CONSTRUCTION PLANS

CUDEENGINEERS COM

GENERAL CONSTRUCTION NOTES
- C0.00 – KENDALL COUNTY – GENERAL CONSTRUCTION NOTES

STORM WATER POLLUTION PREVENTION PLAN
- C1.00 – STORM WATER POLLUTION PREVENTION PLAN

UTILITY PLAN
- C3.00 – UTILITY LAYOUT PLAN

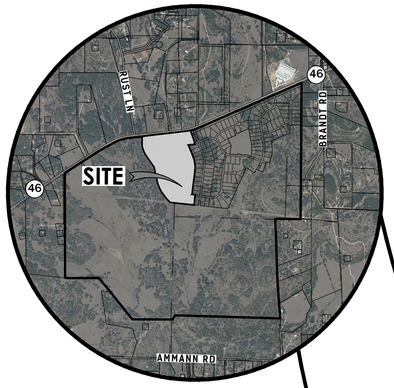
SEWER PLAN
- C4.00 – NOT USED

WATER DISTRIBUTION
- C5.00 – WATER DISTRIBUTION PLAN
- C5.D1 – WATER DISTRIBUTION STANDARD DETAILS

DRAINAGE PLANS
- C6.00 – OVERALL MASTER DRINAGE AREA MAP
- C6.01 – DRAINAGE CALCULATIONS
- C6.02 – DRAIN INDEX SHEET
- C6.03 – DRAINAGE PLAN AND PROFILE – DRAINS A AND C
- C6.04 – DRAINAGE PLAN AND PROFILE – DRAIN B
- C6.05 – DRAINAGE PLAN AND PROFILE – DRAIN B
- C6.06 – DRAINAGE PLAN AND PROFILE – DRAIN B
- C6.07 – DRAINAGE PLAN AND PROFILE – DRAIN B
- C6.08 – DETENTION POND PLAN
- C6.09 – DETENTION POND DETAILS
- C6.D1 – DRAINAGE DETAILS
- C6.D2 – DRAINAGE DETAILS
- C6.D3 – DRAINAGE DETAILS

STREET PLANS
- C7.00 – STREET INDEX SHEET
- C7.01 – STREET PLAN & PROFILE – STRAIGHT SHOOTER
- C7.02 – STREET PLAN & PROFILE – STRAIGHT SHOOTER
- C7.03 – STREET PLAN & PROFILE – MERINO WAY
- C7.04 – STREET PLAN & PROFILE – MERINO WAY
- C7.05 – STREET PLAN & PROFILE – LAUGHING DOG
- C7.06 – STREET PLAN & PROFILE – LAUGHING DOG
- C7.D1 – STANDARD STREET DETAILS

TRAFFIC PLAN
- C8.00 – TRAFFIC SIGNAGE PLAN
- C8.D1 – TXDOT – TYPICAL STANDARD PAVEMENT MARKINGS
- C8.D2 – TXDOT – SIGN MOUNTING DETAILS



LOCATION MAP

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES:

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. AT A MINIMUM, CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS MEET TCEQ'S "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS."
2. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NSF INTERNATIONAL STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI [§290.44(a)(1)].
3. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NSF INTERNATIONAL SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS [§290.44(a)(2)].
4. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY [§290.44(a)(3)].
5. ALL WATER LINE CROSSINGS OF WASTEWATER MAINS SHALL BE PERPENDICULAR [§290.44(e)(4)(B)].
6. WATER TRANSMISSION AND DISTRIBUTION LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE [§290.44(a)(4)].
7. THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES IS 0.25 PERCENT [§290.44(b)].
8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES WITH VENT OPENINGS TO THE ATMOSPHERE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT [§290.44(d)(1)].
9. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION [§290.44(f)(1)].
10. WHEN WATERLINES ARE LAID UNDER ANY FLOWING OR INTERMITTENT STREAM OR SEMI-PERMANENT BODY OF WATER, THE WATERLINE SHALL BE INSTALLED IN A SEPARATE WATERTIGHT PIPE ENCASEMENT. VALVES MUST BE PROVIDED ON EACH SIDE OF THE CROSSING WITH FACILITIES TO ALLOW THE UNDERWATER PORTION OF THE SYSTEM TO BE ISOLATED AND TESTED [§290.44(f)(2)].
11. PURSUANT TO 30 TAC §290.44(a)(5), THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE. INCLUDE THE FORMULAS IN THE NOTES ON THE PLANS.
    - O THE HYDROSTATIC LEAKAGE RATE FOR POLYVINYL CHLORIDE (PVC) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-605 AS REQUIRED IN 30 TAC §290.44(a)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE;

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

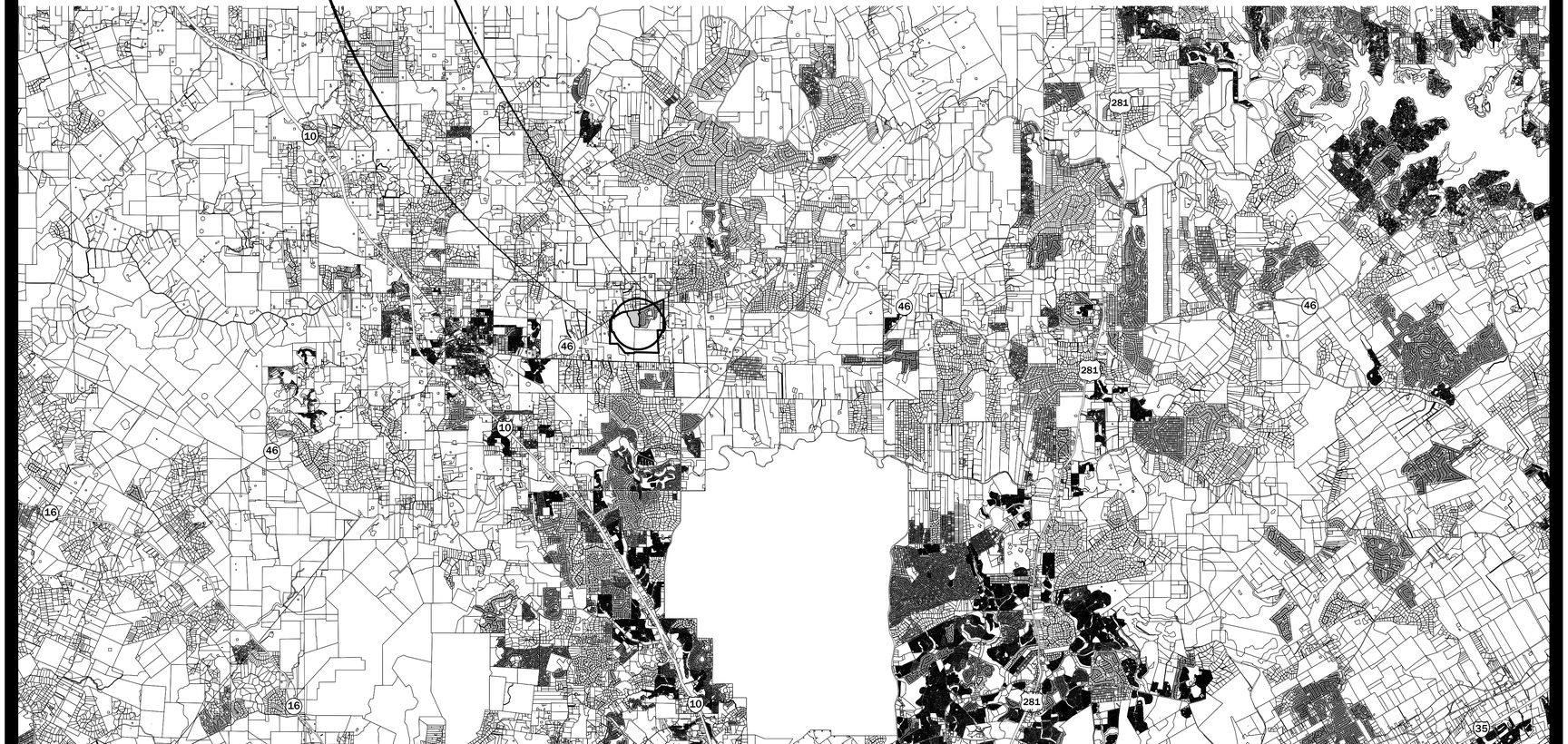
WHERE:
- L = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,
- S = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,
- D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
- P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

    - O THE HYDROSTATIC LEAKAGE RATE FOR DUCTILE IRON (DI) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-600 AS REQUIRED IN 30 TAC §290.44(a)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE;

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

WHERE:
- L = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,
- S = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,
- D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
- P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

12. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS, AND MATERIALS UTILIZED MUST MEET §290.44(e)(1)-(4).
13. THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET. WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT [§290.44(e)(5)].
14. FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER LINE, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF CONSTRUCTION [§290.44(e)(6)].
15. SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED WITHIN FIVE FEET OF ANY TILE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE [§290.44(e)(7)].
16. WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS [§290.44(e)(8)].
17. THE CONTRACTOR SHALL DISINFECT THE NEW WATERLINES IN ACCORDANCE WITH AWWA STANDARD C-651-14 OR MOST RECENT, THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATERLINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER [§290.44(f)(3)].
18. DECHLORINATION OR DISINFECTING WATER SHALL BE IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARD C655-09 OR MOST RECENT.



VICINITY MAP

GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION MATERIALS AND METHODS FOR ROADWAY & DRAINAGE IMPROVEMENTS SHALL CONFORM TO THE KENDALL COUNTY, TEXAS "REGULATIONS, RULES AND SPECIFICATIONS FOR PLATS, ROADS, SUBDIVISIONS AND MANUFACTURED HOME PARKS" EFFECTIVE NOVEMBER 8, 2010.
2. ALL ROADWAYS ARE DESIGNED FOR A 30 MPH SPEED LIMIT.

