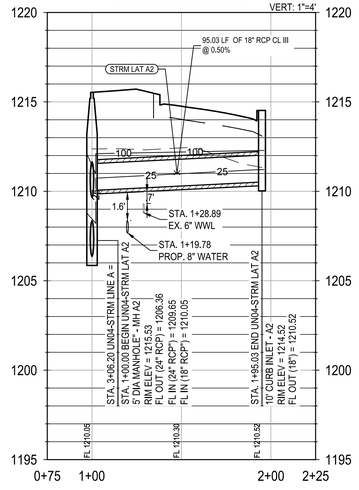
UN04-STRM LAT A1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



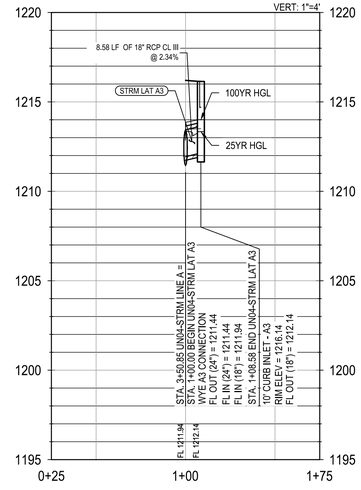
UN04-STRM LAT A2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



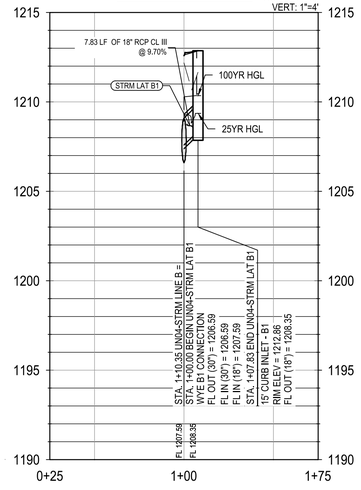
UN04-STRM LAT A3

SCALE: HORIZ: 1"=40' VERT: 1"=4'



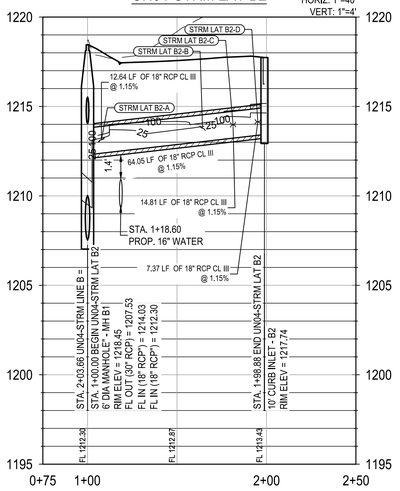
UN04-STRM LAT B1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



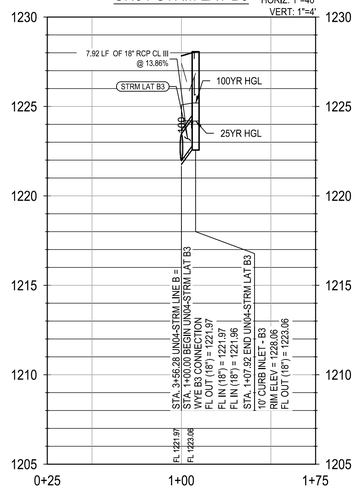
UN04-STRM LAT B2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



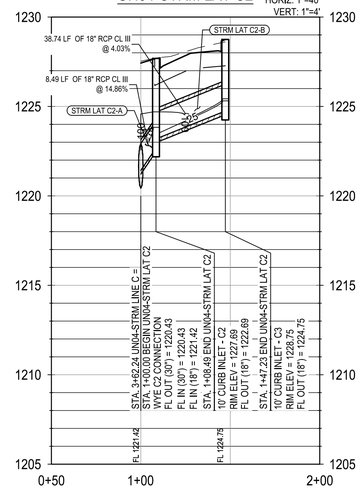
UN04-STRM LAT B3

SCALE: HORIZ: 1"=40' VERT: 1"=4'



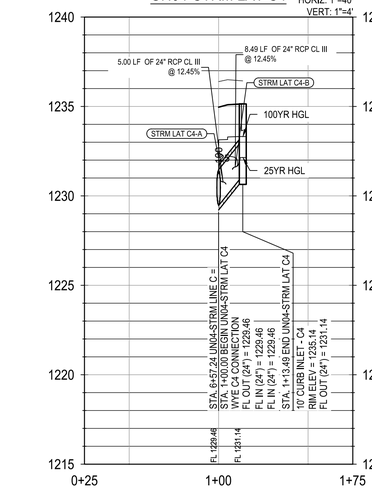
UN04-STRM LAT C2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



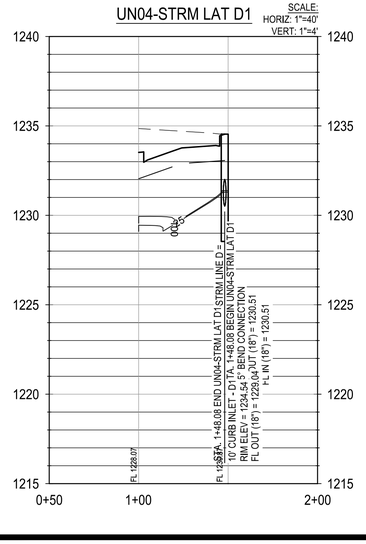
UN04-STRM LAT C4

SCALE: HORIZ: 1"=40' VERT: 1"=4'



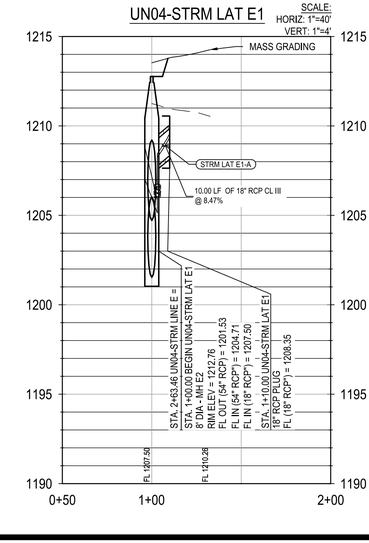
UN04-STRM LAT D1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



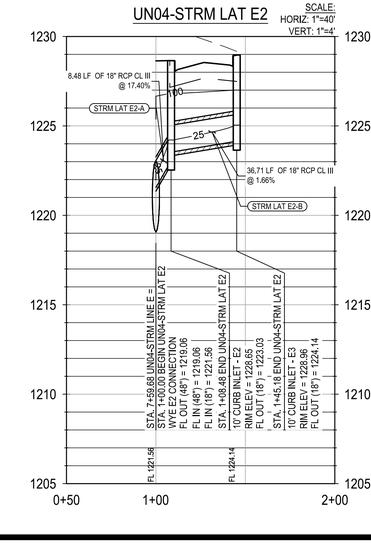
UN04-STRM LAT E1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



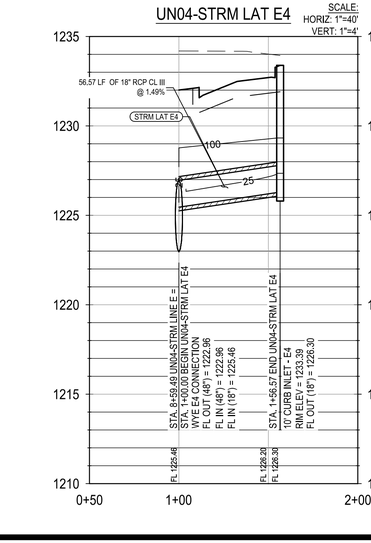
UN04-STRM LAT E2

SCALE: HORIZ: 1"=40' VERT: 1"=4'



UN04-STRM LAT E4

SCALE: HORIZ: 1"=40' VERT: 1"=4'



0 20' 40' 80'

SCALE: 1" = 40'

PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM LAT A1	5.94	1.89	4.41
STRM LAT A2	4.54	2.57	2.05
STRM LAT A3	13.63	7.71	1.92
STRM LAT B1	9.71	5.49	2.69
STRM LAT B2-A	8.60	7.01	1.03
STRM LAT B2-B	8.65	7.02	1.55
STRM LAT B2-C	8.66	7.02	1.56
STRM LAT B2-D	8.67	4.90	1.77
STRM LAT B3	12.02	6.80	3.12
STRM LAT C2-A	12.46	7.05	3.15
STRM LAT C2-B	3.21	8.62	1.51
STRM LAT C4-A	11.24	3.58	3.67
STRM LAT C4-B	11.26	3.58	3.21
STRM LAT D1	1.89	8.40	1.87
STRM LAT E1-A	13.47	16.78	0.94
STRM LAT E1-B	13.49	16.74	2.11
STRM LAT E2-A	13.24	7.49	5.10
STRM LAT E2-B	7.78	4.40	3.26
STRM LAT E4	10.37	5.87	3.32

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM LAT A1	4.07	7.04	3.38
STRM LAT A2	3.17	4.04	0.68
STRM LAT A3	9.55	9.49	1.42
STRM LAT B1	6.78	14.54	1.69
STRM LAT B2-A	6.06	6.48	0.83
STRM LAT B2-B	6.10	6.49	1.26
STRM LAT B2-C	6.11	6.50	1.26
STRM LAT B2-D	6.11	6.50	1.30
STRM LAT B3	8.35	17.54	2.21
STRM LAT C2-A	8.76	18.23	2.11
STRM LAT C2-B	2.24	7.77	0.65
STRM LAT C4-A	7.88	2.51	2.66
STRM LAT C4-B	7.88	16.14	2.12
STRM LAT D1	1.32	7.55	1.38
STRM LAT E1-A	9.28	15.19	0.75
STRM LAT E1-B	9.29	15.16	1.63
STRM LAT E2-A	9.32	19.69	1.43
STRM LAT E2-B	5.49	7.25	0.68
STRM LAT E4	7.31	7.49	1.20

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 — 100 — 25/100 YEAR HGL
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NOTES:

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NOT FOR CONSTRUCTION

							APR
							DATE
							DESCRIPTION
△	△	△	△	△	△		REV

DESIGNED BY: JDC

REVIEWED BY: ACR

DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STORM DRAIN LATERAL PROFILES (SHEET 1 OF 2)

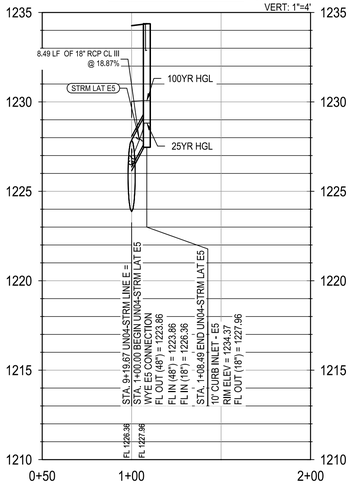
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.20

G:\TXO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.40 - STORM DRAIN LATERALS.dwg Layout: STORM DRAIN LATERAL PROFILES (SHEET 2 OF 2) Plotted: 6/17/2025 2:49:32 PM By: Mhernandez

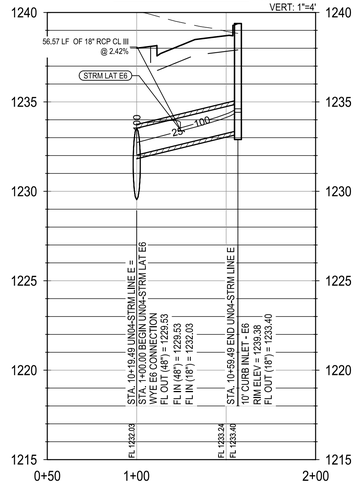
UN04-STRM LAT E5

SCALE: HORIZ: 1"=40' VERT: 1"=4'



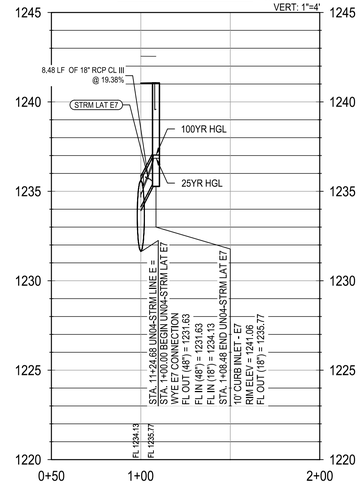
UN04-STRM LAT E6

SCALE: HORIZ: 1"=40' VERT: 1"=4'



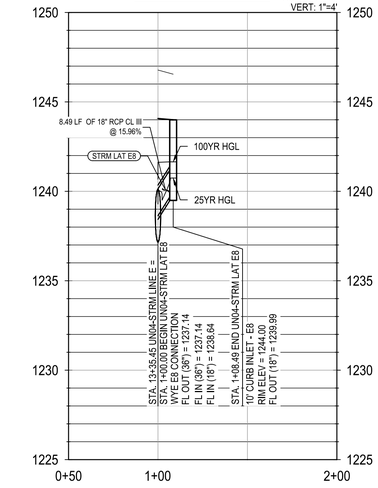
UN04-STRM LAT E7

SCALE: HORIZ: 1"=40' VERT: 1"=4'



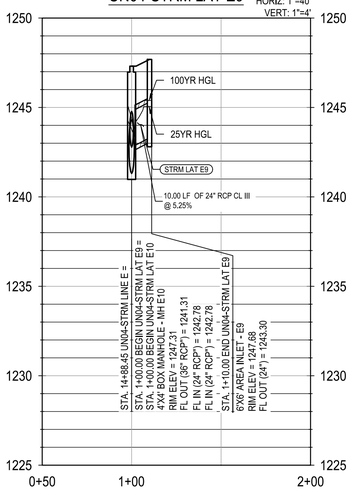
UN04-STRM LAT E8

SCALE: HORIZ: 1"=40' VERT: 1"=4'



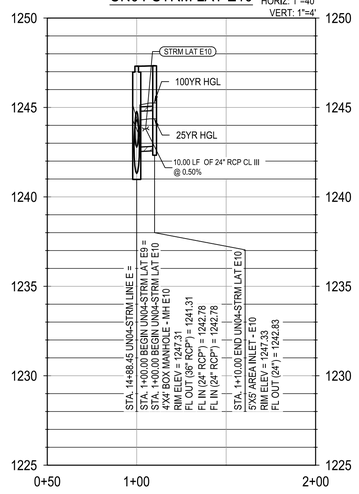
UN04-STRM LAT E9

SCALE: HORIZ: 1"=40' VERT: 1"=4'



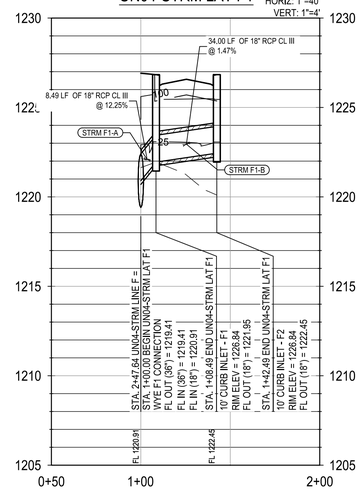
UN04-STRM LAT E10

SCALE: HORIZ: 1"=40' VERT: 1"=4'



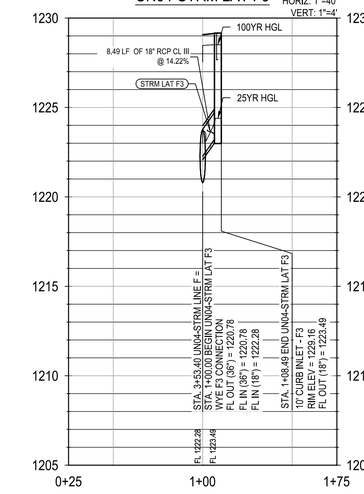
UN04-STRM LAT F1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



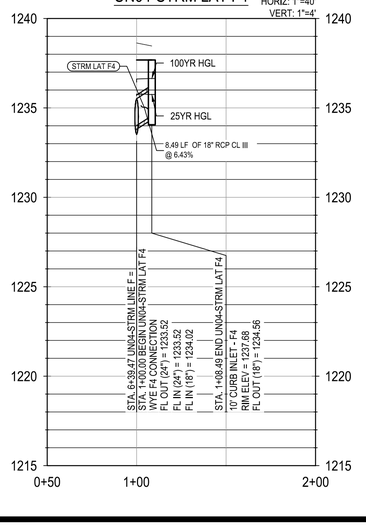
UN04-STRM LAT F3

SCALE: HORIZ: 1"=40' VERT: 1"=4'



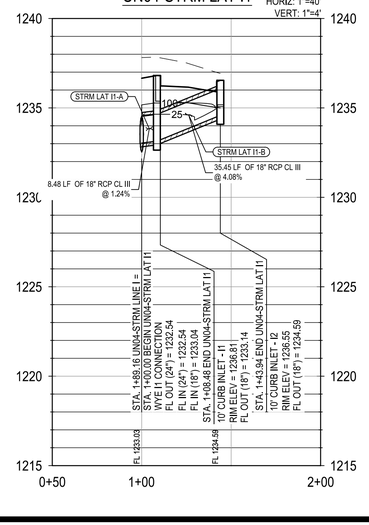
UN04-STRM LAT F4

SCALE: HORIZ: 1"=40' VERT: 1"=4'



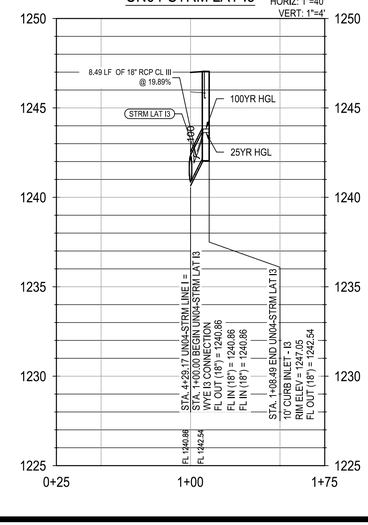
UN04-STRM LAT I1

SCALE: HORIZ: 1"=40' VERT: 1"=4'



UN04-STRM LAT I3

SCALE: HORIZ: 1"=40' VERT: 1"=4'





PIPE IDENTIFICATION	FLOW 100 (CFS)	VELOCITY 100 (FPS)	DEPTH 100 (FT)
STRM LAT E5	7.00	3.96	3.67
STRM LAT E6	10.01	9.71	1.76
STRM LAT E7	10.91	20.82	1.70
STRM LAT E8	5.73	3.24	2.98
STRM LAT E9	35.53	11.31	2.36
STRM LAT E10	22.90	7.29	2.37
STRM LAT F1-A	12.28	6.95	5.70
STRM LAT F1-B	3.80	2.15	4.50
STRM LAT F3	7.82	4.42	6.19
STRM LAT F4	5.64	3.19	2.60
STRM LAT I1-A	11.41	6.46	2.13
STRM LAT I1-B	2.47	8.02	2.13
STRM LAT I3	11.27	21.68	2.24

PIPE IDENTIFICATION	FLOW 25 (CFS)	VELOCITY 25 (FPS)	DEPTH 25 (FT)
STRM LAT E5	4.89	16.83	1.02
STRM LAT E6	7.00	8.88	0.70
STRM LAT E7	7.63	18.83	0.58
STRM LAT E8	3.85	14.78	1.40
STRM LAT E9	24.67	16.21	1.34
STRM LAT E10	15.43	5.80	1.52
STRM LAT F1-A	8.63	17.00	2.01
STRM LAT F1-B	2.65	5.69	1.14
STRM LAT F3	5.50	15.72	1.42
STRM LAT F4	3.94	10.75	1.75
STRM LAT I1-A	7.92	4.48	1.56
STRM LAT I1-B	1.72	7.22	1.51
STRM LAT I3	7.80	19.53	1.72

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOT FOR CONSTRUCTION

							APR
							DATE
							DESCRIPTION
△	△	△	△	△	△		REV

DESIGNED BY: JDC

REVIEWED BY: ACR

DRAWN BY: SSM

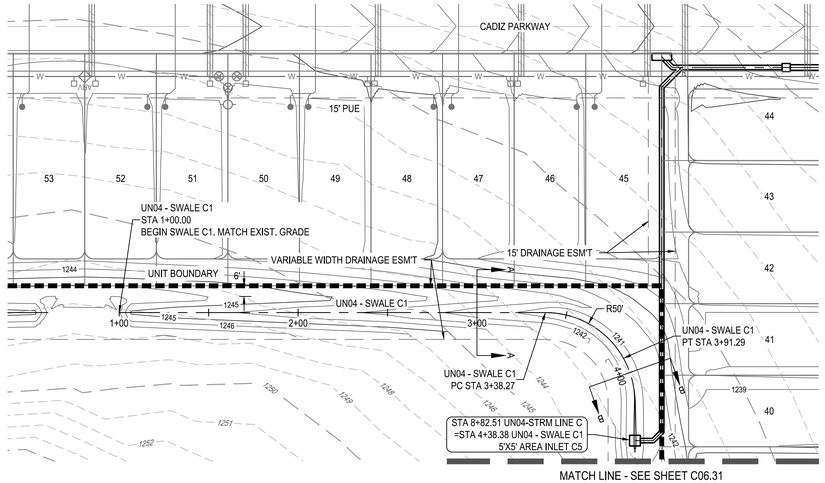
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

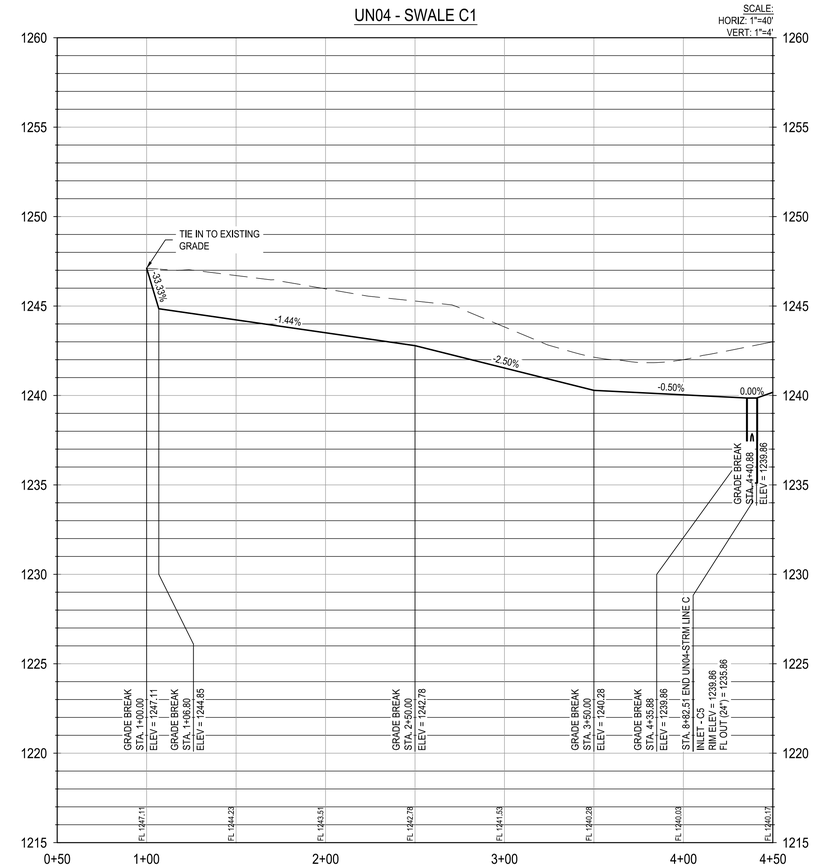
CANYON RANCH UNIT 4

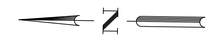
STORM DRAIN LATERAL PROFILES (SHEET 2 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.21







0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW WW PROPOSED WASTEWATER LINE
- W W PROPOSED WATER LINE
- FM FM EXISTING FORCE MAIN
- E E E PROPOSED ELECTRIC
- G G G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

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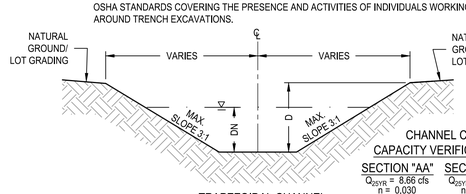


TRAPEZOIDAL CHANNEL TYPICAL SECTION

CHANNEL C1 CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 8.66 cfs	Q_{25YR} = 8.66 cfs
n = 0.030	n = 0.030
S = 2.50%	S = 0.50%
Dn = 0.35 ft	Dn = 0.56 ft
Vn = 3.99 fps	Vn = 2.01 fps
D = 1.25 ft	D = 1.25 ft
BW = 6.00 ft	BW = 6.00 ft

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

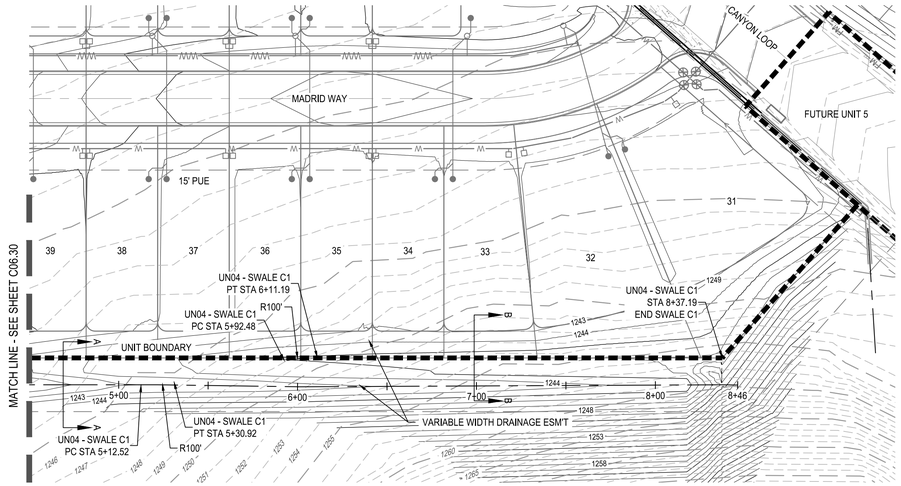
INTERCEPTOR CHANNEL C1 PLAN AND PROFILE STA 0+50 TO 4+50

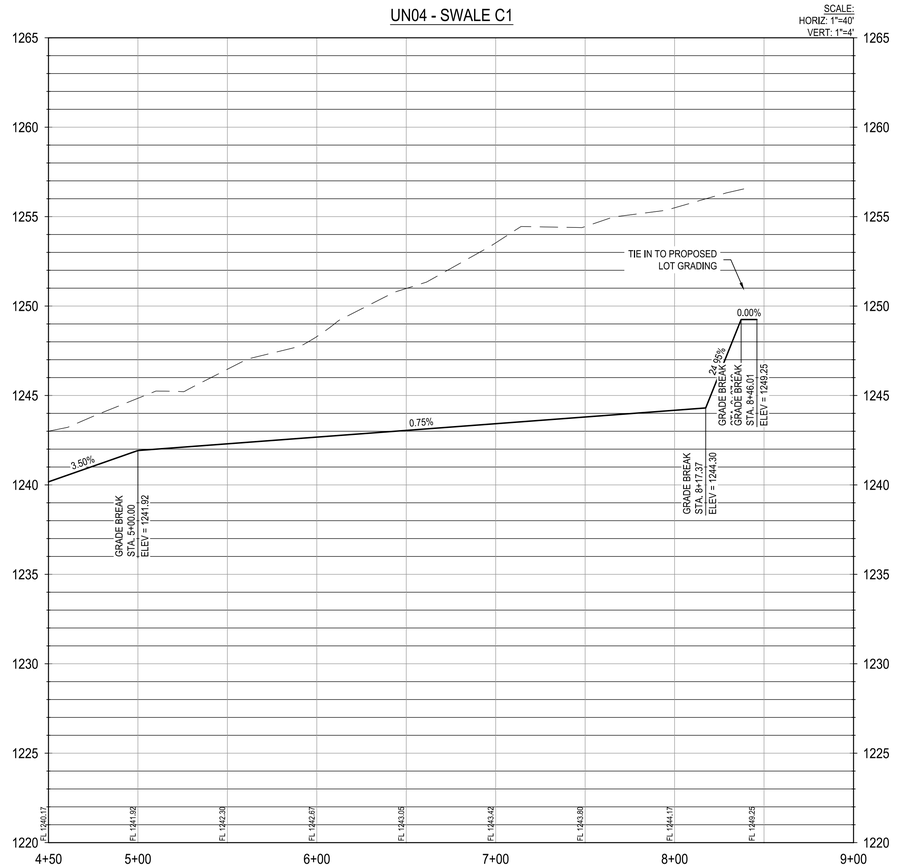
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

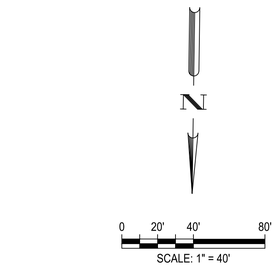
06/17/2025

SHEET
C06.30

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.30 - INTERCEPTOR CHANNEL C1 PLAN AND PROFILE.dwg Layout: C06.30 INTERCEPTOR CHANNEL C1 PLAN AND PROFILE STA 0+50 TO 4+50 Plotted: 6/17/2025 2:51:48 PM By: Arath







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
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- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

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TRENCH EXCAVATION SAFETY PROTECTION

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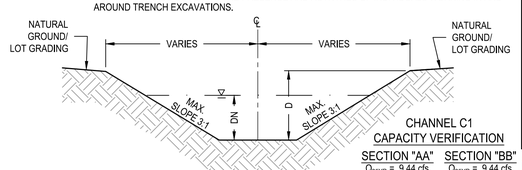


TRAPEZOIDAL CHANNEL
TYPICAL SECTION

CHANNEL C1
CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 9.44 cfs	Q_{25YR} = 9.44 cfs
n = 0.030	n = 0.030
S = 4.63%	S = 1.47%
Dn = 0.31 ft	Dn = 0.43 ft
Vn = 4.39 fps	Vn = 3.01 fps
D = 2.00 ft	D = 2.00 ft
BW = 6.00 ft	BW = 6.00 ft

NOT FOR CONSTRUCTION

						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

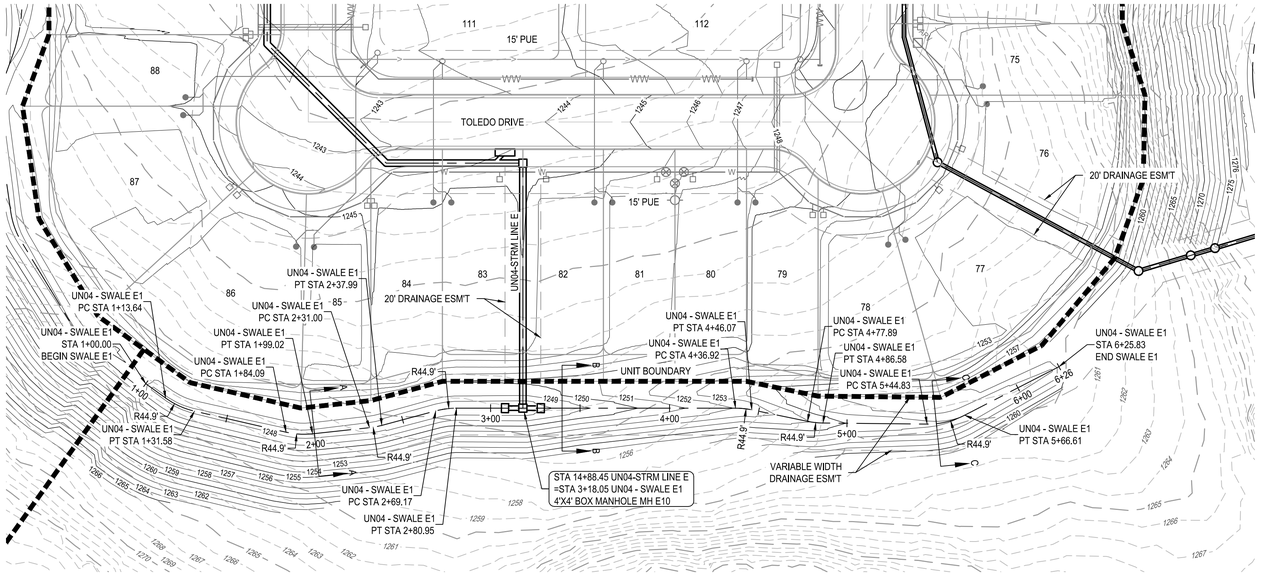
CANYON RANCH UNIT 4

INTERCEPTOR CHANNEL C1 PLAN AND PROFILE STA 4+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
06/17/2025

SHEET
C06.31

G:\TX\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.30 - INTERCEPTOR CHANNEL C1 PLAN AND PROFILE.dwg Layout: C06.31 INTERCEPTOR CHANNEL C1 PLAN AND PROFILE STA 4+50 TO END Plotted: 6/17/2025 2:52:13 PM By: Aath





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- PROPOSED WASTEWATER LINE
- PROPOSED WATER LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

NOTES:

1. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
2. CONTRACTOR TO DEFLECT STORM SEWER 1-DEGREE EACH 20 FT SEGMENT AS REQUIRED.
3. CONTRACTOR TO CONNECT PROPOSED STORM SEWER OUTFALL TO POND.
4. CONTRACTOR TO ENSURE THAT ALL OFF-SITE STORM WATER RUNOFF IS BYPASSED UNTIL PROPOSED DRAINAGE IMPROVEMENTS ARE CONSTRUCTED.
5. CONTRACTOR TO ADJUST MANHOLE RIM ELEVATIONS AS NEEDED TO ENSURE FLUSHNESS WITH PROPOSED GRADING.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE, EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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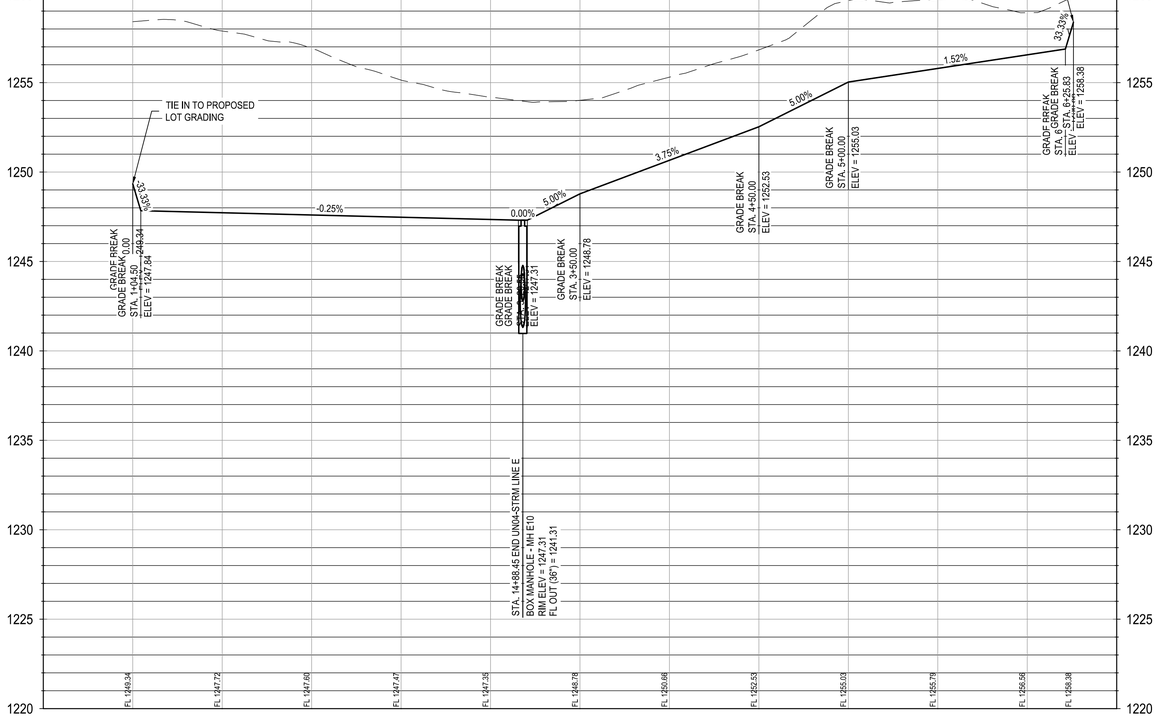
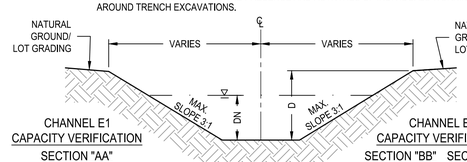




NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

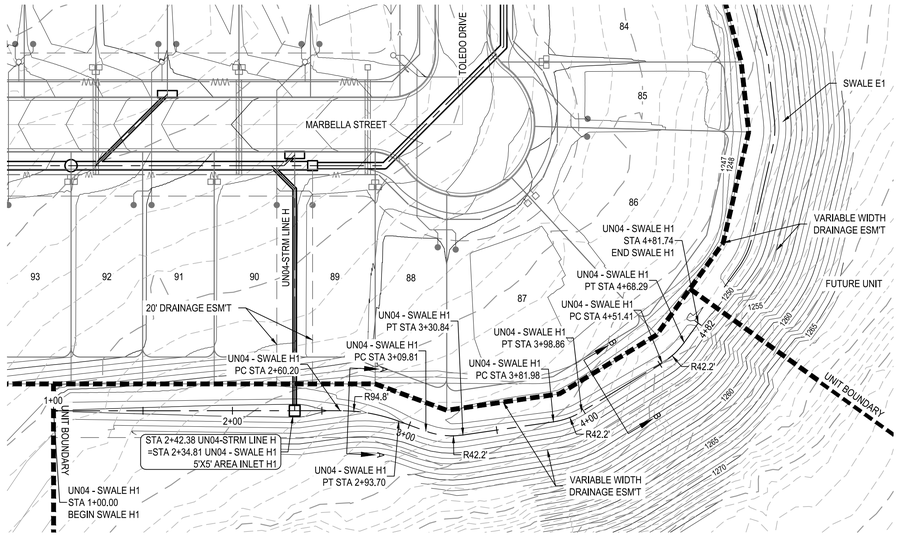
06/17/2025

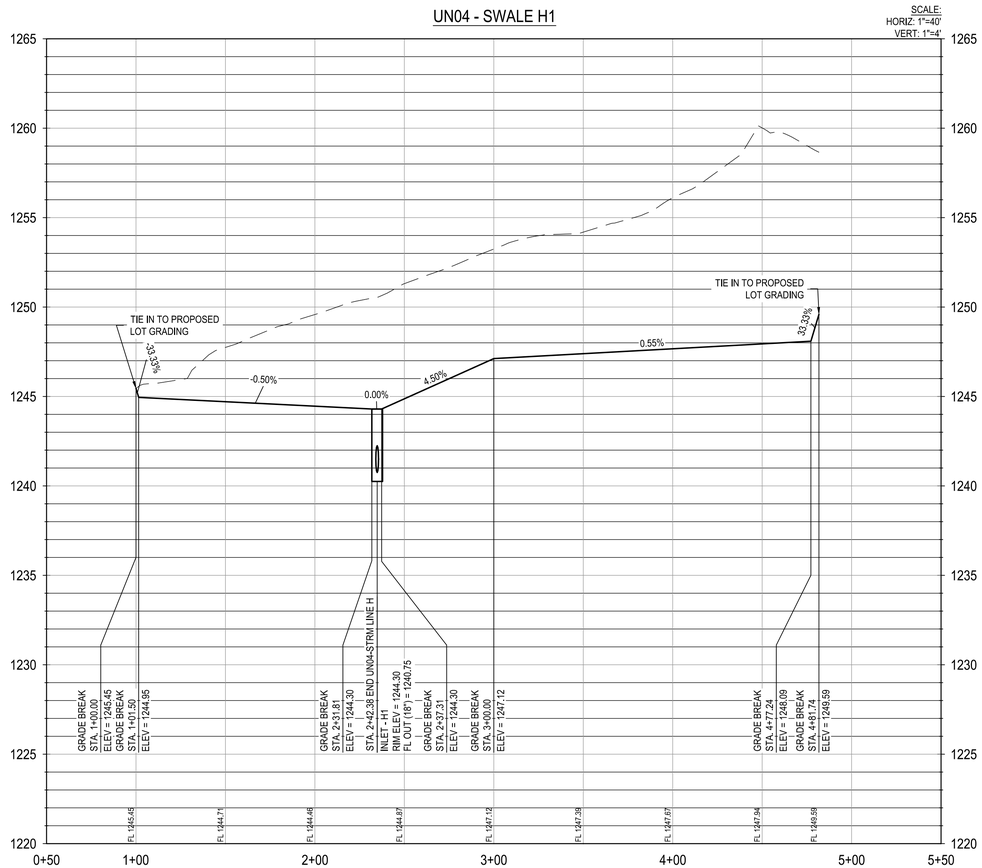
CANYON RANCH UNIT 4

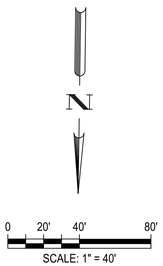
INTERCEPTOR CHANNEL E1 PLAN AND PROFILE

SHEET
C06.32

G:\TXO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.32 - INTERCEPTOR CHANNEL E1 PLAN AND PROFILE.dwg Layout: C06.32 INTERCEPTOR CHANNEL E1 PLAN AND PROFILE Plotted: 6/17/2025 2:54:42 PM By: Mhernandez







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED STORM DRAIN w/ MANHOLE
- PROPOSED CURB INLET
- WW PROPOSED WASTEWATER LINE
- W PROPOSED WATER LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
- UTILITY CROSSING
- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

PROFILE LEGEND

- PROPOSED STORM PIPE
- PROPOSED GROUND
- PROPOSED SUBGRADE
- EXISTING GROUND
- 25 100 25/100 YEAR HGL
- ALL WATER/WASTEWATER SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO DETAILS SHOWN IN THIS PLAN SET.