GEORGE'S RANCH
UNIT 2A
OVERALL CONSTRUCTION PLANS

SUBMITTED BY:

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TBPELS FIRM #10048500
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REVISIONS

NO.	DESCRIPTION	SHEET NO.	DATE	BY:

DEVELOPER:

THE LOOKOUT GROUP

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DRAWN BY	DATE
MAS/MGM	2/6/2025
CHECKED BY	**PROJECT NO.**
W. PATRICK MURPHY, P.E.	03546.008

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

CUDE ENGINEERS
TBPE No. 455
TBPELS No. 10048500

KENDALL COUNTY

GENERAL CONSTRUCTION NOTES

KENDALL COUNTY NOTES

1. NO ACTIVITY MAY BEGIN UNTIL PLAT IS FILED AND DEVELOPMENT PERMIT IS ISSUED. ANY REQUIRED DRAINAGE PLAN AND ROADWAY PLAN AND PROFILE SHALL HAVE BEEN APPROVED PRIOR TO THE START OF ANY CONSTRUCTION CONCERNING THE SAME. CLEARING, GRUBBING, AND MINOR GRADING WILL BE ALLOWED PRIOR TO FINAL PLAT APPROVAL, DRAINAGE PLAN APPROVAL, AND ROADWAY PLAN AND PROFILES. NO CONSTRUCTION SHALL BEGIN UNTIL PRE-CONSTRUCTION CONFERENCE HAS BEEN COMPLETED.
2. RIGHT OF WAY: ALL PUBLIC RIGHT OF WAYS SHALL BE CLEARED OF ALL IMPEDIMENTS INCLUDING BOULDERS, STUMPS, TREES, OR ANY OTHER DEBRIS.
3. REFLECTIVE ROAD NAME SIGNS SHALL BE FURNISHED AND INSTALLED BY THE DEVELOPER AT ALL INTERSECTIONS WITHIN OR ABUTTING THE SUBDIVISION. ROAD NAME SIGNS SHALL BE PLACED IN A UNIFORM MANNER THROUGH OUT THE SUBDIVISION. ROAD NAME SIGNS SHALL BE 7 FEET ABOVE THE FINAL GRADE TO THE BOTTOM OF THE SIGN ON AN APPROVED METAL POST.
4. PRIVATE ROAD NAME SIGNS SHALL BE GREEN WITH A 1 INCH RED TAPE ACROSS THE TOP OF THE SIGN WITH 4 INCHES WHITE REFLECTIVE LETTERS.
5. ALL TRAFFIC SIGNS SHALL BE FURNISHED AND INSTALLED BY THE DEVELOPER IN ACCORDANCE WITH THE LATEST ISSUE OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVISED (TMUTCD) ISSUED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.
6. ALL PRIVATELY MAINTAINED ROADS SHALL BE SIGNED TO INFORM THE PUBLIC OF THEIR STATUS. THE SIGN SHALL READ ''PRIVATELY MAINTAINED ROAD," AND SIGNS MUST BE PLACED AT EACH ENTRANCE TO THE SUBDIVISION. THE SIGN MUST BE A RECTANGULAR SHAPED MINIMUM SIZE OF 24 INCHES, WHITE BACKING WITH BLACK LETTERS AND INSTALLED IN ACCORDANCE WITH THE TMUTCD.
7. ALL SUB-GRADE AND ROAD CONSTRUCTION SHALL BE INSPECTED AND TESTED DURING CONSTRUCTION TO INSURE INSTALLATION AND CONSTRUCTION IS IN ACCORDANCE WITH THE APPROVED PLANS AND DESIGN. INSPECTIONS AND TESTING SHALL INCLUDE VERIFICATION OF MATERIALS USED, COMPACTION TESTS, GRADE CALCULATIONS, AND OTHER TESTING REQUIREMENTS AS MAY BE REQUIRED TO VERIFY CONSTRUCTION.
8. THE KENDALL COUNTY ENGINEER SHALL BE NOTIFIED IN WRITING 48 HOURS PRIOR TO ANY CONSTRUCTION, INSPECTIONS, OR TESTING.
9. THE SUB-GRADE SHALL BE INSPECTED AND APPROVED, IN WRITING, BY THE KENDALL COUNTY ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, PRIOR TO THE PLACEMENT OF ANY BASE ON SUB-GRADE.
10. ROAD CONSTRUCTION TESTING SHALL BE ONE TEST FOR EACH 500 FEET AND ALTERNATE LANE PATTERN WITH A MINIMUM OF THREE TESTS PER ROAD. TEST SHALL BE FROM A CERTIFIED TESTING LABORATORY. SEE COUNTY DEVELOPMENT RULES AND REGULATIONS FOR ADDITIONAL TESTING REQUIREMENTS.
11. CLEARING AND GRUBBING: THE ENTIRE AREA OF THE SUB-GRADE SHALL BE CLEARED AND GRUBBED TO A DEPTH OF NOT LESS THAN 6 INCHES BELOW NATURAL GROUND IN FILL AREAS AND ONE FOOT BELOW SUB-GRADE ELEVATION IN EXCAVATED AREAS. BRUSH AND OTHER DEBRIS SHALL BE REMOVED FROM THE ROW AND DISPOSED OF AS ELECTED BY THE DEVELOPER.
12. DENSITY: SUBGRADE SHALL BE CONSTRUCTED AND FINISHED WITH A MINIMUM DENSITY OF 95% OF STANDARD PROCTOR FOR IN PLACE MATERIALS OR AS SPECIFIED IN THE PAVEMENT REPORT PREPARED BY A SOILS LAB OR PROOF ROLLED BY EQUIPMENT AS APPROVED BY THE KENDALL COUNTY ENGINEER.
13. HIGH PLASTICITY SOILS: HIGH PLASTICITY INDEX SOILS SHALL BE STABILIZED WITH LIME OR CEMENT BY DIRECTION OF THE KENDALL COUNTY ENGINEER.
14. EMBANKMENTS: EMBANKMENTS SHALL BE PLACED IN LIFTS OF NOT MORE THAN EIGHT (8) INCHES LOOSE DEPTH AND EACH LIFT SHALL BE THOROUGHLY COMPACTED BY SPRINKLING AND ROLLING BEFORE PLACEMENT OF SUCCEEDING LIFTS. ROCK EMBANKMENTS SHALL CONFORM TO TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) STANDARD SPECIFICATION (2014), ITEM 132.
15. UNSTABLE MATERIAL: UNSTABLE MATERIAL ENCOUNTERED IN EITHER EXCAVATED SECTIONS OR BENEATH EMBANKMENTS SHALL BE REMOVED TO A DEPTH OF NOT LESS THAN ONE FOOT BELOW NATURAL GROUND OR FINISHED SUB-GRADE AND REPLACED BY SATISFACTORY MATERIAL. MATERIAL SO REMOVED SHALL BE REMOVED FROM THE ROW.
16. CONSTRUCTION METHODS: BASE ON ALL STREETS AND ROADS SHALL HAVE A COMPACTED BASE DEPTH OF NOT LESS THAN EIGHT (8) INCHES AND SHALL BE CONSTRUCTED IN TWO (2), FOUR (4)-INCH LIFTS, UNLESS A DIFFERENT THICKNESS IS SUPPORTED BY A TOTAL ROAD SECTION DESIGN BY A LICENSED GEOTECHNICAL ENGINEER AND APPROVED BY THE KENDALL COUNTY ENGINEER. ANY CHANGES MUST BE APPROVED BY THE COUNTY ENGINEER PRIOR CONSTRUCTION. THE MATERIAL SHALL BE DUMPED, SPREAD, MIXED, WIND ROWED, WATERED, AND OTHER OPERATIONS NECESSARY TO PRODUCE A UNIFORMLY BLENDED MIXTURE OF THE DESIRED COURSE THICKNESS, MOISTURE CONDITION, AND GRADATION. SHAPING OF THE BLENDED MIXTURE TO THE REQUIRED GRADE AND LINE SHALL FOLLOW THE MIXING PROCEDURE AND PRECEDE THE COMPACTION. COMPACTION OF EACH COURSE OF MATERIAL SHALL BE ACCOMPLISHED BY SUITABLE EQUIPMENT TO OBTAIN A MINIMUM DENSITY OF 95% DRY DENSITY AS DETERMINED BY TEX-113-- E PER TXDOT AND MOISTURE CONTENT BY TEX-115-E OR TEX-103-E PER TXDOT SPECIFICATIONS.
17. TESTING MATERIAL: PRIOR TO DELIVERY OF BASE MATERIAL FOR THE ROAD OR STREET, THE RESULTS OF PHYSICAL TESTS OF THE MATERIAL PROPOSED FOR USE SHALL BE SUBMITTED TO THE KENDALL COUNTY ENGINEER FOR APPROVAL. THESE TEST RESULTS SHALL BE CERTIFIED AS CONFORMING TO THE REQUIREMENTS BY AN APPROVED COMMERCIAL LABORATORY. THE CERTIFICATION SHALL DEFINE THE AREA AND COLUMN REPRESENTED BY THE TABULATED RESULTS.
18. PRIME COAT: AFTER FINAL FINISHING, CURING AND CORRECTION OF ANY IRREGULARITIES DEVELOPED DURING THE CURING PERIOD HAVE BEEN CORRECTED, THE AREA OF THE BASE WHICH IS TO RECEIVE SURFACING MAY BE PRIMED WITH AN APPLICATION OF APPROXIMATELY TWO-TENTHS (0.2) GALLONS OF AEP OR SSI ASPHALT, OR EQUIVALENT, PER SQUARE YARD OF SURFACE COVERED. GENERALLY, TRAFFIC SHALL BE DIVERTED FROM THE PRIMED AREA UNTIL PLACEMENT OF THE SURFACE. SHOULD DIVERSION OF TRAFFIC NOT BE FEASIBLE, THE PRIME COAT SHALL BE BLANKET ROLLED WITH A PNEUMATIC ROLLER IMMEDIATELY FOLLOWING APPLICATION. PRIME COAT SHALL BE PERMITTED TO CURE FOLLOWING APPLICATION AND BEFORE APPLICATION OF SURFACE COURSE OF PAVEMENT.
19. PAVEMENT: ALL STREETS AND ROADS IN SUBDIVISIONS, AND PROVIDING ACCESS THERETO, WHICH ARE PROVIDED WITH A WEARING SURFACE SHALL MEET THE FOLLOWING STANDARDS:
    a. (A) COMPACTED HMACP SHALL CONFORM TO TXDOT'S CURRENT SPECIFICATIONS FOR HOT MIX, TYPE D (FINE SURFACE). REFERENCE KENDALL COUNTY'S DEVELOPMENT RULES AND REGULATIONS FOR ADDITIONAL REQUIREMENTS.
    b. (B) HMACP SHALL NOT BE PLACED AT ANY TIME WHEN:
        1. THE AIR TEMPERATURE IS BELOW 60° F AND FALLING;
        2. THE AIR TEMPERATURE IS BELOW 50° F, AND
        3. THE ROADWAY SURFACE TEMPERATURE IS BELOW 60° F.
20. INSPECTIONS: THE KENDALL COUNTY ENGINEER, AS AUTHORIZED BY THE COMMISSIONERS' COURT, OR HIS DESIGNATED AGENT, MAY INSPECT ALL PROPERTY SITE WORK AT ANY TIME AND ANY STAGE. DEVELOPER WILL PROVIDE A WRITTEN CONSTRUCTION SCHEDULE FOR DRAINAGE, UTILITY AND ROAD CONSTRUCTION. DEVELOPER WILL PROVIDE WRITTEN AMENDED SCHEDULES IF THE ACTUAL CONSTRUCTION VARIES MORE THAN FIVE (5) DAYS FROM THE DATE SET FORTH IN THE ORIGINAL CONSTRUCTION SCHEDULE. SHOULD THE DEVELOPER FAIL TO COMPLY WITH THIS PROVISION OR BEGIN ANY DRAINAGE, UTILITY, OR ROAD CONSTRUCTION PRIOR TO PROVIDING SUCH SCHEDULE THE DEVELOPER MAY BE REQUIRED TO PERFORM TESTING DEEMED NECESSARY BY THE COUNTY ENGINEER AT THE SOLE COST AND EXPENSE OF THE DEVELOPER.
21. ALL MATERIALS USED FOR PRIME OIL, TACK OIL, AND HMACP MUST BE SUBMITTED TO KENDALL COUNTY FOR APPROVAL BEFORE USE.
22. CONTRACTOR SHALL HAVE AN ENGLISH SPEAKING SUPERVISOR PRESENT DURING ALL INSPECTIONS.

GENERAL NOTES

1. ALL MATERIALS, CONSTRUCTION, TESTING AND WORKMANSHIP SHALL COMPLY WITH THE KENDALL COUNTY'S DEVELOPMENT RULES AND REGULATIONS, UNLESS SPECIFIED OTHERWISE IN THESE PLANS OR APPROVED BY THE OWNER IN WRITING.
2. DURING THE CONSTRUCTION OF THIS PROJECT, ANY INTERPRETATION OF THE STANDARD SPECIFICATIONS OR ANY MATTER WHICH REQUIRES THE APPROVAL OF THE OWNER, MUST BE APPROVED BY THE KENDALL COUNTY ENGINEER BEFORE ANY CONSTRUCTION INVOLVING THAT DECISION COMMENCES. ASSUMPTIONS ABOUT WHAT THOSE DECISIONS MIGHT BE, WHICH ARE MADE DURING THE BIDDING PHASE, WILL HAVE NO BEARING ON THE DECISION. CHANGES TO THE CONSTRUCTION DRAWINGS OR ENGINEERING MUST BE APPROVED BY KENDALL COUNTY ENGINEER.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS BEFORE AND DURING CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND NOTIFYING ALL AUTHORIZED INSPECTORS AND PERSONS IN CHARGE OF PRIVATE OR PUBLIC UTILITIES AFFECTED BY THIS PROJECT PRIOR TO CONSTRUCTION COMMENCEMENT.
5. THE SIZE AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IDENTIFIED IN THESE CONSTRUCTION PLANS (INCLUDING SERVICE LATERALS) ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATION (BOTH HORIZONTALLY & VERTICALLY) PRIOR TO CONSTRUCTION COMMENCEMENT AND PROTECT THE SAME DURING CONSTRUCTION. IT SHALL BE THE DUTY OF THE CONTRACTOR TO ASCERTAIN WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT. THE ENGINEER DOES NOT ASSUME RESPONSIBILITY FOR UTILITIES NOT SHOWN OR NOT IN THE LOCATION SHOWN.
6. THE CONTRACTOR SHALL PROVIDE TRENCH SAFETY IN ACCORDANCE WITH OSHA SPECIFICATIONS AND PROVIDE A TRENCH SAFETY PLAN SIGNED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS AND PROVIDE DAILY INSPECTIONS TO ENSURE THAT THOSE REQUIREMENTS ARE BEING MET. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE SAFETY OF THOSE PERSONS WORKING IN AND AROUND THE TRENCH.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL UTILITIES DURING THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, CLEANOUTS, VALVE BOXES, FIRE HYDRANTS, ETC. MUST BE ADJUSTED TO PROPER LINE AND GRADE BY THE CONTRACTOR PRIOR TO AND AFTER THE PLACEMENT OF FINAL GRADE AND/OR PAVEMENT. ANY REMOVAL OR DAMAGE TO EXISTING IMPROVEMENTS SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT HIS EXPENSE AND SHALL BE APPROVED BY THE OWNER OF THE SUBJECT IMPROVEMENT. SAID EXISTING IMPROVEMENTS SHALL ALSO INCLUDE, BUT NOT BE LIMITED TO, BERMS, DITCHES, FENCES, VEGETATION, ETC.
8. CONTRACTOR SHALL IMMEDIATELY REPORT ANY DIFFERENCES BETWEEN THE INFORMATION IDENTIFIED IN THESE PLANS AND THE CONDITIONS IN THE FIELD TO THE ENGINEER.
9. TEXAS LAW ARTICLE 1436C, PROHIBITS ALL ACTIVITIES IN WHICH PERSONS OR EQUIPMENT MAY COME WITHIN SIX FEET OF ENERGIZED OVERHEAD POWER LINES, AND FEDERAL REGULATION, TITLE 29, PART 1910.180(1) AND PART 1 926.550(A)(15) REQUIRE A MINIMUM CLEARANCE OF TEN FEET FROM THESE FACILITIES. THE ABOVE LAWS CARRY BOTH CRIMINAL AND CIVIL LIABILITIES, WITH CONTRACTORS AND OWNERS BEING LEGALLY RESPONSIBLE FOR THE SAFETY OF WORKERS UNDER THESE LAWS. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE ELECTRIC COMPANY WHEN WORKING NEAR OVERHEAD POWER LINES TO BE DE-ENERGIZED AND/OR MOVED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL ALSO SHORE EXISTING POWER POLES WHEN PERFORMING EARTHWORK OPERATIONS OR TRENCHING WITHIN CLOSE PROXIMITY OF EXISTING POWER POLES (NO SEPARATE PAY ITEM).
10. WHERE TRENCHING IS UTILIZED DURING CONSTRUCTION, NO MORE THAN 100 FEET OF TRENCH SHALL BE OPEN AT ANY GIVEN TIME. NO EXCAVATIONS SHALL BE LEFT OPEN OVERNIGHT UNLESS PRIOR APPROVAL IS GRANTED BY OWNER. WHERE A TRENCH IS LEFT OPEN DURING NON-WORKING HOURS, ORANGE SAFETY FENCING SHALL BE INSTALLED AT LEAST 5 FEET AROUND THE TRENCH PERIMETER. ALL EXCAVATIONS IN PAVED AREAS WHICH CANNOT BE COMPLETELY BACKFILLED PRIOR TO BEING SUBJECTED TO TRAFFIC SHALL BE COVERED WITH STEEL SHEETING AND ANCHORED TO PAVEMENT.
11. PAVEMENT PRESERVATION TECHNIQUES SHALL BE UTILIZED BY THE CONTRACTOR AT ALL TIMES DURING CONSTRUCTION. NO TRACK EQUIPMENT IS ALLOWED ON ANY COUNTY STREET, CURB, OR PRIVATE PAVING UNLESS PRIOR APPROVAL IS GIVEN BY COUNTY.
12. CONTRACTOR SHALL NOT CLOSE A STREET TO TRAFFIC OR INTERFERE WITH TRAFFIC MOVEMENT ON A STREET WITHOUT NOTIFYING THE COUNTY ENGINEER AND SECURING PERMISSION TO DO SO. WHEN ANY STREET, SECTION OF A STREET, OR STREET SHOULDER IS CLOSED, OR TRAFFIC FLOW IS RESTRICTED, THE CONTRACTOR SHALL FURNISH A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) FOR REVIEW AND APPROVAL BY THE TXDOT AND COUNTY ENGINEER OR HIS DESIGNEE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING BARRICADES, WARNING AND DIRECTING SIGNS, LIGHTS, TRAFFIC CONTROL DEVICES, FLAGS AND PROVIDE FLAGMEN ALONG THE ENTIRE STREET WITHIN THE LIMITS OF THE PROJECT IN ACCORDANCE WITH THE APPROVED TRAFFIC CONTROL PLAN AND TMUTCD STANDARDS. ALL BARRICADES SHALL BE EQUIPPED WITH FLASHERS AND BE KEPT BURNING BETWEEN THE HOURS OF SUNSET AND SUNRISE.
13. THE CONTRACTOR SHALL AT ALL TIMES KEEP THEIR CONSTRUCTION SITE FREE FROM ACCUMULATION OF WASTE MATERIAL, DEBRIS, OR RUBBISH GENERATED DURING CONSTRUCTION. AT THE COMPLETION OF CONSTRUCTION AND PRIOR TO THE COUNTY SCHEDULED WALK-THRU, THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL TOOLS, SURPLUS MATERIALS AND DEBRIS AND SHALL LEAVE THE SITE IN A ''BROOM CLEAN" CONDITION, UNLESS SPECIAL PERMISSION HAS BEEN GRANTED BY THE COUNTY IN WRITING.
14. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SANITARY CONVENIENCE FACILITIES AT THE PROJECT SITE FOR USE BY ALL LABORERS. THEY SHALL BE WELL VENTILATED, BUT PROVIDE CONCEALMENT, AND SHALL BE KEPT CLEAN AT ALL TIMES BY THE CONTRACTOR. THE FACILITIES SHALL BE REMOVED AND THE SITE RESTORED TO ITS ORIGINAL CONDITION OR BETTER UPON COMPLETION OF THE PROJECT. ALL SUCH FACILITIES SHALL CONFORM TO THE REQUIREMENTS OF THE STATE AND LOCAL HEALTH AUTHORITIES.
15. CONTRACTOR SHALL PROTECT ALL EXISTING TREES AT THE PROJECT SITE. NO EXISTING TREE SHALL BE TRIMMED OR REMOVED WITHOUT AUTHORIZATION FROM THE OWNER UNLESS NOTED OTHERWISE IN THE PLANS.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING, TO THE ORIGINAL CONDITION OR BETTER, ANY DAMAGES TO EXISTING VEGETATION, PAVEMENTS, SIDEWALKS, DRIVEWAYS, FENCES, OR OTHER STRUCTURES AT THEIR EXPENSE, EXCEPT AS NOTED IN THE PLANS.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIAL AND EQUIPMENT STORED ON THE JOBSITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIALS IN A SAFE AND WORKMANLIKE MANNER TO PREVENT INJURIES DURING AND AFTER WORK HOURS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING MATERIALS TESTING FOR THE SCOPE OF THIS PROJECT IN ACCORDANCE WITH THE KENDALL COUNTY SPECIFICATIONS. ALL MATERIALS TESTING SHALL BE PERFORMED BY AN INDEPENDENT MATERIALS TESTING LAB APPROVED BY KENDALL COUNTY. SAID LAB SHALL BE CONTRACTED AND PAID BY THE CONTRACTOR AND HAVE A REGISTER PROFESSIONAL ENGINEER ON STAFF.
19. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES (RESIDENTIAL, INDUSTRIAL, COMMERCIAL, ETC.) ADJACENT TO WORK AREAS AT ALL TIMES.
20. NO SEPARATE PAY FOR ITEMS COVERED IN THE PLANS, SPECIFICATIONS, OR NOTES UNLESS SPECIFICALLY ESTABLISHED IN THE UNIT COST BREAKDOWN OR BID FORM IF PROVIDED. ALL ITEMS NOT SPECIFICALLY CALLED FOR ON THE PLANS, OR IN THE SPECIFICATIONS, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITIES OR IMPROVEMENTS, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS WILL BE MADE FOR THESE ITEMS. INCLUDE COST OF SAME IN THE CONTRACT UNIT PRICE BID FOR ITEMS FOR WHICH WORK IS A COMPONENT PART OR AS INCIDENTAL TO WORK.
21. 3" DIAMETER WEEP HOLES 10' O.C. ON BOTH SIDES OF CHANNEL TO BE PLACED 1' ABOVE FLOW LINE ON ALL CONC. RIP-RAP.
22. IF ONE OR MORE GRAVES ARE DISCOVERED DURING CONSTRUCTION OF IMPROVEMENTS ON THE PROPERTY, CONTRACTOR SHALL NOTIFY KENDALL COUNTY, ENGINEER OF RECORD, AND OWNER IMMEDIATELY UPON DISCOVERY. CONTRACTOR SHALL PERFORM PROCEDURE AS OUTLINED IN TEXAS ADMINISTRATIVE CODE TITLE 13, PART 2, CHAPTER 22, RULE §22.4.