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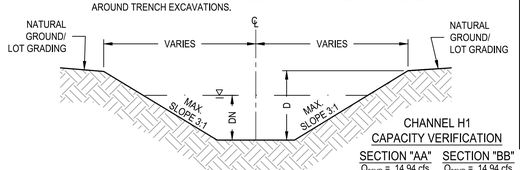

TRAPEZOIDAL CHANNEL TYPICAL SECTION

CHANNEL H1 CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 14.94 cfs	Q_{25YR} = 14.94 cfs
n = 0.030	n = 0.030
S = 2.78%	S = 0.50%
Dn = 1.13 ft	Dn = 1.74 ft
Vn = 1.41 fps	Vn = 0.77 fps
D = 2.50 ft	D = 2.50 ft
BW = 6.00 ft	BW = 6.00 ft

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
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STATE OF TEXAS
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146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

CANYON RANCH UNIT 4
INTERCEPTOR CHANNEL H1 PLAN AND PROFILE

SHEET
C06.33

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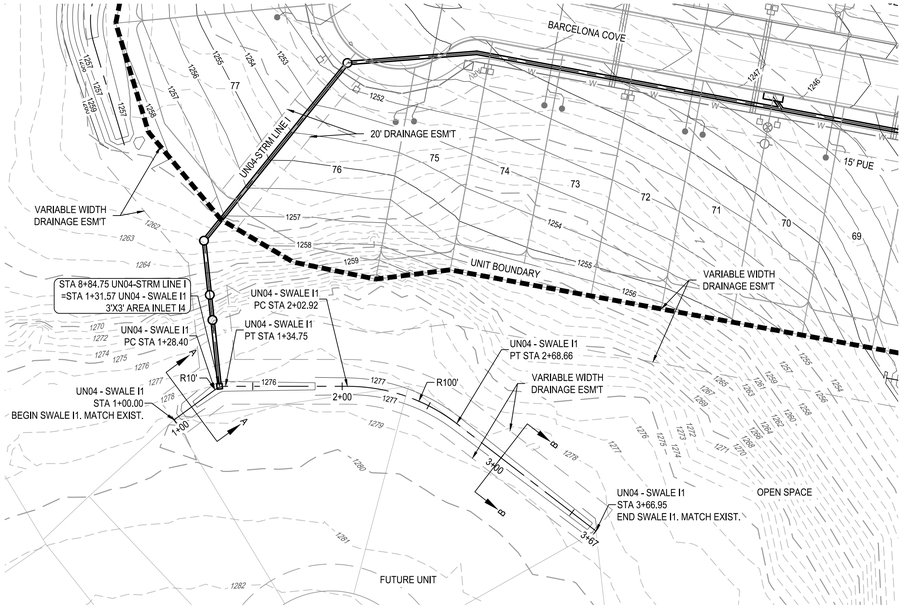

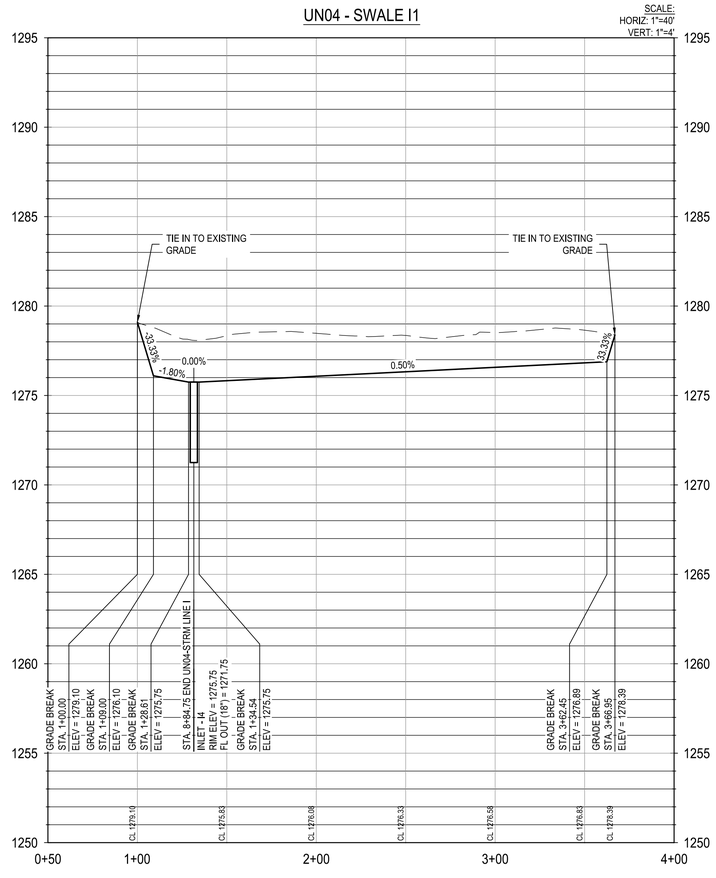

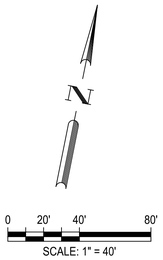

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- G PROPOSED GAS LINE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WATER SERVICES
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- PROPOSED SWALE FLOWLINE
- JURISDICTIONAL WATERS

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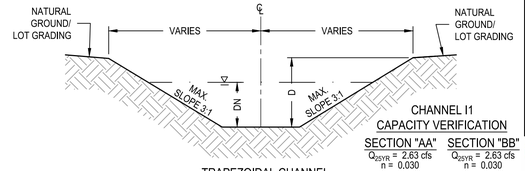

TRAPEZOIDAL CHANNEL TYPICAL SECTION

CHANNEL I1 CAPACITY VERIFICATION

SECTION "AA"	SECTION "BB"
Q_{25YR} = 2.63 cfs	Q_{25YR} = 2.63 cfs
n = 0.030	n = 0.030
S = 1.80%	S = 0.50%
Dn = 0.30 ft	Dn = 0.43 ft
Vn = 2.61 fps	Vn = 1.69 fps
D = 1.00 ft	D = 1.00 ft
BW = 4.00 ft	BW = 4.00 ft

NOT FOR CONSTRUCTION

						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE
BGE, INC.
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TBPE Registration No. F-1046

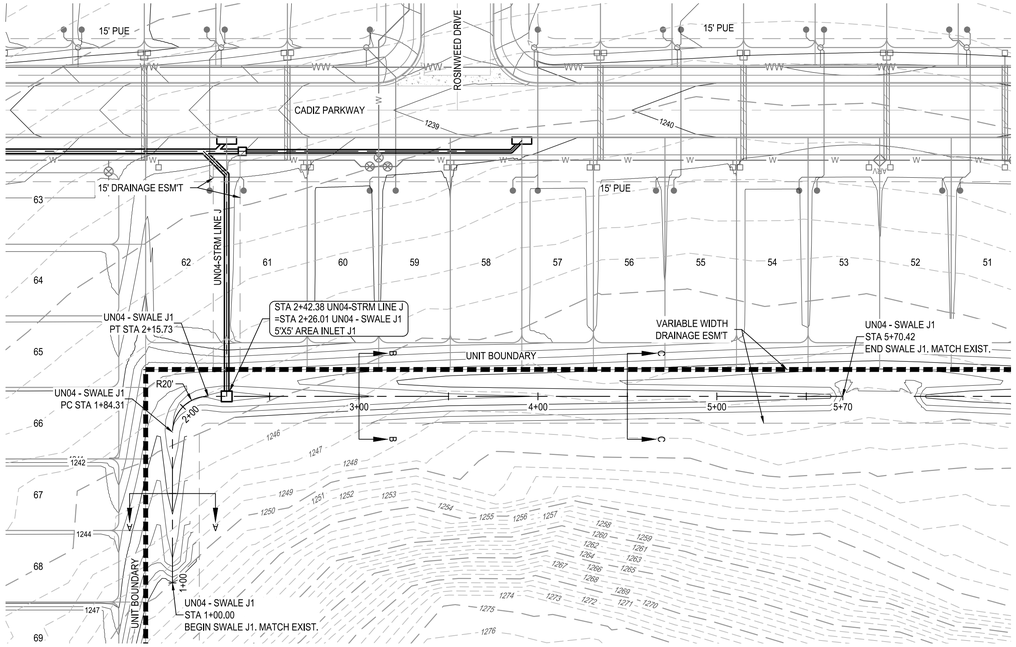
CANYON RANCH UNIT 4

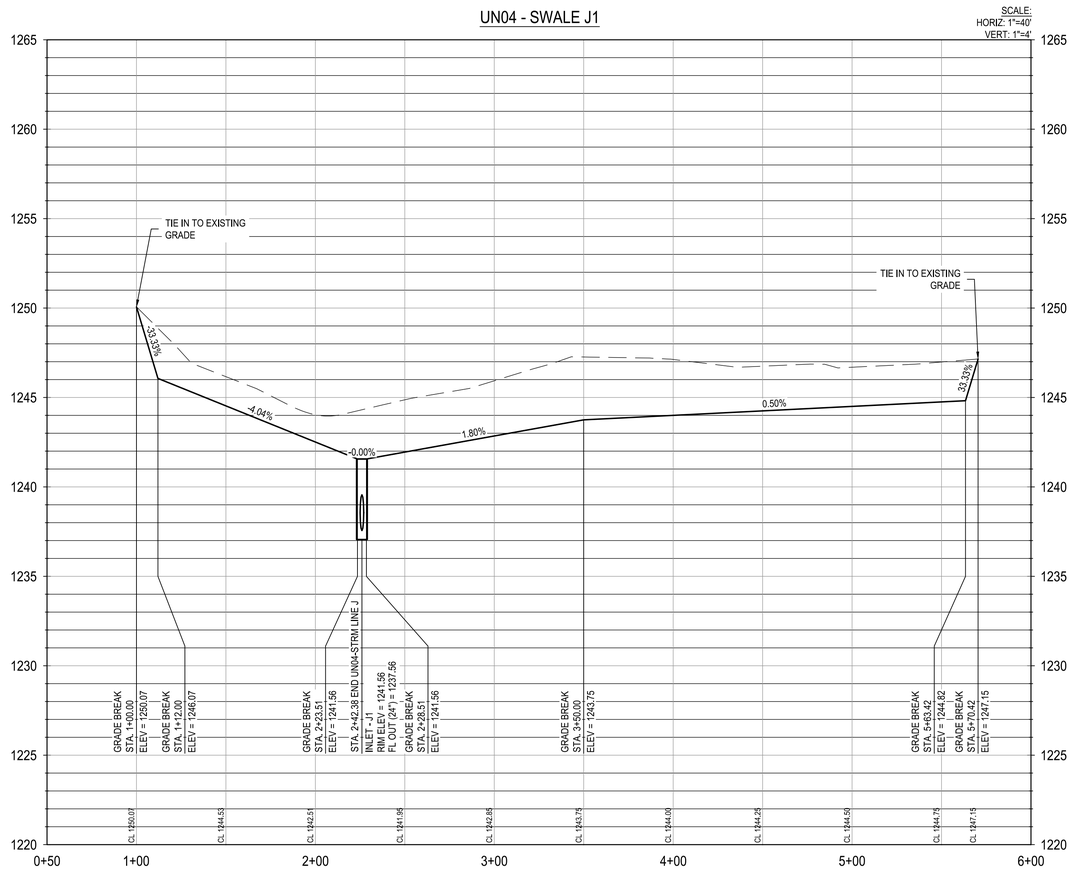
INTERCEPTOR CHANNEL I1 PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.34

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.34 - INTERCEPTOR CHANNEL I1 PLAN AND PROFILE.dwg Layout: C06.34 INTERCEPTOR CHANNEL I1 PLAN AND PROFILE Plotted: 6/17/2025 2:59:30 PM By: Mhernandez







LEGEND

- PROPERTY BOUNDARY
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- 831 EXISTING MINOR CONTOUR
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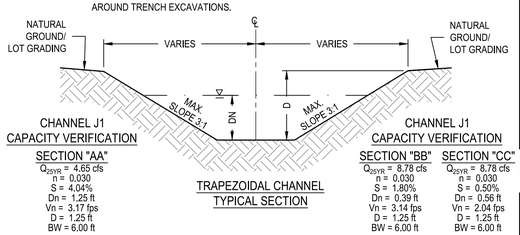

NOT FOR CONSTRUCTION

	DESCRIPTION	DATE	APR
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REVIEWED BY: SSM			
DRAWN BY: JDC			

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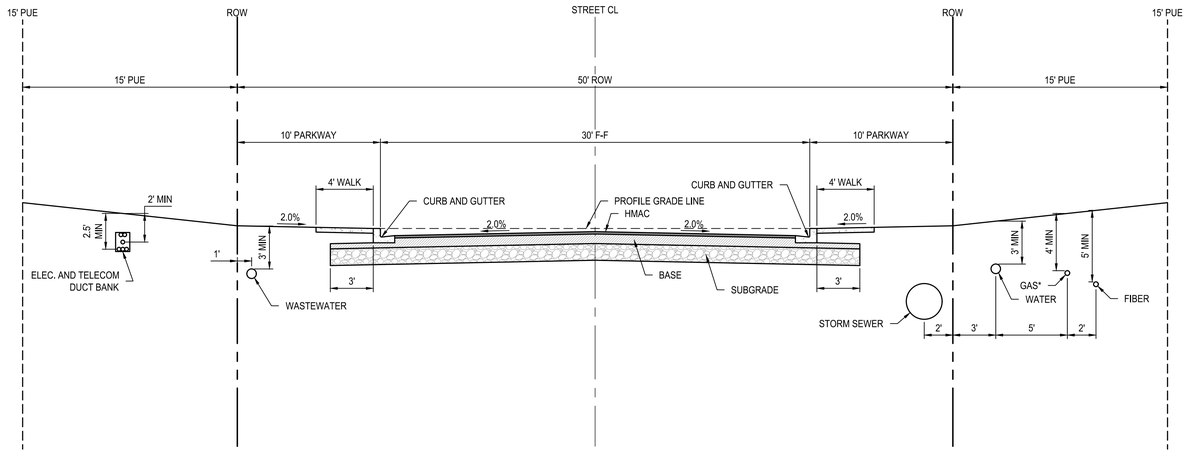
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.35



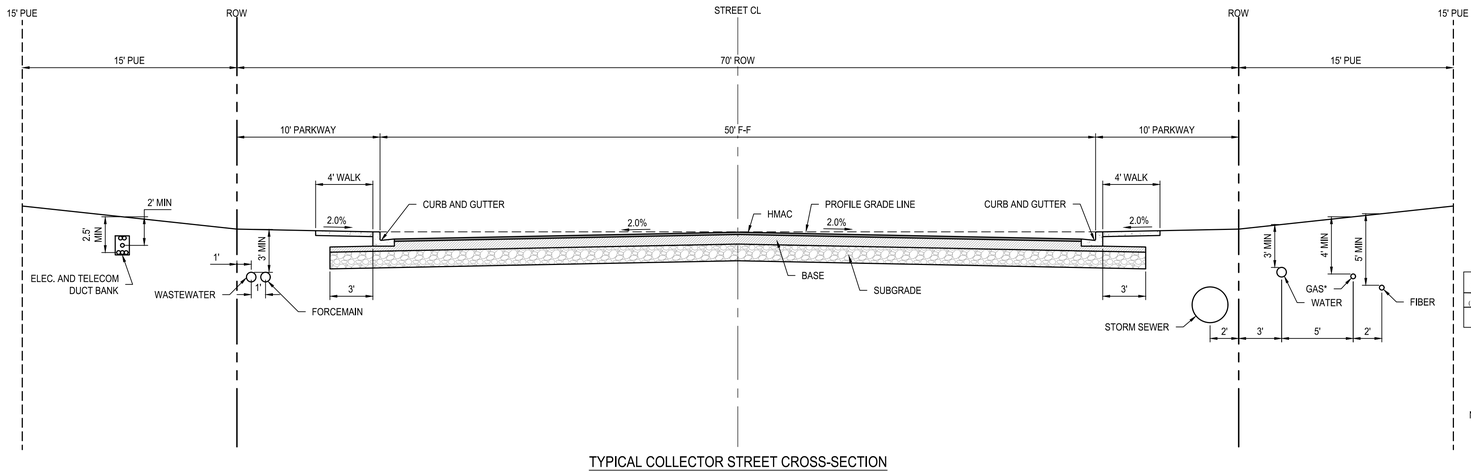
TYPICAL LOCAL STREET CROSS-SECTION

N.T.S.

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS FOR CANYON RANCH UNIT 4
SPRING BRANCH, TEXAS
REPORT FOR LENNAR
OCTOBER 22, 2024
BY PROFESSIONAL SERVICE INDUSTRIES, INC
REPORT NUMBER: 0312-3287-1R
SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE, INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.5	-	7.00	NO	-	-

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT



TYPICAL COLLECTOR STREET CROSS-SECTION

N.T.S.

SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS
PROPOSED NEW STREETS
CANYON RANCH SUBDIVISION
COMAL COUNTY, TEXAS
REPORT FOR GRAM VIKAS PARTNERS, INC
DECEMBER 10, 2020
BY INTEC OF SAN ANTONIO, LP.
12028 RADIUM
SAN ANTONIO, TX 78216
SUMMARY OF RECOMMENDED OPTIONS
MINIMUM FLEXIBLE PAVEMENT RECOMMENDATIONS - CBR = 3.0**

STREET CLASSIFICATION	ASPHALTIC CONCRETE TYPE D, INCHES	ASPHALTIC CONCRETE TYPE B, INCHES	AGGREGATE BASE, INCHES	GEOGRID	SUBGRADE INCHES	STRUCTURAL NUMBER
LOCAL STREET (NO BUS TRAFFIC)	2.0	-	6.00	NO	-	2.07
RESIDENTIAL COLLECTOR	3.00	-	18.50	NO	-	3.91
	3.00	-	15.50	YES	-	3.95
	3.00	-		NO	-	4.04

SUMMARY OF RECOMMENDED OPTIONS - RIDGID PAVEMENT**

STREET CLASSIFICATION	REINFORCED CONCRETE, INCHES	SUBGRADE THICKNESS, INCHES
RESIDENTIAL LOCAL (NO BUS TRAFFIC)	6.00	-
RESIDENTIAL COLLECTOR	10.00	-

NOTE: CONTRACTOR MUST REFERENCE THE SIGNED AND SEALED GEOTECH REPORT

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

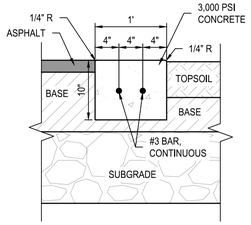
STREET AND DRAINAGE DETAILS
(SHEET 1 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

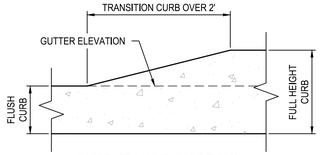
06/17/2025

SHEET
C06.50

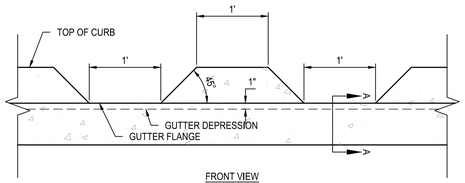
G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.50 - STREET AND DRAINAGE DETAILS.dwg Layout: STREET AND DRAINAGE DETAILS (SHEET 1 OF 6) Plotted: 6/17/2025 3:02:20 PM By: Lhuck



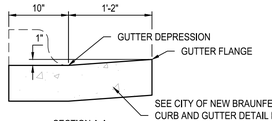
12" FLUSH CURB
N.T.S.



CURB TRANSITION DETAIL
SCALE: N.T.S.



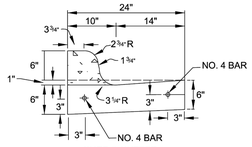
FRONT VIEW
N.T.S.



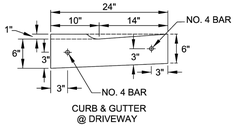
SECTION A-A
N.T.S.

SAWTOOTH CURB
SCALE: N.T.S.

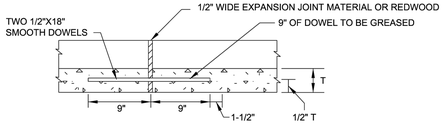
CURB AND GUTTER



CURB & GUTTER



CURB & GUTTER
@ DRIVEWAY



LONGITUDINAL SECTION THRU CURB AND GUTTER
SHOWING TYPICAL EXPANSION JOINT DETAILS.
REINFORCING STEEL SHALL NOT CROSS EXPANSION JOINTS.
STEEL SHALL BE TERMINATED 3" (+ OR -) 1" FROM FACE OF THE JOINT.

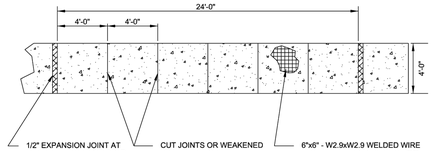
NOTES:

1. REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 18".
2. CURB AND GUTTER SHALL HAVE FORMED TOOLED OR SAWED CONTRACTION JOINTS AT ± 10'. THE DEPTH OF THESE JOINTS SHALL BE SUFFICIENT TO ENSURE CRACKING AT THE JOINTS.
3. CURB OR CURB AND GUTTER SHALL HAVE EXPANSION JOINTS AT POINTS OF CURVATURE, AT INTERVALS NO GREATER THAN 100' AND AT ALL ADJACENT STRUCTURES.
4. UNLESS OTHERWISE SHOWN, TRANSITIONS BETWEEN CURBS OR CURBS AND GUTTER OF DIFFERING CROSS SECTION SHALL BE ACCOMPLISHED OVER A 10' LENGTH OR AS APPROVED BY THE CITY ENGINEER.
5. ALL CONCRETE TO BE CLASS "A" 3000 PSI CONCRETE.
6. ALL EXPOSED CONCRETE SURFACES TO BE BRUSHED SMOOTH AND UNIFORM.

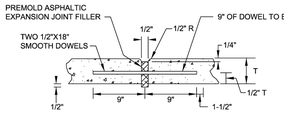
DATE APPROVED: 07/2008	DWG. NO: ST-013	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: CURB & GUTTER		

City of New Braunfels ENGINEERING DEPARTMENT

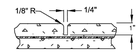
SIDEWALK
(RESIDENTIAL)



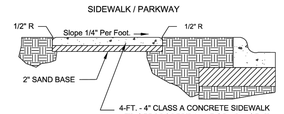
PLAN VIEW



EXPANSION JOINT



WEAKENED PLANE JOINT



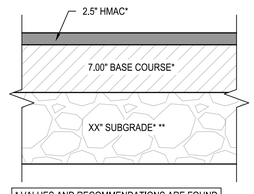
TYPICAL SECTION

NOTES:

1. EXPANSION JOINTS ARE TO BE USED BETWEEN CONCRETE DRIVEWAY AND SIDEWALK.
2. SCORED JOINTS DENOTE SIDEWALK ACROSS THE DRIVEWAY AND ARE TO BE PLACED AT LEAST 1/3 rd. THROUGH THE SLAB THICKNESS.
3. ALL SIDEWALK AND DRIVEWAY CONSTRUCTION SHALL MEET A.D.A. SPECIFICATIONS.

DATE APPROVED: 07/2008	DWG. NO: ST-016	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 1	
FILENAME: SIDEWALK (RESIDENTIAL)		

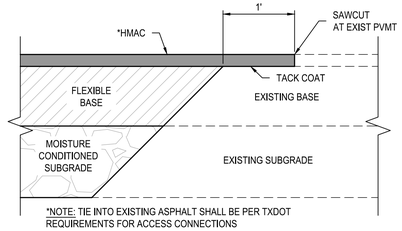
City of New Braunfels ENGINEERING DEPARTMENT



* VALUES AND RECOMMENDATIONS ARE FOUND IN THE GEOTECHNICAL REPORT NUMBER 0312-3287-1R PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC DATED 08/28/2024

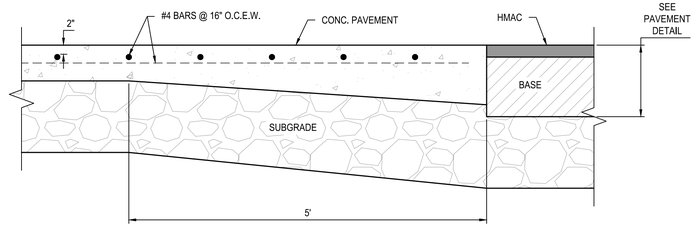
** LIME TREATED SUBGRADE ONLY REQUIRED IF PI IS ABOVE 20 PER THE GEOTECH REPORT

TYPICAL PAVEMENT DETAIL
SCALE: N.T.S.



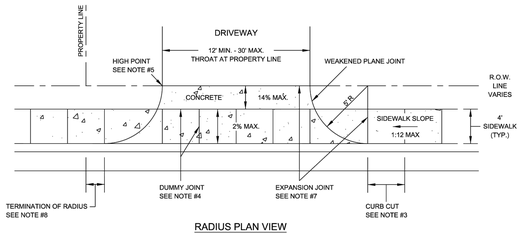
*NOTE: TIE INTO EXISTING ASPHALT SHALL BE PER TXDOT REQUIREMENTS FOR ACCESS CONNECTIONS

MATCH EXISTING PAVEMENT
N.T.S.

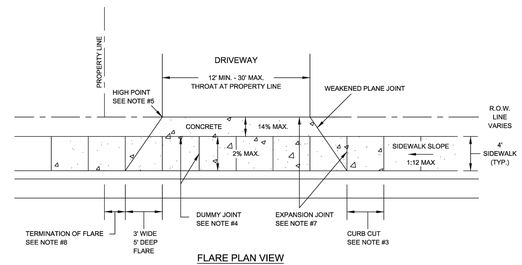


CONCRETE/ASPHALT PAVEMENT JUNCTURE
SCALE: N.T.S.

DRIVEWAY APRON
(RESIDENTIAL - ONE OR TWO FAMILY)



RADIUS PLAN VIEW

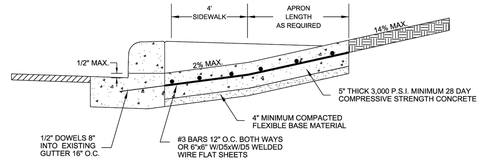


FLARE PLAN VIEW

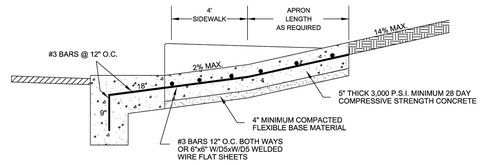
DATE APPROVED: 04/2016	DWG. NO: ST-014.1	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 1 OF 2	
FILENAME: DRIVEWAY (RESIDENTIAL - ONE OR TWO FAMILY)		

City of New Braunfels ENGINEERING DEPARTMENT

DRIVEWAY APRON
(RESIDENTIAL - ONE OR TWO FAMILY)



STRUCTURAL SECTION



NO EXISTING CURB STRUCTURAL SECTION

NOTES:

1. WHERE GUTTER DOES NOT EXIST DRIVEWAY APRON SHALL EXTEND TO EDGE OF ASPHALT AND SHALL HAVE A MINIMUM 6" WIDE 1' DEEP GRADE BEAM MONOLITHIC AND REINFORCED SIMILAR TO APRON.
2. PLACEMENT OF SIDEWALK SHOWN IS TYPICAL; HOWEVER, ALTERNATIVE SIDEWALK PLACEMENT COMMON TO DRIVEWAY APRON WILL BE CONSIDERED PROVIDED CROSS SLOPE OF SIDEWALK IS NO GREATER THAN 2%.
3. CURB CUT LENGTH NO GREATER THAN AS REQUIRED TO MATCH SLOPE OF ADJACENT SIDEWALK.
4. DUMMY JOINTS TO BE PROVIDED AT MINIMUM 4-FT. INTERVALS PERPENDICULAR TO THE CURB LINE WITHIN THE SIDEWALK AREA AND PARALLEL TO THE SIDEWALK AREA.
5. PROVIDE A MINIMUM 7" HIGH POINT. HIGH POINT HEIGHT SHALL BE MEASURED FROM THE GUTTER FLOW LINE TO THE DRIVEWAY APRON. NOTE HIGH POINT MAY OCCUR OUTSIDE OF ROW.
6. DRIVEWAY THROAT TRANSITION MAY OCCUR OUTSIDE OF ROW.
7. PROVIDE EXPANSION JOINTS AT ALL SIDEWALK AND DRIVEWAY THROAT JOINTS. EXPANSION JOINTS SHALL BE PLACED USING 1/2" ASPHALTIC MATERIAL WITH 1/2" DOWELS 16" O.C.
8. THE TANGENT POINT OF THE DRIVEWAY CURB RETURN AT THE PUBLIC ROADWAY LINE OR FLARE SHALL BE A MINIMUM DISTANCE OF 1' OFF THE PROPERTY PROJECTED PERPENDICULAR TO THE STREET CENTERLINE, EXCEPT SINGLE FAMILY OR ZERO LOT LINE LOTS. ON SINGLE FAMILY ZERO LOT LINE LOTS WHERE THE DRIVE IS ON THE ZERO LOT LINE, THE TANGENT POINT OR FLARE SHALL BE NO GREATER THAN 3' BEYOND THE ADJOINING PROPERTY LINE PROJECTED PERPENDICULAR TO THE STREET CENTERLINE.

DATE APPROVED: 04/2016	DWG. NO: ST-014.2	SCALE: N.T.S.
DRAWN BY: RAS	SHEET: 2 OF 2	
FILENAME: DRIVEWAY (RESIDENTIAL - ONE OR TWO FAMILY)		

City of New Braunfels ENGINEERING DEPARTMENT

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STREET AND DRAINAGE DETAILS
(SHEET 2 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.51

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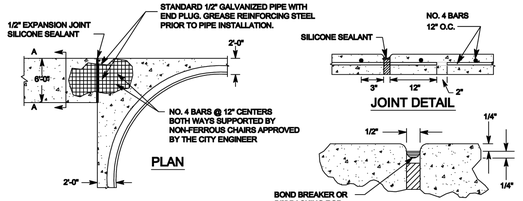
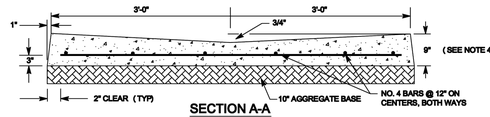
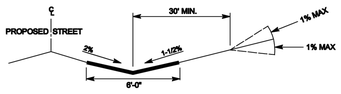
CROSS GUTTER





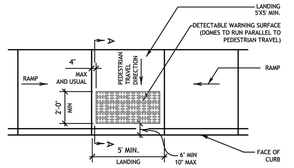


TYPICAL PROFILE AT LOCAL RESIDENTIAL STREET INTERSECTION

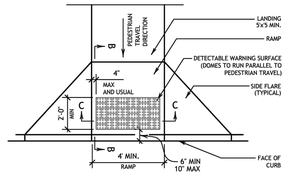
NOTES:

1. **ALL CONCRETE SHALL BE CLASS "A" 3,000 PSI.**
2. **FINISHED ASPHALT CONCRETE SURFACE TO BE FLUSH WITH CROSS GUTTER LIP.**
3. **CONSTRUCTION OF CROSS GUTTER IS NOT ALLOWED ACROSS MAJOR COLLECTOR OR ARTERIAL STREETS.**
4. **ADJACENT SPANDREL SHALL BE 9" THICK CLASS "A" 3,000 PSI CONCRETE.**

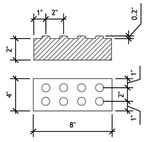
DATE APPROVED: 7/08	DWG. NO: ST-020	SCALE: N.T.S.	City of New Braunfels — ENGINEERING DEPARTMENT
DRAWN BY: RAS	SHEET: 1 OF 1		
FILENAME: CROSS GUTTER			
P:\CURRENT NEW BRAUNFELS DETAILS\2008\			



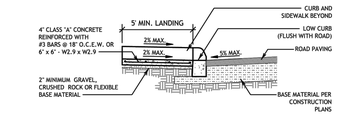
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



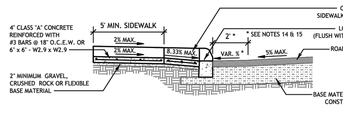
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



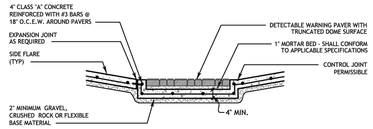
DETECTABLE WARNING PAVER



SECTION A-A



SECTION B-B



SECTION C-C

CURB RAMP NOTES

1. ALL SLOPES ARE MAXIMUM ALLOWABLE. THE LEAST POSSIBLE SLOPE THAT WILL STILL DRAIN PROPERLY SHOULD BE USED. ADJUST CURB RAMP LENGTH OR GRADE OF APPROACH SIDEWALKS AS DIRECTED.
2. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF CURB RAMPS ARE TO BE SHOWN ON THE CONSTRUCTION PLANS. ALL ACCESSIBLE WALK WAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE AMERICANS WITH DISABILITIES ACT (ADA) AND TEXAS ACCESSIBILITY STANDARDS (TAS). CITY ENGINEER OR BUILDING OFFICIAL MAY ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
3. THE MINIMUM STANDARD SIDEWALKS SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 118-49 OF THE NEW BRAUNFELS CODE OF ORDINANCES AND MAINTAIN A MINIMUM UNOBSTRUCTED WIDTH OF 3' (36").
4. ALL LANDINGS WHERE REQUIRED SHALL BE 5'X 5' (60"X60") MINIMUM WITH A MAXIMUM 2% SLOPE IN ANY DIRECTION.
5. RAMP LENGTHS SHALL BE SUFFICIENT TO MAINTAIN A MAXIMUM SLOPE OF 8.33% (1:12). MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND CURB RAMP SURFACES IS 2% (1:50).
6. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY. ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE GRADE OF THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS, AND LANDINGS IN ACCORDANCE WITH CURRENT ADA AND TAS REQUIREMENTS.
7. PROVIDE FLARED RAMP SIDES WITH A MAXIMUM SLOPE OF 10% (1:10) MEASURED ALONG THE CURB LINE. CURB RETURNS MAY BE USED IN-LIEU OF SIDE FLARES IN AREAS NOT NORMALLY WALKED ACROSS BY PEDESTRIANS, BECAUSE THE ADJACENT SURFACE IS VEGETATION OR OTHER NON-WALKING SURFACE OR WHERE THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
8. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4'X 4' (48"X48") WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
9. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, CURB RAMPS SHALL BE ALIGNED WITH THEORETICAL CROSSWALKS, OR AS DIRECTED BY THE CITY ENGINEER OR BUILDING OFFICIAL.
10. EXISTING FEATURES THAT COMPLY WITH CURRENT TAS REQUIREMENTS MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.
11. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. PROVIDE CURB RAMPS WHEREVER AN ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB.
12. SEPARATE CURB RAMP AND LANDINGS FROM ADJACENT SIDEWALK AND ANY OTHER ELEMENTS WITH PRE-MOLD OR BOARD JOINT OF 1/2" UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER OR BUILDING OFFICIAL.
13. PROVIDE A SMOOTH TRANSITION WHERE THE CURB RAMPS CONNECT TO THE STREET.
14. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP 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%.
15. 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.
16. ADA RAMP SHALL BE CONSTRUCTED WITH 4" CLASS 'A' CONCRETE WITH 2" MINIMUM GRAVEL,CRUSHED ROCK OR FLEXIBLE BASE MATERIAL. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6"x6" - W2.9 X W2.9 WIRE MESH.
17. THE EXTENTS OF ADA COMPLIANCE IN ALTERATIONS SHALL BE WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT AND AS DETERMINED BY THE CITY BUILDING OFFICIAL.

DETECTABLE WARNING NOTES

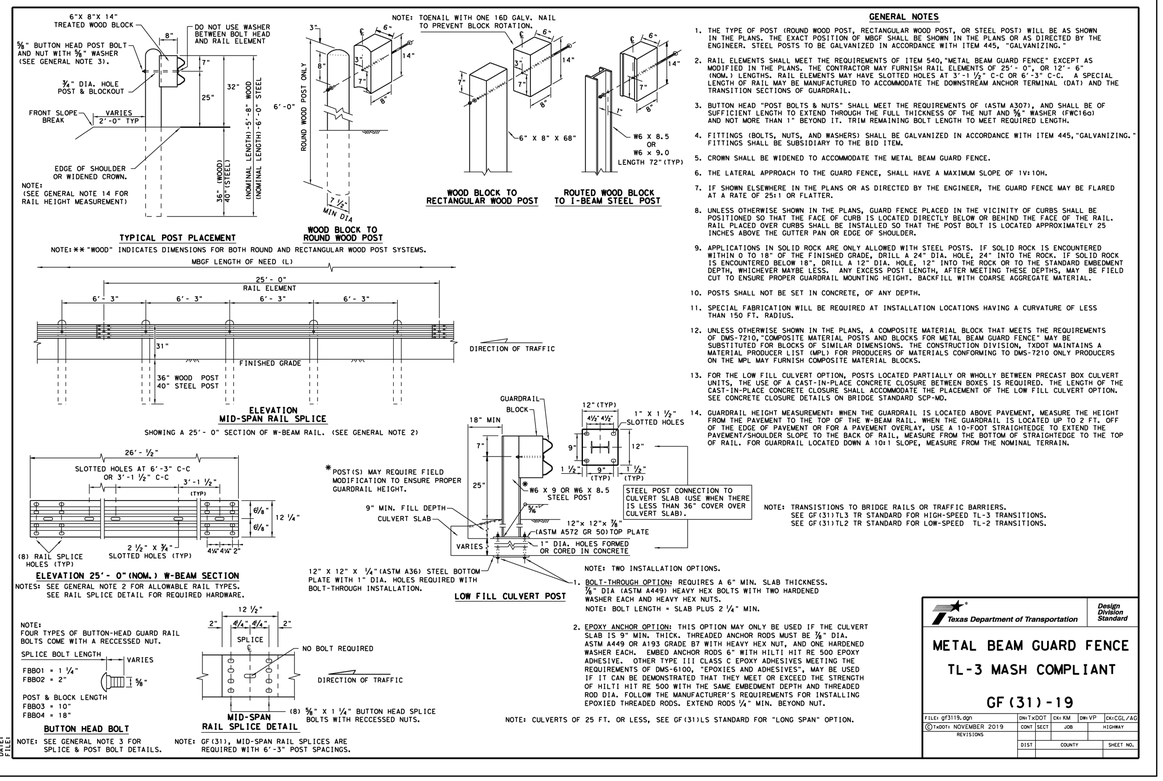
1. CURB RAMPS OR LANDINGS ABUTTING THE CROSSWALK MUST HAVE A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH SECTION 4.29 OF THE TEXAS ACCESSIBILITY STANDARDS (TAS). THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACES, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
2. DETECTABLE WARNING SURFACES MUST BE SLIP RESISTANT AND NOT ALLOW WATER TO ACCUMULATE.
3. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
4. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
5. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS A MINIMUM OF 6" AND A MAXIMUM OF 10" FROM THE EXTENSION OF THE FACE OF CURB. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
7. WITHIN CITY RIGHT OF WAY AND WHERE APPLICABLE FURNISH DETECTABLE WARNING PAVER UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
8. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING PAVER UNITS USING A POWER SAW.

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the City of New Braunfels for any purpose whatsoever.

City of New Braunfels

ENGINEERING DIVISION
424 S. CASTELL AVE.
NEW BRAUNFELS, TEXAS 78130
PHONE: 830 221 4020
FAX: 830 626 3600

ADA RAMP STANDARDS		
APPROVED DATE: 7/5/2011	DWG. NO.:	SCALE: AS NOTED
DRAWN BY: AM	CONTACT: JK	SHEET: 1 OF 1



GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540,"METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 2511 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210,"COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MO.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL. MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:
FILE:

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE TL-3 MASH COMPLIANT

GF(31)-19

FILE: gf3119.dgn	DN:TxDOT	CK: KM	DW: VP	CK: CGL/AG	
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
REVISIONS	DIST	COUNTY		SHEET NO.	

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinvgay.com
TBPE Registration No. F-1046

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

CANYON RANCH UNIT 4
STREET AND DRAINAGE DETAILS
(SHEET 3 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.52

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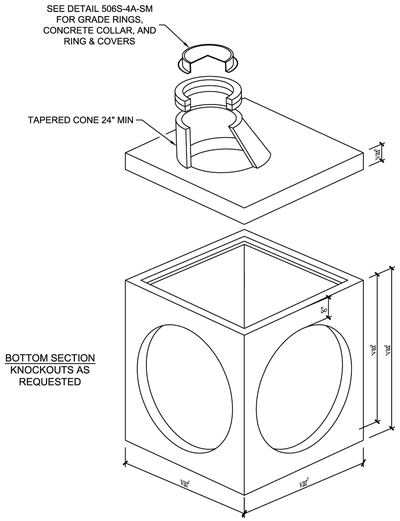
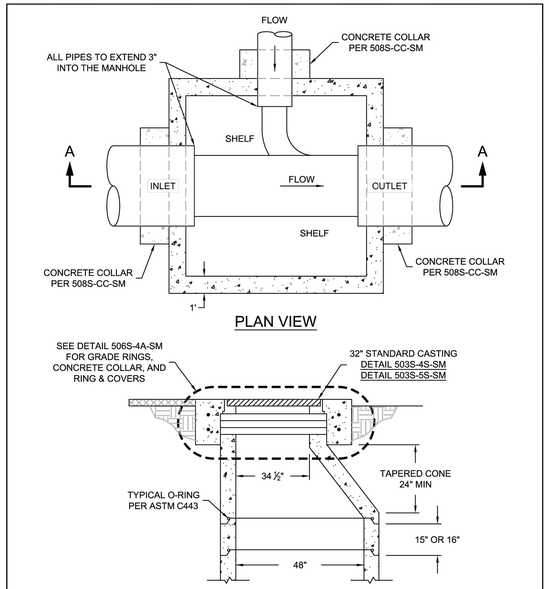


SPECIFICATIONS:
- CONCRETE HAS A 28 DAY STRENGTH OF 5,000 PSI
- STEEL REINFORCEMENT S ASTM A615 GRADE 60
-LOAD DESIGN IS H-20

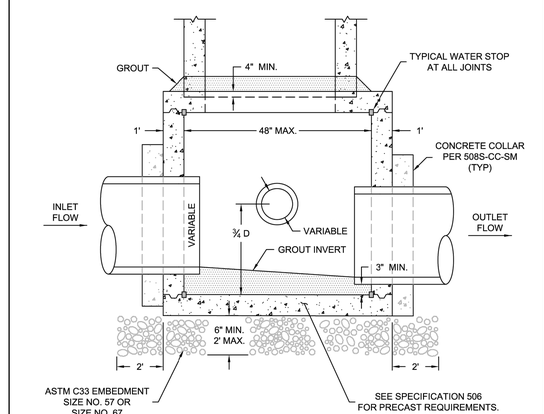
NOTES:
- CONSULT MANUFACTURER BEFORE HANDLING

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM JUNCTION BOX	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-5-SM
LAURIE MOYER, P.E.	ADOPTED		1 OF 3



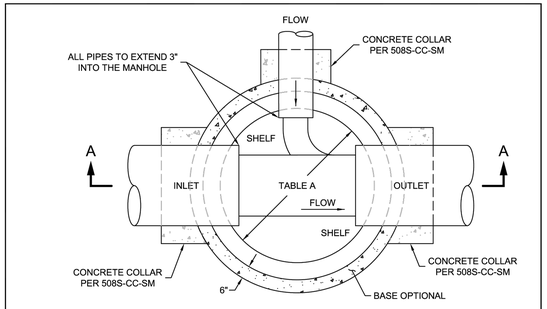
PLAN VIEW

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM JUNCTION BOX	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-5-SM
LAURIE MOYER, P.E.	ADOPTED		2 OF 3



SECTION A-A

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM JUNCTION BOX	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-5-SM
LAURIE MOYER, P.E.	ADOPTED		3 OF 3



PLAN VIEW

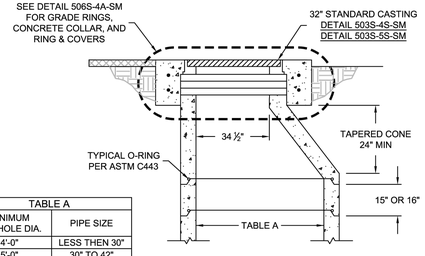
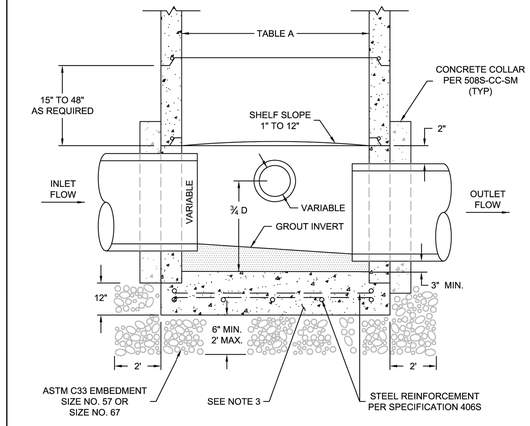


TABLE A	
MINIMUM MANHOLE DIA.	PIPE SIZE
4'-0"	LESS THEN 30"
5'-0"	30" TO 42"
6'-0"	48" TO 54"
7'-0"	60" TO 66"

ALTERNATE SECTION MAY BE SUBMITTED FOR APPROVAL

THESE ARE MINIMUM. SIZE TO BE USED IS DEPENDENT ON DRAIN ANGLES.

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3-SM
LAURIE MOYER, P.E.	ADOPTED		1 OF 2

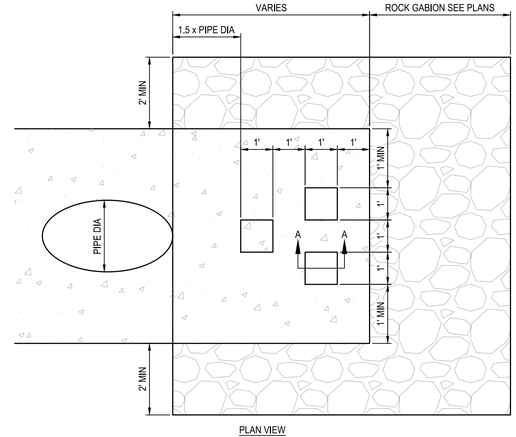


SECTION A-A

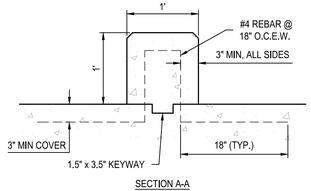
NOTES

1. STORM DRAIN MANHOLES SHOULD ONLY BE USED WHEN A JUNCTION BOX WILL NOT WORK DUE TO ODD ANGLES.
2. SEE DETAIL 506S-5-SM FOR JUNCTION BOX MANHOLE.
3. SEE SPECIFICATION 506 FOR PRECAST REQUIREMENTS.

The City of San Marcos Engineering and Capital Improvements	CURRENT AS OF 1/1/2022	PRE-CAST STORM DRAIN MANHOLE	
RECORD COPY SIGNED BY	1/1/2022	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 506S-3-SM
LAURIE MOYER, P.E.	ADOPTED		2 OF 2



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

ENERGY DISSIPATOR DETAILS
N.T.S.

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

STREET AND DRAINAGE DETAILS
(SHEET 4 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.53

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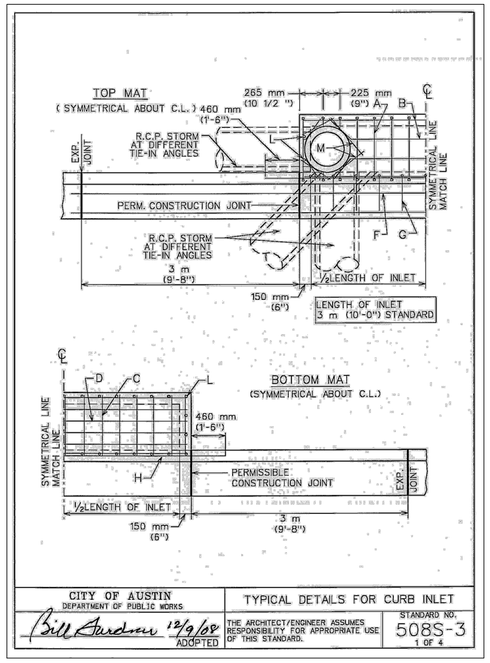


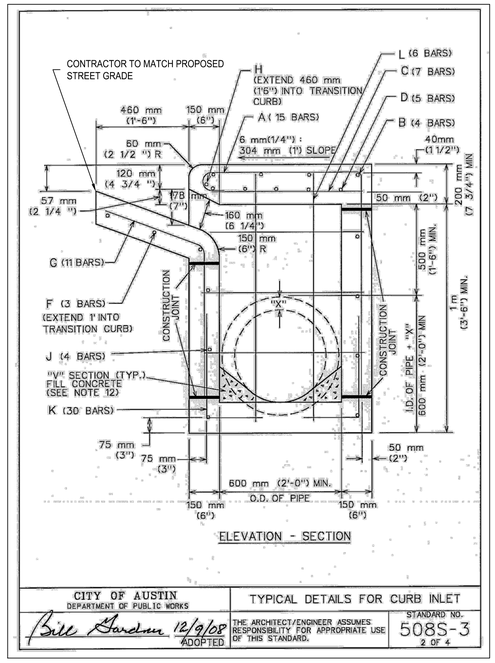
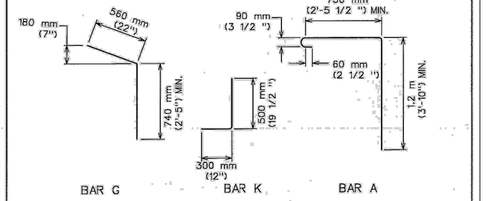


TABLE OF QUANTITIES
FOR 18" OUTLET PIPE
REINFORCING STEEL QUANTITIES

BARS	SIZE	SPACING	NUMBER	LENGTH	WEIGHT
A	4	230mm (9")×	15	2 m (7'-0")	73
B	4	250 mm (10")	4	3.25 m (10'-8")	29
C	4	460 mm (18")	7	760 mm (2'-6")	12
D	6	150 mm (6")	5	3.25 m (10'-8")	80
E	4	300 mm (12")	6	760 mm (2'-6")	10
F	4	250 mm (10")	3	4 m (13'-0")	35
G	4	300 mm (12")	11	1.25 m (4'-3")	31
H	6	-	1	4.25 m (14'-0")	20
J	4	300 mm (12")	7	3.25 m (10'-8")	50
K	4	230 mm (9")×	30	800 mm (2'-7 1/2")	52
L	4	300 mm (12")×	6	1.3 m (4'-4")	17
M	4	-	4	500 mm (1'-8") AVG	4
TOTAL STEEL, LB.					413
TOTAL CONCRETE, C.Y.					4.06

• EXCEPT AS SHOWN ON PLAN



CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
Bill Gardner 12/9/08
ADOPTED
TYPICAL DETAILS FOR CURB INLET
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 508S-3
3 OF 4

NOTES:
1. ALL CONCRETE SHALL BE CLASS "A"
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. VERTICAL STEEL MAY BE SPLICED (380 mm or 15" MIN. LAP) IN THE LOWER ONE-HALF OF ALL INLET WALLS.5. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME, THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.
5. QUANTITIES SHOWN HEREON ARE FOR THE CONTRACTOR'S INFORMATION ONLY. PAYMENT WILL BE MADE FOR EACH INLET OF THE TYPE SPECIFIED, COMPLETE IN PLACE INCLUDING MANHOLE FRAME AND OVER.
7. CHAMFER ALL EXPOSED EDGES 20 mm (3/4 ").
8. MANHOLE FRAME AND COVER SHALL BE IN ACCORDANCE WITH CITY OF AUSTIN STANDARD 503S-1.
9. THE CONTRACTOR MAY PROPOSE ALTERNATE PROCEDURES FOR THE CONSTRUCTION OF INLETS, INCLUDING PRECAST UNITS. PLANS FOR SUCH PROPOSED ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE CONSTRUCTION.
10. ALL INLET WALLS SHALL BE FORMED EXCEPT WHERE THE NATURE OF THE SURROUNDING MATERIAL IS SUCH THAT IT CAN BE TRIMMED TO A SMOOTH VERTICAL FACE, WHEN INLET WALLS ARE PLACED TO NEAT EXCAVATION LINES THE WALL THICKNESS SHALL NOT EXCEED 10 INCHES.
11. PAYMENT FOR INLET AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB.
12. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE, SHAPED AS "V" SECTION
13. NO SPLICING OF REINFORCING STEEL SHALL BE PERMITTED UNLESS OTHERWISE NOTED ON THE PLANS OR PERMITTED IN WRITING BY THE ENGINEER.

REFERENCES:
FOR EXPANSION JOINT DOWEL AND DOWEL LOCATION DETAILS SEE STD. 430S-3, "CURB EXPANSION JOINT DOWEL DETAIL".
FOR 18" MANHOLE AND COVER DETAILS SEE STD. 503S-1, "18" COVER AND FRAME".

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
Bill Gardner 12/9/08
ADOPTED
TYPICAL DETAILS FOR CURB INLET
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
STANDARD NO. 508S-3
4 OF 4

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

Slope	Dia of Pipe (D)	Values for One Pipe W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	Values to be Added for Each Add'l Pipe X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	4'-7 1/2"	2'-6"	2'-10"	3'-3 1/4"	88	0.6	1'-9"	20	0.2
	15"	5'-5 1/2"	2'-9 1/2"	3'-4"	3'-10 1/4"	103	0.7	2'-2"	24	0.3
	18"	6'-4 1/2"	3'-1"	3'-10"	4'-5"	124	0.9	2'-8"	32	0.3
	21"	7'-2 1/2"	3'-4 1/2"	4'-4"	5'-0"	143	1.1	3'-1"	43	0.4
	24"	8'-2 1/2"	3'-9 1/2"	4'-10"	5'-7"	164	1.3	3'-7"	50	0.5
	27"	9'-1"	4'-1"	5'-4"	6'-2"	179	1.5	3'-11"	56	0.6
	30"	9'-11 1/2"	4'-4 1/2"	5'-10"	6'-8 3/4"	203	1.7	4'-4"	65	0.8
	33"	10'-10"	4'-8"	6'-4"	7'-3 3/4"	224	2.0	4'-8"	71	0.9
	36"	11'-8 1/2"	4'-11 1/2"	6'-10"	7'-10 3/4"	249	2.2	5'-1"	81	1.0
	42"	13'-5 1/2"	5'-6 1/2"	7'-10"	9'-0 1/2"	298	2.8	5'-10"	97	1.3
	48"	15'-1"	6'-1 1/2"	9'-4"	10'-9 1/2"	360	3.8	6'-7"	117	1.7
	54"	17'-5 3/4"	6'-8 1/2"	10'-4"	11'-11 1/4"	427	4.5	7'-6"	151	2.1
	60"	19'-2 3/4"	7'-3 1/2"	11'-4"	13'-1"	481	5.3	8'-3"	174	2.5
	66"	20'-11 1/2"	7'-10 1/2"	12'-4"	14'-3"	544	6.2	8'-9"	194	2.9
	72"	22'-8 1/2"	8'-5 1/2"	13'-4"	15'-4 3/4"	601	7.1	9'-4"	213	3.3
3:1	12"	6'-3"	2'-6"	4'-3"	4'-11"	118	0.8	1'-9"	22	0.2
	15"	7'-5"	2'-9 1/2"	5'-0"	5'-9 1/4"	137	1.1	2'-2"	28	0.3
	18"	8'-6 3/4"	3'-1"	5'-9"	6'-7 3/4"	170	1.3	2'-8"	37	0.5
	21"	9'-8 3/4"	3'-4 1/2"	6'-6"	7'-6"	195	1.6	3'-1"	48	0.6
	24"	11'-0"	3'-9 1/2"	7'-3"	8'-4 1/2"	227	2.0	3'-7"	58	0.7
	27"	12'-2"	4'-1"	8'-0"	9'-2 3/4"	251	2.3	3'-11"	67	0.8
	30"	13'-4"	4'-4 1/2"	8'-9"	10'-1 1/4"	293	2.7	4'-4"	77	1.0
	33"	14'-5 3/4"	4'-8"	9'-6"	10'-11 3/4"	318	3.1	4'-8"	84	1.2
	36"	15'-7 3/4"	4'-11 1/2"	10'-2"	11'-10"	351	3.5	5'-1"	96	1.4
	42"	17'-11 1/2"	5'-6 1/2"	11'-9"	13'-6 3/4"	432	4.5	5'-10"	119	1.7
	48"	21'-1 3/4"	6'-1 1/2"	14'-0"	16'-2"	537	6.1	6'-7"	146	2.3
	54"	23'-5 1/2"	6'-8 1/2"	15'-6"	17'-10 3/4"	630	7.3	7'-6"	186	2.9
	60"	25'-9 1/2"	7'-3 1/2"	17'-0"	19'-7 1/2"	719	8.7	8'-3"	219	3.4
	66"	28'-1"	7'-10 1/2"	18'-4"	21'-4 1/2"	811	10.1	8'-9"	242	3.9
	72"	30'-4 3/4"	8'-5 1/2"	20'-0"	23'-1 1/2"	924	11.7	9'-4"	272	4.4
4:1	12"	7'-10 3/4"	2'-6"	5'-8"	6'-6 1/2"	148	1.1	1'-9"	24	0.3
	15"	9'-4"	2'-9 1/2"	6'-8"	7'-8 1/2"	181	1.5	2'-2"	32	0.4
	18"	10'-9 1/2"	3'-1"	7'-8"	8'-10 1/2"	221	1.9	2'-8"	42	0.5
	21"	12'-2 3/4"	3'-4 1/2"	8'-8"	10'-0"	260	2.3	3'-1"	57	0.7
	24"	13'-9 1/2"	3'-9 1/2"	9'-8"	11'-2"	301	2.8	3'-7"	67	0.9
	27"	15'-3"	4'-1"	10'-8"	12'-3 3/4"	334	3.3	3'-11"	77	1.0
	30"	16'-8 1/2"	4'-4 1/2"	11'-8"	13'-5 3/4"	385	3.8	4'-4"	89	1.3
	33"	18'-1 3/4"	4'-8"	12'-8"	14'-7 1/2"	425	4.5	4'-8"	101	1.4
	36"	19'-7"	4'-11 1/2"	13'-8"	15'-9 1/4"	472	5.1	5'-1"	115	1.7
	42"	22'-5 3/4"	5'-6 1/2"	15'-8"	18'-1"	583	6.5	5'-10"	141	2.1
	48"	26'-6 1/2"	6'-1 1/2"	18'-8"	21'-6 3/4"	730	8.9	6'-7"	175	2.8
	54"	29'-5"	6'-8 1/2"	20'-8"	23'-10 1/4"	875	10.7	7'-6"	226	3.6
	60"	32'-3 3/4"	7'-3 1/2"	22'-8"	26'-2"	996	12.7	8'-3"	264	4.3
	66"	35'-2 1/2"	7'-10 1/2"	24'-8"	28'-5 3/4"	1,140	14.9	8'-9"	300	4.9
	72"	38'-1 1/2"	8'-5 1/2"	26'-8"	30'-9 1/2"	1,297	17.3	9'-4"	334	5.6
6:1	12"	11'-2"	2'-6"	8'-6"	9'-9 3/4"	224	1.9	1'-9"	28	0.4
	15"	13'-2 1/2"	2'-9 1/2"	10'-0"	11'-6 1/2"	268	2.5	2'-2"	37	0.5
	18"	15'-2 1/2"	3'-1"	11'-6"	13'-3 1/4"	330	3.2	2'-8"	50	0.7
	21"	17'-2 3/4"	3'-4 1/2"	13'-0"	15'-0 1/4"	387	3.9	3'-1"	69	0.9
	24"	19'-4 1/2"	3'-9 1/2"	14'-6"	16'-9"	453	4.8	3'-7"	80	1.2
	27"	21'-4 3/4"	4'-1"	16'-0"	18'-5 3/4"	512	5.7	3'-11"	96	1.4
	30"	23'-5 1/2"	4'-4 1/2"	17'-6"	20'-2 1/2"	593	6.7	4'-4"	110	1.7
	33"	25'-5 1/2"	4'-8"	19'-0"	21'-11 1/4"	675	7.8	4'-8"	127	2.0
	36"	27'-5 3/4"	4'-11 1/2"	20'-6"	23'-8"	735	9.0	5'-1"	144	2.3
	42"	31'-6 1/2"	5'-6 1/2"	23'-6"	27'-1 1/2"	922	11.5	5'-10"	179	3.0
	48"	37'-3 1/2"	6'-1 1/2"	28'-0"	32'-4"	1,191	15.9	6'-7"	231	4.0
	54"	41'-4 1/2"	6'-8 1/2"	31'-0"	35'-9 1/2"	1,424	19.2	7'-6"	300	5.0
	60"	45'-4 3/4"	7'-3 1/2"	34'-0"	39'-3"	1,631	22.9	8'-3"	353	6.0

DATE FILE

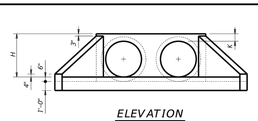
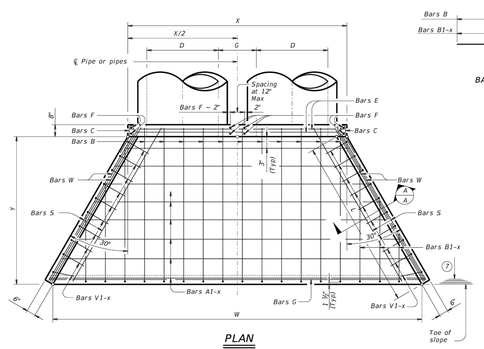


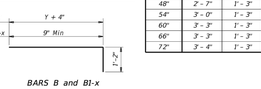
TABLE OF (3) REINFORCING STEEL

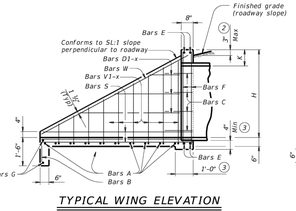
Bar	Size	Spa	No.
A	#4	1'-0"	~
B	#3	1'-6"	~
C	#4	1'-0"	~
D	#3	1'-0"	~
E	#5	~	4
F	#5	~	~
G	#3	~	2
S	#4	~	6
V	#4	1'-0"	~
W	#5	~	4

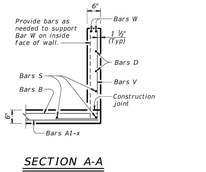
TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (4)	H
12"	0'-9"	1'-0"	2'-0"
15"	0'-11"	1'-0"	2'-3"
18"	1'-2"	1'-0"	2'-6"
21"	1'-4"	1'-0"	2'-9"
24"	1'-7"	1'-0"	3'-0"
27"	1'-8"	1'-0"	3'-3"
30"	1'-10"	1'-0"	3'-6"
33"	1'-11"	1'-0"	3'-9"
36"	2'-1"	1'-0"	4'-0"
42"	2'-4"	1'-0"	4'-6"
48"	2'-7"	1'-3"	5'-3"
54"	3'-0"	1'-3"	5'-9"
60"	3'-3"	1'-3"	6'-3"
66"	3'-3"	1'-3"	6'-9"
72"	3'-4"	1'-3"	7'-3"









(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) Provide a 1'-0" footing as shown where required to maintain 4' minimum cover for pipes.

(4) Dimensions shown are usual and maximum.

(5) Quantities shown are for one structure end only (one headwall).

(6) Min Length = 6" + 3" × ((12 x H – 7) / 12 x L)
Max Length = 12 x H – 3" × ((12 x H – 7) / 12 x L) – 1"

(7) Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

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

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE: ch*w00s-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

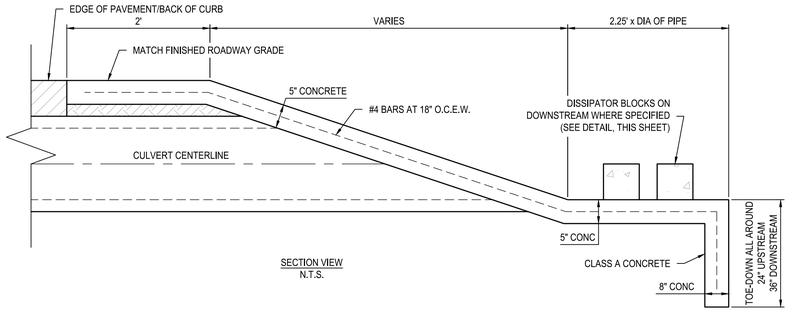
CANYON RANCH UNIT 4
STREET AND DRAINAGE DETAILS
(SHEET 5 OF 6)

	APR	DATE	DESCRIPTION	REV

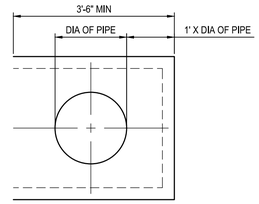
DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

SHEET
C06.54

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C06.50 - STREET AND DRAINAGE DETAILS.dwg Layout: STREET AND DRAINAGE DETAILS (SHEET 5 OF 6) Plotted: 6/17/2025 3:02:48 PM By: Lhuck



SECTION VIEW
N.T.S.



END VIEW
N.T.S.

PIPE END TREATMENT
N.T.S.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
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CANYON RANCH UNIT 4

STREET AND DRAINAGE DETAILS
(SHEET 6 OF 6)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C06.55

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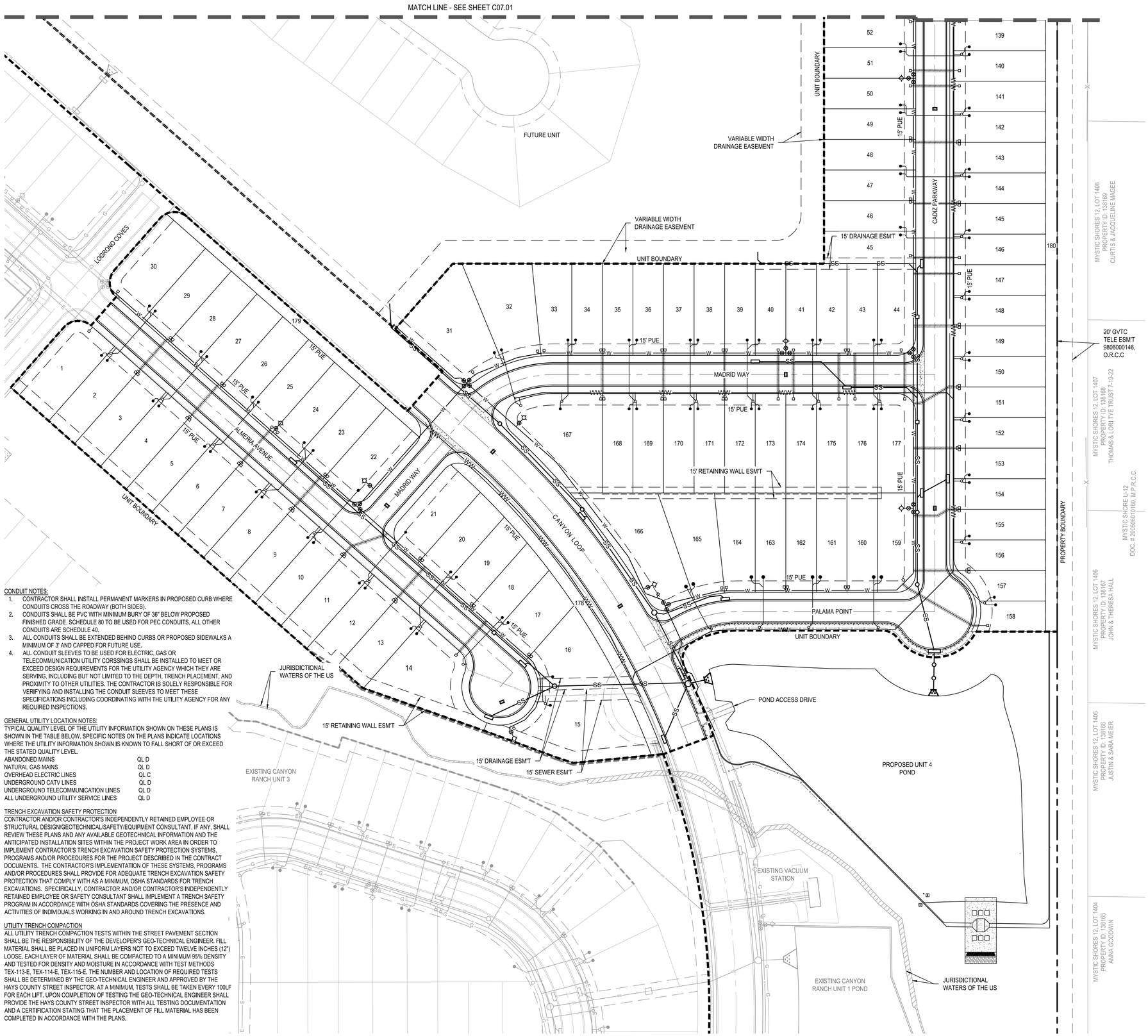

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- 100 YEAR FEMA FLOODPLAIN
- PROPOSED WATER MAIN
- DUAL/SINGLE WATER SERVICES
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SANITARY SEWER
- WASTEWATER SERVICES
- PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- PROPOSED NATURAL GAS LINE
- PROPOSED ELECTRIC LINE
- PROPOSED FIBER OPTIC LINE
- EXISTING FORCE MAIN
- PROPOSED STREET LIGHT
- RAISED REFLECTIVE HYDRANT MARKER

CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 36" BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR PEC CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUIT SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3' AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS OR TELECOMMUNICATION UTILITY CORSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS.

GENERAL UTILITY LOCATION NOTES:
TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES ON THE PLANS INDICATE LOCATIONS WHERE THE UTILITY INFORMATION SHOWN IS KNOWN TO FALL SHORT OF OR EXCEED THE STATED QUALITY LEVEL.

ABANDONED MAINS	QL D
NATURAL GAS MAINS	QL D
OVERHEAD ELECTRIC LINES	QL C
UNDERGROUND CATV LINES	QL D
UNDERGROUND TELECOMMUNICATION LINES	QL D
ALL UNDERGROUND UTILITY SERVICE LINES	QL D

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

UTILITY TRENCH COMPACTION
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE HAYS COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE HAYS COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

UTILITY GENERAL NOTES:

1. 2" WATERLINES SHALL BE ASTM D2241, SDR 21 UNLESS OTHERWISE APPROVED. ALL WATERLINES LARGER THAN 8" SHALL BE AWWA C900 DR 18.
2. ALL MAINS SHALL BE FLUSHED, HYDROSTATICALLY TESTED, AND DISINFECTED BY THE CONTRACTOR. SEE "CONNECTION TO EXISTING WATER SYSTEM" NOTE BELOW

   CONTRACTOR TO TIE INTO EXISTING WATER MAIN AFTER ALL NEW MAINS HAVE BEEN DISINFECTED AND PASSED ALL TESTS AND HAVE BEEN APPROVED BY AUQA TEXAS, INC.
   FOR CHLORINATION INJECTION:
   1 ~ 1" CORPORATION STOP C.C. X I.P.
   1 ~ 1" COMP X 1R" CPL, CURB STOP
   1 ~ 1" 1/4" THD SOLID CAP FOR MACHINE CHLORINATION
   1 ~ 1" COPPER TUBING, CUT AS REQ'D
   CONTRACTOR TO PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN
3. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
4. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
6. ALL ITEMS NOT SPECIFICALLY CALLED FOR ON THE PLANS, OR IN THE SPECIFICATIONS, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITY OR IMPROVEMENT, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS WILL BE MADE FOR THESE ITEMS.
7. DEPTH OF BURY FOR ALL PIPE SHALL BE A MINIMUM OF 4' UNLESS OTHERWISE NOTED OR APPROVED BY TEXAS WATER COMPANY.
8. CONTRACTOR TO GRADE SITE TO WITHIN ± 0.10' BEFORE THE INSTALLATION OF UTILITIES TO ENSURE PROPER COVER IS ACHIEVED.
9. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES REGARDING THE LOCATION OF THE EXISTING FACILITIES PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR SHALL EXCAVATE AROUND EXISTING UTILITIES WHICH INTERSECT THE PROPOSED ALIGNMENT OF THE SERVICES AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS, PRIOR TO ANY CONSTRUCTION IN THE AREA.
11. ALL DISTURBED AREAS WITHIN THE EASEMENTS SHALL BE HYDRO-MULCHED IN ACCORDANCE WITH TXDOR SPECIFICATIONS.
12. FOR WATER METER SERVICED DETAIL, SEE SHEET C10.00
13. SEE SHEET C10.00 THROUGH C10.06 FOR UTILITY DETAILS
14. IF THE MAXIMUM STATIC PRESSURE EXCEEDS 80 PSI, A PRV WILL BE REQUIRED ON THE PROPERTY OWNER'S SIDE OF THE WATER METER

GENERAL UTILITY LOCATION NOTES:
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ABANDONED MAINS	QL D
NATURAL GAS MAINS	QL D
OVERHEAD ELECTRIC LINES	QL C
UNDERGROUND CATV LINES	QL D
UNDERGROUND TELECOMMUNICATION LINES	QL D
ALL UNDERGROUND UTILITY SERVICE LINES	QL D

NOTE:
UTILITY SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO UTILITY DETAIL SHEETS C10.00 - C10.08.

							APR
							DATE
							DESCRIPTION
							REV

DESIGNED BY: STAFF
REVIEWED BY: SSM
DRAWN BY: ACR

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE UTILITY PLAN (SHEET 1 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C07.00

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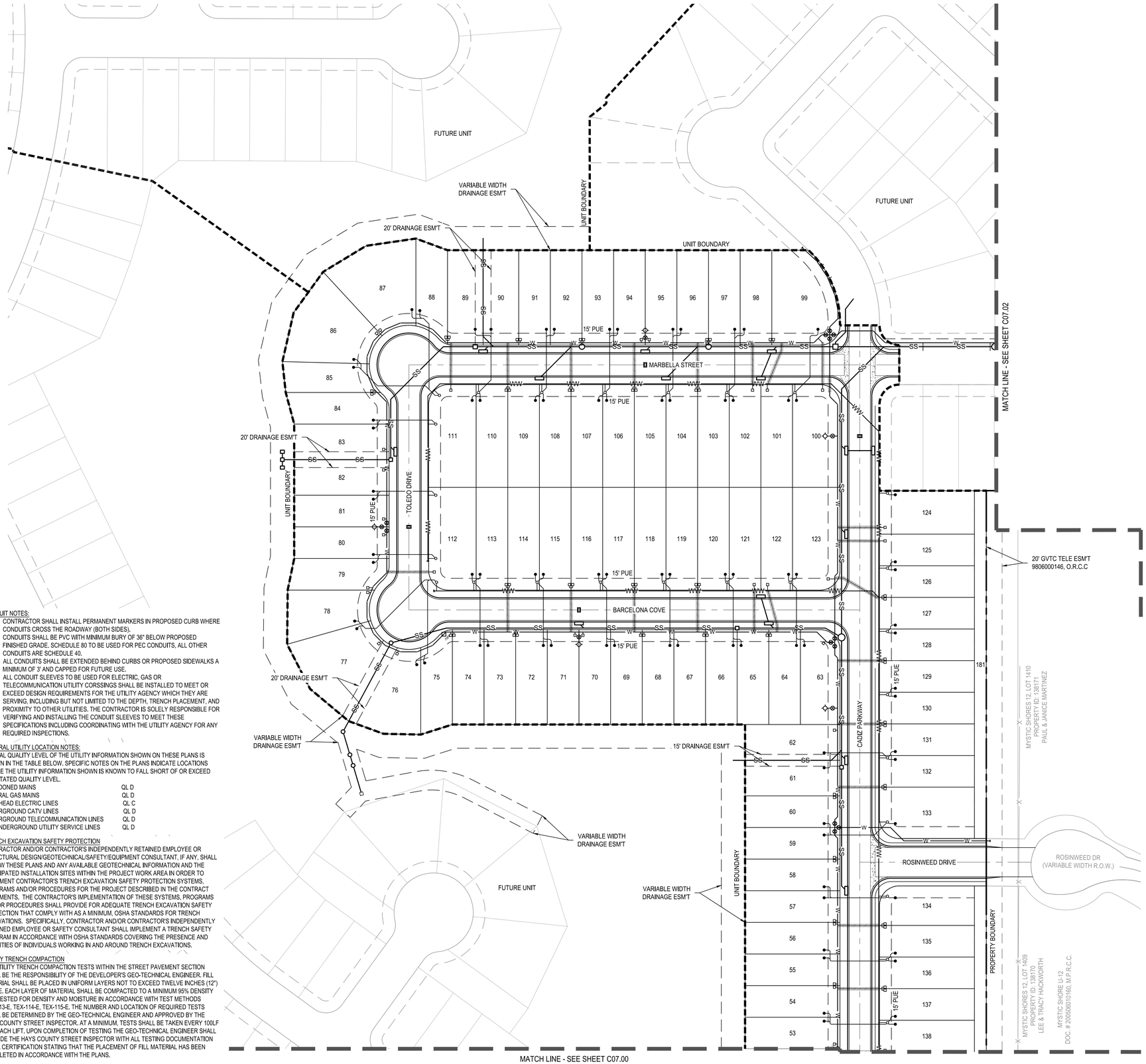

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
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- PROPOSED FIBER OPTIC LINE
- EXISTING FORCE MAIN
- PROPOSED STREET LIGHT
- RAISED REFLECTIVE HYDRANT MARKER

UTILITY GENERAL NOTES:

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2. ALL MAINS SHALL BE FLUSHED, HYDROSTATICALLY TESTED, AND DISINFECTED BY THE CONTRACTOR. SEE "CONNECTION TO EXISTING WATER SYSTEM" NOTE BELOW

   CONTRACTOR TO TIE INTO EXISTING WATER MAIN AFTER ALL NEW MAINS HAVE BEEN DISINFECTED AND PASSED ALL TESTS AND HAVE BEEN APPROVED BY AUQA TEXAS, INC. FOR CHLORINATION INJECTION:
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   1 ~ 1" COMP X 1R" CPL, CURB STOP
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8. CONTRACTOR TO GRADE SITE TO WITHIN ± 0.10' BEFORE THE INSTALLATION OF UTILITIES TO ENSURE PROPER COVER IS ACHIEVED.
9. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES REGARDING THE LOCATION OF THE EXISTING FACILITIES PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR SHALL EXCAVATE AROUND EXISTING UTILITIES WHICH INTERSECT THE PROPOSED ALIGNMENT OF THE SERVICES AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS, PRIOR TO ANY CONSTRUCTION IN THE AREA.
11. ALL DISTURBED AREAS WITHIN THE EASEMENTS SHALL BE HYDRO-MULCHED IN ACCORDANCE WITH TXDOR SPECIFICATIONS.
12. FOR WATER METER SERVICED DETAIL, SEE SHEET C10.00
13. SEE SHEET C10.00 THROUGH C10.06 FOR UTILITY DETAILS
14. IF THE MAXIMUM STATIC PRESSURE EXCEEDS 80 PSI, A PRV WILL BE REQUIRED ON THE PROPERTY OWNER'S SIDE OF THE WATER METER

GENERAL UTILITY LOCATION NOTES:
TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES ON THE PLANS INDICATE LOCATIONS WHERE THE UTILITY INFORMATION SHOWN IS KNOWN TO FALL SHORT OF OR EXCEED THE STATED QUALITY LEVEL.

ABANDONED MAINS	QL D
NATURAL GAS MAINS	QL D
OVERHEAD ELECTRIC LINES	QL C
UNDERGROUND CATV LINES	QL D
UNDERGROUND TELECOMMUNICATION LINES	QL D
ALL UNDERGROUND UTILITY SERVICE LINES	QL D

NOTE:
UTILITY SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO UTILITY DETAIL SHEETS C10.00 - C10.08.

CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 36" BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR PEC CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3' AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS OR TELECOMMUNICATION UTILITY CORSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS.

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

UTILITY TRENCH COMPACTION
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE HAYS COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT, UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE HAYS COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: STAFF
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

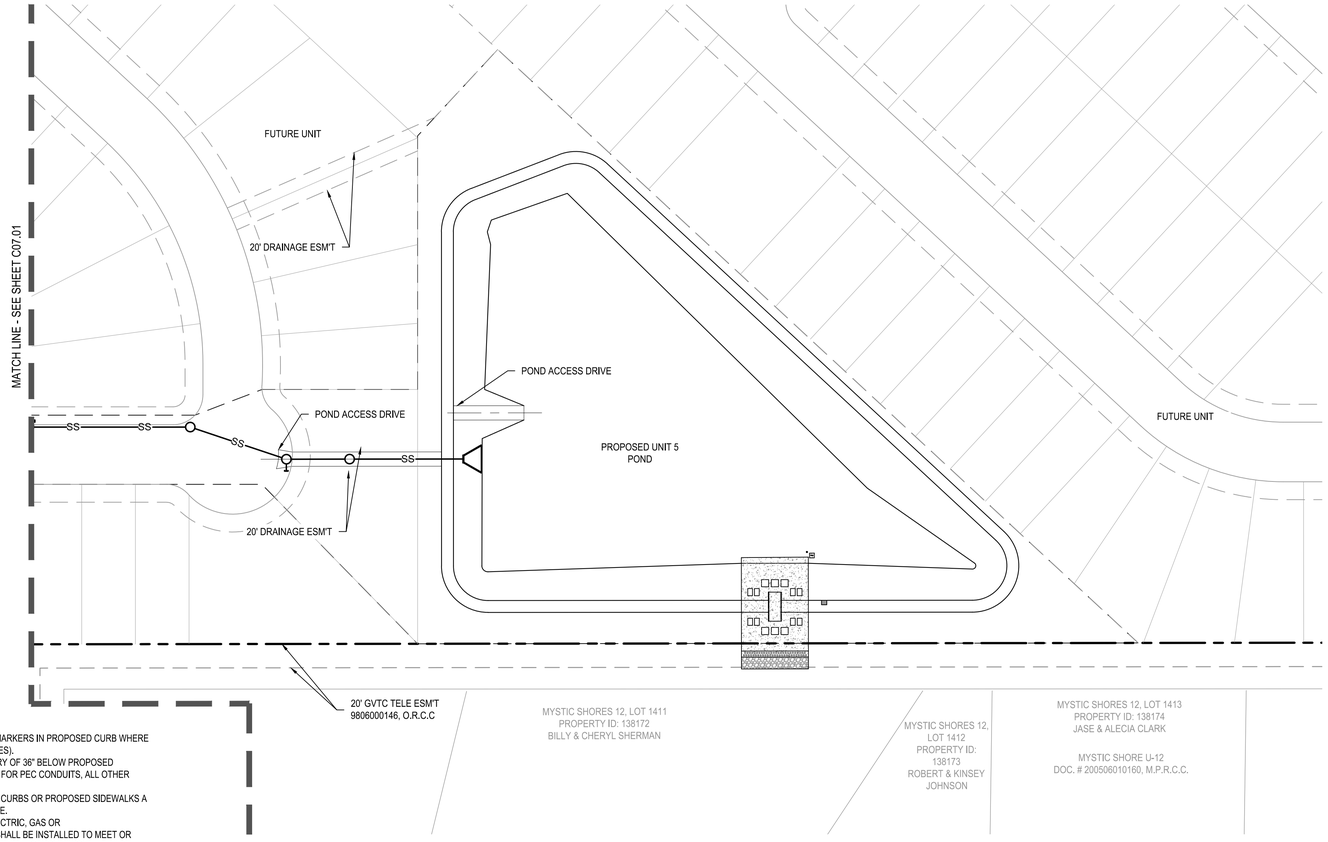
CANYON RANCH UNIT 4

ONSITE UTILITY PLAN (SHEET 2 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C07.01

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C07.00 - ONSITE UTILITY PLAN.dwg Layout: C07.01 ONSITE UTILITY PLAN (SHEET 2 OF 3) Plotted: 6/17/2025 1:16:57 PM By: Mhernandez



CONDUIT NOTES:

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 36" BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR PEC CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3' AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS OR TELECOMMUNICATION UTILITY CORSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS.