SEPARATION DISTANCES BETWEEN WATER AND SEWER

1. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND FOR INFORMATION PURPOSES ONLY.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT SEPARATION DISTANCE PROVISIONS ARE MAINTAINED PER TCEQ REQUIREMENTS

CONFLICT WITH OTHER UTILITIES

1. THE PIPELINE ALIGNMENTS MAY CROSS EXISTING WATER, WASTEWATER, GAS, ELECTRIC, TELEPHONE UTILITIES, FIBER OPTIC CABLES, DR OTHER.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND DEPTH OF THESE FACILITIES PRIOR TO CONSTRUCTION.
3. THERE WILL BE NO SEPARATE PAYMENT FOR POTHOLING OR OTHER FIELD RECONNAISSANCE TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES.

PAVEMENT NOTES

1. ALL PAVEMENT TO BE REMOVED, INCLUDING CURB & GUTTERS, DRIVEWAYS AND SIDEWALKS SHALL BE SAWCUT, REMOVED AND REPLACED, UNLESS SPECIFIED OTHERWISE IN PLANS.
2. CONTRACTOR SHALL BE REQUIRED TO ADJUST SEWER MANHOLES, SEWER CLEANOUTS, WATER METERS, FIRE HYDRANTS, VALVES, ETC. AS REQUIRED TO MATCH THE FINISHED GRADE.
3. CONTRACTOR SHALL STAGE THE CONSTRUCTION WORK OUT OF STREET. ALL NECESSARY BARRICADES, TEMPORARY BYPASSES AND DIVERSIONS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBSIDIARY TO THE TRAFFIC CONTROL.

TXDOT NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION COMMENCEMENT.

WATER AND SEWER NOTES

1. ALL MATERIALS, CONSTRUCTION, TESTING, AND WORKMANSHIP SHALL CONFORM TO THE WATER PURVEYOR'S STANDARD SPECIFICATIONS, EXCEPT AS NOTED HEREIN OR APPROVED BY THE PROJECT ARCHITECT IN WRITING.
2. ALL TIE-INS TO EXISTING SANITARY SEWER AND WATER MAINS SHALL BE PERFORMED BY THE UTILITY PROVIDER AT CONTRACTOR'S EXPENSE UNLESS OTHERWISE APPROVED BY THE COUNTY OR UTILITY PROVIDER.
3. CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY PROVIDER AT LEAST 48 HOURS PRIOR TO CONNECTING PROPOSED WATER LINE TO EXISTING WATER SYSTEM AND PRIOR TO ANY DISRUPTION OF WATER SERVICE. NEW WATER MAINS TO BE TIED INTO EXISTING WATER SYSTEMS MUST HAVE PASSED ALL TESTING AND BE APPROVED BY THE PURVEYOR PRIOR TO MAKING SUCH CONNECTION.
4. FOR THE PURPOSE OF RECORD DRAWINGS / AS-BUILTS, THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS UPON COMPLETION OF THE PROJECT AND PRIOR TO FINAL ACCEPTANCE.
5. CONTRACTOR MAY DEFLECT WATER LINES SLIGHTLY TO AVOID CONFLICTS WITH OBSTRUCTIONS. THE WATER PURVEYOR MUST BE CONTACTED FOR APPROVAL IN ADVANCE OF ANY DECISION TO DEFLECT WATER LINES. CONTRACTOR SHALL KEEP ACCURATE RECORDS OF LOCATIONS WHERE WATER LINES ARE DEFLECTED FOR REQUIRED AS-BUILT RECORD DRAWINGS. SUCH DEFLECTIONS SHALL BE WITHIN THE LIMITS ALLOWED AND RECOMMENDED BY THE MANUFACTURER OF THE PIPE.
6. WET CONNECTIONS ARE TO BE COORDINATED WITH THE OWNER IN SUCH A MANNER AND AT SUCH HOURS AS TO CAUSE THE LEAST INCONVENIENCE TO THE PUBLIC. WHEN EXISTING MAINS HAVE BEEN CUT OR A PLUG REMOVED FOR A CONNECTION, THEN THE WORK OF MAKING THE CONNECTION SHALL PROGRESS WITHOUT INTERRUPTION UNTIL COMPLETE. NO ADDITIONAL COMPENSATION WILL BE GRANTED FOR MAKING CONNECTIONS AT NIGHT OR FOR HAVING TO COMPLETE CONNECTION UNDER UNFAVORABLE WORKING CONDITIONS. COMPENSATION FOR WET CONNECTION NOT SHOWN ON THE PLANS WILL BE INCIDENTAL TO THE WATER MAIN ONLY WHEN REQUESTED BY THE CONTRACTOR AND ACCEPTED BY THE PURVEYOR.
7. ALL FITTINGS, VALVES, OR OTHER APPURTENANCES NECESSARY FOR TESTING OR DISINFECTION OF UTILITY LINES SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST. TEMPORARY BLOW-OFF VALVES SHALL BE REMOVED BY THE CONTRACTOR PROMPTLY UPON SUCCESSFUL COMPLETION OF ALL TESTING (NO SEPARATE PAY).
8. ALL PIPE USED FOR WATER MAINS SHALL BE C-900 DR-14, OR AS OTHERWISE APPROVED BY THE WATER PURVEYOR.
9. ALL PIPE USED FOR SANITARY SEWER MAINS SHALL BE AS SPECIFIED BY THE OSSF DESIGNER.
10. ALL WATER & SANITARY SEWER SERVICE LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE COUNTY'S PLUMBING CODE.

CONSTRUCTION STAKING AND BENCH MARKS

1. BASELINES, STATIONS, AND ELEVATIONS ON THESE PLANS HAVE BEEN ESTABLISHED BASED ON INFORMATION PROVIDED TO THE ENGINEER. CONTRACTOR SHALL ESTABLISH BASELINES PRIOR TO COMMENCING WITH CONSTRUCTION ACTIVITIES AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES OR PROBLEMS ASSOCIATED WITH DOING SO.
2. CONSTRUCTION STAKING SHALL BE PROVIDED BY CONTRACTOR.
3. STATION VALUES SHOWN ON THE PLANS ARE CENTERLINE OF PROPOSED UTILITY LINE OR STREET WHERE REFERENCED

EROSION CONTROL STANDARD NOTES

1. EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBING ACTIVITIES AT THE PROJECT SITE. THE BMPS SHALL BE INSTALLED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
2. CONTRACTOR SHALL INSPECT ALL EROSION CONTROL DEVICES WEEKLY AND AFTER MAJOR RAIN EVENTS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY.
3. SEDIMENT SHALL BE REMOVED FROM EROSION CONTROL DEVICES WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY ONE-THIRD. EROSION CONTROL DEVICES THAT UTILIZE STONE SHALL HAVE THE STONE REPLACED WHEN THE VOIDS SPACES IN THE ROCK BECOME CLOGGED WITH SEDIMENT.
4. IF AN EROSION CONTROL DEVICE HAS BEEN DAMAGED OR IF IT IS NOT FUNCTIONING PROPERLY TO ELIMINATE EROSION OR OFF-SITE SEDIMENTATION, THEN THE DEVICE MUST BE REPAIRED, REPLACED OR MODIFIED. IN ADDITION, THE STORM WATER POLLUTION PREVENTION PLAN SHALL BE REVISED TO INDICATE THE CHANGE.
5. OFF-SITE MATERIAL STORAGE AREAS USED SOLELY BY THE PERMITTED PROJECT (I.E., OFF-SITE SOIL BORROW OR SPOIL SITES) ARE CONSIDERED A PART OF THE PROJECT AND SHALL BE ADDRESSED IN THE STORM WATER POLLUTION PREVENTION PLAN. THESE AREAS SHALL BE STABILIZED WITH PERMANENT GROUND COVER PRIOR TO FINAL APPROVAL OF THE PROJECT.
6. LITTER, CONSTRUCTION DEBRIS, WASH PIT AREA AND CONSTRUCTION CHEMICALS EXPOSED TO STORM WATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORM WATER DISCHARGES OR A SAFETY HAZARD.
7. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
8. THE PROJECT SITE SHALL BE PERMANENTLY STABILIZED AND ALL TEMPORARY EROSION CONTROL DEVICES REMOVED PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.
9. ALL EROSION CONTROL MEASURES MUST BE PLANNED FOR, INSTALLED, MAINTAINED AND REMOVED IN ACCORDANCE WITH COUNTY, STATE, AND FEDERAL STORM WATER AND POLLUTION PREVENTION REQUIREMENTS.
10. CONSTRUCTION SITE NOTICE AND/OR N.O.I.S MUST BE POSTED AT THE PROJECT SITE.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL AND SWPPP PREPARATION AND INCLUDE EROSION CONTROL AND SWPPP PREPARATION IN BID. ALL EROSION CONTROL AND SWPPP SHALL BE PROVIDED BY CONTRACTOR AND SHALL BE IN COMPLIANCE WITH NPDES, TPDES, AND TCEQ REQUIREMENTS.

CUDEENGINEERS.COM

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

KENDALL COUNTY - GENERAL CONSTRUCTION NOTES

DATE
3/17/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-17 REVISED NOTE 1 OF KENDAL COUNTY NOTES & NOTE 2 OF EROSION CONTROL STANDARDS.
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

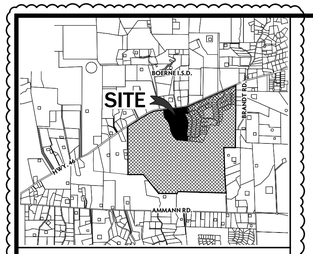
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

C0.00

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\03546\008\3 Drawings\2 Plans\C00_KCGNotes.dwg 2025/03/17 3:54pm masmidwell



LOCATION MAP N.T.S.

DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

LEGEND

- PROPERTY LINE
- EXISTING CONTOURS — 930 —
- BMP ITEM NUMBER [1]
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- ROCK BERM
- SILT FENCE
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED GRAVEL INLET FILTER

NOTE:

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.

2. THE PROPOSED CONTOURS WILL BE APPROXIMATELY EQUAL TO THE EXISTING CONTOURS.

3. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, UTILITY EASEMENTS & LOTS.

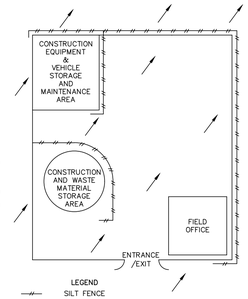
4. THERE WILL BE STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.

5. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.

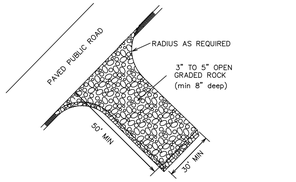
6. THE COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

7. SITE DETENTION POND SHALL SERVE AS A TEMPORARY SEDIMENTATION BASIN UNTIL ENTIRE DRAINAGE BASIN'S SOIL HAS BEEN STABILIZED.

8. STORMWATER MANAGEMENT & DETENTION FACILITIES SHALL BE PROVIDED PRIOR TO SITE CONSTRUCTION.



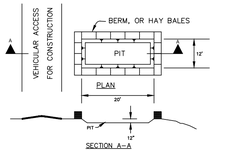
[1] TYP. CONSTRUCTION STAGING AREA
N.T.S.



STABILIZED CONSTRUCTION EXIT NOTES:

1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY.

[2] TEMPORARY CONSTRUCTION ENTRANCE/EXIT
N.T.S.



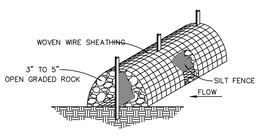
GENERAL NOTES:

- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.
- Washout pit shall be located in an area easily accessible to construction traffic.
- Washout pit shall not be located in areas subject to inundation from storm water runoff.

[3] CONCRETE TRUCK WASHOUT PIT
N.T.S.

SILT FENCE DETAIL SECTION DETAIL

[4] STANDARD SILT FENCE
N.T.S.



ISOMETRIC PLAN VIEW SECTION DETAIL

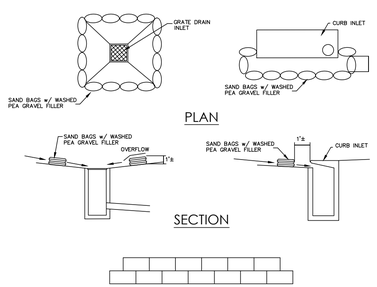
INSTALLATION:

– CLEAR THE GROUND OF DEBRIS, ROCKS OR VEGETATION THAT WILL INTERFERE WITH INSTALLATION.
– PLACE WOVEN WIRE FABRIC ON THE GROUND ALONG THE PROPOSED INSTALLATION LOCATION WITH ENOUGH OVERLAP TO COMPLETELY ENCIRCLE THE FINISHED SIZE OF THE BERM.
– INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT.
– PLACE THE ROCK ALONG THE CENTER OF THE WIRE AND BOTH SIDES OF THE SILT FENCE TO THE DESIGNATED HEIGHT.
– WRAP THE STRUCTURE WITH THE PREVIOUSLY PLACED WIRE MESH SECURELY SO THE STRUCTURE RETAINS IT'S SHAPE.
– SECURE WITH TIE WIRE.
– THE ROCK BERM SHALL BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

INSPECTION AND MAINTENANCE GUIDELINES:

– INSPECTION SHALL BE MADE WEEKLY AND AFTER EACH RAINFALL EVENT BY THE CONTRACTOR. FOR THE INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHALL BE MADE ON ROCK BERM.
– REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER. REPAIR ANY LOOSE WIRE SHEATHING.
– THE BERM SHALL BE RESHAPED AS NEEDED DURING INSPECTION.
– THE BERM SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

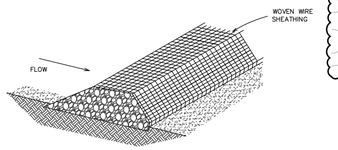
[5] HIGH-SERVICE ROCK BERM
N.T.S.



GENERAL NOTES:

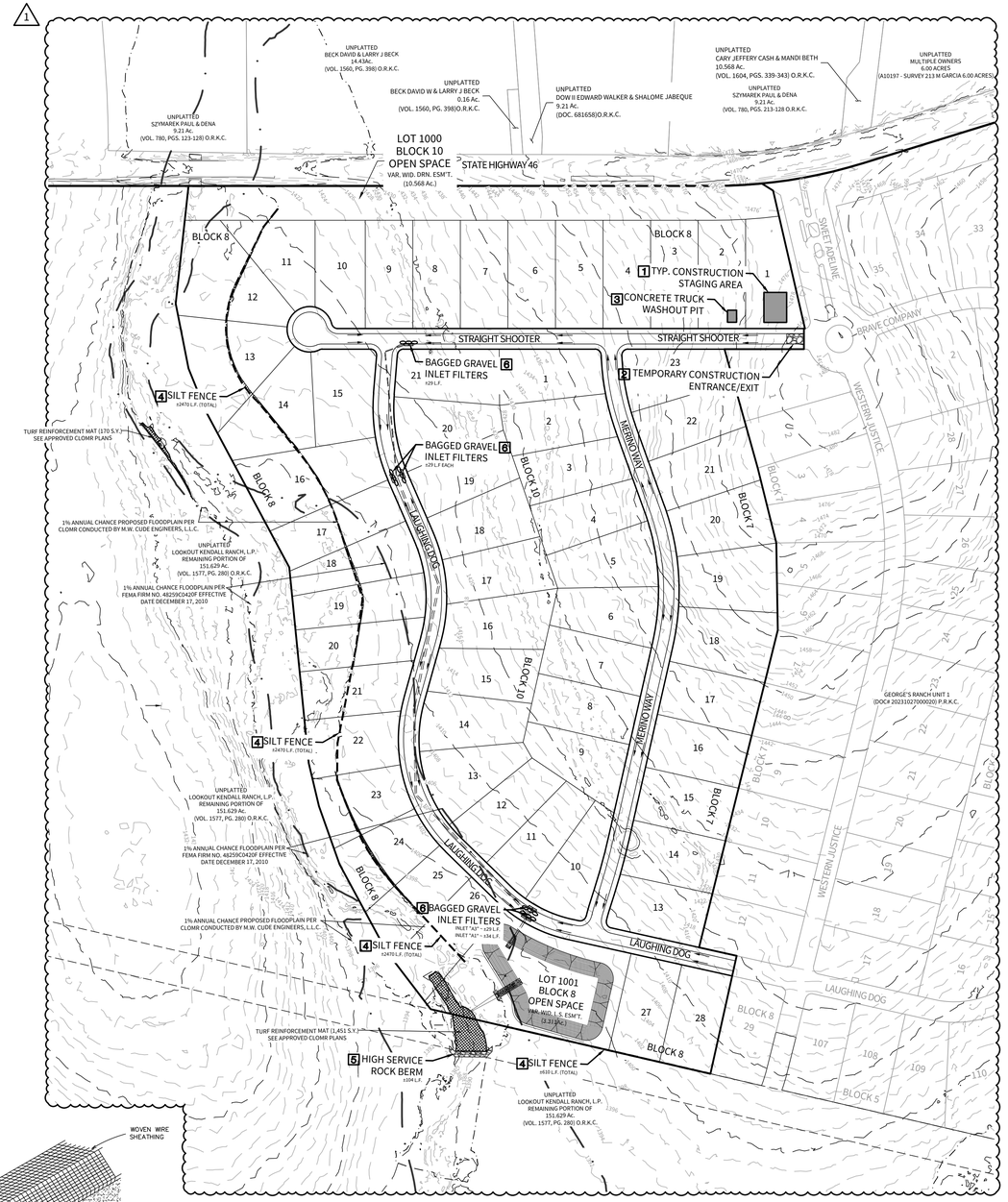
1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2 , MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH ¾" GRAVEL .
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY OR BI–WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF .3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

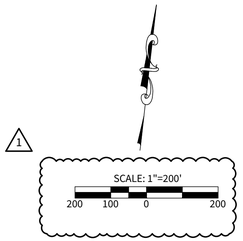
[6] BAGGED GRAVEL INLET FILTER DETAIL
N.T.S.



ISOMETRIC PLAN VIEW SECTION DETAIL

[7] ROCK BERM
N.T.S.





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GEORGE'S RANCH UNIT 2A

STORM WATER POLLUTION PREVENTION PLAN

DATE 3/24/2025
PROJECT NO. 03546.008
DRAWN BY MAS/MGM
CHECKED BY KMH/WPM

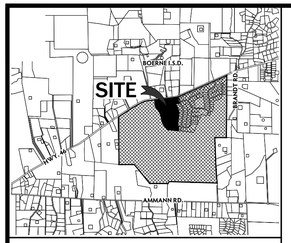
REVISIONS
1. 2025-03-18 UPDATED SCALE TO 1"=200', ADDED QUANTITIES TO EROSION CONTROL MEASURES, DISPLAYED TBM IN CLOMR FLOODPLAIN AREA, & REMOVED ET.J LINE FROM VICINITY MAP
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025
CUDE ENGINEERS
TBPEL No. 455

C1.00

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P:\03546\Docs\2-Design\Plans\C1.00_SWPPP.dwg 2025/03/24 9:51am KMHMA



LOCATION MAP N.T.S.