GENERAL UTILITY LOCATION NOTES:
TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES ON THE PLANS INDICATE LOCATIONS WHERE THE UTILITY INFORMATION SHOWN IS KNOWN TO FALL SHORT OF OR EXCEED THE STATED QUALITY LEVEL.

ABANDONED MAINS	QL D
NATURAL GAS MAINS	QL D
OVERHEAD ELECTRIC LINES	QL C
UNDERGROUND CATV LINES	QL D
UNDERGROUND TELECOMMUNICATION LINES	QL D
ALL UNDERGROUND UTILITY SERVICE LINES	QL D

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

UTILITY TRENCH COMPACTION
ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE HAYS COUNTY STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE HAYS COUNTY STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

N

0 30' 60' 120'
SCALE: 1" = 60'

LEGEND

	PROPERTY BOUNDARY
	UNIT BOUNDARY
	BUILDING SETBACK
	PROPOSED LOT LINES
	PROPOSED EASEMENT
	100 YEAR FEMA FLOODPLAIN
W W	PROPOSED WATER MAIN
	DUAL/SINGLE WATER SERVICES
	PROPOSED FIRE HYDRANT
	PROPOSED GATE VALVE
WW WW	PROPOSED SANITARY SEWER
	WASTEWATER SERVICES
SS	PROPOSED STORM LINE WITH MANHOLE
	PROPOSED CURB INLET
G G G	PROPOSED NATURAL GAS LINE
E E E	PROPOSED ELECTRIC LINE
FO FO FO	PROPOSED FIBER OPTIC LINE
FM FM	EXISTING FORCE MAIN
	PROPOSED STREET LIGHT
	RAISED REFLECTIVE HYDRANT MARKER

UTILITY GENERAL NOTES:

1. 2" WATERLINES SHALL BE ASTM D2241, SDR 21 UNLESS OTHERWISE APPROVED. ALL WATERLINES LARGER THAN 8" SHALL BE AWWA C900 DR 18.
2. ALL MAINS SHALL BE FLUSHED, HYDROSTATICALLY TESTED, AND DISINFECTED BY THE CONTRACTOR. SEE "CONNECTION TO EXISTING WATER SYSTEM" NOTE BELOW

   CONTRACTOR TO TIE INTO EXISTING WATER MAIN AFTER ALL NEW MAINS HAVE BEEN DISINFECTED AND PASSED ALL TESTS AND HAVE BEEN APPROVED BY AUQA TEXAS, INC.
   FOR CHLORINATION INJECTION:
   1 ~ 1" CORPORATION STOP C.C. X I.P.
   1 ~ 1" COMP X 1R" CPL, CURB STOP
   1 ~ 1" 1/4" THD SOLID CAP FOR MACHINE CHLORINATION
   1 ~ 1" COPPER TUBING, CUT AS REQ'D
   CONTRACTOR TO PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN
3. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
4. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
6. ALL ITEMS NOT SPECIFICALLY CALLED FOR ON THE PLANS, OR IN THE SPECIFICATIONS, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITY OR IMPROVEMENT, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS WILL BE MADE FOR THESE ITEMS.
7. DEPTH OF BURY FOR ALL PIPE SHALL BE A MINIMUM OF 4' UNLESS OTHERWISE NOTED OR APPROVED BY TEXAS WATER COMPANY.
8. CONTRACTOR TO GRADE SITE TO WITHIN ± 0.10' BEFORE THE INSTALLATION OF UTILITIES TO ENSURE PROPER COVER IS ACHIEVED.
9. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES REGARDING THE LOCATION OF THE EXISTING FACILITIES PRIOR TO CONSTRUCTION.
10. THE CONTRACTOR SHALL EXCAVATE AROUND EXISTING UTILITIES WHICH INTERSECT THE PROPOSED ALIGNMENT OF THE SERVICES AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS, PRIOR TO ANY CONSTRUCTION IN THE AREA.
11. ALL DISTURBED AREAS WITHIN THE EASEMENTS SHALL BE HYDRO-MULCHED IN ACCORDANCE WITH TXDOR SPECIFICATIONS.
12. FOR WATER METER SERVICED DETAIL, SEE SHEET C10.00
13. SEE SHEET C10.00 THROUGH C10.06 FOR UTILITY DETAILS
14. IF THE MAXIMUM STATIC PRESSURE EXCEEDS 80 PSI, A PRV WILL BE REQUIRED ON THE PROPERTY OWNER'S SIDE OF THE WATER METER

GENERAL UTILITY LOCATION NOTES:
TYPICAL QUALITY LEVEL OF THE UTILITY INFORMATION SHOWN ON THESE PLANS IS SHOWN IN THE TABLE BELOW. SPECIFIC NOTES ON THE PLANS INDICATE LOCATIONS WHERE THE UTILITY INFORMATION SHOWN IS KNOWN TO FALL SHORT OF OR EXCEED THE STATED QUALITY LEVEL.

ABANDONED MAINS	QL D
NATURAL GAS MAINS	QL D
OVERHEAD ELECTRIC LINES	QL C
UNDERGROUND CATV LINES	QL D
UNDERGROUND TELECOMMUNICATION LINES	QL D
ALL UNDERGROUND UTILITY SERVICE LINES	QL D

NOTE:
UTILITY SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO UTILITY DETAIL SHEETS C10.00 - C10.08.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: STAFF
REVIEWED BY: SSM
DRAWN BY: ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

ONSITE UTILITY PLAN (SHEET 3 OF 3)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C07.02

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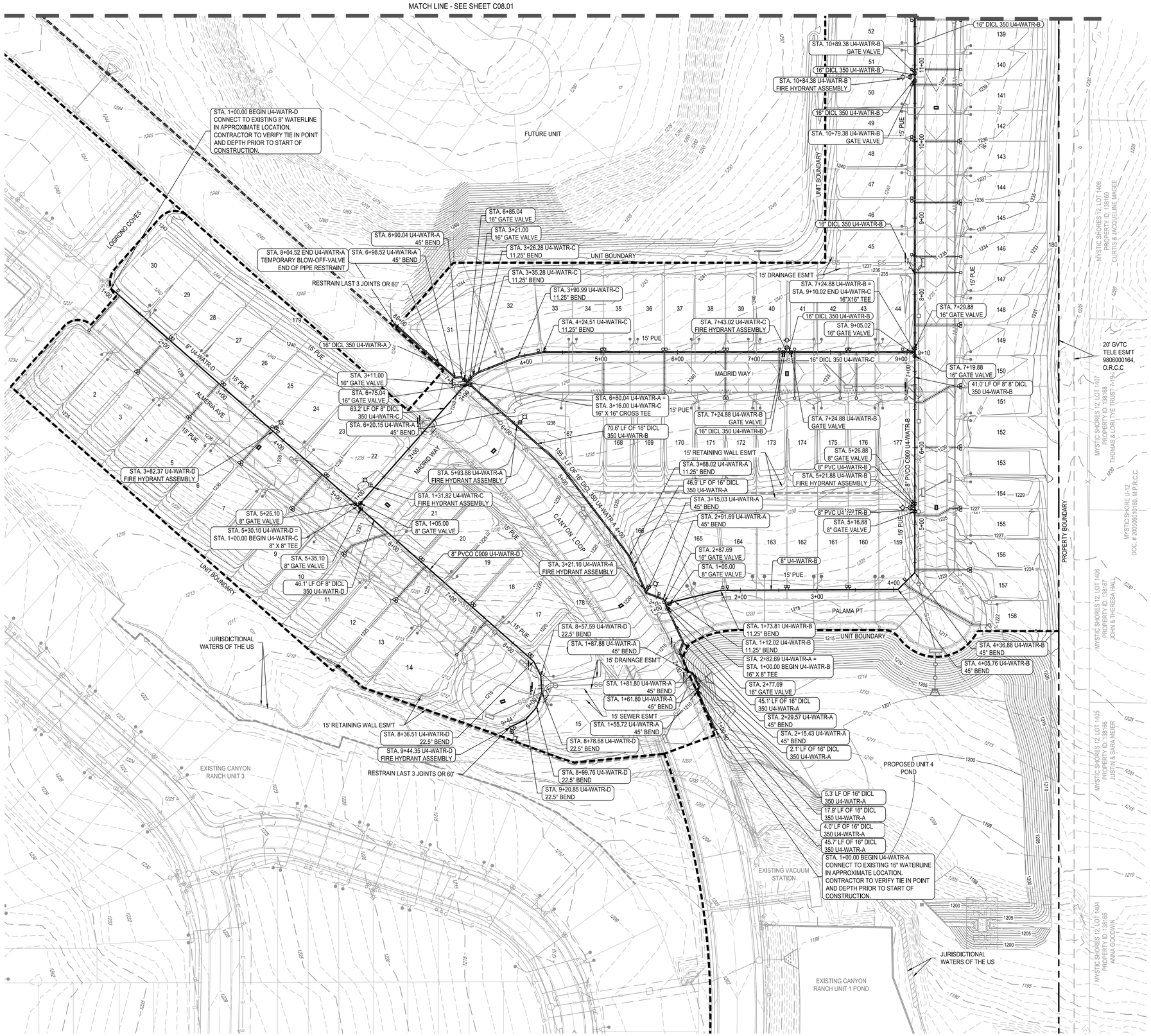

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NOT FOR CONSTRUCTION

UTILITY GENERAL NOTES:

1. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND WILL BE CONFIRMED BY CONTRACTOR PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL PROTECT ALL EXISTING TREES, FENCES, RETAINING WALLS AND STRUCTURES UNLESS OTHERWISE NOTED.
3. WATER LINES 3" AND SMALLER SHALL BE SCH 40 PVC OR CLASS 200 PVC WATER PIPE. WATER LINES 4" THROUGH 12" SHALL BE AWWA C-909. ALL WATER MAINS 14" THROUGH 36" SHALL BE C-909.
4. GENERALLY, WATER MAIN FITTINGS IDENTIFIED ON THIS DRAWING ARE SHOWN FOR INSTALLATION LOCATION PURPOSES. NOT ALL FITTINGS ARE NOTED, SHOWN, OR INDICATED.
5. REFER TO GENERAL NOTES SHEET OR SPECIFIC DETAIL SHEET IN THIS SET FOR FURTHER INSTRUCTIONS. FOR ANY DISCREPANCIES THE MORE STRINGENT WILL APPLY.
6. REFER TO PLAN AND PROFILE SHEETS IN THIS SET FOR SANITARY SEWER AND STORM SEWER DESIGN INFORMATION.
7. RADIUS WATERLINE PIPE SHALL BE LAID IN 20 FT INCREMENTS AT 1° DEFLECTIONS.
8. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
9. ALL OTHER UTILITIES SHALL BE INSTALLED BELOW THE WATER LINE WITH AT LEAST 1' SEPARATION.
10. WATER OR SEWER LINE MUST BE ENCASED WHEN CROSSING OPPOSING UTILITY.
11. WATERLINE UNDER ROADWAYS SHALL BE DICL 350.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR, AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOTE: ALL MAINS SHALL BE FLUSHED, HYDROSTATICALLY TESTED, AND DISINFECTED BY THE CONTRACTOR. SEE "CONNECTION TO EXISTING WATER SYSTEM" NOTE BELOW

CONTRACTOR TO TIE INTO EXISTING WATER MAIN AFTER ALL NEW MAINS HAVE BEEN DISINFECTED AND PASSED ALL TESTS AND HAVE BEEN APPROVED BY COMAL COUNTY
FOR CHLORINATION INJECTION:
1 ~ 1" CORPORATION STOP C.C. X I.P.
1 ~ 1" COMP X 1/8" CPL, CURB STOP
1 ~ 1" 1/4" THD SOLID CAP FOR MACHINE CHLORINATION
1 ~ 1" COPPER TUBING, CUT AS REQ'D
CONTRACTOR TO PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN

	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

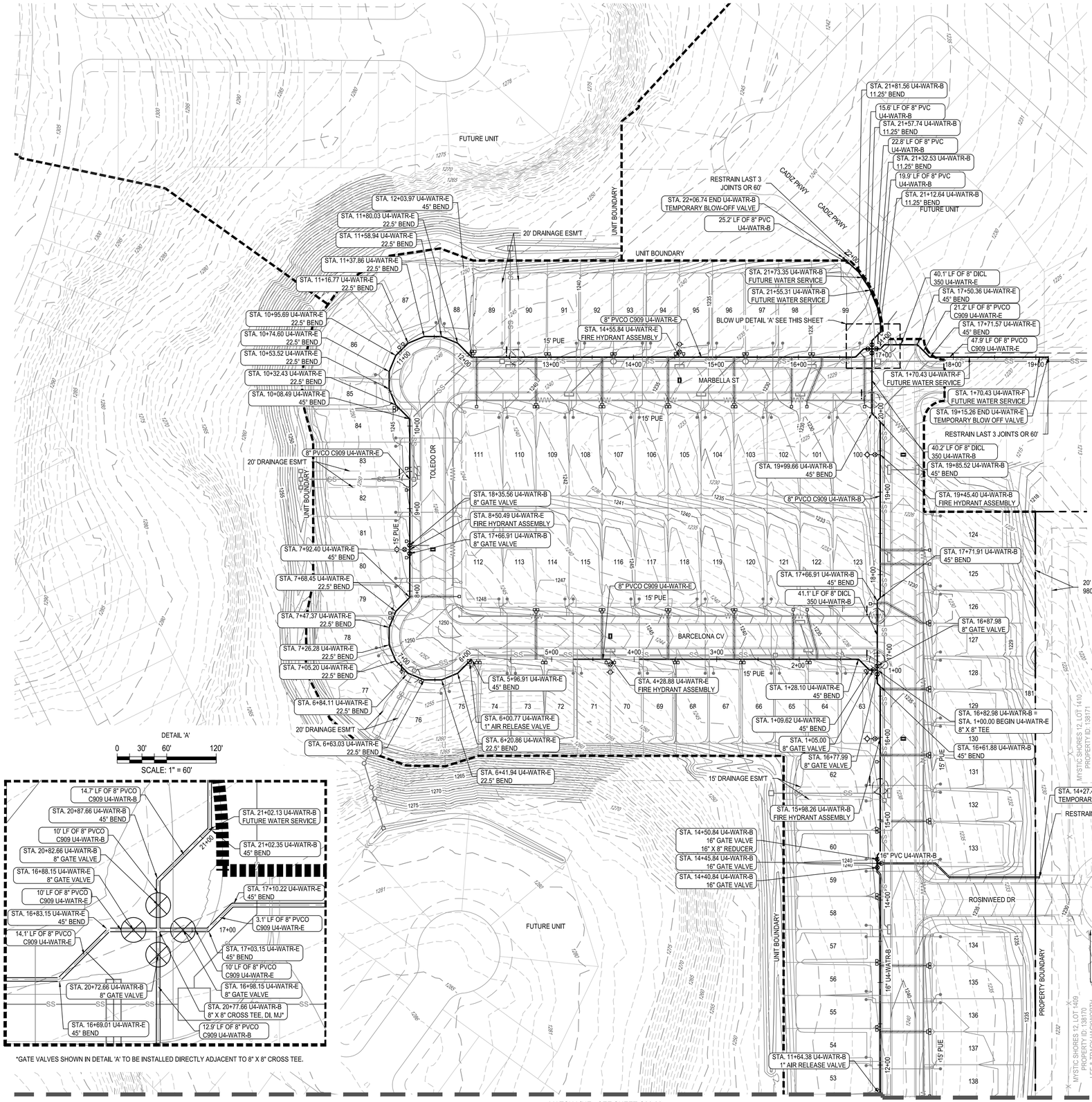
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

WATER DISTRIBUTION PLAN (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C08.00



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- PROPOSED WATER MAIN
- PROPOSED WATER MAIN ENCASEMENT
- WATER SERVICES
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROP WATER SLEEVE
- PROPOSED SANITARY SEWER
- WASTEWATER SERVICES
- PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- PROPOSED NATURAL GAS LINE
- PROPOSED ELECTRIC LINE
- PROPOSED FIBER OPTIC LINE
- EXISTING FORCE MAIN
- PROPOSED STREET LIGHT
- RAISED REFLECTIVE HYDRANT MARKER
- UTILITY CROSSING

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: LNH

REVIEWED BY: SSM

DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4
WATER DISTRIBUTION PLAN (SHEET 2 OF 2)

UTILITY GENERAL NOTES:

1. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND WILL BE CONFIRMED BY CONTRACTOR PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL PROTECT ALL EXISTING TREES, FENCES, RETAINING WALLS AND STRUCTURES UNLESS OTHERWISE NOTED.
3. WATER LINES 3" AND SMALLER SHALL BE SCH 40 PVC OR CLASS 200 PVC WATER PIPE. WATER LINES 4" THROUGH 12" SHALL BE AWWA C-909. ALL WATER MAINS 14" THROUGH 36" SHALL BE C-909.
4. GENERALLY, WATER MAIN FITTINGS IDENTIFIED ON THIS DRAWING ARE SHOWN FOR INSTALLATION LOCATION PURPOSES. NOT ALL FITTINGS ARE NOTED, SHOWN, OR INDICATED.
5. REFER TO GENERAL NOTES SHEET OR SPECIFIC DETAIL SHEET IN THIS SET FOR FURTHER INSTRUCTIONS. FOR ANY DISCREPANCIES THE MORE STRINGENT WILL APPLY.
6. REFER TO PLAN AND PROFILE SHEETS IN THIS SET FOR SANITARY SEWER AND STORM SEWER DESIGN INFORMATION.
7. RADIUS WATERLINE PIPE SHALL BE LAID IN 20 FT INCREMENTS AT 1° DEFLECTIONS.
8. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
9. ALL OTHER UTILITIES SHALL BE INSTALLED BELOW THE WATER LINE WITH AT LEAST 1' SEPARATION.
10. WATER OR SEWER LINE MUST BE ENCASED WHEN CROSSING OPPOSING UTILITY.
11. WATERLINE UNDER ROADWAYS SHALL BE DICL 350.

UTILITY TRENCH COMPACTION

ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOTE: ALL MAINS SHALL BE FLUSHED, HYDROSTATICALLY TESTED, AND DISINFECTED BY THE CONTRACTOR. SEE "CONNECTION TO EXISTING WATER SYSTEM" NOTE BELOW

CONTRACTOR TO TIE INTO EXISTING WATER MAIN AFTER ALL NEW MAINS HAVE BEEN DISINFECTED AND PASSED ALL TESTS AND HAVE BEEN APPROVED BY COMAL COUNTY

FOR CHLORINATION INJECTION:

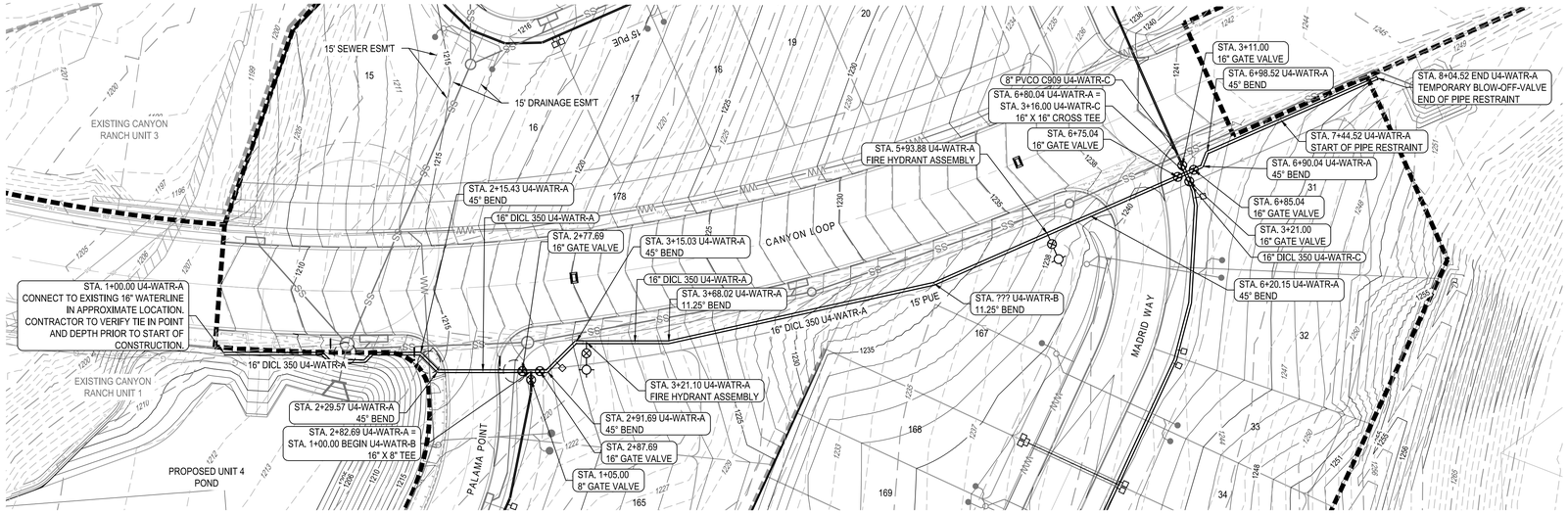
1 ~ 1" CORPORATION STOP C.C. X I.P.
1 ~ 1" COMP X 1R" CPL, CURB STOP
1 ~ 1" 1/4" THD SOLID CAP FOR MACHINE CHLORINATION
1 ~ 1" COPPER TUBING, CUT AS REQ'D

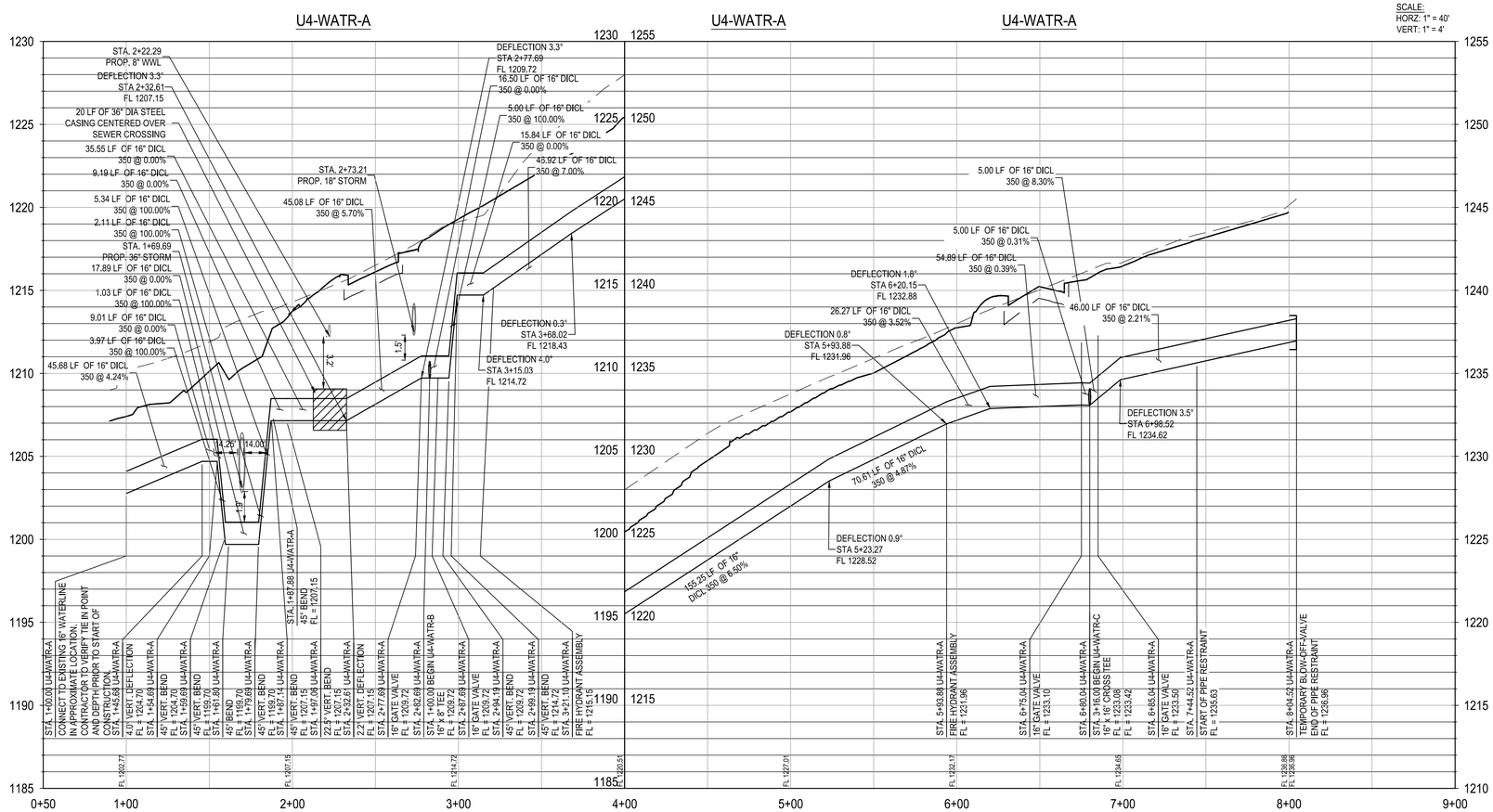
CONTRACTOR TO PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN

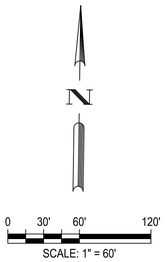
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C08.01

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C08.00 - WATER DISTRIBUTION PLAN.dwg Layout: C08.01 WATER DISTRIBUTION PLAN (SHEET 2 OF 2) Plotted: 6/17/2025 1:20:58 PM By: Mhernandez







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- BUILDING SETBACK
- PROPOSED LOT LINES
- PROPOSED EASEMENT
- PROPOSED WATER MAIN
- PROPOSED WATER MAIN ENCASEMENT
- WATER SERVICES
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROP WATER SLEEVE
- PROPOSED SANITARY SEWER
- WASTEWATER SERVICES
- PROPOSED STORM LINE WITH MANHOLE
- PROPOSED CURB INLET
- PROPOSED NATURAL GAS LINE
- PROPOSED ELECTRIC LINE
- PROPOSED FIBER OPTIC LINE
- EXISTING FORCE MAIN
- PROPOSED STREET LIGHT
- RAISED REFLECTIVE HYDRANT MARKER
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

UTILITY GENERAL NOTES:

1. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND WILL BE CONFIRMED BY CONTRACTOR PRIOR TO CONSTRUCTION.
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6. REFER TO PLAN AND PROFILE SHEETS IN THIS SET FOR SANITARY SEWER AND STORM SEWER DESIGN INFORMATION.
7. RADIUS WATERLINE PIPE SHALL BE LAID IN 20 FT INCREMENTS AT 1° DEFLECTIONS.
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9. ALL OTHER UTILITIES SHALL BE INSTALLED BELOW THE WATER LINE WITH AT LEAST 1' SEPARATION.
10. WATER OR SEWER LINE MUST BE ENCASED WHEN CROSSING OPPOSING UTILITY.
11. WATERLINE UNDER ROADWAYS SHALL BE DICL 350.

UTILITY TRENCH COMPACTION

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TRENCH EXCAVATION SAFETY PROTECTION

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FOR CHLORINATION INJECTION:

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1 ~ 1" COPPER TUBING, CUT AS REQ'D

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

						APR
						DATE
						DESCRIPTION
◁	◁	◁	◁	◁	◁	REV

DESIGNED BY: ####

REVIEWED BY: ####

DRAWN BY: ####

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

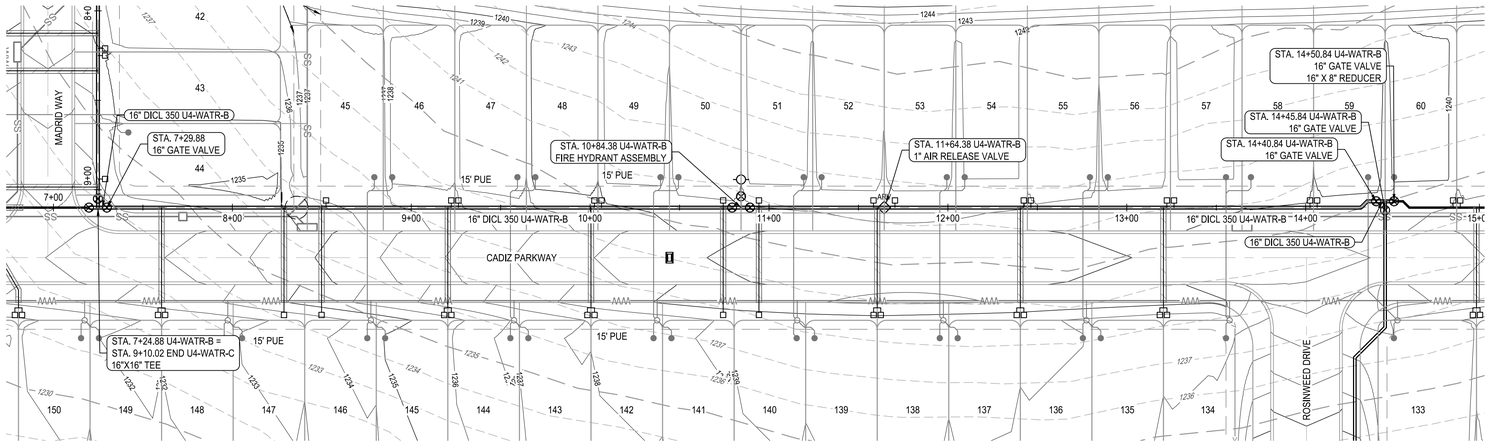
CANYON RANCH UNIT 4

WATERLINE A PLAN & PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C08.10

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Stds\C08.10 - WATERLINE A PLAN AND PROFILE.dwg Layout: C08.10 WATERLINE A PLAN & PROFILE Plotted: 3/5/2025 2:09:08 PM By: Lhuck



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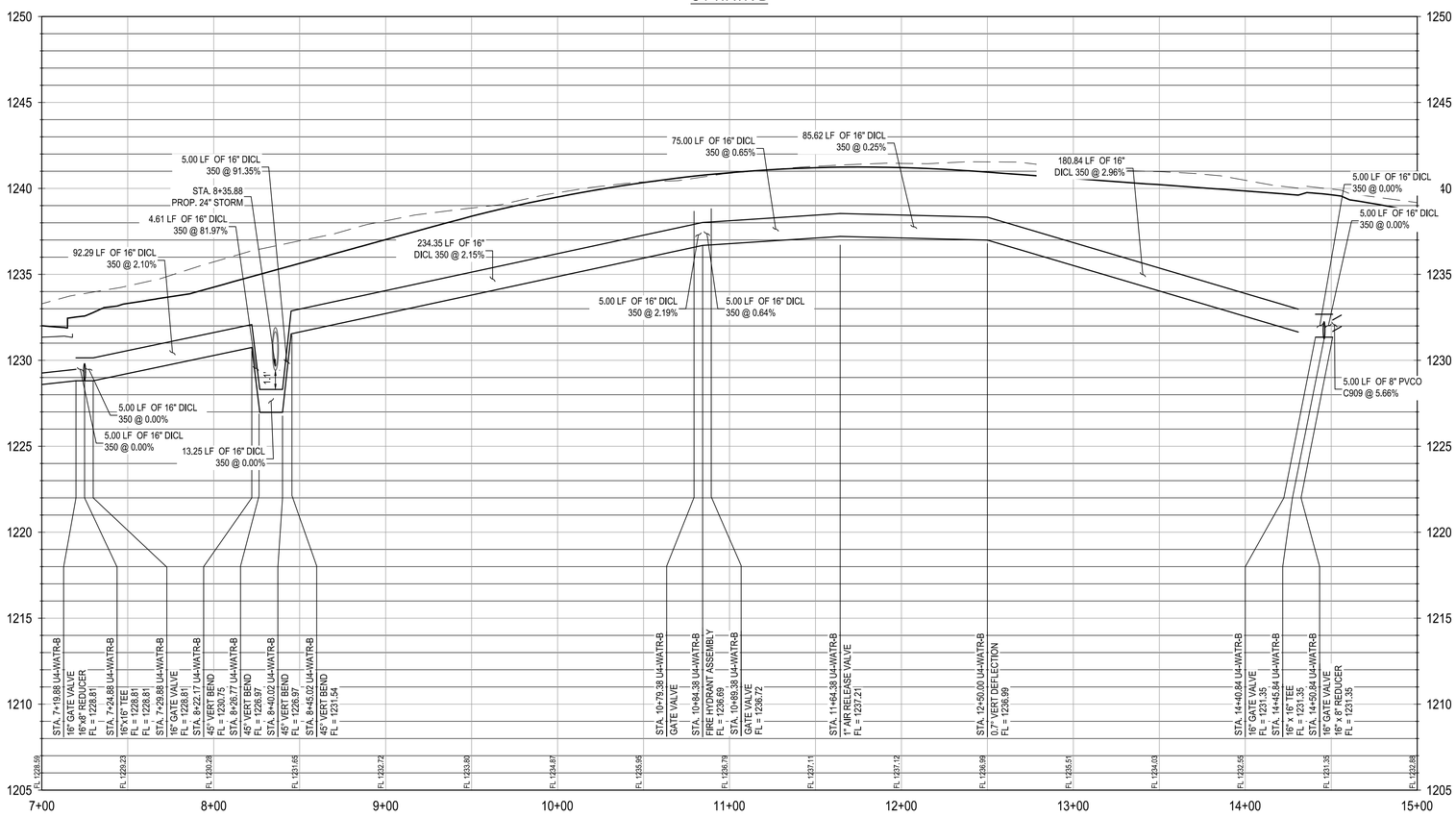

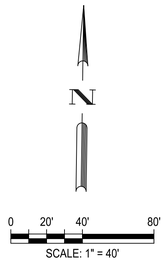

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CONTRACTOR TO PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN

	APR
	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

NOT FOR CONSTRUCTION

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7330 San Pedro, Suite 202
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TEL: 210-581-3600 www.bgeinc.com
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CANYON RANCH UNIT 4

WATERLINE B PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C08.11

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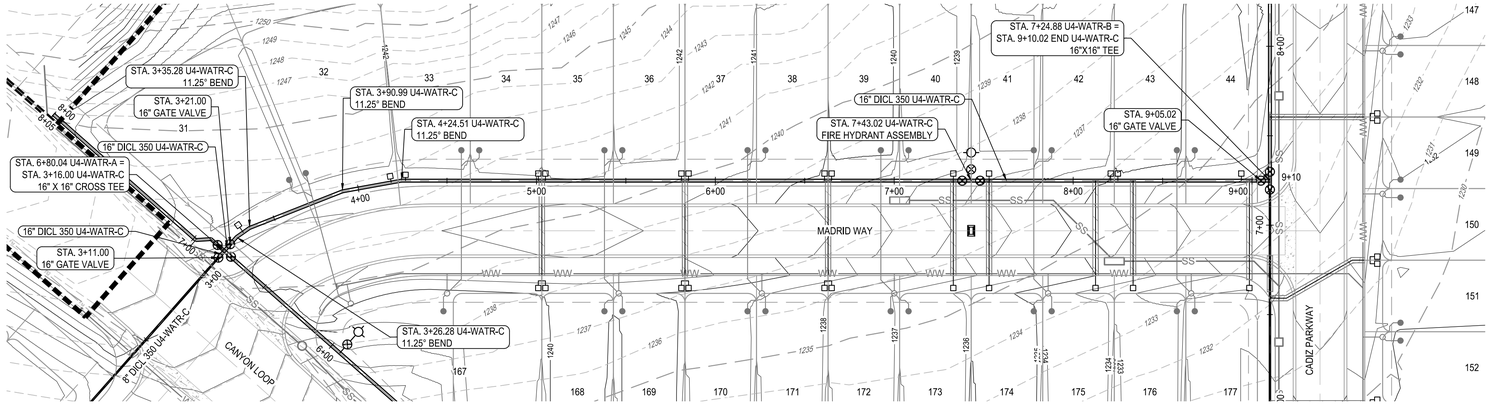

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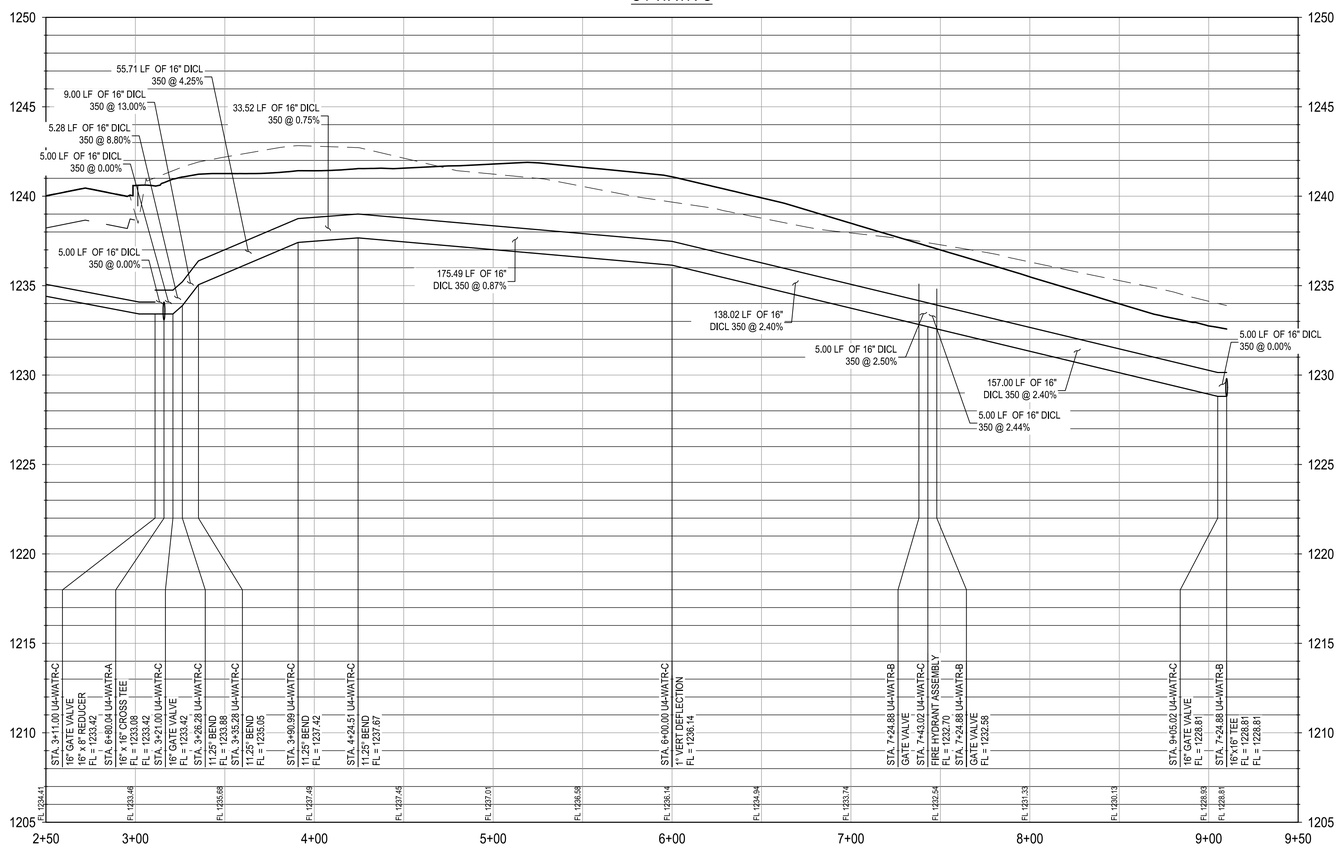