NOTE

THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES, INCLUDING SERVICE LATERALS AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.

KENDALL COUNTY ENGINEER & DEVELOPMENT OFFICE	(1-830-249-9343)
BOERNE MAINT. OFFICE, TxDOT	(1-830-816-2430)
TEXAS STATE WIDE ONE CALL LOCATOR	(1-800-545-6005)
GVTC	-
SPECTRUM COMMUNICATIONS	-

GVTC AND SPECTRUM COMMUNICATIONS CABLE LINES TO GO IN JOINT TRENCH WITH PEDERNALES ELECTRIC CO-OP. LOTS WITH CONFLICTING TRANSFORMER / SECONDARY ENCLOSURE ELECTRIC SERVICE AND WATER METER LOCATION SHALL HAVE WATER METER PLACED 5' FROM PROPERTY LINE WHERE THE CONFLICT OCCURS.

TYPICAL UTILITY CROSSINGS WILL HAVE
2-6" SCH 80 PVC CONDUIT WITH SWEEPS,
2-4" SCH 40 PVC CONDUIT WITH SWEEPS,
THE TOTAL AMOUNT OF CONDUIT TO BE USED WILL BE DETERMINED DURING CONSTRUCTION.

TYPICAL IRRIGATION CROSSING WILL HAVE
3-4" SCH 40 PVC CONDUIT WITH SWEEPS,

CONDUIT CROSSING MUST MAINTAIN MINIMUM 1' VERTICAL AND 2' HORIZONTAL CLEARANCE FROM OTHER UTILITIES.

* CONDUIT ONLY TO BE INSTALLED IF:

1.) STREET BASE AND DRAINAGE COMPLETION PRECEDES PEDERNALES ELECTRIC CO-OP UTILITY LINE INSTALLATION.

2.) INSTALLATION IS AUTHORIZED BY THE DEVELOPER.

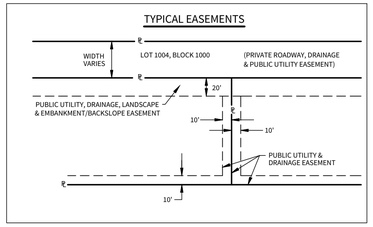
TRENCH EXCAVATION SAFETY PROTECTION

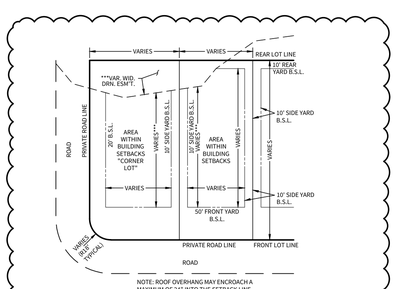
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES 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 GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

LEGEND

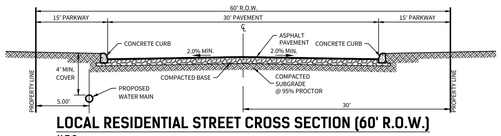
EXISTING WATER MAIN	EX.10"W
PROPOSED WATER MAIN	10"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
EXISTING STANDARD GATE VALVE	
PROPOSED STANDARD GATE VALVE	
EXISTING PERMANENT BLOWOFF	
PROPOSED PERMANENT BLOWOFF	
1% ANNUAL CHANCE PROPOSED FLOODPLAIN PER CLOMR CONDUCTED BY M.W. CUDE ENGENNERS,L.L.C.	
1% ANNUAL CHANCE FLOODPLAIN PER FEMA FIRM NO. 48259C0420F EFFECTIVE DATE DECEMBER 17, 2010	



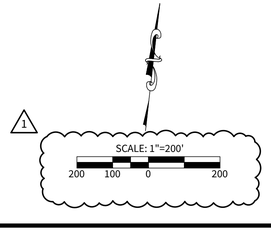


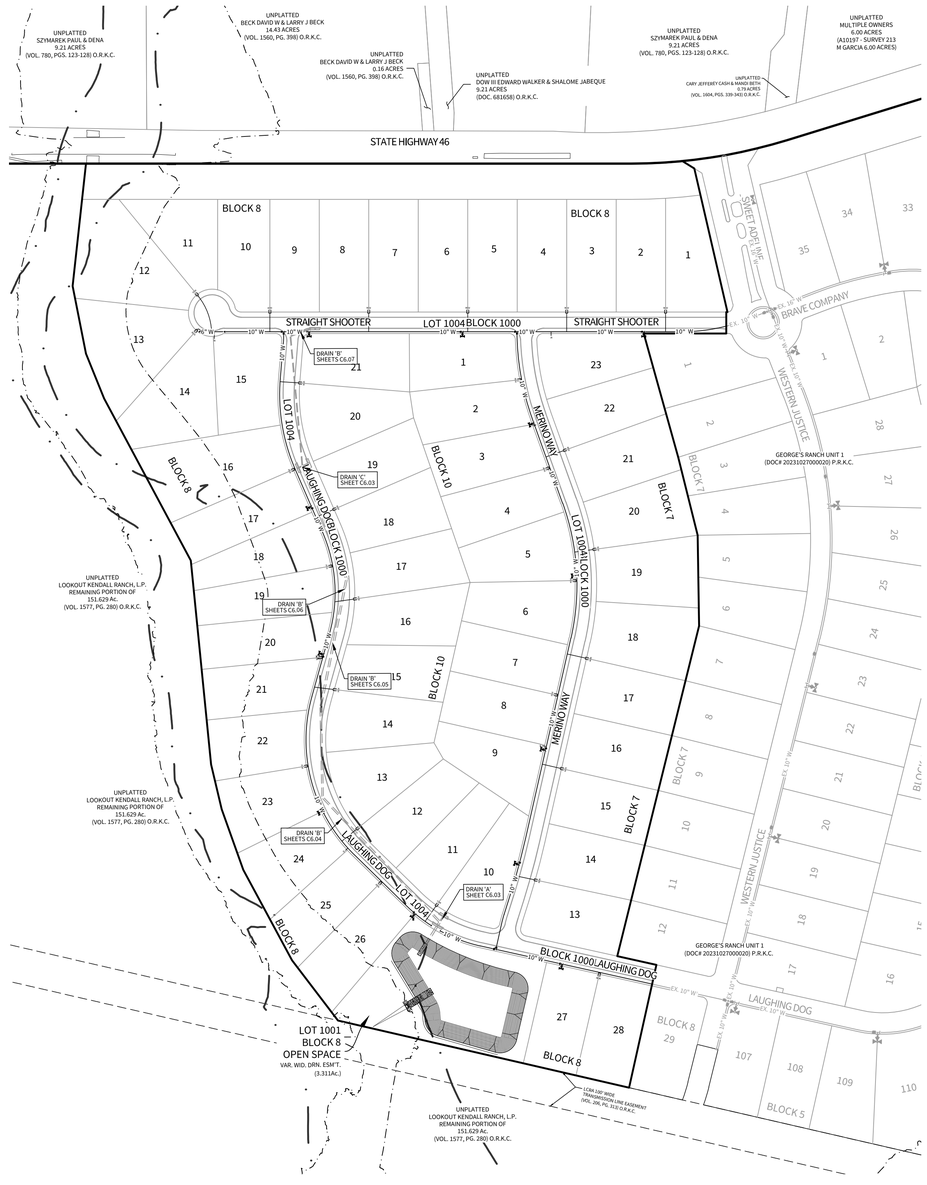
1

TYPICAL RESIDENTIAL LOT SETBACKS LAYOUT
(ESTABLISHED ON ALL LOTS)
N.T.S.



LOCAL RESIDENTIAL STREET CROSS SECTION (60' R.O.W.)
N.T.S.





CUDEENGINEERS.COM

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

UTILITY LAYOUT PLAN

DATE
3/17/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS
1. 2025-03-17 UPDATED SCALE AND TYPICAL LOT SETBACKS LAYOUT DETAIL.
2.
3.
4.
5.
6.
7.
8.
9.

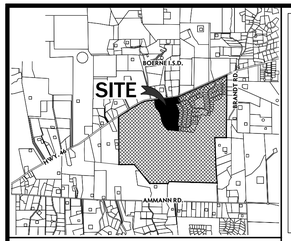
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

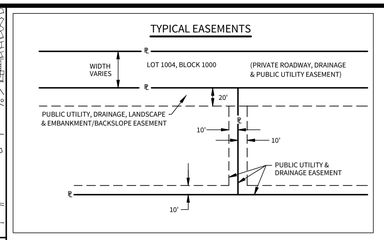
C3.00

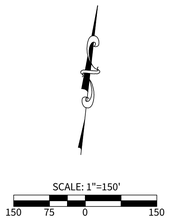
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\03546\Docs\2-Civil\04-Plans\C3.00_UTIL_Plan.dwg,3/25/2025 9:33:34 AM,mas@cud



LOCATION MAP N.T.S.





DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

BOERNE GENERAL CONSTRUCTION NOTES

UTILITIES

GENERAL

1. ALL CONSTRUCTION, TESTING, CLEANING, AND DISINFECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
2. CONTRACTOR SHALL NOT OPERATE ANY EXISTING VALVES. THE CITY MUST BE PRESENT DURING ANY WORK COMPLETED ON EXISTING CITY UTILITIES. THE CONTRACTOR IS NOT PERMITTED TO COMPLETE GAS WORK ON EXISTING CITY GAS MAINS AT ANY TIME.
3. THE CONTRACTOR MUST COORDINATE AND SCHEDULE ALL UTILITY TIE-INS WITH THE CITY. NO TIE-INS SHALL BE MADE TO THE EXISTING UTILITY SYSTEM UNTIL ALL TEST RESULTS HAVE BEEN PROVIDED TO THE CITY AND ARE VERIFIED.
4. UNLESS THE DEVELOPER HAS RECEIVED PRIOR WRITTEN PERMISSION BY THE CITY OF BOERNE, ALL UTILITIES, INCLUDING BUT NOT LIMITED TO WATER, RECLAIMED WATER, SEWER, GAS, AND ELECTRIC UTILITIES MUST BE INSTALLED AND TESTED PRIOR TO THE PAVING OF A STREET OR ALLEY OR PORTION THEREOF.
5. PRIOR TO RECEIVING BULK WATER, THE CONTRACTOR MUST SUBMIT APPLICATION TO THE UTILITIES DEPARTMENT FOR A BULK WATER METER. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING A CITY APPROVED BACKFLOW DEVICE OR AIR GAP ON ALL JUMPERS PRIOR TO LOADING WATER IN UNAPPROVED MAINS.
6. ALL MANHOLES, END OF MAIN CLEANOUTS, VALVES, AND BLOW-OFFS SHALL HAVE CONCRETE ENCASEMENTS INSTALLED. ANY ENCASEMENTS IN PAVEMENT WILL BE DIAGONAL FROM THE DIRECTION OF TRAFFIC.
7. ONE DENSITY TEST PER 8-INCH LIFT IS REQUIRED EVERY 500 FEET FOR TRENCHES UP TO 12 FEET IN DEPTH AND EVERY 300 FEET FOR TRENCHES 12 FEET AND DEEPER. DENSITY TESTING MUST BE COMPLETED FOR EACH LIFT PRIOR TO COMMENCING INSTALLATION OF THE NEXT LIFT. POTHOLING AND STAIR STEPPING IS NOT PERMITTED.
8. ALL VALVE BOXES, METER BOXES, FIRE HYDRANTS, MANHOLES, ETC. ARE REQUIRED TO BE ADJUSTED AS REQUIRED TO MATCH FINAL GRADES.
9. THE CONTRACTOR IS RESPONSIBLE FOR STAKING UTILITIES AND INSTALLING PERMANENT PROPERTY PINS PRIOR TO THE FINAL INSPECTION TO VERIFY LOCATION, FINISH GRADE, AND DEPTH.
10. TRACER WIRE LOCATE BOX SHALL BE INSTALLED PER CITY REQUIREMENTS AT ALL VALVES INCLUDING, GAS, RECLAIMED WATER, FIRE HYDRANT VALVES AND BLOWOFFS. FOR GROUPING OF VALVES AT ONE GENERAL LOCATION, ONE LOCATE BOX MAY BE USED.

BOERNE WATER GENERAL NOTES

11. WHERE THE MINIMUM NINE (9) FEET SEPARATION BETWEEN WATER AND SANITARY SEWER LINES CANNOT BE MAINTAINED, THE CONTRACTOR MUST MEET THE REQUIREMENTS OF 30 TAC 217.53(D) AND 30 TAC 290.44(E).
12. ALL WATER LINES SHALL BE INSTALLED AT A DEPTH BETWEEN FOUR (4) AND SIX (6) FEET OR AS SHOWN ON THE APPROVED INFRASTRUCTURE DRAWINGS. DEVIATIONS FROM THESE DEPTHS REQUIRES PRIOR APPROVAL.
13. ALL WATER MAINS SHALL BE HYDROSTATICALLY TESTED BY THE CONTRACTOR PER CITY REQUIREMENTS.
14. THE USE OF TEMPORARY JUMPERS IS REQUIRED FOR NEW WATER MAIN INSTALLATION.
15. SAMPLE TEST PORTS FOR BACTERIOLOGICAL TESTING SHALL BE PROVIDED ALONG THE WATER MAIN AT THE FREQUENCY AND LOCATION REQUIRED BY THE CITY OF BOERNE OR AT A MINIMUM PER THE TCEQ REQUIREMENTS.
16. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, PASSED BACTERIOLOGICAL TESTING AND THE CITY OF BOERNE RELEASED THE MAIN FOR TIE-IN AND USE.
17. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED WITHIN 40 FEET OF THE WATER MAIN.
18. NO VALVES , OR APPURTENANCES SHALL BE CONSTRUCTED WITHIN CURBS, CURB RAMPS OR LANDINGS. ADDITIONALLY, HYDRANTS AND BLOWOFFS SHALL NOT BE INSTALLED WITHIN SIDEWALKS OR DRIVEWAYS WITHOUT PRIOR AUTHORIZATION.
19. ALL FIRE HYDRANTS SHALL BE INSTALLED WITH THE MAIN PUMPER NOZZLE A MINIMUM OF 18", AND A MAXIMUM OF 24" FROM FINISH GRADE, HYDRANTS IN THE RIGHT OF WAY SHALL BE INSTALLED FROM 1' MINIMUM TO 7' MAXIMUM FROM THE FACE OF THE CURB.

MISCELLANEOUS NOTES

1. NO METER BOXES TO BE SET IN DRIVEWAYS. ANY METER BOXES SET IN DRIVEWAYS WILL BE RELOCATED AT THE CONTRACTOR'S AND/OR DEVELOPER'S EXPENSE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION FROM DAMAGE DONE TO EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, LANDSCAPING, AND STRUCTURES.
3. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY OF BOERNE PUBLIC WORKS AT 1-830-249-9511 FOR GUIDANCE.
4. NO EXTRA-PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.
5. THE DEVELOPER DEDICATES THE WATER MAIN UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE CITY OF BOERNE. THE CITY OF BOERNE WILL OWN AND MAINTAIN SAID WATER MAINS WHICH ARE LOCATED WITHIN THIS PARTICULAR SUBDIVISION (AS APPLICABLE).
6. THE CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE WATER METER BOX FREE OF ALL OBJECTS AND DEBRIS.
7. CONTRACTOR SHALL FURNISH A SET OF "AS-BUILT" DRAWINGS TO THE ENGINEER AT TIME OF FINAL INSPECTION. CONTRACTOR SHALL GIVE ENGINEER AT LEAST TWO WORKING DAYS NOTICE OF FINAL INSPECTION.
8. X – DENOTES JOINT RESTRAINT LENGTH AND DIRECTION
9. HYDRANTS AND WATER LINES MUST BE INSPECTED BY THE FIRE MARSHAL'S OFFICE PRIOR TO COVERING. CONTACT THE FIRE MARSHAL'S OFFICE TO SCHEDULE INSPECTION.
10. CONTRACTOR TO COORDINATE WITH ENGINEER FOR GUARD SHACK DOMESTIC WATER SERVICE.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT

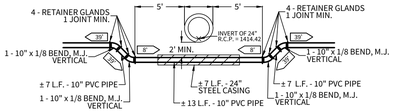
CAUTION!!
EXISTING UTILITIES ARE LOCATED WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES 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 GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

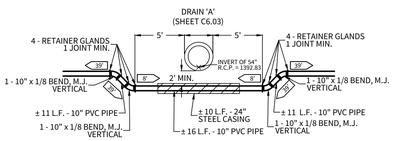
FENCE NOTE:

GATES ACROSS EASEMENT: DOUBLE SWING GATES WITH A MINIMUM CLEAR OPENING OF 12 FEET WIDE SHALL BE INSTALLED WHEREVER FENCES CROSS UTILITY EASEMENTS.



ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

DETAIL 'A': DRAIN 'B' / WATER CROSSING
SIDE VIEW N.T.S.



ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

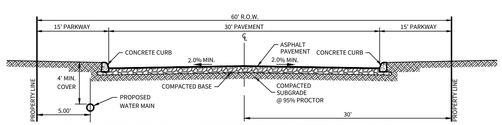
DETAIL 'B': DRAIN 'A' / WATER CROSSING
SIDE VIEW N.T.S.

JOINT RESTRAINT NOTE:

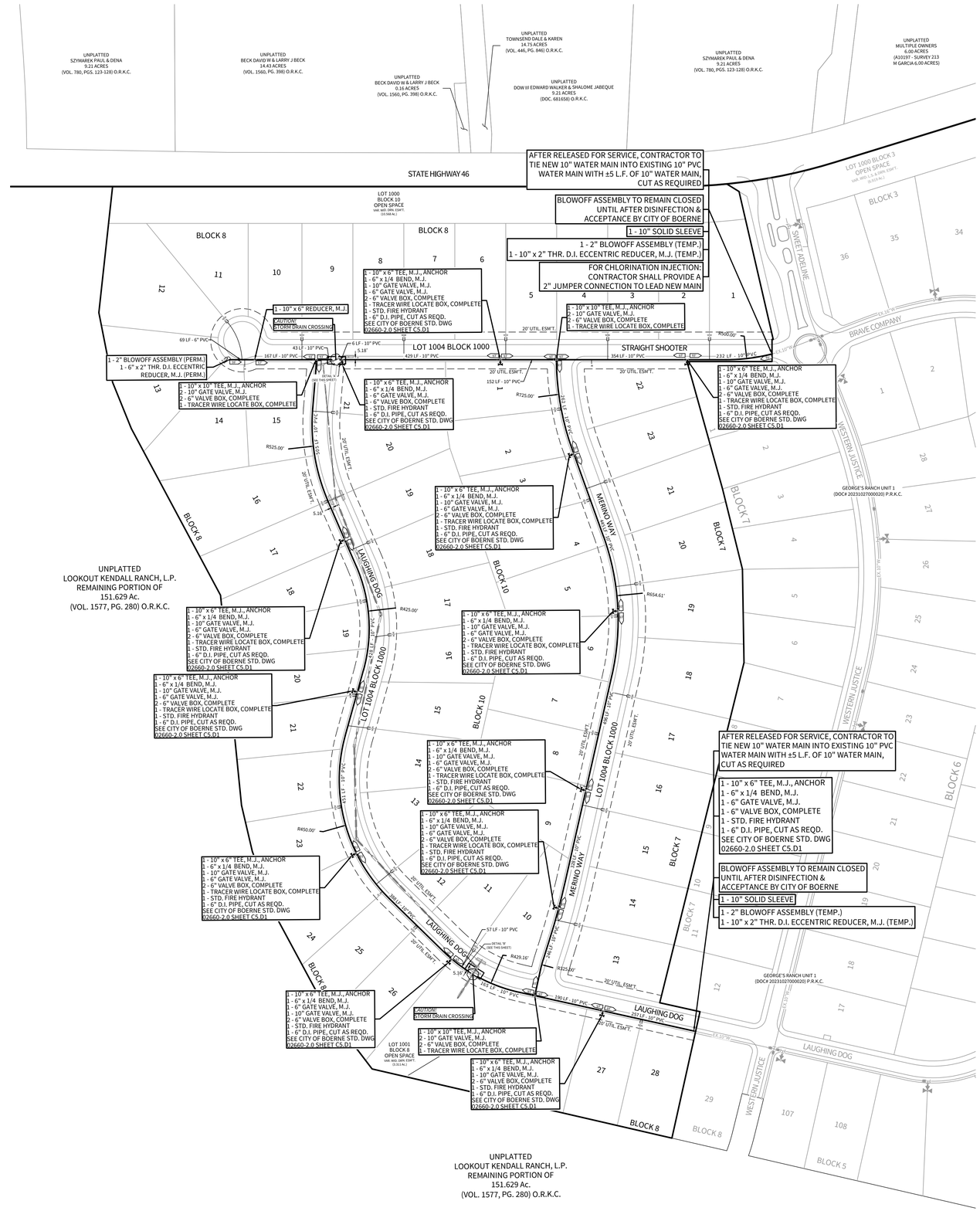
CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESSES OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING, JOINT RESTRAINTS AND FIELD LOCK GASKETS.