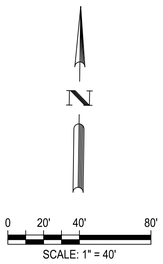

LEGEND

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DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	JDC

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TEL: 210-581-3600 www.bgeinc.com
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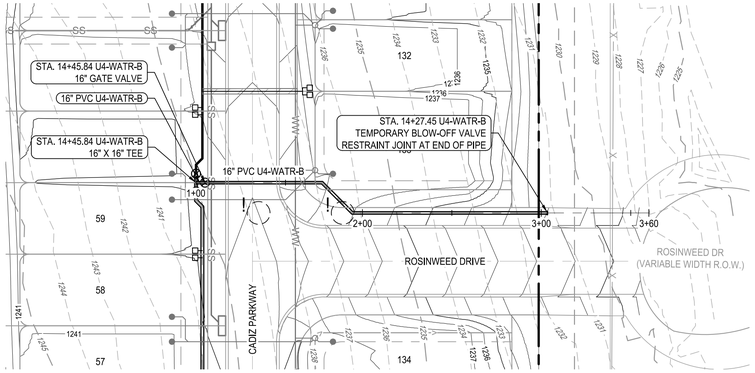
CANYON RANCH UNIT 4

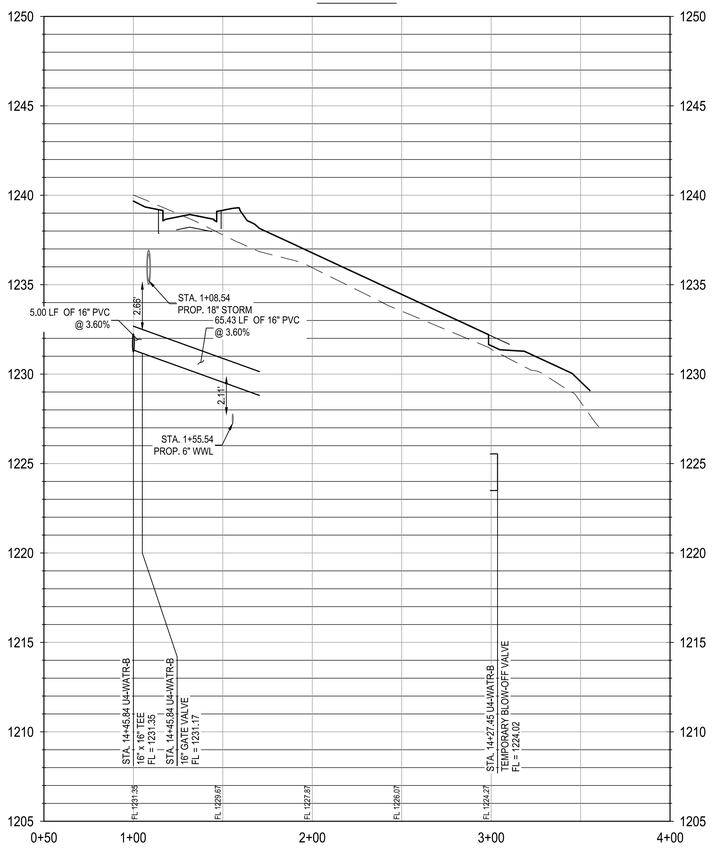
WATERLINE C PLAN AND PROFILE

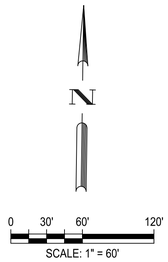
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C08.12

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C08.12 - WATERLINE C PLAN AND PROFILE.dwg Layout: C08.12 WATERLINE C PLAN AND PROFILE Plotted: 6/17/2025 1:54:47 PM By: Mhernandez







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ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET PAVEMENT SECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED TWELVE INCHES (12") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% DENSITY AND TESTED FOR DENSITY AND MOISTURE IN ACCORDANCE WITH TEST METHODS TEX-113-E, TEX-114-E, TEX-115-E. THE NUMBER AND LOCATION OF REQUIRED TESTS SHALL BE DETERMINED BY THE GEO-TECHNICAL ENGINEER AND APPROVED BY THE CITY OF SAN MARCOS STREET INSPECTOR. AT A MINIMUM, TESTS SHALL BE TAKEN EVERY 100LF FOR EACH LIFT. UPON COMPLETION OF TESTING THE GEO-TECHNICAL ENGINEER SHALL PROVIDE THE CITY OF SAN MARCOS STREET INSPECTOR WITH ALL TESTING DOCUMENTATION AND A CERTIFICATION STATING THAT THE PLACEMENT OF FILL MATERIAL HAS BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

TRENCH EXCAVATION SAFETY PROTECTION

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

NOTE: ALL MAINS SHALL BE FLUSHED, HYDROSTATICALLY TESTED, AND DISINFECTED BY THE CONTRACTOR. SEE "CONNECTION TO EXISTING WATER SYSTEM" NOTE BELOW

CONTRACTOR TO TIE INTO EXISTING WATER MAIN AFTER ALL NEW MAINS HAVE BEEN DISINFECTED AND PASSED ALL TESTS AND HAVE BEEN APPROVED BY COMAL COUNTY
FOR CHLORINATION INJECTION:
1 ~ 1" CORPORATION STOP C.C. X I.P.
1 ~ 1" COMP X 18" CPL, CURB STOP
1 ~ 1" 1/4" THD SOLID CAP FOR MACHINE CHLORINATION
1 ~ 1" COPPER TUBING, CUT AS REQ'D
CONTRACTOR TO PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: JDC

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

WATERLINE F PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C08.13

G:\TXCO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C08.13 - WATERLINE F PLAN AND PROFILE.dwg Layout: C08.13 WATERLINE F PLAN AND PROFILE Plotted: 6/17/2025 2:00:04 PM By: Mhernandez

G:\TXCO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C09.00 - SANITARY SEWER COLLECTION PLAN (SHEET 1 OF 2) Plotted: 6/17/2025 2:03:59 PM By: Mhernandez
C09.00 SANITARY SEWER COLLECTION PLAN (SHEET 1 OF 2).dwg Layout: C09.00 SANITARY SEWER COLLECTION PLAN

MATCH LINE - SEE SHEET C09.01

FUTURE UNIT

UNIT BOUNDARY

VARIABLE WIDTH DRAINAGE ESM'T

15' DRAINAGE ESM'T

15' PUE

PROPERTY BOUNDARY

20' GVTC TELE ESM'T
9806000146, O.R.C.C

6" SDR 21 PVC UN04-SSWR LINE A

STA. 6+41.30 UN04-SSWR LINE B
11.25° BEND

STA. 6+77.79 UN04-SSWR LINE B
4" SSWR PLUG

STA. 1+34.25 UN04-SSWR LINE A
6" SSWR PLUG

MADRID WAY

4" SDR 21 PVC UN04-SSWR LINE B

STA. 1+11.31 UN04-SSWR LINE B
45° BEND

STA. 8+31.75 UN04-SSWR LINE A
8" X 6" REDUCER

STA. 8+21.75 UN04-SSWR LINE A =
STA. 1+00.00 BEGIN UN04-SSWR LINE B
8X6X4 45° WYE, REDUCING VALVE - LINE B

15' RETAINING WALL ESM'T

STA. 5+96.23 UN04-SSWR LINE A
45° BEND

STA. 2+66.14 UN04-SSWR LINE A
5° HORIZONTAL DEFLECTION

PALAMA PT

UNIT BOUNDARY

8" SDR 21 PVC UN04-SSWR LINE A

STA. 4+88.07 UN04-SSWR LINE A
45° BEND

NOTE: SEWER TAPS MAY NEED AN EXTRA HOLE TO TAP INTO A POTENTIALLY LIVE LINE

LOGRONO COVES

ALMERIA AVE

CANYON LOOP

UN04-SSWR LINE D

5.00

4.00

3.00

2.00

EXISTING WASTEWATER
8" U3-SSWR-H
REFERENCE CANYON
RANCH UNIT 3 BY BGE, INC.

JURISDICTIONAL
WATERS OF THE US

STA. 1+34.25 UN04-SSWR LINE A
45° BEND

STA. 1+23.81 UN04-SSWR LINE A =
STA. 1+00.00 BEGIN UN04-SSWR LINE D
8X8X6 45° WYE, REDUCING VALVE - 45BND A-1

15' RETAINING WALL ESM'T

15' DRAINAGE ESM'T

15' SEWER ESM'T

STA. 1+00.00 UN04-SSWR LINE A
TIE INTO EXISTING
8" SANITARY SEWER LINE
SEE UNIT 3 PLANS

EXISTING CANYON
RANCH UNIT 3

2-6" SDR PVC
EX. FORCE MAIN A
REFERENCE CANYON
RANCH UNIT 1 BY BGE, INC.
(TYP. BURY DEPTH 6')

EXISTING VACUUM
STATION
REFERENCE CANYON
RANCH UNIT 1

EXISTING CANYON
RANCH UNIT 1 POND

JURISDICTIONAL
WATERS OF THE US

PROPOSED UNIT 4
POND

MYSTIC SHORES 12, LOT 1408
PROPERTY ID: 138169
CURTIS & JACQUELINE MAGEE

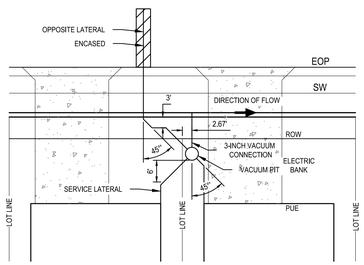
MYSTIC SHORES 12, LOT 1407
PROPERTY ID: 138168
THOMAS & LORI TYE TRUST 7-19-22

MYSTIC SHORE U-12
DOC. # 20050601016O, M.P.R.C.C.

MYSTIC SHORES 12, LOT 1406
PROPERTY ID: 138167
JOHN & THERESA HALL

MYSTIC SHORES 12, LOT 1405
PROPERTY ID: 138166
JUSTIN & SARA MEIER

MYSTIC SHORES 12, LOT 1404
PROPERTY ID: 138165
ANNA GOODWIN



NOTES:

1. GRAVITY SERVICE LATERALS WILL HAVE A MINIMUM SLOPE OF 2%
2. 90° BENDS AND TEE FITTINGS ARE NOT ALLOWED ON SERVICE LATERALS
3. MAXIMUM LENGTH TO AIR INTAKE ON EACH SERVICE IS 100 FT FOR A 4-INCH SERVICE AND, 160 FT FOR A 6-INCH SERVICE. REDUCE MAXIMUM LENGTH BY 5 FT FOR EACH 45° BEND OVER 2 BENDS FOR A 4-INCH SERVICE OR 3 BENDS FOR A 6-INCH SERVICE
4. LONG SERVICES UNDER ROADWAY SHALL BE ENCASED

TYPICAL VACUUM PIT LAYOUT
N.T.S

N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED WASTEWATER LINE w/MANHOLE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WASTEWATER CLEANOUT
- PROPOSED WATER LINE
- PROPOSED SINGLE/DOUBLE WATER SERVICE
- PROPOSED STORM LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

NOTE:
UTILITY SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO UTILITY DETAIL SHEETS C10.00 - C10.07.

WASTEWATER PIPES SHALL BE SDR 21 PVC.

NOTES:

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9. ALL OTHER UTILITIES SHALL BE INSTALLED BELOW THE WATER LINE ALL OTHER UTILITIES SHALL BE INSTALLED BELOW THE WATER LINE WITH AT LEAST 1' SEPARATION.

UTILITY TRENCH COMPACTION

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NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: ACR

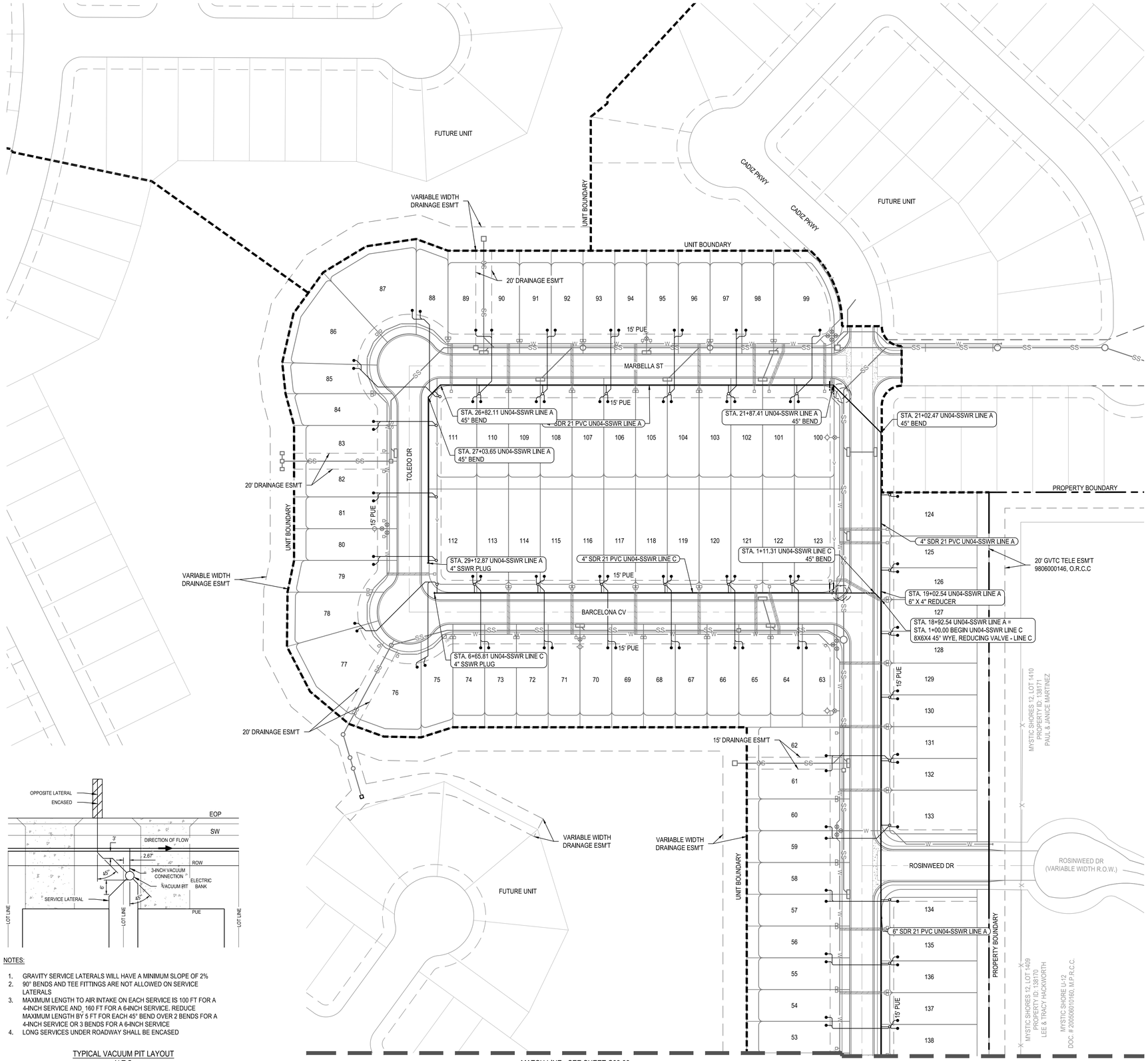
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

SANITARY SEWER COLLECTION PLAN (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.00



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4. LONG SERVICES UNDER ROADWAY SHALL BE ENCASED

TYPICAL VACUUM PIT LAYOUT
N.T.S

N

0 30' 60' 120'
SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED WASTEWATER LINE w/MANHOLE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WASTEWATER CLEANOUT
- W W PROPOSED WATER LINE
- PROPOSED SINGLE/DOUBLE WATER SERVICE
- SS SS PROPOSED STORM LINE
- FM FM EXISTING FORCE MAIN
- E E E PROPOSED ELECTRIC
- G G G PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WASTEWATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

NOTE:
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WASTEWATER PIPES SHALL BE SDR 21 PVC.

NOTES:

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NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
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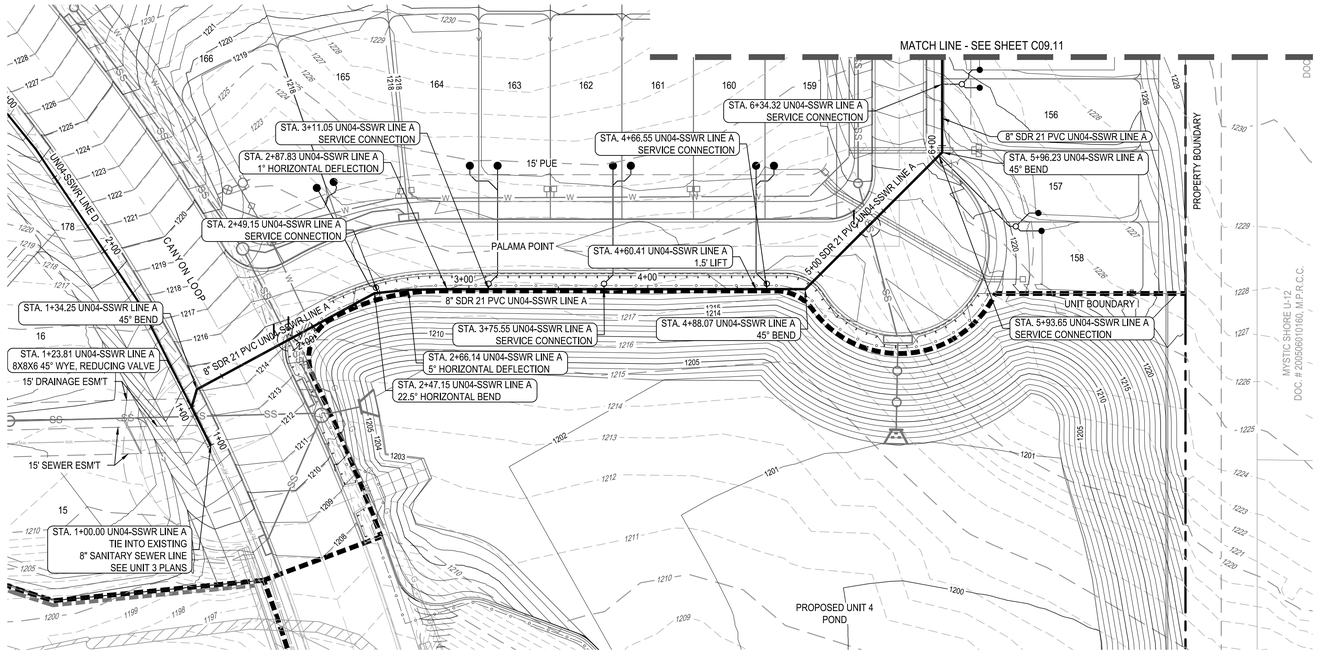
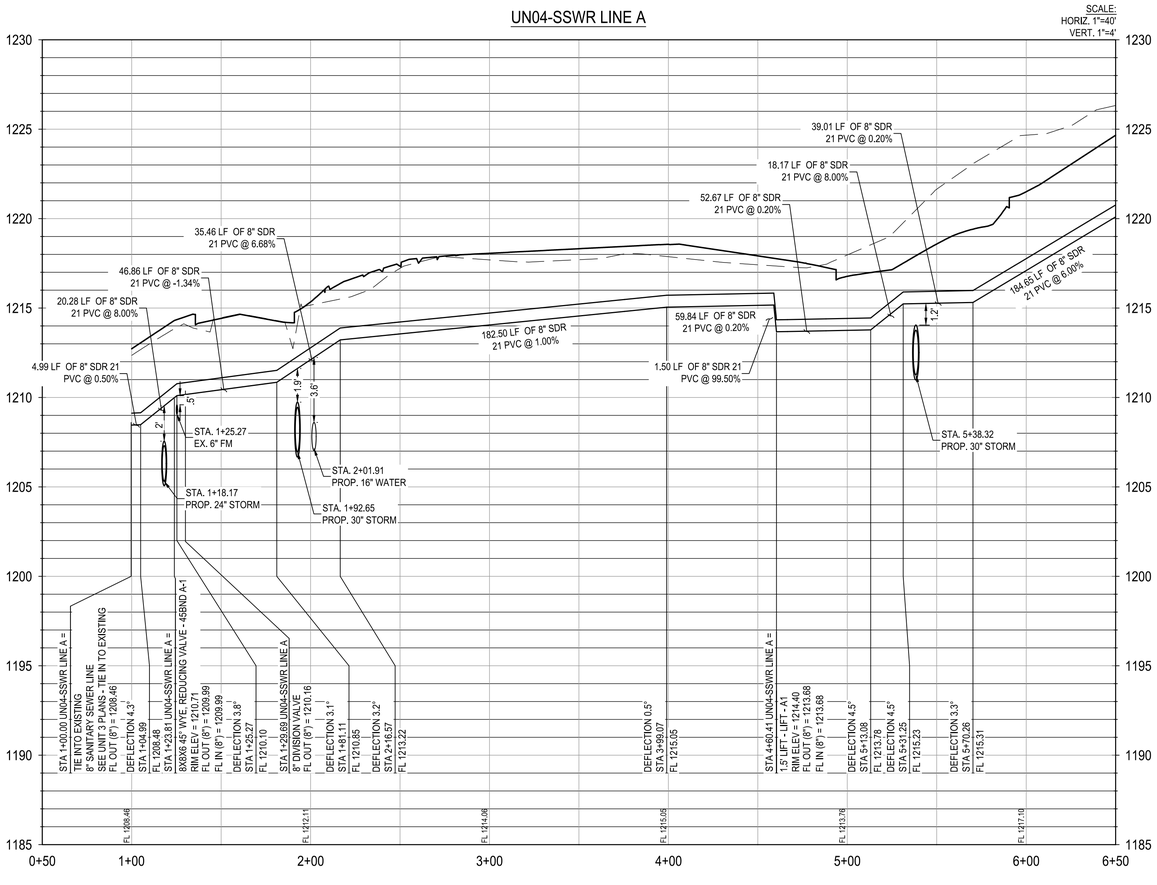
CANYON RANCH UNIT 4
SANITARY SEWER COLLECTION PLAN (SHEET 2 OF 2)

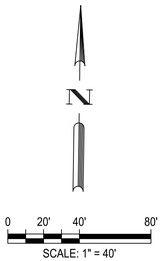
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.01

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C09.00 - SANITARY SEWER COLLECTION PLAN.dwg Layout: C09.01 SANITARY SEWER COLLECTION PLAN (SHEET 2 OF 2) Plotted: 6/17/2025 2:04:10 PM By: Mhernandez







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED WASTEWATER LINE w/MANHOLE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WASTEWATER CLEANOUT
- PROPOSED WATER LINE
- PROPOSED SINGLE/DOUBLE WATER SERVICE
- PROPOSED STORM LINE
- EXISTING FORCE MAIN
- PROPOSED ELECTRIC
- PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WASTEWATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

NOTE:
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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 ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS COVERING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATIONS.

NOT FOR CONSTRUCTION

	APR
	DATE
	DESCRIPTION
◁ ◁ ◁ ◁ ◁ ◁	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

SANITARY SEWER LINE A PLAN AND PROFILE STA 0+50 TO 6+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.10

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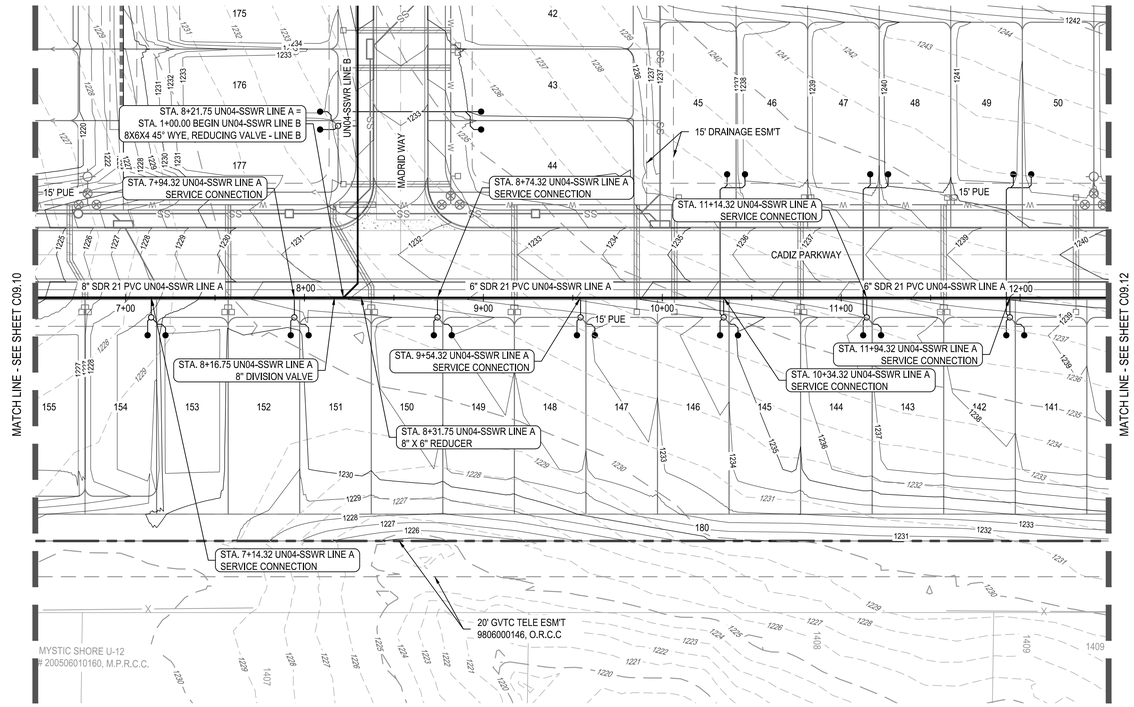

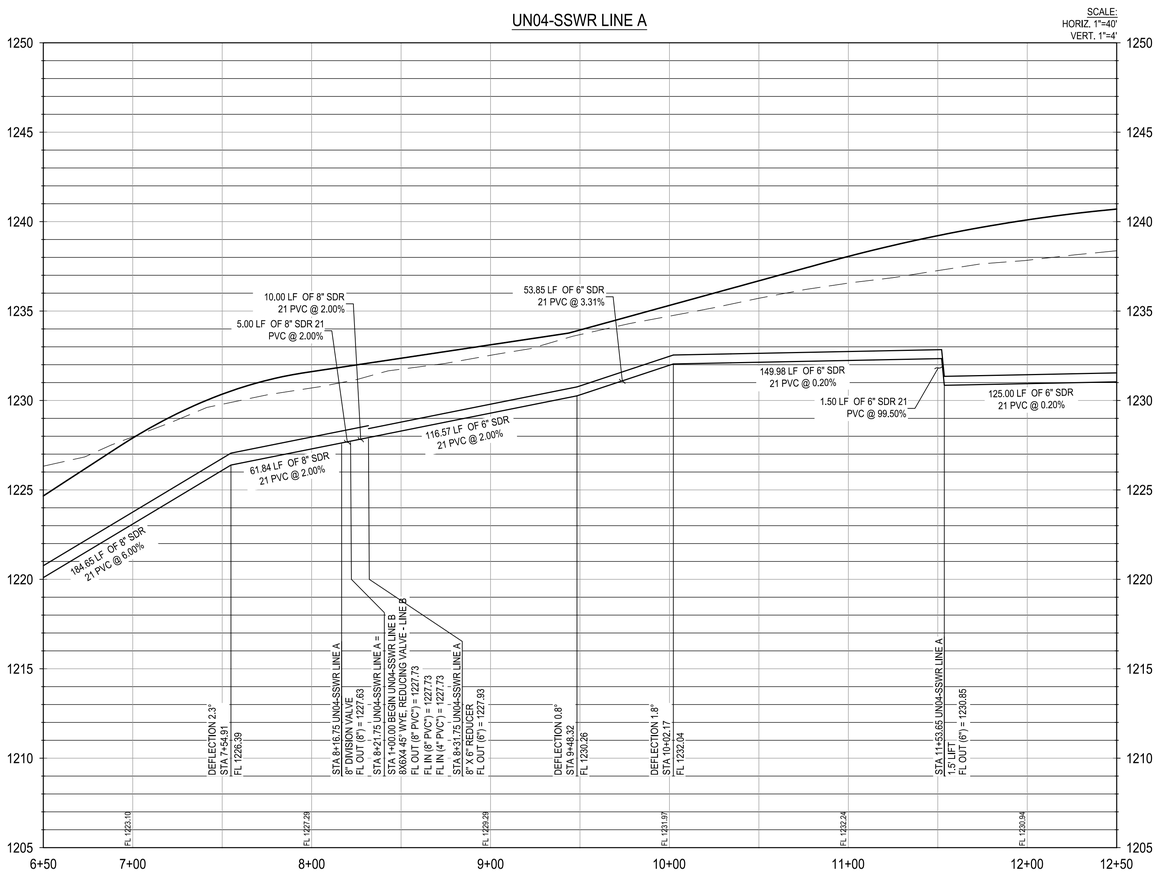



0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED WASTEWATER LINE w/MANHOLE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WASTEWATER CLEANOUT
- W W PROPOSED WATER LINE
- PROPOSED SINGLE/DOUBLE WATER SERVICE
- SS SS PROPOSED STORM LINE
- FM FM EXISTING FORCE MAIN
- E E E PROPOSED ELECTRIC
- G G G PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WASTEWATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

NOTE:
UTILITY SYMBOLS ARE NOT TO SCALE, AND ARE ONLY SHOWN FOR ILLUSTRATION PURPOSES. REFER TO UTILITY DETAIL SHEETS C10.00 - C10.07.

WASTEWATER PIPES SHALL BE SDR 21 PVC.

NOTES:

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8. COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE COMPACTION OF TRENCH UNDER PROPOSED PAVING SHOULD USE APPROPRIATE REPLACEMENT GRANULAR MATERIAL IF UNSUITABLE SOIL IS EXCAVATED FROM TRENCH.
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TRENCH EXCAVATION SAFETY PROTECTION

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NOT FOR CONSTRUCTION

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DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: ACR

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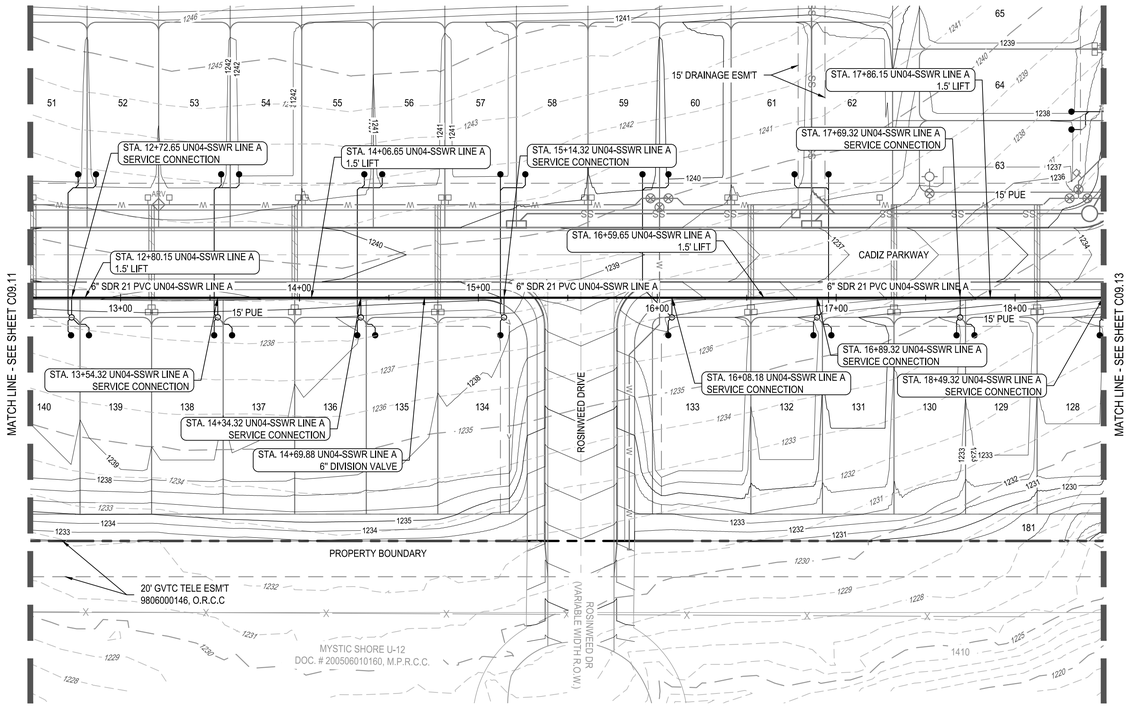
CANYON RANCH UNIT 4

SANITARY SEWER LINE A PLAN AND PROFILE STA 6+50 TO 12+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

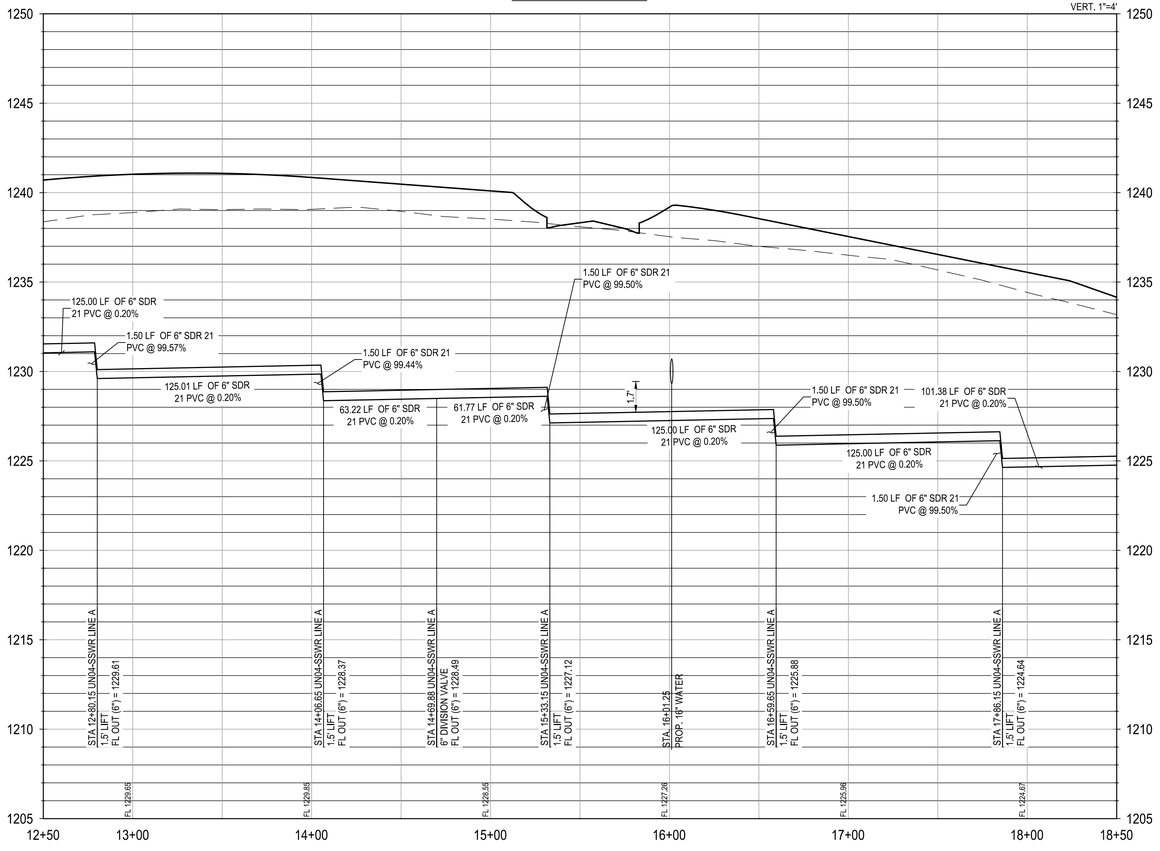
SHEET
C09.11

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C09.10 - SANITARY SEWER LINE A PLAN AND PROFILE.dwg Layout: C09.11 SANITARY SEWER LINE A PLAN AND PROFILE STA 6+50 TO 12+50 Plotted: 6/17/2025 2:08:17 PM By: Mhernandez



UN04-SSWR LINE A

SCALE:
HORIZ. 1"=40'
VERT. 1"=4'





LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 — EXISTING MINOR CONTOUR
- 831 — EXISTING MAJOR CONTOUR
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- PROPOSED WASTEWATER LINE w/MANHOLE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WASTEWATER CLEANOUT
- W — W — PROPOSED WATER LINE
- PROPOSED SINGLE/DOUBLE WATER SERVICE
- SS — SS — PROPOSED STORM LINE
- FM — FM — EXISTING FORCE MAIN
- E — E — E — PROPOSED ELECTRIC
- G — G — G — PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WASTEWATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

NOTE:
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NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

SANITARY SEWER LINE A PLAN AND PROFILE STA 12+50 TO 18+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.12

G:\TX\C\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C09.10 - SANITARY SEWER LINE A PLAN AND PROFILE.dwg Layout: C09.12 SANITARY SEWER LINE A PLAN AND PROFILE STA 12+50 TO 18+50 Plotted: 6/17/2025 2:08:32 PM By: Mhernandez

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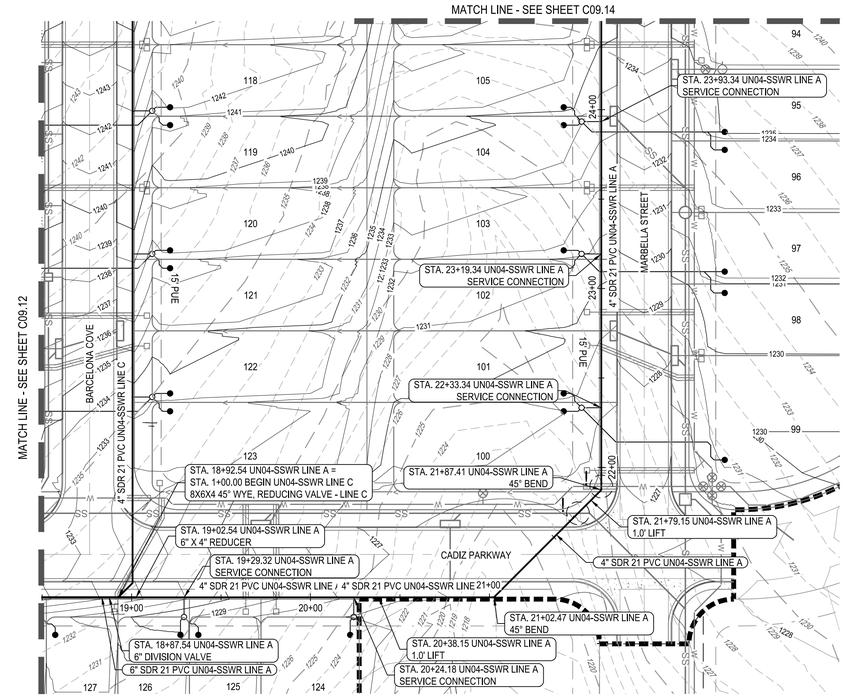
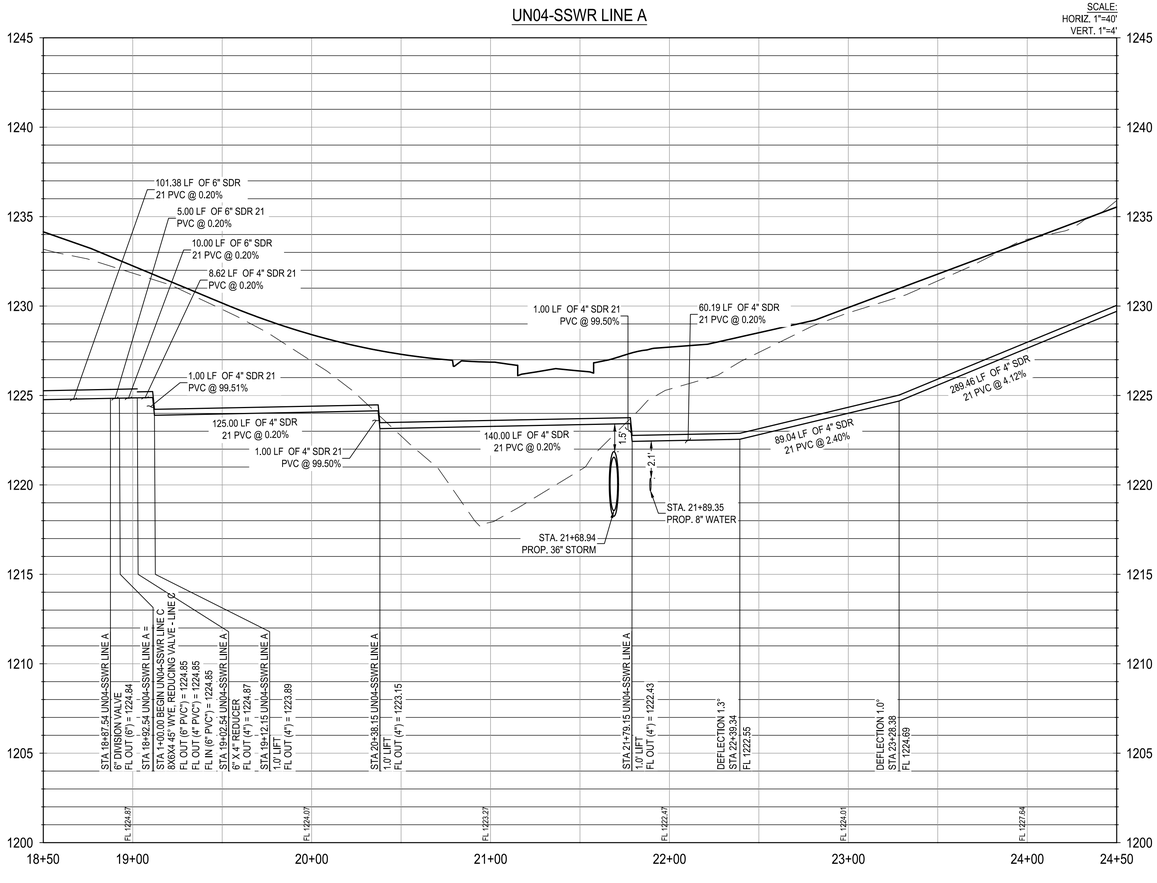


UN04-SSWR LINE A

SCALE:
HORIZ. 1"=40'
VERT. 1"=4'





0 20' 40' 80'

SCALE: 1" = 40'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED WASTEWATER LINE w/MANHOLE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WASTEWATER CLEANOUT
- W W PROPOSED WATER LINE
- PROPOSED SINGLE/DOUBLE WATER SERVICE
- SS SS PROPOSED STORM LINE
- FM FM EXISTING FORCE MAIN
- E E E PROPOSED ELECTRIC
- G G G PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WASTEWATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

NOTE:
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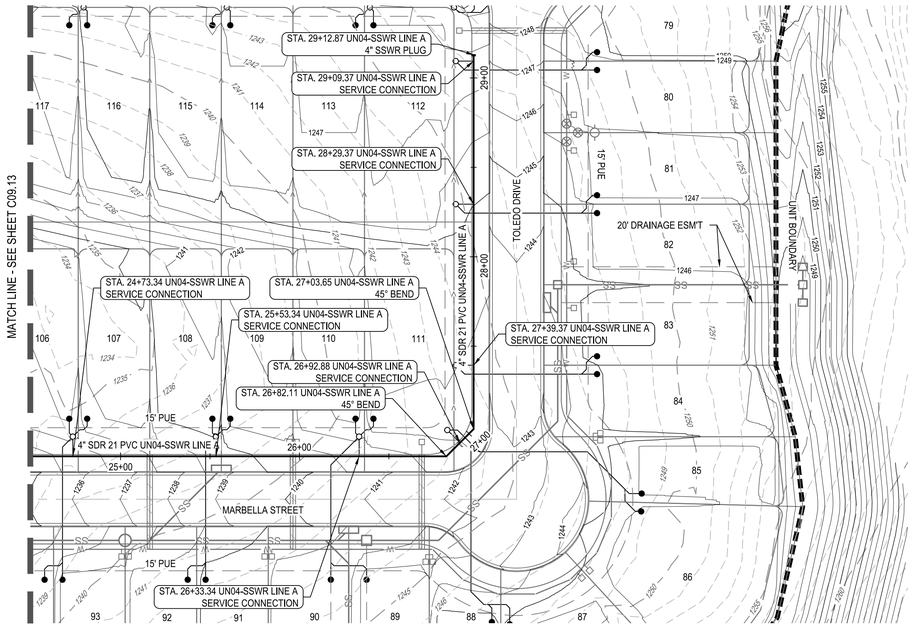
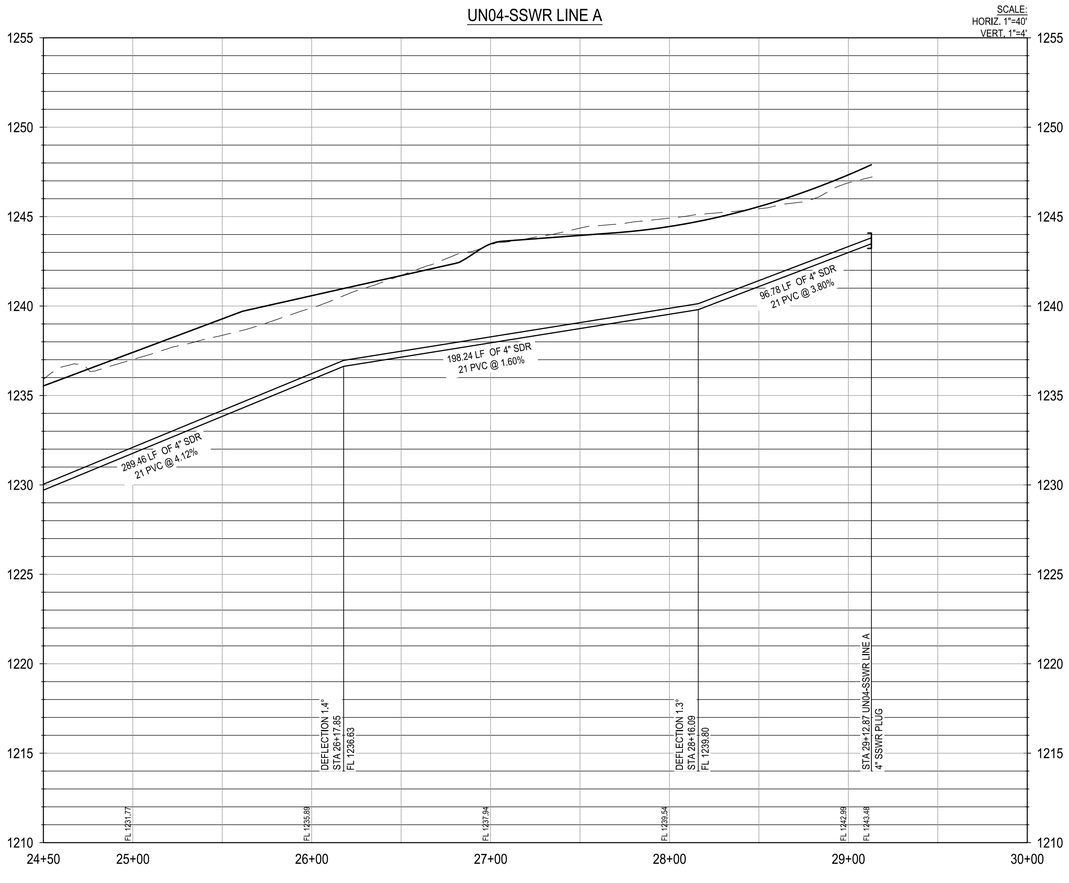
CANYON RANCH UNIT 4

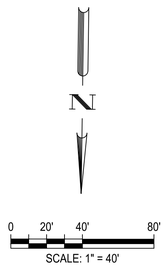
SANITARY SEWER LINE A PLAN AND PROFILE STA 18+50 TO 24+50

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.13







LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 — EXISTING MINOR CONTOUR
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- E — E — E — PROPOSED ELECTRIC
- G — G — G — PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WASTEWATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

NOTE:
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NOT FOR CONSTRUCTION

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	DATE
	DESCRIPTION
	REV
DESIGNED BY:	LNH
REVIEWED BY:	SSM
DRAWN BY:	ACR

BGE
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

SANITARY SEWER LINE A PLAN AND PROFILE STA 24+50 TO END

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.14

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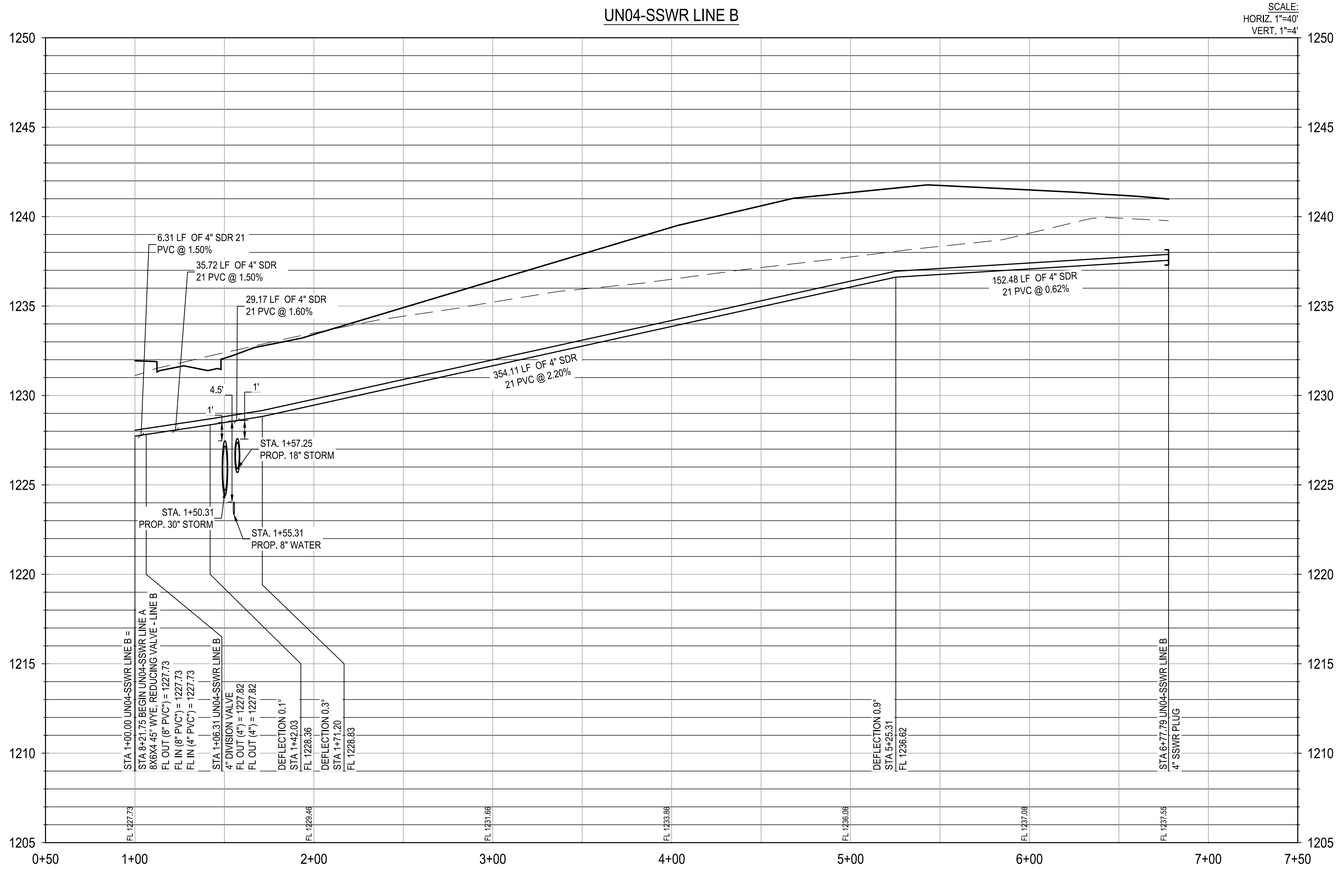

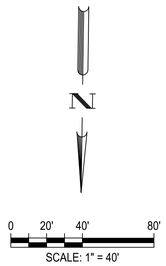

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- 831 EXISTING MINOR CONTOUR
- 831 EXISTING MAJOR CONTOUR
- 681 PROPOSED MINOR CONTOUR
- 686 PROPOSED MAJOR CONTOUR
- PROPOSED WASTEWATER LINE w/MANHOLE
- PROPOSED WASTEWATER SERVICES
- PROPOSED WASTEWATER CLEANOUT
- W PROPOSED WATER LINE
- PROPOSED SINGLE/DOUBLE WATER SERVICE
- SS PROPOSED STORM LINE
- FM EXISTING FORCE MAIN
- E PROPOSED ELECTRIC
- G PROPOSED GAS
- DIRECTION OF FLOW
- UTILITY CROSSING

PROFILE LEGEND

- PROPOSED WASTEWATER MAIN
- EXISTING SURFACE
- PROPOSED SURFACE
- PROPOSED SUBGRADE

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DESIGNED BY: LNH
REVIEWED BY: SSM
DRAWN BY: ACR

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CANYON RANCH UNIT 4

SANITARY SEWER LINE B PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.15

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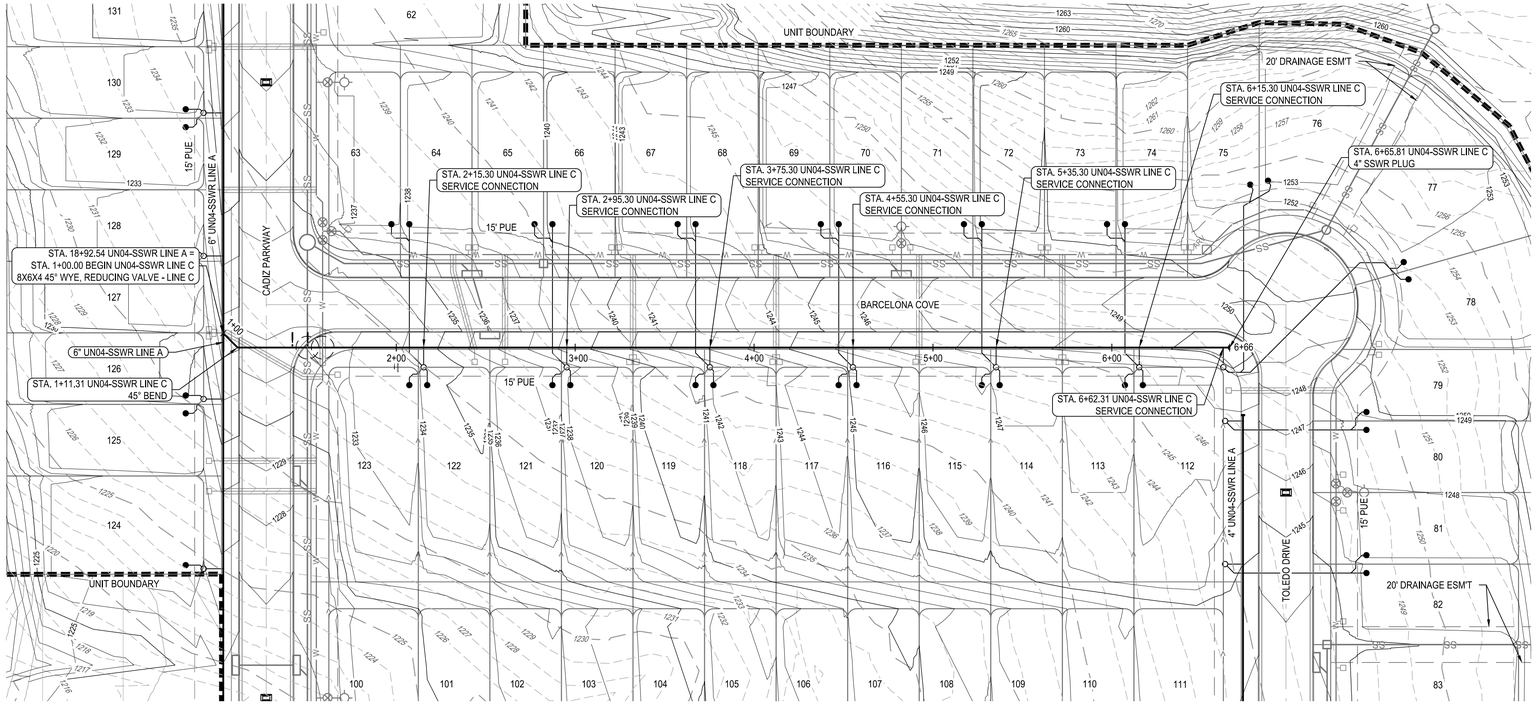

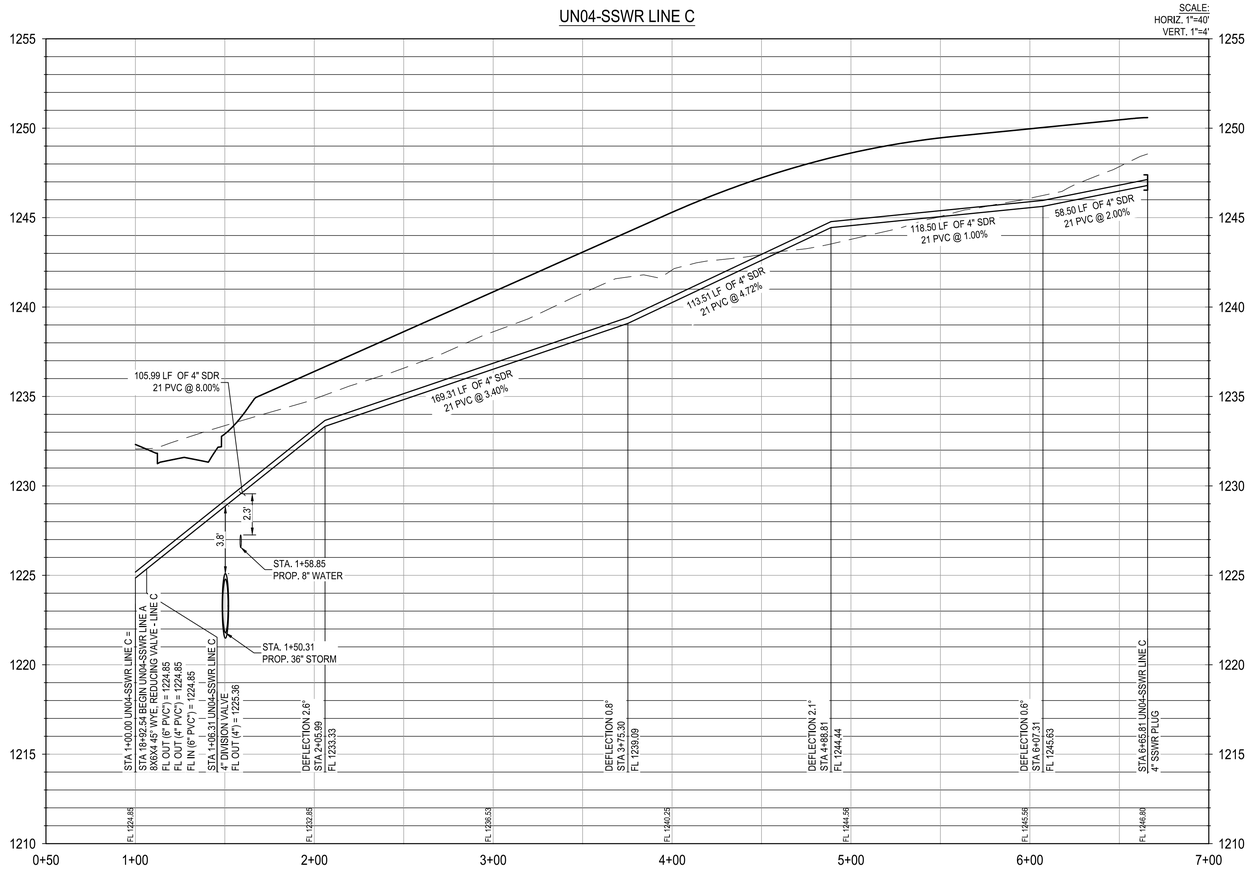

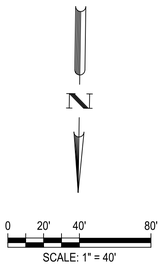

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CANYON RANCH UNIT 4

SANITARY SEWER LINE C PLAN AND PROFILE

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C09.16

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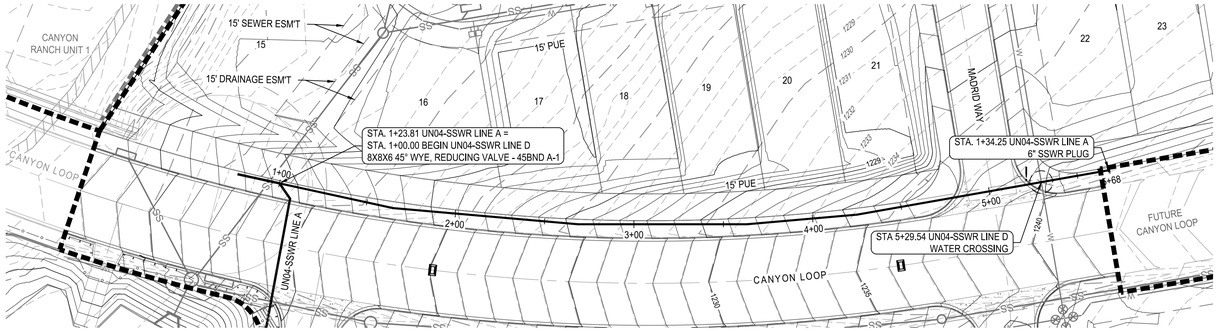

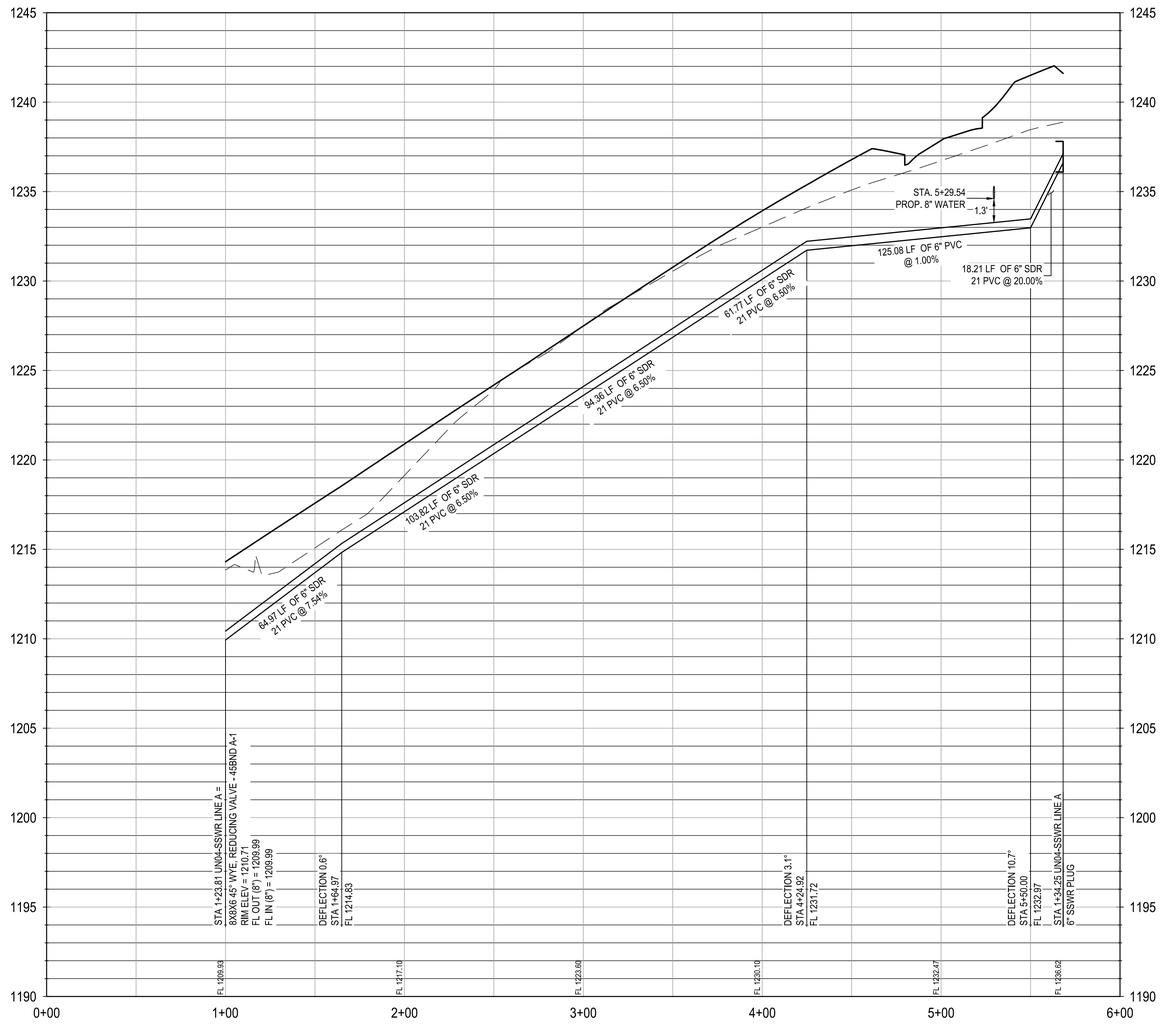

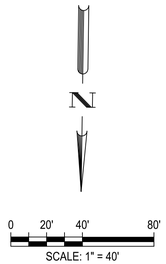

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SANITARY SEWER LINE D PLAN AND PROFILE

STATE OF TEXAS
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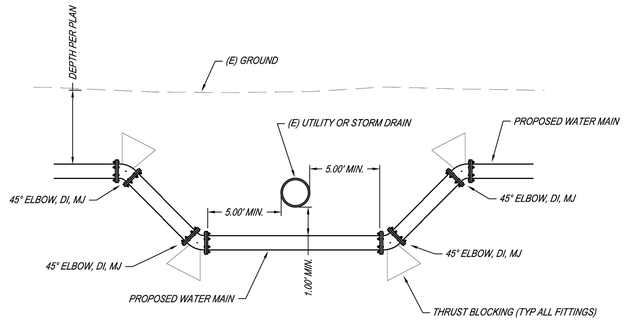


NOTES:

1. ALL MATERIAL SHALL BE DICL FOR WATER LOWERING.
2. ALL JOINTS SHALL BE RESTRAINED.

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

TYPICAL WATER MAIN LOWERING - UTILITY CROSSING

February 15, 2024

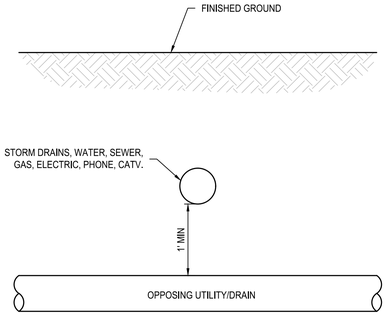
SHEET NO.
MAIN-LOW

PIT-LOT #	PIT SIZE
1-30	6
2-28	6
3-26	6
4-24	8
5-22	6
6-21	6
7-19	6
8-17	8
9-16	8
10-31	6
11-34	6
12-36	6
13-38	6
14-40	6
15-42	6
16-44	6

PIT-LOT #	PIT SIZE
17-165	6
18-164	6
19-161	6
20-159	6
21-46	6
22-48	6
23-50	6
24-52	6
25-54	8
26-56	6
27-58	6
28-60	8
29-61	6
30-63	8
31-65	6
32-67	8

PIT-LOT #	PIT SIZE
32-67	8
33-69	6
34-71	6
35-73	6
36-76	6
36-78	6
37-79	6
38-81	6
39-83	6
40-86	6
40-87	6
41-89	8
42-92	8
43-94	8
44-96	8
45-98	6

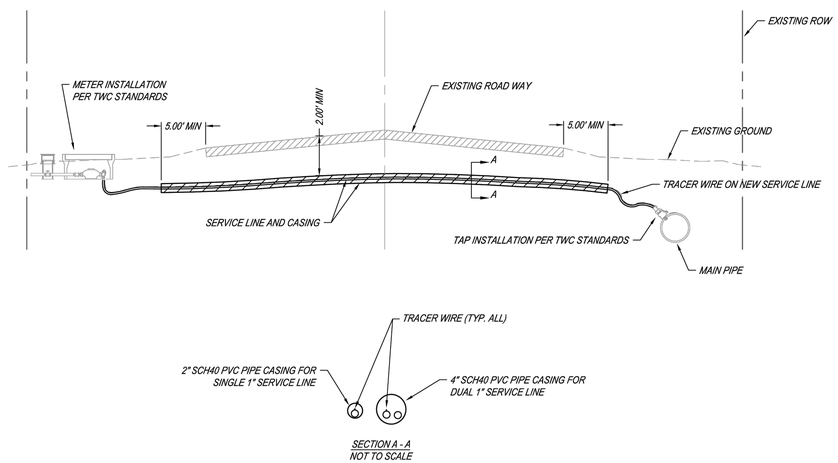
U4 PIT TOTALS
6' - 37
8' - 11



NOTES:

1. IF EITHER UTILITY SHOWN IS SEWER, REFER TO 30 TAC CHAPTER 290.44 (e) AND 217.13 APPENDIX E FOR TCEQ SEPARATION DISTANCE AND PROTECTION REQUIREMENTS.
2. IF SEPARATION CANNOT BE ATTAINED, CONTRACTOR SHALL COORDINATE WITH PROJECT ENGINEER AND APPLICABLE UTILITY COMPANY FOR ALTERNATE MEASURES.
3. IF SEPARATION CANNOT BE ATTAINED FOR WATERLINE, REFER TO TYPICAL WATER LOWERING DETAIL.

TYPICAL UTILITY CROSSING DETAIL
N.T.S



SECTION A - A
NOT TO SCALE

NOTES

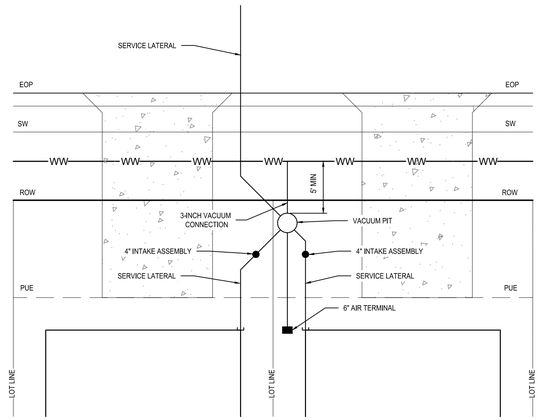
1) ALL HDPE SERVICE PIPE SHALL BE 200 PSI.
2) ALL METERS SHALL BE PLACED WITHIN EASEMENT OR EXISTING CITY/COUNTY RIGHT OF WAY.

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

LONG SERVICE

February 15, 2024

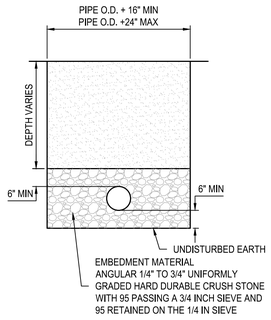
SHEET NO.
SER-LT



NOTES:

1. GRAVITY SERVICE LATERALS WILL HAVE A MINIMUM SLOPE OF 2%
2. 90° BENDS AND TEE FITTINGS ARE NOT ALLOWED ON SERVICE LATERALS
3. MINIMUM LENGTH OF GRAVITY SERVICE LATERALS IS 6 FT
4. MAXIMUM LENGTH TO AIR INTAKE ON EACH SERVICE IS 100 FT FOR A 4-INCH SERVICE AND 160 FT FOR A 6-INCH SERVICE. REDUCE MAXIMUM LENGTH BY 5 FT FOR EACH 45° BEND OVER 2 BENDS FOR A 4-INCH SERVICE OR 3 BENDS FOR A 6-INCH SERVICE
5. MAXIMUM DISTANCE AN AIR TERMINAL CAN BE LOCATED FROM A VALVE PIT IS 40 FT ASSUMING NO MORE THAN 3-45 BENDS ARE USED. THE DISTANCE IS REDUCED BY 5 FT FOR EVERY ADDITIONAL FITTING. AIR TERMINAL MUST ALSO BE AT LEAST 10 FT CLOSER TO THE VALVE PIT THAN THE LENGTH OF THE GRAVITY PIPING FROM THE HOUSE TO THE PIT.

TYPICAL VACUUM PIT LAYOUT
N.T.S



PIPE BEDDING DETAIL
N.T.S.

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgetgy.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

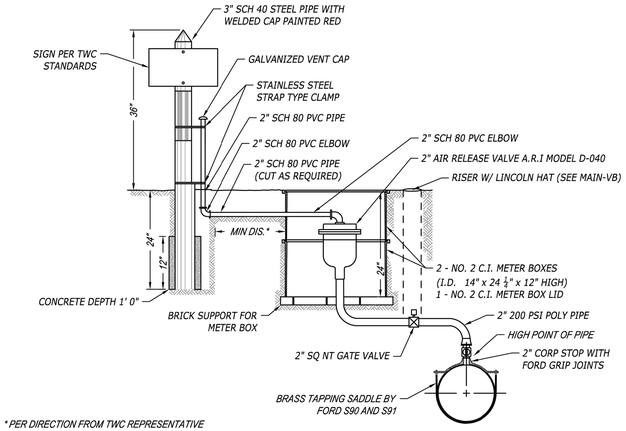
CIVIL UTILITY DETAILS
(SHEET 1 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C10.00

G:\TXC\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C10.00 - CIVIL UTILITY DETAILS.dwg Layout: CIVIL UTILITY DETAILS (SHEET 1 OF 9) Plotted: 6/17/2025 2:19:39 PM By: Lhuck



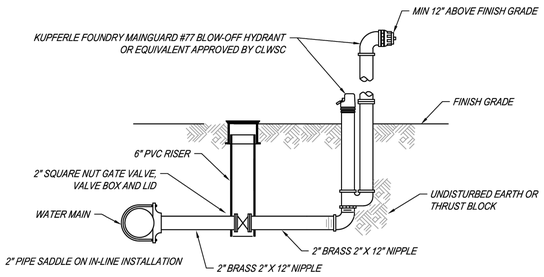
* PER DIRECTION FROM TWC REPRESENTATIVE

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

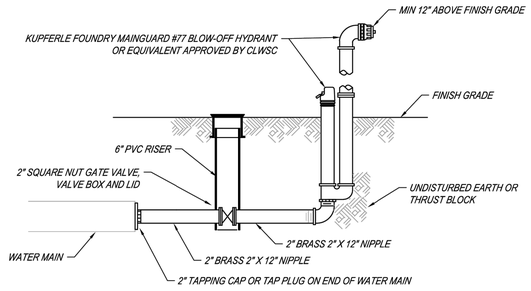
2" AIR VALVE INSTALLATION

February 15, 2024

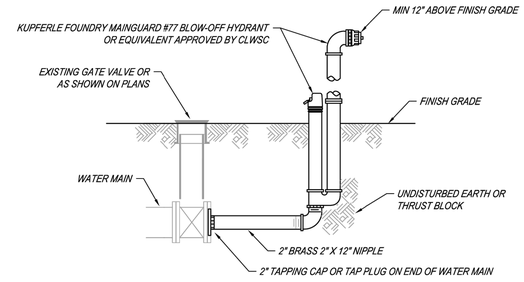
SHEET NO.
MAIN-AV2



TYPE 1



TYPE 2



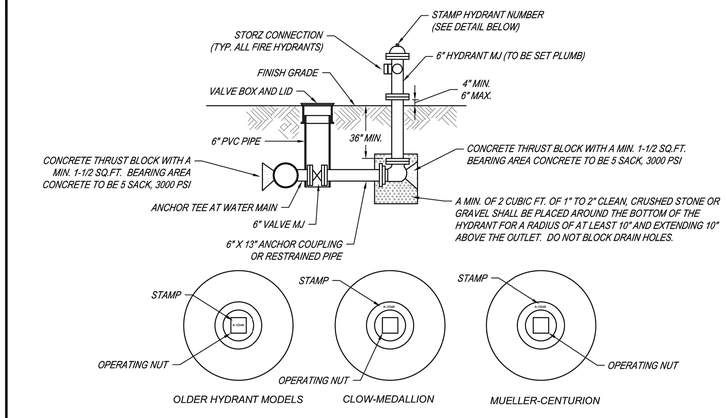
TYPE 3

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

TYPICAL BLOW-OFF ASSEMBLY INSTALLATION

February 15, 2024

SHEET NO.
MAIN-BO



HYDRANT NUMBER LOCATION TOP VIEW

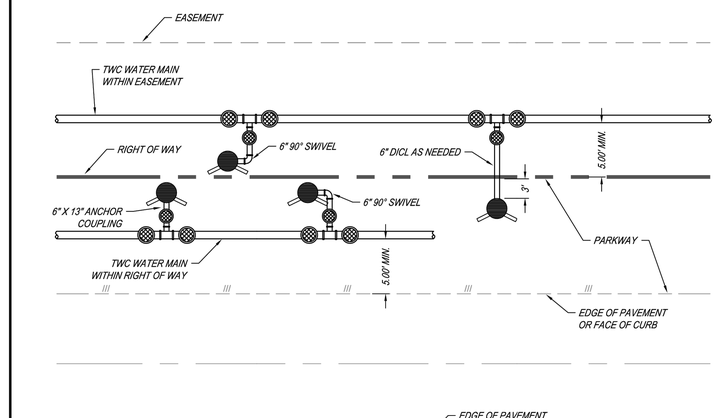
NOTE:
1. ALL HYDRANTS SHALL BE TURN LEFT TO OPEN.
2. FIRE HYDRANTS SHALL BE INSTALLED WITH STORZ TYPE CONNECTION, INTEGRAL CONNECTION OR STORZ ADAPTORS SHALL BE REQUIRED ON ALL FIRE HYDRANTS.
3. SEE STD. DWG. MAIN-VB FOR VALVE BOX INSTALLATION

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

STANDARD FIRE HYDRANT INSTALLATION

February 15, 2024

SHEET NO.
MAIN-HYD



NOTES:
1. SEE TWC STANDARDS FOR VALVE BOX INSTALLATION.
2. SEE TWC STANDARDS FOR FIRE HYDRANT INSTALLATION

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

TYPICAL FIRE HYDRANT PLACEMENTS

February 15, 2024

SHEET NO.
MAIN-HYDP

APR | DATE | DESCRIPTION | REV

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CIVIL UTILITY DETAILS (SHEET 2 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C10.01

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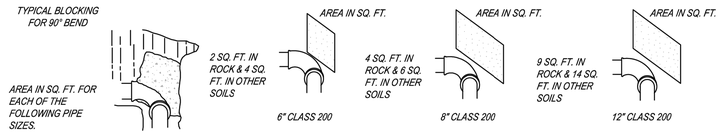

SQ. FT. OF BLOCKING REQUIRED FOR OTHER THAN ROCK EXCAVATION

PIPE SIZE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22.5° BENDS
6"	3	4	2	1
8"	4	6	4	2
12"	10	14	8	4
16"	18	25	14	7

BLOCKING AREA FOR 200 PSI TESTS AND 175 PSI WORKING PRESSURE

SQ. FT. OF BLOCKING REQUIRED FOR OTHER THAN ROCK EXCAVATION

PIPE SIZE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22.5° BENDS
6"	2	2	1	1
8"	3	4	2	1
12"	6	9	5	2
16"	11	15	8	4

ON BASIS OF 200 PSI WATER PRESSURE USED FOR TESTS, THE BLOCKING REQUIRED FOR TWO TYPES OF SOILS ARE NOTED BELOW. IN ONE CASE, A SOIL PRESSURE OF 5000 PSI IS USED FOR ROCK EXCAVATION AND FOR SOILS OTHER THAN ROCK A 3000 PSI BEARING SOIL PRESSURE IS USED. THE DISTRIBUTION ON SYSTEM IS DESIGNED TO OPERATE WITH A MAXIMUM WATER PRESSURE OF 175 PSI ALL CALCULATIONS APPLY TO ALL TYPES OF PIPE APPROVED FOR USE BY TWC AND MEETING TWC SPECIFICATIONS AND STANDARDS .

TRANSIT 2500 PSI CONCRETE MIX SHALL BE USED HOWEVER FOR SMALL VOLUME REQUIREMENTS CONCRETE MIXED AT JOB SITE WILL BE ACCEPTABLE ONLY IF A CONCRETE MIXER IS USED. ALL AGGREGATE SHALL BE CLEAN AND THE FIELD MIX SHALL BE IN THE RATIO OF 1:3:4 AND CONTAIN NOT LESS THAN 4 SACKS OF CEMENT PER CUBIC YARD.

TEXAS WATER COMPANY
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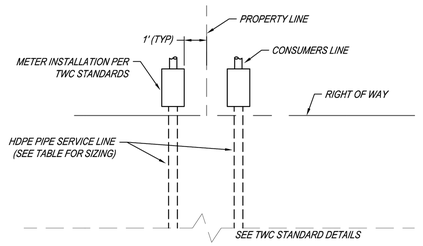
THRUST BLOCKING

February 15, 2024

SHEET NO. TB-HP



NOTES

1) ALL HDPE SERVICE PIPE SHALL BE 200 PSI SDR9 CTS.
2) ALL METERS SHALL BE PLACED WITHIN EASEMENT OR EXISTING CITY/COUNTY RIGHT OF WAY.

SERVICE SIZING	
HDPE PIPE SIZE	METER SIZE
1"	5/8" / 3/4"
1"	1"

TEXAS WATER COMPANY
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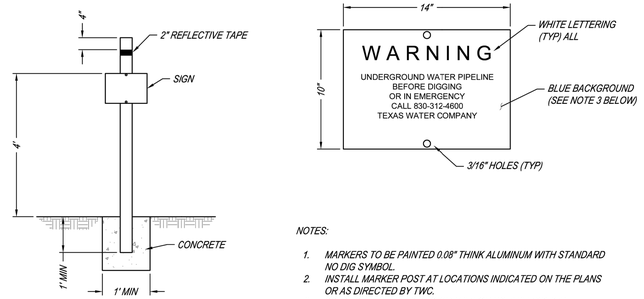
TYPICAL DUAL SERVICE INSTALLATION

February 15, 2024

SHEET NO. SER-DUAL



NOTES:

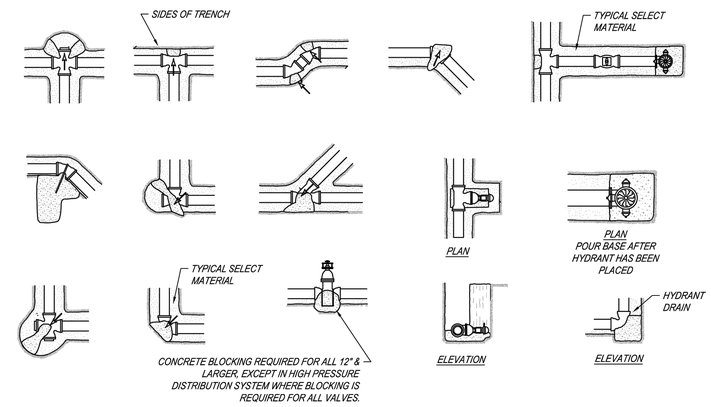
1. MARKERS TO BE PAINTED 0.08" THINK ALUMINUM WITH STANDARD NO DIG SYMBOL.
2. INSTALL MARKER POST AT LOCATIONS INDICATED ON THE PLANS OR AS DIRECTED BY TWC.
3. COLORS AND LABELS SHOWN ARE FOR POTABLE WATER. WASTEWATER BACKGROUND SHALL BE GREEN AND LABELED "SEWER". RECLAIMED BACKGROUND SHALL BE PURPLE AND LABELED "RECLAIMED"

TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

MARKER POST DETAL

February 15, 2024

SHEET NO. MAIN-MP



TEXAS WATER COMPANY
1399 Sattler Road Canyon Lake, Texas 78133 (830) 312-4600

THRUST BLOCKING

February 15, 2024

SHEET NO. TB-STD

NOT FOR CONSTRUCTION

							APR
							DATE
							DESCRIPTION
◁	◁	◁	◁	◁	◁		REV

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CIVIL UTILITY DETAILS (SHEET 3 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET C10.02

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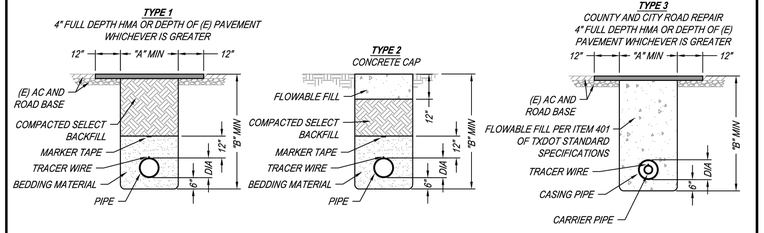


PIPE DIA	WIDTH "A"	DEPTH "B"
4"	16"	36"
6"	18"	42"
8"	20"	44"
12"	30"	52"
16"	36"	56"
>16"	DIA + 24"	DIA + 40"

NOTES:

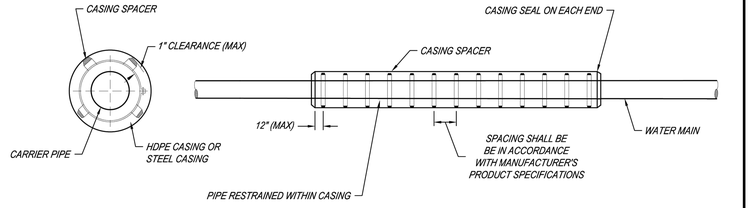
1. SEE GENERAL NOTES CONCERNING BEDDING AND COMPACTION.
2. ALL TRENCHES UNDER OR WITHIN 5 FEET OF PAVEMENT OR STRUCTURES SHALL BE FILLED IN MAXIMUM 6 INCH LIFTS, COMPACTED TO 95% STANDARD PROCTOR DENSITY. TRENCHES IN OTHER AREAS TO BE COMPACTED TO THE DENSITY OF THE ADJACENT UNDISTURBED SOIL.
3. ALL ASPHALT MATERIAL SHALL BE TYPE C GRADATION, USING AC-10 OIL AND SHALL BE COMPACTED TO AT LEAST 97% OF MAXIMUM DENSITY.
4. MARKER TAPE ATTACHED TO THE TOP OF PIPE WITH DUCT TAPE.
5. INSULATED 12 AWG SOLID DIRECT BURIAL RATED (30 MIL POLYETHYLENE JACKET MINIMUM) COPPER TRACER WIRE SHALL BE INSTALLED ABOVE AND ALONG ALL WATER LINES.
6. SEE TEST STATION DETAIL FOR TRACER WIRE TERMINATION.

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

PIPE TRENCH DETAIL

February 15, 2024

SHEET NO.
MAIN-TRN



TEXAS WATER COMPANY
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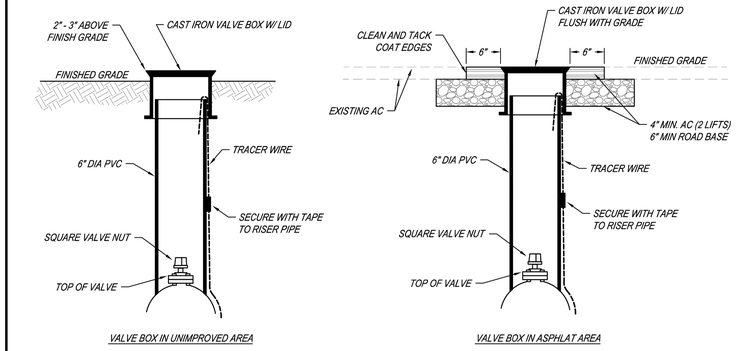
Lake, Texas 78133
(830) 312-4600

CASING DETAIL

February 15, 2024

SHEET NO.
MAIN-CSG



NOTES:

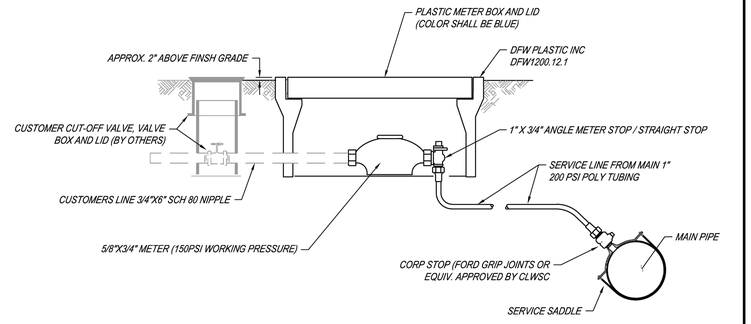
1. ALL ASPHALT MATERIAL SHALL BE TYPE C GRADATION, USING AC-10 OIL AND SHALL BE COMPACTED TO AT LEAST 97% OF MAXIMUM DENSITY.
2. VALVE BOX SHALL BE CENTERED ON VALVE.

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

VALVE BOX INSTALLATION

February 15, 2024

SHEET NO.
MAIN-VB



NOTES:

1. SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
2. PIPING AND TUBING SHALL BE BEDDED IN GRANULAR MATERIALS AS REQUIRED IN THE SPECIFICATIONS.
3. METERS SUPPLIED BY TWC.

TEXAS WATER COMPANY
1399 Sattler Road Canyon
Lake, Texas 78133
(830) 312-4600

5/8" OR 3/4" SERVICE

February 15, 2024

SHEET NO.
SER-58-34

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CIVIL UTILITY DETAILS
(SHEET 4 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C10.03

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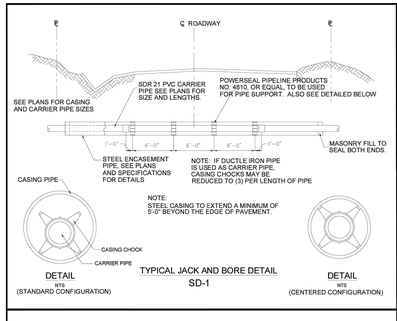
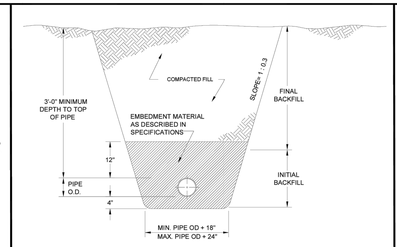
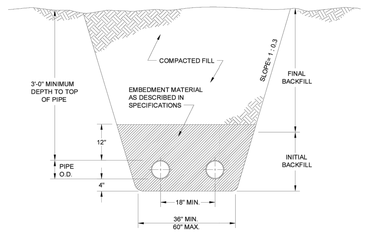


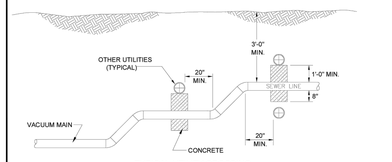
TYPICAL JACK AND BORE DETAIL
SD-1



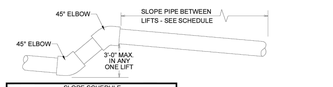
TYPICAL TRENCH SECTION
SD-2



TYPICAL TRENCH SECTION (2-LINE)
SD-3



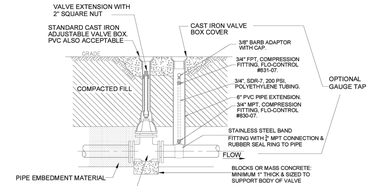
TYPICAL UTILITY CROSSING
SD-4



SLOPE SCHEDULE		
PIPE DIAMETER	MINIMUM FALL	0.2% OF DISTANCE
3"	0.20 FT	0.2% 100 FT ▲
4"	0.25 FT	0.2% 125 FT ▲
6"	0.25 FT	0.2% 125 FT ▲
8"	0.25 FT	0.2% 125 FT ▲
10"	0.25 FT	0.2% 125 FT ▲

USE WHICHEVER SLOPE IS GREATER BETWEEN LIFTS. ABOVE THIS LENGTH ▲ IN DISTANCE, THE 0.2% SLOPE IS GREATER. ANYTHING SHORTER THAN THIS DISTANCE SHOULD USE MINIMUM FALL INDICATED. WHEN NOT BETWEEN TWO LIFTS, USE 0.2% SLOPE.

LIFT DETAIL AND SLOPE SCHEDULE
SD-5



DIVISION VALVE AND OPTIONAL GAUGE TAP
SD-7

GENERAL NOTES:

LIFTS:

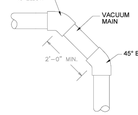
1. MINIMUM SLOPE BETWEEN LIFTS 0.20% X LENGTH OR 0.25 FT. FALL, WHICHEVER IS GREATER (FOR 4" AND LARGER VACUUM LINES).
2. FOR 3" SERVICE LATERALS, MINIMUM SLOPE BETWEEN LIFTS = 0.2% X LENGTH OR 0.20 FEET FALL, WHICHEVER IS GREATER.
3. MINIMUM SPACING BETWEEN LIFTS - 20'-0".
4. MAXIMUM ELEVATIONS IN ANY ONE LIFT - 3'-0".

SERVICE LINES

1. MINIMUM LENGTH OF PIPING FROM MAIN TO VALVE PIT = 5'-0".
2. SLOPE FROM VALVE PIT TO MAIN--2" OR 0.20% FALL (WHICHEVER IS GREATER)
3. MINIMUM DISTANCE FROM VALVE PIT TO LIFT IN SERVICE LINE -5'-0".
4. MINIMUM DISTANCE FROM LIFT IN SERVICE LINE TO CROSSOVER CONNECTION-5'-0".

CROSSOVER CONNECTIONS (SERVICE LINE OR BRANCH CONNECTION TO MAIN)

1. MINIMUM SPACING BETWEEN ANY TWO CROSSOVER CONNECTIONS - 5'-0".
2. MINIMUM DISTANCE FROM TOP OF LIFT TO ANY CROSSOVER CONNECTION--5'-0".
3. ALL CROSSOVER CONNECTIONS MUST ENTER OVER TOP OF THE MAIN (WYE IN VERTICAL POSITION OR 45 DEGREE ALTERNATE ALIGNMENT.
4. LONG TURN 90° PERMITTED AS PART OF CROSSOVER TO MAIN CONNECTION AT MAIN LINE ONLY.



CHANGE IN DIRECTION
SD-6

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Vacuum Technology Systems
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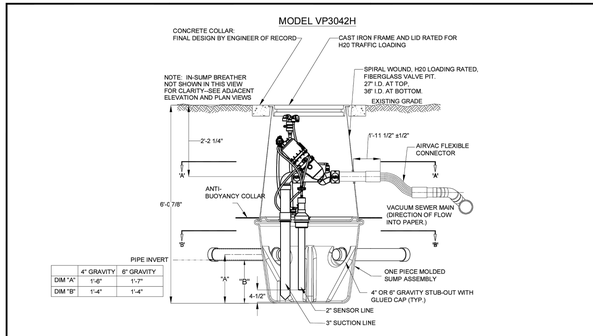
The Viable Alternative

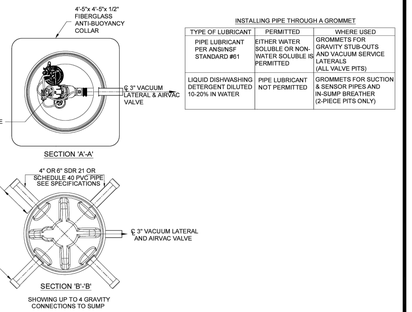
NO.	REVISIONS	DATE
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	1/2/2020

TITLE: STANDARD LINE DETAILS (TRENCH & LIFT)
DRAWN BY: SHL | DATE: 4/25/2019 | SCALE: NTS | DRAWING NO.: 1-S

LIFT DETAILS FOR 3" SERVICE LATERAL



	4" GRAVITY	6" GRAVITY
DIM "A"	1'-6"	1'-7"
DIM "B"	1'-4"	1'-4"



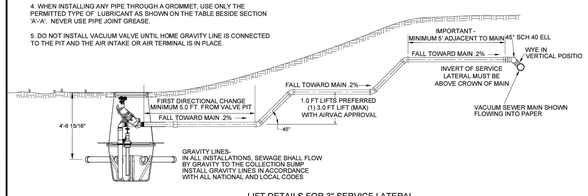
INSTALLING PIPE THROUGH A GROMMET

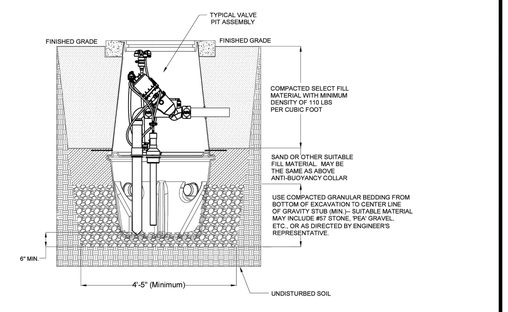
TYPE OF LUBRICANT	PERMITTED	WHERE USED
PIPE LUBRICANT PER ANSI/NSF STANDARD #61	EITHER WATER SOLUBLE OR NON-WATER SOLUBLE IS PERMITTED	GROMMETS FOR GRAVITY STUB-OUTS AND VACUUM SERVICE LATERALS (ALL VALVE PITS)
LIQUID DISHWASHING DETERGENT DILUTED 10-20% IN WATER	PIPE LUBRICANT NOT PERMITTED	GROMMETS FOR SUCTION & SENSOR PIPES AND IN-SUMP BREATHER (2-PIECE PITS ONLY)

VALVE PIT SECTION "A" & "B"

NOTES;

1. ALL GROMMETS FOR VALVE PIT AND SUMP SUPPLIED BY AIRVAC.
2. ALL HOLES IN VALVE PIT AND PIT BOTTOM ARE FACTORY CUT. ALL GRAVITY LINE CONNECTION OPENINGS IN THE SUMP ARE FIELD CUT.
3. ONLY HOMES OR APARTMENTS WHOSE LOWER FLOOR ELEVATIONS ARE THE SAME SHOULD BE CONNECTED TO A COMMON VACUUM VALVE PIT INSTALLATION. SOME LOCAL CODES MAY REQUIRE THE INSTALLATION OF A BACKFLOW PREVENTER IN THE HOME OWNERS' GRAVITY LINES. WITH MULTIPLE FLOOR APARTMENTS, EACH FLOOR LEVEL SHOULD BE SERVICE BY ITS OWN VACUUM VALVE PIT PACKAGE.
4. WHEN INSTALLING ANY PIPE THROUGH A GROMMET, USE ONLY THE PERMITTED TYPE OF LUBRICANT AS SHOWN ON THE TABLE BESIDE SECTION 'A'-'A'. NEVER USE PIPE JOINT GREASE.
5. DO NOT INSTALL VACUUM VALVE UNTIL HOME GRAVITY LINE IS CONNECTED TO THE PIT AND THE AIR INTAKE OR AIR TERMINAL IS IN PLACE.





VALVE PIT BEDDING & BACKFILL DETAIL

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Vacuum Technology Systems
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The Viable Alternative

NO.	REVISIONS	DATE
2	REPLACED WITH NEW BREATHER -SHL-	7/10/2020
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	11/13/2019

TITLE: 2 PIECE 6FT HYBRID PIT
DRAWN BY: SHL | DATE: 2/12/2018 | SCALE: | DRAWING NO.: VP H-1

NOT FOR CONSTRUCTION

NO.	DESCRIPTION	DATE	APR
REV			

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

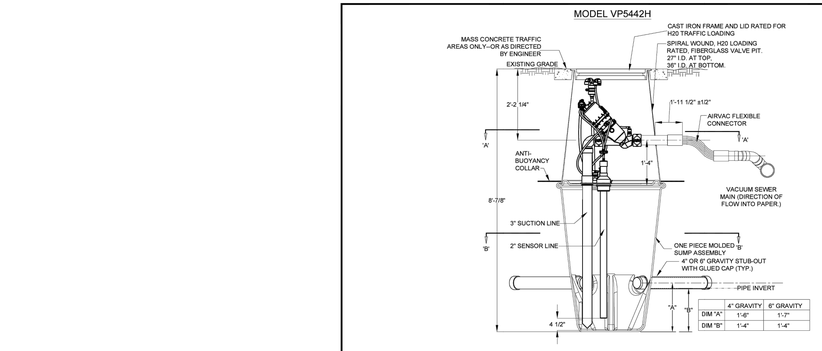
CANYON RANCH UNIT 4
CIVIL UTILITY DETAILS
(SHEET 5 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C10.04

G:\TXO\Projects\San Antonio Projects\7228-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Stds\C10.00 - CIVIL UTILITY DETAILS.dwg Layout: CIVIL UTILITY DETAILS (SHEET 6 OF 9) Plotted: 6/17/2025 2:20:05 PM By: Lhuck

MODEL VP5442H



	4" GRAVITY	6" GRAVITY
DIM "A"	1'-6"	1'-7"
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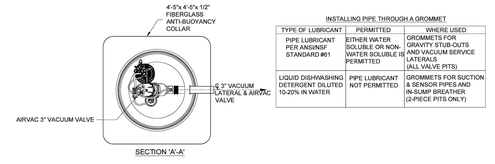

INSTALLING PIPE THROUGH A GROMMET

TYPE OF LUBRICANT	PERMITTED	WHERE USED
PIPE LUBRICANT PER ANSI/NSF STANDARD #61	EITHER WATER SOLUBLE OR NON-WATER SOLUBLE IS PERMITTED	GROMMETS FOR GRAVITY STUB-OUTS AND VACUUM SERVICE LATERALS (ALL VALVE PITS)
LIQUID DISHWASHING DETERGENT DILUTED 10-20% IN WATER	PIPE LUBRICANT NOT PERMITTED	GROMMETS FOR SUCTION & SENSOR PIPES AND IN-SUMP BREATHER (2-PIECE PITS ONLY)

VALVE PIT SECTION "A" & "B"

NOTES:

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2. ALL HOLES IN VALVE PIT AND PIT BOTTOM ARE FACTORY CUT. ALL GRAVITY LINE CONNECTION OPENINGS IN THE SUMP ARE FIELD CUT.

3. ONLY HOMES OR APARTMENTS WHOSE LOWER FLOOR ELEVATIONS ARE THE SAME SHOULD BE CONNECTED TO A COMMON VACUUM VALVE PIT INSTALLATION. SOME LOCAL CODES MAY REQUIRE THE INSTALLATION OF A BACKFLOW PREVENTER IN THE HOME OWNERS' GRAVITY LINES. WITH MULTIPLE FLOOR APARTMENTS, EACH FLOOR LEVEL SHOULD BE SERVICE BY ITS OWN VACUUM VALVE PIT PACKAGE.

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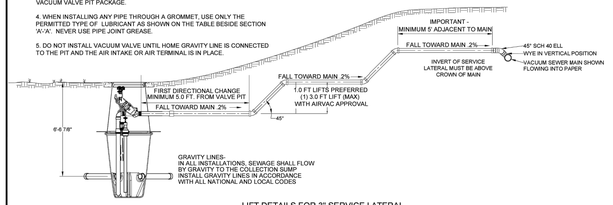
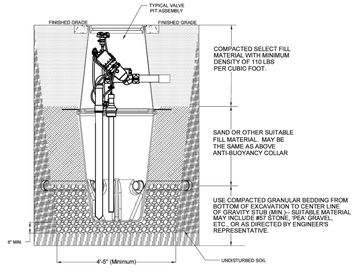


LIFT DETAILS FOR 3" SERVICE LATERAL



VALVE PIT BEDDING AND BACK FILL DETAIL

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Vacuum Technology Systems

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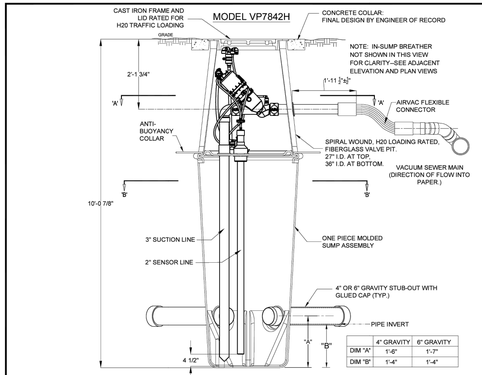
The Viable Alternative ®

NO.	REVISIONS	DATE
2	REPLACED WITH NEW BREATHER -SHL-	7/10/2020
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	11/13/2019

TITLE: 2 PIECE 8FT HYBRID PIT

DRAWN BY: SHL | DATE: 2/12/2018 | SCALE: | DRAWING NO.: VP H-2

MODEL VP7842H



	4" GRAVITY	6" GRAVITY
DIM "A"	1'-6"	1'-7"
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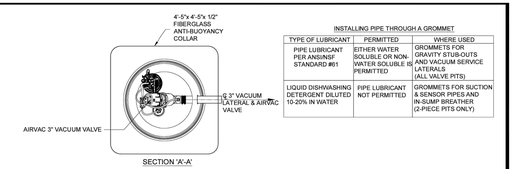

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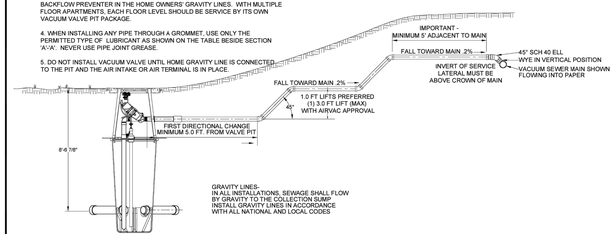
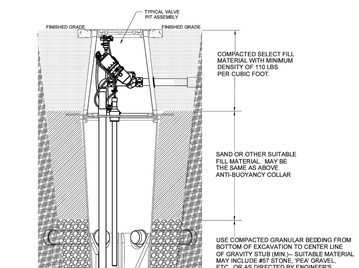


LIFT DETAILS FOR 3" SERVICE LATERAL



VALVE PIT BEDDING AND BACK FILL DETAIL

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The Viable Alternative ®

NO.	REVISIONS	DATE
2	REPLACED WITH NEW BREATHER -SHL-	7/10/2020
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	11/13/2019

TITLE: 2 PIECE 10 FT HYBRID PIT

DRAWN BY: SHL | DATE: 2/12/2018 | SCALE: | DRAWING NO.: VP H-3

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA

REVIEWED BY: ACR

DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

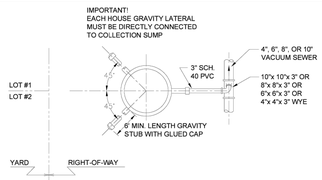
CANYON RANCH UNIT 4

CIVIL UTILITY DETAILS (SHEET 6 OF 9)

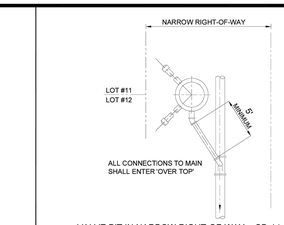
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

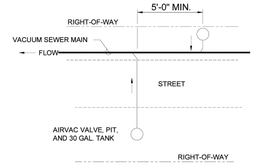
SHEET C10.05



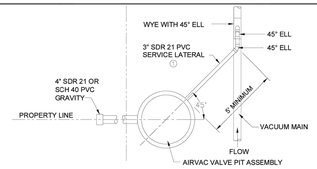
VALVE PIT WITH 2 CONNECTIONS -- SD-13



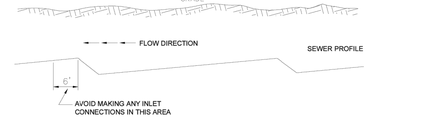
VALVE PIT IN NARROW RIGHT-OF-WAY -- SD-14



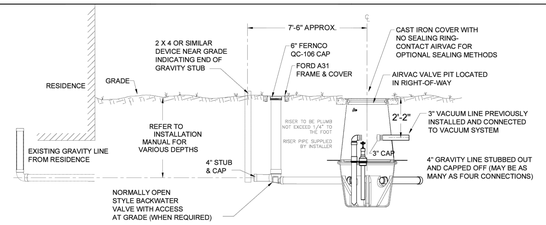
MINIMUM SPACING BETWEEN CONNECTIONS -- SD-15



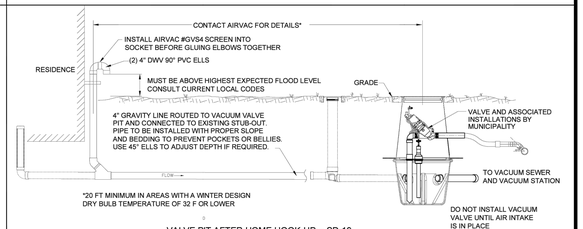
VALVE PIT WITH SINGLE CONNECTION -- SD-16



CONNECTION LOCATIONS TO AVOID -- SD-17



VALVE PIT PRIOR TO HOME HOOK-UP -- SD-18



VALVE PIT AFTER HOME HOOK-UP -- SD-19

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Vacuum Technology Systems

4217 N. OLD U.S. 31, ROCHESTER, INDIANA 46975 PHONE (574) 223-3980

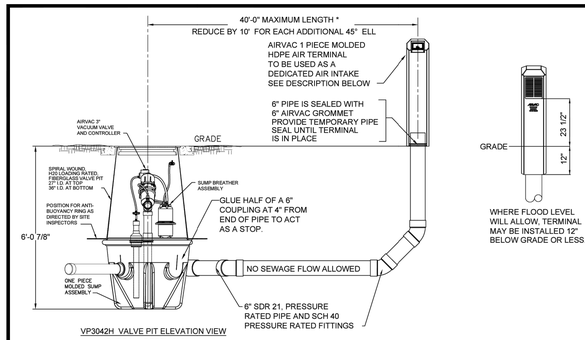
The Vista Alternative

NO.	REVISIONS	DATE
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	12/27/2019

TITLE: PIT CONNECTION DETAIL

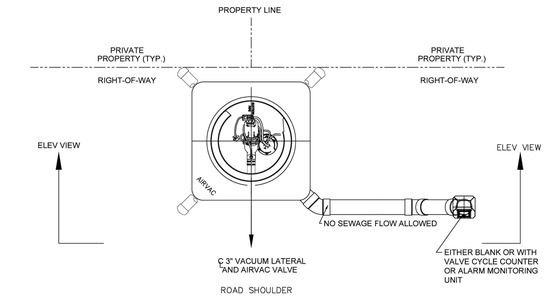
DRAWN BY	DATE	SCALE	DRAWING NO.
SHL	4/25/2019	NTS	3-S

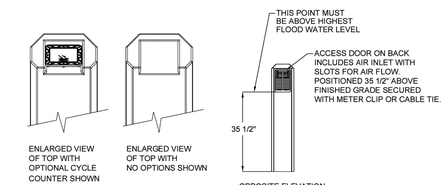
CHECKED BY:



VP3042H VALVE PIT ELEVATION VIEW
OVERALL DEPTH 6'-0"
DEPTH TO CENTERLINE GRAVITY 4'-6"

WHERE FLOOD LEVEL
WILL ALLOW, TERMINAL
MAY BE INSTALLED 12"
BELOW GRADE OR LESS.



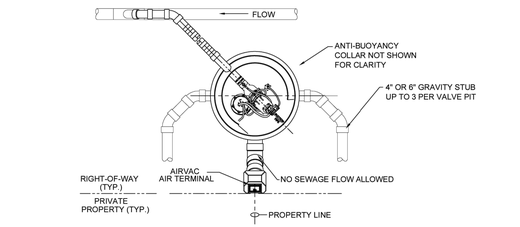


ENLARGED VIEW
OF TOP WITH
OPTIONAL CYCLE
COUNTER SHOWN

ENLARGED VIEW
OF TOP WITH
NO OPTIONS SHOWN

OPPOSITE ELEVATION
VIEW AT REAR

ENLARGED VIEW
OF ACCESS DOOR
AND INLET SLOTS



ALTERNATE ARRANGEMENT

MATERIAL: POLYETHYLENE, MOLDED CONSTRUCTION WITH APPROXIMATELY 3/16" WALL THICKNESS.

COLOR: SIMULATED BROWN STONE.

INSTALLATION: PUSH DOWN ONTO 6" SDR 21 PVC PIPE INSTALLED AT 6" ABOVE FINISHED GRADE.

THIS 6" PVC PIPE TO BE A DEDICATED AIR PIPE FROM THE SEWAGE HOLDING SUMP WITH NO SEWAGE FLOW.

* 20'-0" MIN IN AREAS WITH A WINTER DESIGN DRY BULB TEMPERATURE 32° F OR LOWER

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The Vista Alternative

NO.	REVISIONS	DATE
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	5/5/2020

TITLE: DEDICATED 6" AIR TERMINAL W/ TWO PIECE VALVE PIT

DRAWN BY	DATE	SCALE	DRAWING NO.
SHL	5/5/2020	NTS	9-S

CHECKED BY:

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CIVIL UTILITY DETAILS
(SHEET 7 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

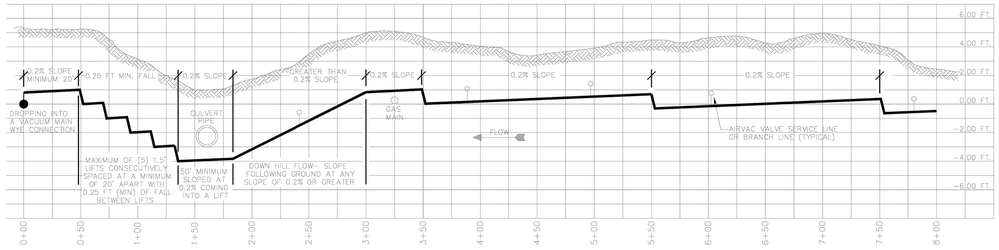
06/17/2025

SHEET
C10.06

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C10.00 - CIVIL UTILITY DETAILS.dwg Layout: CIVIL UTILITY DETAILS (SHEET 7 OF 9) Plotted: 6/17/2025 2:20:09 PM By: Lhuck

G:\TXO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C10.00 - CIVIL UTILITY DETAILS.dwg Layout: CIVIL UTILITY DETAILS (SHEET 8 OF 9) Plotted: 6/17/2025 2:20:12 PM By: Lhuck

PROFILE DESIGNED FOR 4" OR LARGER VACUUM MAINS



LEVEL AND UPGRADE TRANSPORT
MINIMUM FALL BETWEEN LIFTS:

PIPE DIA.	MIN. FALL	0.2% OF DISTANCE
3"	0.25'	0.2% 100' ▲
4"	0.25'	0.2% 125' ▲
6"	0.25'	0.2% 125' ▲
8"	0.25'	0.2% 125' ▲
10"	0.25'	0.2% 125' ▲

USE WHICHEVER SLOPE IS GREATER BETWEEN ANY 2 LIFTS. ▲ –ABOVE THIS LENGTH IN DISTANCE, THE 0.2% SLOPE IS GREATER. ANYTHING SHORTER THAN THIS DISTANCE SHOULD USE MIN. FALL INDICATED. WHEN NOT BETWEEN TWO LIFTS, USE 0.2% SLOPE.

3" SERVICE LATERAL PROFILE DESIGN

3" VALVE SERVICE LINE– MAXIMUM LENGTH 300', 1 VALVE PIT FLOW LIMIT.
USE SCHEDULE 40 OR SDR 21 PVC PIPE.

4" OR LARGER MAIN PROFILE DESIGN

4" VACUUM MAIN– MAXIMUM LENGTH 2000'; 38 GPM MAXIMUM FLOW.
6" VACUUM MAIN– NO MAXIMUM LENGTH; 106 GPM MAXIMUM FLOW.
8" VACUUM MAIN– NO MAXIMUM LENGTH; 210 GPM MAXIMUM FLOW.
10" VACUUM MAIN– NO MAXIMUM LENGTH; 375 GPM MAXIMUM FLOW.
–4" AND ABOVE, USE SDR 21 PVC PIPE.

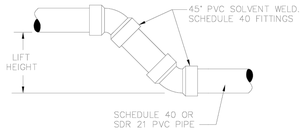
LEVEL AND UPGRADE TRANSPORT

PROFILE CHANGES

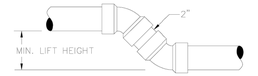
USE 1.0 FT. LIFTS ON 4" PIPE WHERE POSSIBLE. USE 1.0 TO 1.5 FT. LIFTS ON LARGER PIPE SIZES. LIFTS GREATER THAN 2.0 FT. NOT RECOMMENDED.

PROFILE CHANGE CONSTRUCTION

STATIC LIFT FOR CALCULATING LINE LOSSES= LIFT HEIGHT MINUS PIPE DIAMETER, FOR ALL PIPE SIZES.



MINIMUM LIFT HEIGHT	
3" PIPE	.46 FT
4" PIPE	.48 FT
6" PIPE	.81 FT
8" PIPE	.88 FT
10" PIPE	1.07 FT



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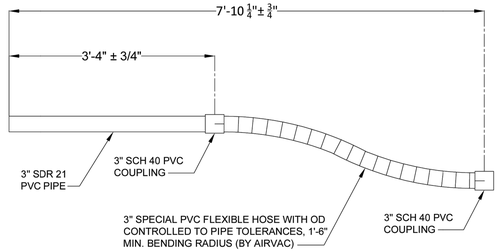
Vacuum Technology Systems

4217 N. OLD U.S. 31, ROCHESTER, INDIANA 46975 PHONE (574) 223-3980

The Vacuum Alternative™

NO.	REVISIONS	DATE
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	1/28/2020

TITLE: VACUUM MAIN PROFILE DESIGN
SCALE:
DRAWN BY: SHL | DATE: 1/26/2021 | SCALE: NTS | DRAWING NO.: 11-S
DESIGN BY:



INITAL INSTALLATION - TO INSURE PROPER ALIGNMENT
1. FLEXIBLE CONNECTOR LENGTH MAY NOT BE ALTERED. DO NOT CUT PVC PIPE OR THE FLEXIBLE HOSE.

2. INSERT BEVELED END INTO THE ALIGNMENT PORT ON THE VALVE PIT. PUSH FLEXIBLE CONNECTOR ALL THE WAY TO THE 3" SUCTION ELBOW IN THE VALVE PIT.

3. TO INSURE PROPER ALIGNMENT, CONNECT THE BEVELED END TO THE 3" SUCTION ELBOW USING A TEMPORARY SLIP COUPLING. DO NOT GLUE THIS COUPLING.

AFTER VALVE PIT INSTALLATION IS COMPLETED - TO ALLOW FOR VACUUM TESTING
1. AFTER THE VALVE PIT INSTALLATION IS COMPLETE, INCLUDING BACKFILL, REMOVE TEMPORARY PVC COUPLING AND CUT THE PVC PIPE TO THE CENTER OF THE VALVE PIT ±1". GLUE 3" PVC CAP ONTO END OF PVC PIPE.
2. DO NOT CONDUCT MAIN LINE VACUUM TESTING UNTIL THE TEMPORARY COUPLING HAS BEEN REMOVED AND THE PVC CAP GLUED ON.

SEE AIRVAC INSTALLATION INSTRUCTIONS FOR ADDITIONAL DETAILS

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Vacuum Technology Systems

4217 N. OLD U.S. 31, ROCHESTER, INDIANA 46975 PHONE (574) 223-3980

The Vacuum Alternative™

NO.	REVISIONS	DATE
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	1/28/2020

TITLE: STANDARD LINE DETAILS (3 INCH FLEX CONNECTOR)
SCALE:
DRAWN BY: SHL | DATE: 1/28/2020 | SCALE: NTS | DRAWING NO.: 8-S
DESIGN BY:

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

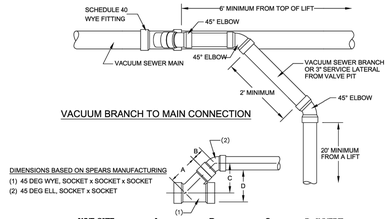
BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CIVIL UTILITY DETAILS (SHEET 8 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C10.07

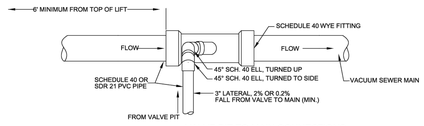


VACUUM BRANCH TO MAIN CONNECTION

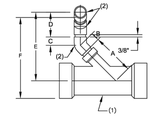
DIMENSIONS BASED ON SPEARS MANUFACTURING
(1) 45 DEG WYE, SOCKET x SOCKET x SOCKET
(2) 45 DEG ELL, SOCKET x SOCKET

WYE SIZE	A	B	C	D- INVERT
4 x 4 x 4	5 1/4"	3 3/32"	5.02"	0.67'
4 x 4 x 3	5 7/8"	2 7/8"	5.30"	0.63'
6 x 6 x 6	11 21/32"	5 7/8"	12.40"	1.03'
6 x 6 x 4	10 1/4"	3 3/32"	9.44"	0.75'
6 x 6 x 3	10 1/4"	2 7/8"	9.25"	0.77'
8 x 8 x 8	15 1/4"	6 7/16"	15.34"	1.25'
8 x 8 x 6	16 1/8"	5 7/8"	15.55"	1.30'
8 x 8 x 4	14 1/4"	3 3/32"	12.26"	1.02'
8 x 8 x 3	13"	2 7/8"	11.22"	0.94'
10 x 10 x 10	22 1/5"	8 1/8"	21.34"	1.78'
10 x 10 x 8	16 25/32	6 7/16"	16.42"	1.37'
10 x 10 x 6	15 7/8"	5 7/8"	15.35"	1.28'
10 x 10 x 4	15 1/2"	3 3/32"	13.15"	1.10'
10 x 10 x 3	14 5/8"	2 7/8"	12.37"	1.03'

VACUUM BRANCH TO MAIN LINE CONNECTION
SD-8



VALVE PIT TO MAIN CONNECTIONS
SD-9



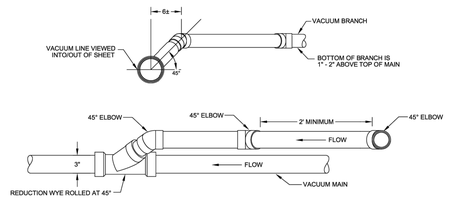
DIMENSIONS BASED ON SPEARS MANUFACTURING
(1) 45 DEG WYE, SOCKET x SOCKET x SOCKET
(2) 45 DEG ELL, SOCKET x SOCKET

WYE SIZE	A	B	C	D	E	F- INVERT
4 x 4 x 3	5 7/8"	2 7/8"	2 7/8"	3 23/32"	14.93"	1.24'
6 x 6 x 3	10 1/4"	2 7/8"	2 7/8"	3 23/32"	15.35"	1.32'
8 x 8 x 3	13"	2 7/8"	2 7/8"	3 23/32"	17.82"	1.48'
10 x 10 x 3	14 5/8"	2 7/8"	2 7/8"	3 23/32"	18.97"	1.58'

VALVE SERVICE CONNECTIONS
SD-10



ALTERNATE VACUUM BRANCH TO MAIN LINE CONNECTION
SD-11



ALTERNATE VACUUM BRANCH TO MAIN LINE CONNECTION
SD-12

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Airvac

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The Waste Alternative

NO.	REVISIONS	DATE
1	UPDATED TITLE BLOCK, NOTES, FONT, ETC -SHL-	1/2/2020

TITLE: STANDARD LINE DETAILS (LINE CONNECTION DETAIL)

CLIENT:

DRAWN BY: SHL | DATE: 4/25/2019 | SCALE: NTS | DRAWING NO.: 2-S

CHECKED BY:

PIT-LOT #	PIT SIZE
1-30	6
2-28	6
3-26	6
4-24	8
5-22	6
6-21	6
7-19	6
8-17	8
9-16	6
10-31	6
11-34	6
12-36	6
13-38	6
14-40	6
15-42	6
16-44	6

PIT-LOT #	PIT SIZE
17-165	6
18-164	6
19-161	6
20-159	6
21-46	8
22-48	6
23-50	6
24-52	8
25-54	6
26-56	8
27-58	6
28-60	8
29-61	6
30-63	10
31-65	8
32-67	6

PIT-LOT #	PIT SIZE
33-69	8
34-71	8
35-73	8
36-76/78	6
37-79	6
38-81	6
39-83	6
40-86/87	6
41-89	6
42-92	6
43-94	6
44-96	6
45-98	6
46-99	6
47-158	6
48-156	6

PIT-LOT #	PIT SIZE
49-154	6
50-152	6
51-150	6
52-148	6
53-130	6
54-128	6
55-126	6
56-124	6

PIT TOTALS
6' - 45
8' - 10
10' - 1

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

CIVIL UTILITY DETAILS
(SHEET 9 OF 9)

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

06/17/2025

SHEET
C10.08

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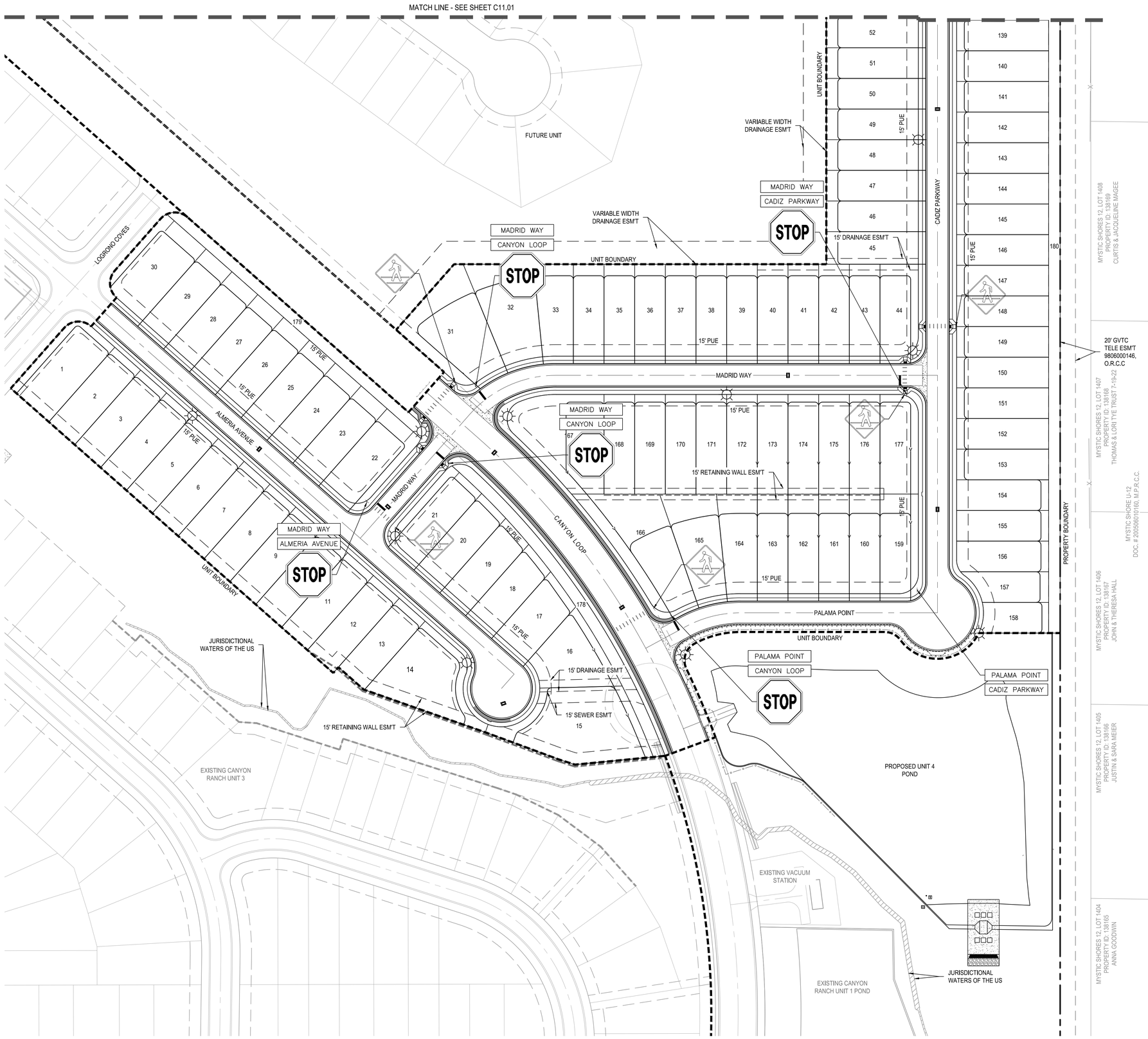


N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- PROPOSED 24" WHITE SOLID STOP BAR
- PROPOSED TYPE III STREET END BARRICADE
- STREET LIGHT
- ADA RAMP
- PEDESTRIAN CROSSING
- RAISED REFLECTIVE HYDRANT MARKER
- PROPOSED PEDESTRIAN CROSSING SIGN; W11-2 30" X 30" (SEE SHEET C11.12 FOR SIGN MOUNTING DETAILS)

NOTES:

1. SIGN PLACEMENT AND STRIPING PLACEMENT PER TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES
2. ALL SIGNS SHALL CONFORM TO THE 2011 TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), REVISION 1, NOVEMBER 2012.
3. PAVEMENT MARKINGS TO BE HOT APPLIED THERMOPLASTIC PER TxDOT SPEC. DMS-8220.
4. CONTRACTOR SHALL INSTALL TEMPORARY STREET END MARKERS AND PLACE AT THE END OF EACH PHASE UNTIL PROJECT COMPLETION.
5. POSTED SPEED ALONG THIS PORTION OF LOCAL STREETS SHALL BE 25 MPH.
6. COUNTY WILL INSTALL SIGNAGE AND INVOICE THE OWNER. CONTRACTOR TO INSTALL ALL PAVEMENT MARKINGS AND HYDRANT MARKERS.
7. SEE SHEET C11.12

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ACR

REVIEWED BY: SSM

DRAWN BY: ACR

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

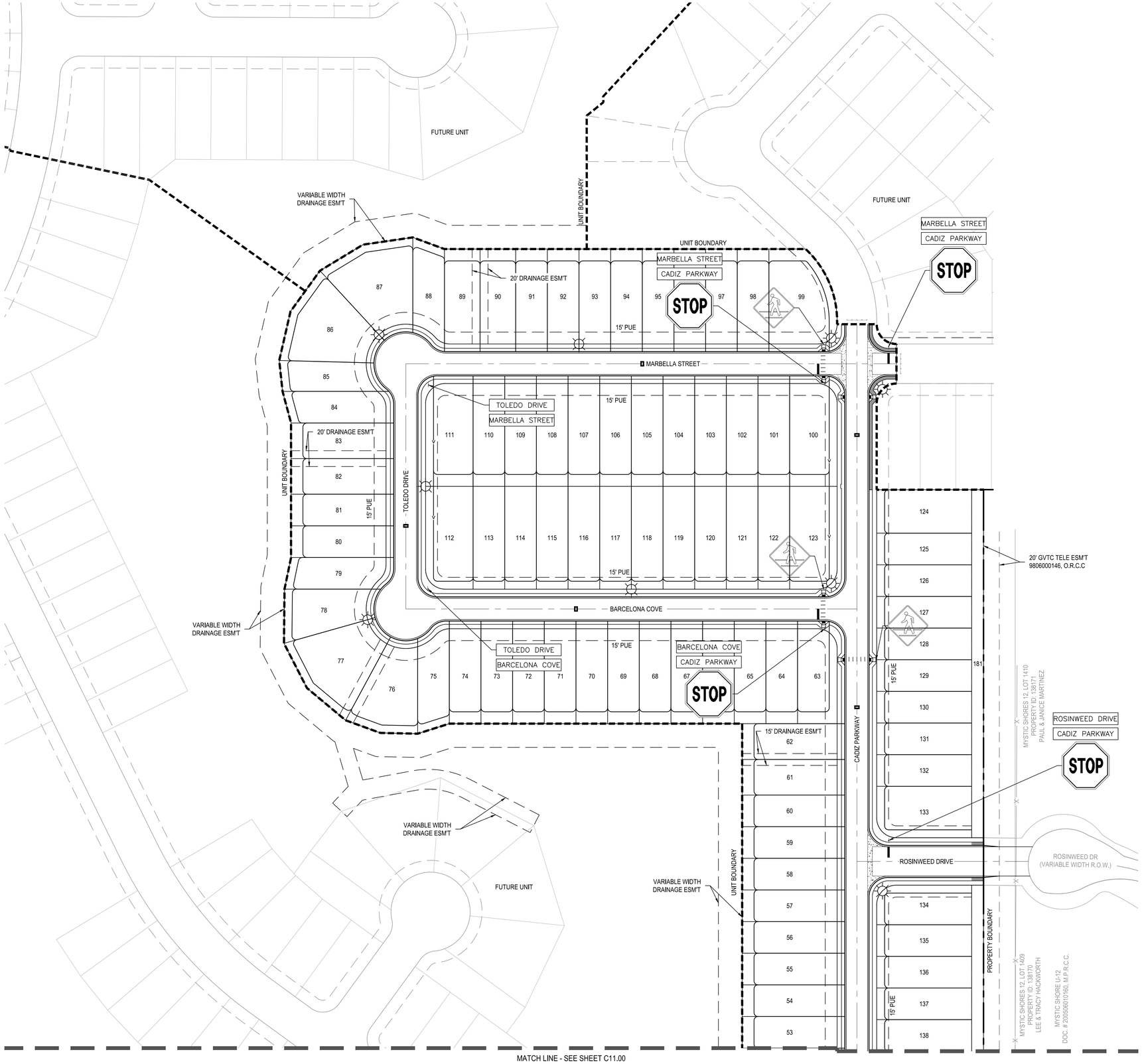
SIGNAGE, STRIPING AND LIGHTING PLAN (SHEET 1 OF 2)

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER

06/17/2025

SHEET
C11.00

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C11.00 - SIGNAGE STRIPING AND LIGHTING PLAN.dwg Layout: SIGNAGE STRIPING AND LIGHTING PLAN (SHEET 1 OF 2) Plotted: 6/17/2025 2:22:16 PM By: Lhuck



N

0 30' 60' 120'

SCALE: 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- UNIT BOUNDARY
- EASEMENT
- PROPOSED 24" WHITE SOLID STOP BAR
- PROPOSED TYPE III STREET END BARRICADE
- STREET LIGHT
- ADA RAMP
- PEDESTRIAN CROSSING
- RAISED REFLECTIVE HYDRANT MARKER
- PROPOSED PEDESTRIAN CROSSING SIGN; W11-2 30" X 30" (SEE SHEET C11.12 FOR SIGN MOUNTING DETAILS)

NOTES:

1. SIGN PLACEMENT AND STRIPING PLACEMENT PER TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES
2. ALL SIGNS SHALL CONFORM TO THE 2011 TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), REVISION 1, NOVEMBER 2012.
3. PAVEMENT MARKINGS TO BE HOT APPLIED THERMOPLASTIC PER TxDOT SPEC. DMS-8220.
4. CONTRACTOR SHALL INSTALL TEMPORARY STREET END MARKERS AND PLACE AT THE END OF EACH PHASE UNTIL PROJECT COMPLETION.
5. POSTED SPEED ALONG THIS PORTION OF LOCAL STREETS SHALL BE 25 MPH.
6. COUNTY WILL INSTALL SIGNAGE AND INVOICE THE OWNER. CONTRACTOR TO INSTALL ALL PAVEMENT MARKINGS AND HYDRANT MARKERS.
7. SEE SHEET C11.12

NOT FOR CONSTRUCTION

	APR	DATE	DESCRIPTION	REV

DESIGNED BY: ACR

REVIEWED BY: SSM

DRAWN BY: ACR

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

SIGNAGE, STRIPING AND LIGHTING PLAN (SHEET 2 OF 2)

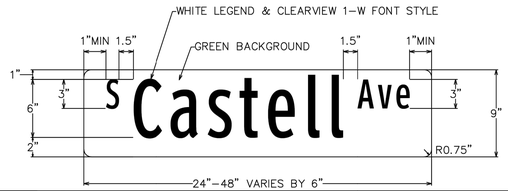
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER

06/17/2025

SHEET
C11.01

G:\TX\CIP\projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C11.00 - SIGNAGE STRIPING AND LIGHTING PLAN.dwg Layout: SIGNAGE STRIPING AND LIGHTING PLAN (SHEET 2 OF 2) Plotted: 6/17/2025 2:22:21 PM By: Lhuck

STREET SIGN DETAIL - GROUND MOUNT



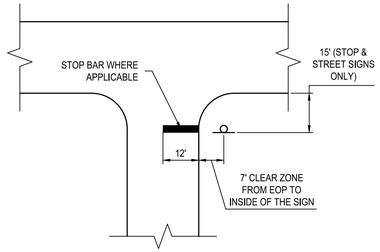
Height	9"
Length	24" min 48" max 6" increments in length
Thickness	0.080"
Substrate	Flat aluminum sheeting with ¾" radius circular fillets at corners conforming to the requirements of ASTM B 209, Alloys 6061–T–6, or 5052–H38.
Sign Face Materials	Green film over High Intensity Prismatic sheeting
Legend	Legends shall be Clearview 1–W font style. Reduced spacing between the letters or words should not be used as a means of reducing the overall size of a street name sign unless approved by the City Traffic Engineer.
Color	White legend on green background

Notes:

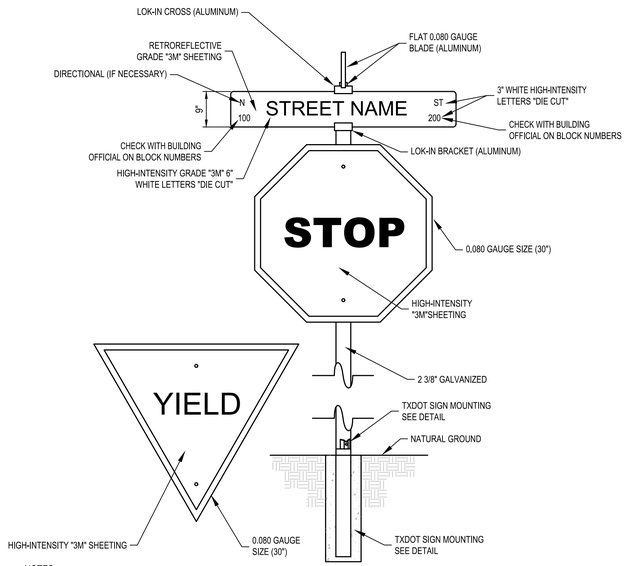
1. Street name signs shall be double sided when center mounted on top of sign post. Only one street name sign should be installed on top of sign post with STOP or YIELD sign.
2. When two sets of street name signs are required (e.g. at "T" intersections), one double-sided street name sign shall be mounted on sign post. The sign assembly shall meet minimum height requirements as required in the Texas Manual on Uniform Traffic Control Devices (TMUTCD). When required, DEAD END (W14-1a) or NO OUTLET (W14-2a) signs shall also be mounted on the sign post.
3. Street name signs greater than 36" long and center mounted on top of sign post shall be mounted on post top bracket with 12" slot. All other street name signs center mounted on top of sign post shall be mounted on post top bracket with 5 ¼" slot.
4. Street name signs mounted on sign post shall be mounted with double-sided round pole brackets. Two holes should be punched in the center of the 9" street name sign blank 1" from edge of the blank with 7"spacing between holes.
5. The lettering for names of streets shall be composed of a combination of lower-case letters with initial upper-case letters. Acceptable abbreviations per TMUTCD may be used except for the street name itself.
6. Red background (red film over High Intensity Prismatic) should be used for private street name signs.

Street Sign Detail - Ground Mount			ENGINEERING DIVISION
ISSUE DATE: February 2013	DWG. NO: ST-024	SCALE: N.T.S.	424 S. CASTELL AVE. NEW BRAUNFELS, TEXAS 78130 PHONE: 830 221 4020 FAX: 830 626 3600
DRAWN BY: RAS	CONTACT: GF	SHEET: 1 OF 1	

P:\2010 ENGINEERING-AUTOCAD\DETAILS\NB-PUBLIC WORKS DETAILS\NB-UNAPPROVED DETAILS-2013\ST-2013.024 STREET SIGN DETAIL - GROUND MOUNT.DWG



SIGN LOCATION DETAIL
SCALE: N.T.S.



NOTES:
1. SIGN HEIGHT FROM GROUND TO BOTTOM OF SIGN SHALL CONFORM TO THE LATEST MUTCD REQUIREMENTS
2. ALL SIGNS TO BE IN CONFORMANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. ALL SIGNAGE SHEETINGS SHALL BE HIGH-INTENSITY "3M" SHEETING. SIGN COLORS SHALL CONFORM TO CURRENT COUNTY REQUIREMENTS.

STREET SIGN MOUNTING DETAIL
N.T.S.

760242261XXXXXX | Straight Integrated Pole 5G



Straight 12inch diameter, Integrated Concealment Pole for 5G / MMW deployments, to mount and conceal mmWave active antennas, radios and other wireless infrastructure equipment in pole modules.

- Intended to mount and conceal mmWave active antennas and infrastructure equipment utilizing pole modules
- Includes everything needed for a low-power 4G/5G outdoor small cell site
- For 5G radios, integrated AC load center/OVP and Disconnect

Product Classification

Product Type	Metro cell site enclosure

General Specifications

Antenna Compatibility, CommScope	mmWave active antennas
Antenna Compatibility, Other Vendors	mmWave active antennas
Antennas Included	None
Color	Light Gray (RAL 7035)
Color Options	Beige-Grey (RAL 7006) | Black | Brown (RAL 8014) | Faux Concrete | Green (RAL 6005) | Metallic Silver | Pure White
Cooling	Passive Cooling
Radio Compatibility, Ericsson	1281 | 6701
Radio Compatibility, Nokia	(3) AEUA (Upgradeable to AEWA) | AEUB | AEWB
Radio Compatibility Samsung	AT1K01 | AT1K02 | HT1K01
Radios Included	None

Dimensions

Height Note	8 ft tall Power Module Base
Pole Height Options	10.668 m | 35 ft | 12.192 m | 40 ft | 6.096 m | 20 ft | 7.62 m | 25 ft | 9.144 m | 30 ft
Depth	325.12 mm | 12.8 in
Depth Note	Round
Pole Diameter	325.12 mm | 12.8 in

Electrical Specifications

Power/Fiber Input	AC load center with OVP and disconnect

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760242261XXXXXX | Straight Integrated Pole 5G

Material Specifications

Finish Aluminum	Chromate
Finish Concealment Covers	Powder coated
Material Type	Steel

Environmental Specifications

Thermal Compliance	GR-487

* Footnotes

Pole Height Options	Overall AGL Standard Height

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COMMSCOPE®

	APR
	DATE
	DESCRIPTION
◁ ◁ ◁ ◁ ◁ ◁	REV
DESIGNED BY:	NA
REVIEWED BY:	ACR
DRAWN BY:	SSM

NOT FOR CONSTRUCTION

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

TRAFFIC CONTROL DETAILS (SHEET 1 OF 4)

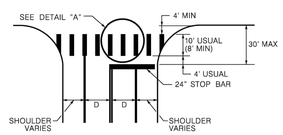
STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C11.10

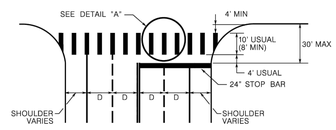
G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C11.10 - TRAFFIC CONTROL DETAILS.dwg Layout: C11.10 TRAFFIC CONTROL DETAILS (SHEET 1 OF 4) Plotted: 6/17/2025 2:22:33 PM By: Lhuck

G:\TXCI\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C11.10 - TRAFFIC CONTROL DETAILS.dwg Layout: C11.11 TRAFFIC CONTROL DETAILS (SHEET 2 OF 4) Plotted: 6/17/2025 2:22:36 PM By: Lhuck

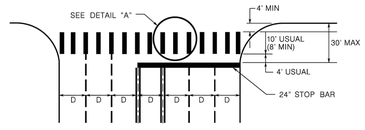
TWO LANES WITH SHOULDERS



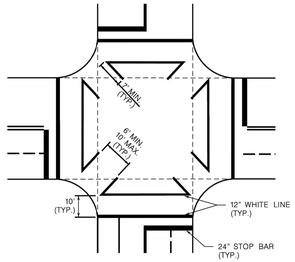
FOUR LANES WITH SHOULDERS



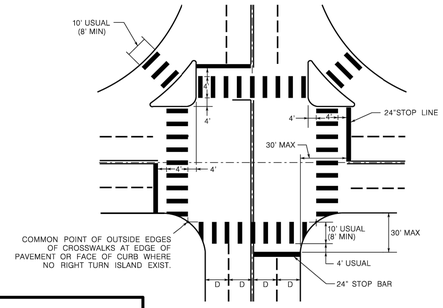
MULTI - LANES



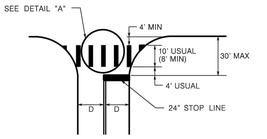
EXCLUSIVE PEDESTRIAN PHASE



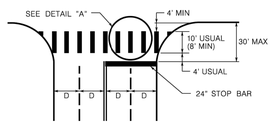
INTERSECTION WITH RIGHT-TURN ISLANDS



TWO LANES



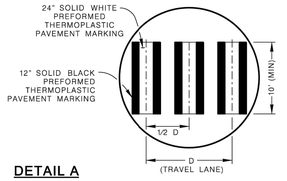
FOUR LANES



HIGH CONTRAST CROSSWALK

NOTES:

1) CROSSWALKS AND STOP BARS SHALL BE WHITE.
2) "D" IS EQUAL TO THE WIDTH OF TRAVEL LANE.
3) PREFORMED THERMOPLASTIC SHALL BE USED FOR ALL CROSSWALK PAVEMENT MARKINGS.
4) PREFORMED THERMOPLASTIC MATERIAL SHALL BE SUPPLIED BY A MANUFACTURER LISTED ON TxDOT'S MATERIAL PRODUCER LIST (MPL).



DETAIL A

GENERAL NOTES:

1) CROSSWALKS AND STOP BARS SHALL BE WHITE.
2) "D" IS EQUAL TO THE WIDTH OF TRAVEL LANE.
3) PREFORMED THERMOPLASTIC SHALL BE USED FOR ALL CROSSWALK PAVEMENT MARKINGS.
4) PREFORMED THERMOPLASTIC MATERIAL SHALL BE SUPPLIED BY A MANUFACTURER LISTED ON TxDOT'S MATERIAL PRODUCER LIST (MPL).

JULY 2017

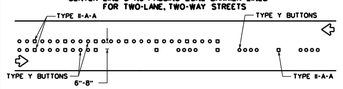
CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS DEPARTMENT
TRANSPORTATION SERVICES CONSTRUCTION STANDARDS
TYPICAL CROSSWALK DETAILS

% SUBMITTAL	PROJECT NO.:	DATE: 7.25.17
DRWN. BY: LAN	RVSD. BY: AF	CHKD. BY: GE, PE	SHEET NO.: 1 OF 1

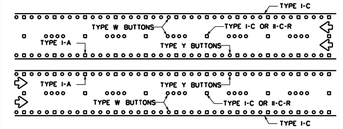
RAISED PAVEMENT MARKING PLACEMENT PATTERNS

PLACED W/ REFLECTION PAVEMENT MARKERS (OPTIONAL)

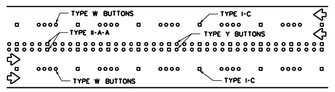
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY STREETS



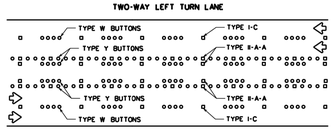
EDGE & LANE LINES FOR DIVIDED STREET



LANE & CENTER LINES FOR MULTILANE UNDIVIDED STREETS

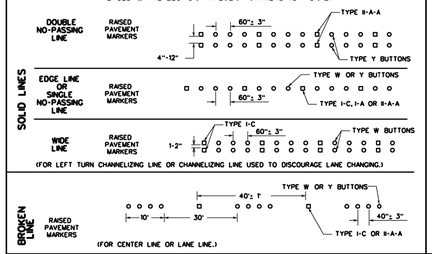


TWO-WAY LEFT TURN LANE



RAISED PAVEMENT MARKINGS PLACEMENT DETAILS

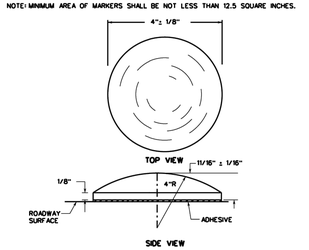
PLACED W/ REFLECTION PAVEMENT MARKERS (OPTIONAL)



TRAFFIC BUTTONS

(NON-REFLECTORIZED)

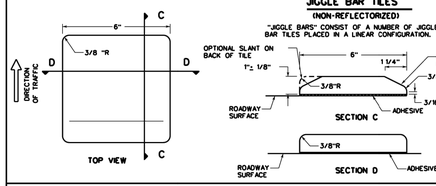
NOTE: MINIMUM AREA OF MARKERS SHALL BE NOT LESS THAN 12.5 SQUARE INCHES.



JIGGLE BAR TILES

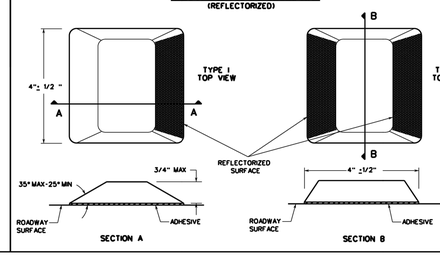
(NON-REFLECTORIZED)

"JIGGLE BARS" CONSIST OF A NUMBER OF JIGGLE BAR TILES PLACED IN A LINEAR CONFIGURATION.



RAISED PAVEMENT MARKERS

(REFLECTORIZED)



NOTES:

1. RAISED PAVEMENT MARKERS (RPMs) MAY CONSIST OF TRAFFIC BUTTONS, PAVEMENT MARKERS AND/OR JIGGLE BAR TILES. PAVEMENT SURFACE SHALL BE PREPARED AND CLEANED SUBJECT TO APPROVAL OF THE CITY TRAFFIC ENGINEER BEFORE ADHESIVE AND RPMs ARE PLACED.
2. JIGGLE BARS SHALL BE ORIENTED PERPENDICULAR TO ROADWAY. JIGGLE BARS SHALL ALSO BE PLACED AT SUCH OTHER LOCATIONS AS SHOWN IN PLANS OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
3. MARKERS, BUTTONS AND JIGGLE BAR TILES SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY AND NOT INTENDED TO SPECIFY ANY PARTICULAR PRODUCT. ALL PAVEMENT MARKERS PROVIDED SHALL BE OF THE SAME MANUFACTURER.
4. ALL DIMENSIONS ARE +/- 1/8" UNLESS OTHERWISE NOTED.
5. ALL PAVEMENT MARKING MATERIALS SHALL MEET MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF SAN ANTONIO STANDARD SPECIFICATIONS.
6. TRAFFIC BUTTONS AND JIGGLE BAR TILES ARE TO BE USED ONLY FOR TEMPORARY TRAFFIC CONTROL OR AS DIRECTED BY THE CITY TRAFFIC ENGINEER.

SEPTEMBER 2009

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING STANDARDS
RAISED PAVEMENT MARKERS, REFLECTIVE PAVEMENT MARKERS, TRAFFIC BUTTONS & JIGGLE BAR TILES 2
SHEET 5 OF 18

% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: LAN	DSGN. BY:	CHKD. BY:	SHEET NO.: 27

NOT FOR CONSTRUCTION

	APR
	DATE
	DESCRIPTION
◁ ◁ ◁ ◁ ◁	REV
DESIGNED BY:	NA
REVIEWED BY:	ACR
DRAWN BY:	SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.browngay.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

TRAFFIC CONTROL DETAILS
(SHEET 2 OF 4)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C11.11

G:\TXCO\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C11.10 - TRAFFIC CONTROL DETAILS.dwg Layout: C11.12 TRAFFIC CONTROL DETAILS (SHEET 3 OF 4) Plotted: 6/17/2025 2:22:39 PM By: Lhuck

GENERAL NOTES

1.) THE EXISTING SIGNS LOCATED ON THE JOBSITE ARE THE PROPERTY OF THE CITY OF SAN ANTONIO. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY. SUCH PROTECTION SHALL INCLUDE THE PERIOD AFTER SIGNS ARE REMOVED FROM INSTALLATION AND STORED BY THE CONTRACTOR OR DELIVERED TO TRAFFIC OPERATIONS. THE ASSISTANT TRAFFIC SUPERINTENDENT (207-7765) MUST BE NOTIFIED 48 HOURS IN ADVANCE PRIOR TO DELIVERY.

2.) AFTER SIGNS ARE REMOVED FROM INSTALLATION AND ARE BEING STORED BY THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE TRAFFIC OPERATIONS SECTION OF THE PUBLIC WORKS DEPARTMENT (207-7765) AND ARRANGE FOR A CONVENIENT TIME TO DELIVER CITY SIGNS AND POLES.

3.) PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE TRAFFIC ENGINEERING (207-7720) CONSTRUCTION INSPECTION AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.

4.) ALL GROUND MOUNTED SIGNS SHALL USE HIGH INTENSITY REFLECTIVE SHEETING.

5.) ALL OVERHEAD SIGNS SHALL USE DIAMOND GRADE REFLECTIVE SHEETING.

6.) ALL BLANKS TO BE ALUMINUM ALLOY NO. 5052-H38.

7.) "T" DENOTES THICKNESS OF SIGN BLANKS.

8.) ALL HOLES SHALL BE 3 /8" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND /OR ROUGH EDGES.

9.) SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL.

10.) ALL SIGN BLANK TO BE ETCHED, DEGREASED, AND HAVE AN ALODINE FINISH PRIOR TO APPLICATION OF LEGENDS.

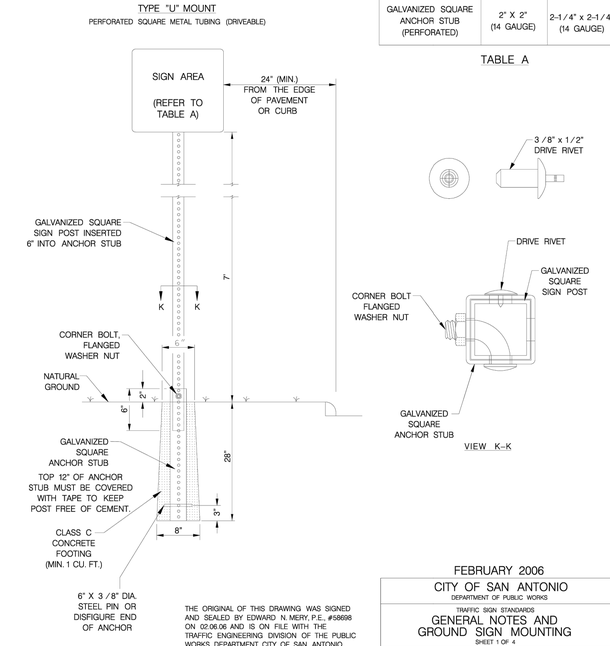
11.) ALL DETAILS ARE NOT TO SCALE.

12.) ALL DIMENSIONS ARE IN INCHES.

13.) ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND STANDARD HIGHWAY SIGNS (FHWA) LATEST EDITION.

14.) REINSTALLATION OF PREVIOUSLY EXISTING SIGNS, WHERE REQUIRED BY THE CITY TRAFFIC ENGINEER, SHALL BE AT THE CONTRACTOR'S EXPENSE.

TYPICAL GROUND SIGN INSTALLATION



METAL TUBING	SIGN AREA	
	≤ 10 SQ. FT.	> 10 SQ. FT.
GALVANIZED SQUARE SIGN POST (PERFORATED)	1-3 /4" x 1-3 /4" (14 GAUGE)	2" x 2" (12 GAUGE)
GALVANIZED SQUARE ANCHOR STUB (PERFORATED)	2" X 2" (14 GAUGE)	2-1/4" x 2-1/4" (14 GAUGE)

TABLE A

THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY EDWARD N. MERY, P.E., #58698 ON 02.06.06 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

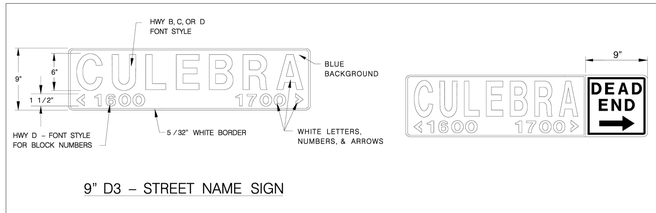
FEBRUARY 2006

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGN STANDARDS

GENERAL NOTES AND GROUND SIGN MOUNTING
SHEET 1 OF 4

N SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: OF



9" D3 - STREET NAME SIGN

NEW 9" D3 W / DEAD END OR NO OUTLET SIGNAGE

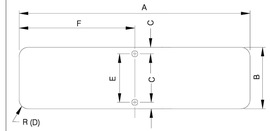
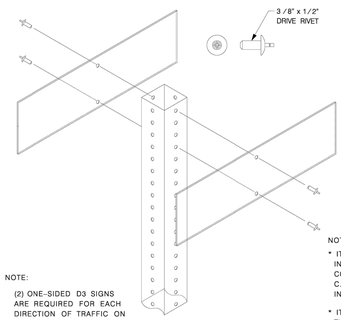


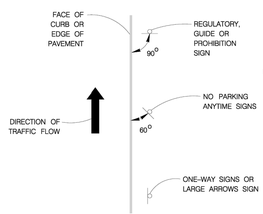
TABLE - D3 SIGNS

A	B	C	D	E	F	T
24"	9"	1 /2"	3 /4"	8"	12"	0.125"
30"	9"	1 /2"	3 /4"	8"	15"	0.125"
36"	9"	1 /2"	3 /4"	8"	18"	0.125"
42"	9"	1 /2"	3 /4"	8"	21"	0.125"
48"	9"	1 /2"	3 /4"	8"	24"	0.125"
54"	9"	1 /2"	3 /4"	8"	27"	0.125"

NOTE: A 30" LONG OR GREATER PLATE SHALL BE USED WHEN A "DEAD END" OR "NO OUTLET" SUPPLEMENT IS REQUIRED.

HEIGHT	9" (228 mm)
LENGTH	24" (600 MM) MIN. 54 (1350 MM) MAX. 6" (150 MM) INCREMENTS OF LENGTH
THICKNESS	0.125" (3MM)
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209) GOLD CHROMATE FINISH
SIGN FACE MATERIALS	BLUE FILM OVER HIGH INTENSITY FP-85, SECTION 718 AND L-S-300C
LEGENDS AND SYMBOLS	SERIES D (USUAL) SERIES C OR B FOR MAXIMUM LENGTH SIGN BLANK, IF NECESSARY
COLOR	WHITE LEGEND ON BLUE BACKGROUND
LETTER TRACKING	10%





NOTE:
(2) ONE-SIDED D3 SIGNS ARE REQUIRED FOR EACH DIRECTION OF TRAFFIC ON EACH POLE.

D3 SIGN TO POLE INSTALLATION

TYPICAL GROUND MOUNTED SIGN PLACEMENT

STREET SIGN ASSEMBLY EXAMPLES	PAY ITEMS			
	ITEM	UNIT	DESCRIPTION	QUANTITY
STOP SIGN WITH 2 STREET NAMES	531.3	EA.	R1-1 STOP	1
	531.57-P	EA.	9-IN STREET NAME PLATE (4 PLATES)	2
YIELD SIGN WITH 1 STREET NAME	531.4	EA.	R1-2 YIELD	1
	531.57-P	EA.	9-IN STREET NAME PLATE (2 PLATES)	1
2 STREET SIGNS	531.57	EA.	9-IN STREET NAME SIGN (2 PLATES)	1
	531.57-P	EA.	9-IN STREET NAME PLATE (2 PLATES)	1

NOTE:
* ITEM 531.57 "9-INCH STREET NAME" SIGN (1-EA.) INCLUDES THE INSTALLATION OF (2) ONE-SIDED D3 SIGNS. THIS SHALL BE FULL COMPENSATION FOR MATERIALS AND LABOR AS DESCRIBED IN C.O.S.A. STANDARD SPECIFICATIONS AND GROUND SIGN MOUNTING STANDARD DETAIL.
* ITEM 531.57-P "9-INCH STREET NAME PLATE" (1-EA.) INCLUDES THE INSTALLATION OF (2) ONE-SIDED D3 SIGNS ON TOP OF EXISTING SIGN (I.E., STOP SIGN OR YIELD SIGN), EXTRA LENGTH POLE AND APPURTENANCES REQUIRED TO MEET SPECIFICATIONS.

THE ORIGINAL OF THIS DRAWING WAS SIGNED AND SEALED BY EDWARD N. MERY, P.E., #58698 ON 02.06.06 AND IS ON FILE WITH THE TRAFFIC ENGINEERING DIVISION OF THE PUBLIC WORKS DEPARTMENT, CITY OF SAN ANTONIO.

JULY 2010

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS

TRAFFIC SIGN STANDARDS

D3 STREET NAME SIGN AND SIGN MOUNTING
SHEET 2 OF 4

N SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: A.F.G.	DSGN. BY: E.N.M.	CHKD. BY: J.D.F./E.N.M.	SHEET NO.: OF

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

TRAFFIC CONTROL DETAILS (SHEET 3 OF 4)

STATE OF TEXAS
STACY MULHOLLAND
146417
LICENSED PROFESSIONAL ENGINEER
06/17/2025

SHEET
C11.12

DISCLAIMER:
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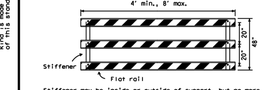
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1'.
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

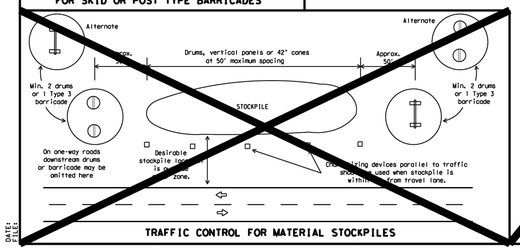


TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



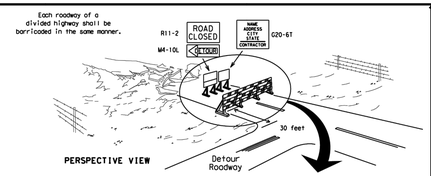
Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



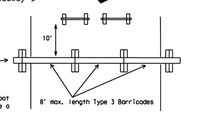
TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

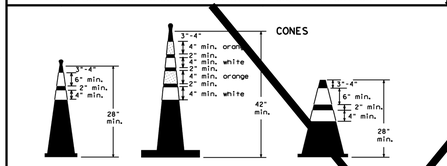
The three rolls on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

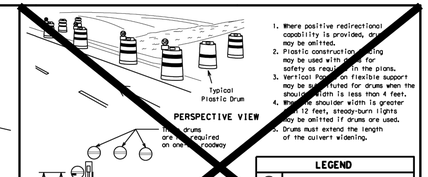
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



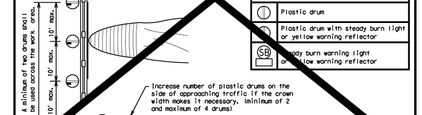
28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright on location in place.
3. Two-piece cones may have a handle or loop extending up from above the minimum height shown above in order to aid in retrieving the device.
4. Cones or tubular markers used at night shall have white or silver and orange reflective bands as shown above. The reflective bands shall be of a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300, Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on site to maintain them in their proper upright position.
42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



PERSPECTIVE VIEW

Drums are required on one roadway



Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

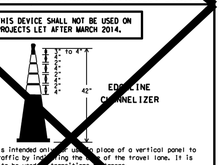
PLAN VIEW

LEGEND	
1	Plastic drum
2	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

1. Where positive redirectional capability is provided, cones may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or as a shoulder or object.
3. This device is to be on a 42 inch, two-piece cone with an alternate striping pattern of four 4 inch retroreflective bands with an approximately 4 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for the centerline, white for right edgeline) for which the device is substituting or for which it supplements. The reflectorized bands shall be retroreflective sheeting conforming to Departmental Material Specification DMS-8300 unless otherwise noted.
The base must weigh a minimum of 30 lbs.

SHEET 10 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-13

FILE:	bc-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.
9-07					
7-13					

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APR

DESIGNED BY: NA
REVIEWED BY: ACR
DRAWN BY: SSM

BGE, INC.
7330 San Pedro, Suite 202
San Antonio, TX 78216
TEL: 210-581-3600 www.bgeinc.com
TBPE Registration No. F-1046

CANYON RANCH UNIT 4

TRAFFIC CONTROL DETAILS (SHEET 4 OF 4)

STATE OF TEXAS
STACY MULHOLLAND
146417
PROFESSIONAL ENGINEER
06/17/2025

SHEET
C11.13

G:\TXDOT\Projects\San Antonio Projects\7278-00 - Canyon Ranch\18 - Unit 4\03_CADD\01_Shts\C11.10 - TRAFFIC CONTROL DETAILS.dwg Layout: C11.13 TRAFFIC CONTROL DETAILS (SHEET 4 OF 4) Plotted: 6/17/2025 2:22:43 PM By: Lhuck