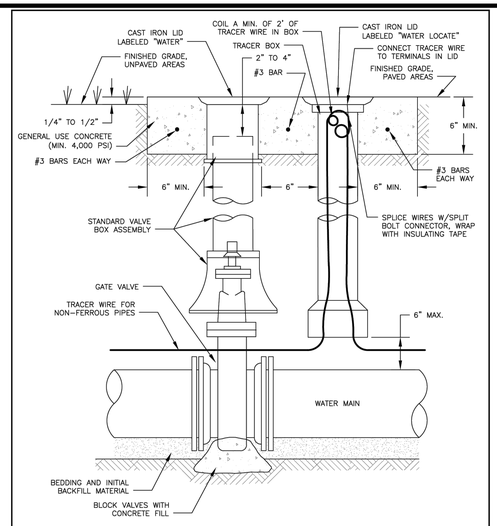
NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE CITY OF BOERNE INSPECTOR/TEST ADMINISTER, PER EACH 8-INCH LOOSE LIFT PER 500 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY CITY OF BOERNE WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.



LOCAL RESIDENTIAL STREET CROSS SECTION (60' R.O.W.)
N.T.S.


UNPLATTED SZYMAREK PAUL & DENA 9.21 ACRES (VOL. 780, PGS. 123-128) O.R.K.C.
UNPLATTED BECK DAVID W & LARRY J BECK 14.43 ACRES (VOL. 1560, PG. 398) O.R.K.C.
UNPLATTED BECK DAVID W & LARRY J BECK 0.16 ACRES (VOL. 1560, PG. 398) O.R.K.C.
UNPLATTED TOWNSEND DALE & KAREN 14.75 ACRES (VOL. 446, PG. 846) O.R.K.C.
UNPLATTED DOW III EDWARD WALKER & SHALOME JABEQUE 9.21 ACRES (DOC. 681658) O.R.K.C.
UNPLATTED SZYMAREK PAUL & DENA 9.21 ACRES (VOL. 780, PGS. 123-128) O.R.K.C.
UNPLATTED MULTIPLE OWNERS 6.00 ACRES (A10197 - SURVEY 213 M GARCIA 6.00 ACRES)
STATE HIGHWAY 46
AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 10" WATER MAIN INTO EXISTING 10" PVC WATER MAIN WITH ±5 L.F. OF 10" WATER MAIN, CUT AS REQUIRED
BLOWOFF ASSEMBLY TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY CITY OF BOERNE
1 - 10" SOLID SLEEVE
1 - 2" BLOWOFF ASSEMBLY (TEMP.)
1 - 10" x 2" THR. D.I. ECCENTRIC REDUCER, M.J. (TEMP.)
FOR CHLORINATION INJECTION: CONTRACTOR SHALL PROVIDE A 2" JUMPER CONNECTION TO LEAD NEW MAIN
LOT 1000 BLOCK 10 OPEN SPACE
LOT 1000 BLOCK 3 OPEN SPACE
BLOCK 8
BLOCK 3
BLOCK 7
BLOCK 6
BLOCK 10
LOT 1004 BLOCK 1000
STRAIGHT SHOOTER
LAUGHING DOG
MERINO WAY
WESTERN JUSTICE
SWEET ADELINE
BRAVE COMPANY
1 - 10" x 6" REDUCER, M.J.
CAUTION: STORM DRAIN CROSSING
1 - 10" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 10" GATE VALVE, M.J.
1 - 6" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - TRACER WIRE LOCATE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQD.
SEE CITY OF BOERNE STD. DWG 02660-2.0 SHEET C5.D1
1 - 2" BLOWOFF ASSEMBLY (PERM.)
1 - 6" x 2" THR. D.I. ECCENTRIC REDUCER, M.J. (PERM.)
1 - 10" x 10" TEE, M.J., ANCHOR
2 - 10" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - TRACER WIRE LOCATE BOX, COMPLETE
2 - 10" GATE VALVE, M.J.
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SEE CITY OF BOERNE STD. DWG 02660-2.0 SHEET C5.D1

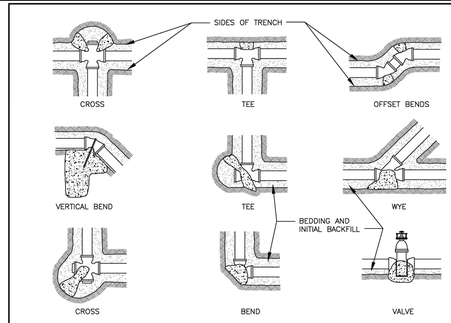


NOTES:
1. ENCASE VALVES IN POLYETHYLENE.
2. PROVIDE STEM EXTENSIONS FOR OPERATING NUT WHEN NUT IS MORE THAN 4' BELOW FINISHED GRADE.
3. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).
4. WHERE MULTIPLE VALVES ARE PROPOSED WITHIN 10-FEET OF EACH OTHER, MAY ROUTE TO A SINGLE TRACER WIRE LOCATE BOX; OTHERWISE A LOCATE BOX IS REQUIRED FOR EACH INDIVIDUAL VALVE.
5. ALL POTABLE WATER GATE VALVES SHALL BE OPEN LEFT (COUNTER CLOCKWISE).

CITY OF BOERNE

WATER GATE VALVE AND VALVE BOX

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-1.0	MAY 2024

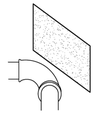


BLOCKING AREA IN SQUARE FEET IN ROCK WALL TRENCH

SIZE PIPE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22 1/2° BENDS
6"	2	2	1	1
8"	3	4	2	1
12"	6	9	5	2
16"	11	15	8	4

BLOCKING AREA IN SQUARE FEET IN OTHER THAN ROCK WALL TRENCH

SIZE PIPE	TEES & DEAD ENDS	90° BENDS	45° BENDS	22 1/2° 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 TEST AND 175 PSI WORKING PRESSURES.

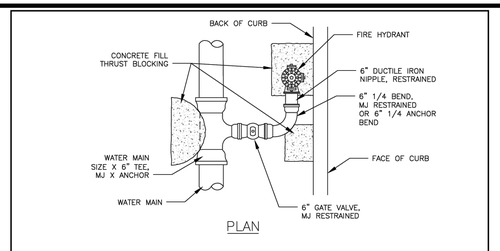
THRUST BLOCKING SHALL BE CONCRETE FILL. MIN. 3,000 PSI

THRUST BLOCKS ARE RECOMMENDED BUT NOT REQUIRED IF RESTRAINTS ARE PROVIDED PER RESTRAINED LENGTHS AS SHOWN ON APPROVED PLANS.

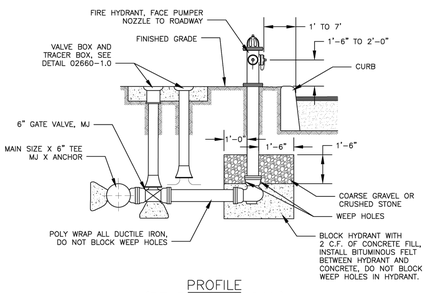
CITY OF BOERNE

CONCRETE THRUST BLOCKING

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-1.1	MAY 2024



PLAN



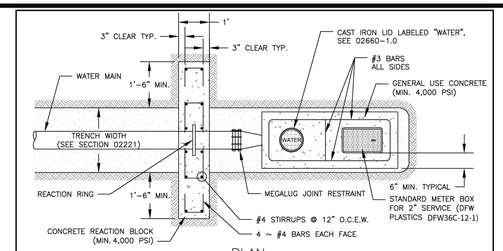
PROFILE
(BEND NOT SHOWN)

NOTES:
1. POLY WRAP ALL DUCTILE IRON BELOW GRADE.
2. RESTRAIN ALL JOINTS.

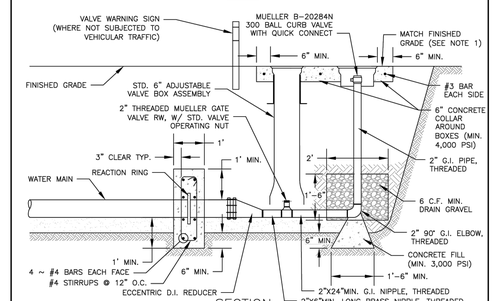
CITY OF BOERNE

FIRE HYDRANT ASSEMBLY

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-2.0	MAY 2024



PLAN



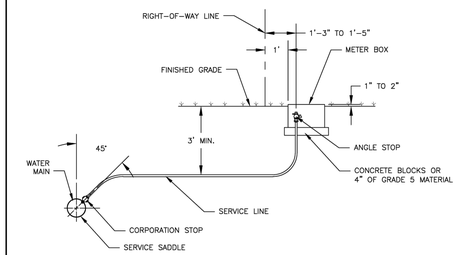
SECTION

NOTES:
1. MATCH FLUSH IN PAVED AREAS. SET BOX AND CONCRETE ±" ±1/2" ABOVE FINISHED GRADE IN UNPAVED AREAS.
2. PROVIDE RESTRAINED LENGTHS AS SHOWN BY DESIGN ENGINEER IN THE APPROVED DRAWINGS.
3. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE

PERMANENT END OF WATER MAIN BLOW-OFF ASSEMBLY

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-3.1	MAY 2024



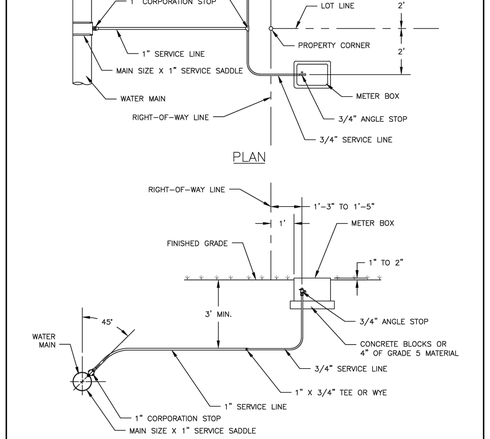
PROFILE

NOTES:
1. TRACER WIRE REQUIRED IF POLYETHYLENE (PE) WATER SERVICE LINE IS USED.

CITY OF BOERNE

3/4 TO 2 IN SINGLE WATER SERVICE

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-4.0	MAY 2024



PLAN

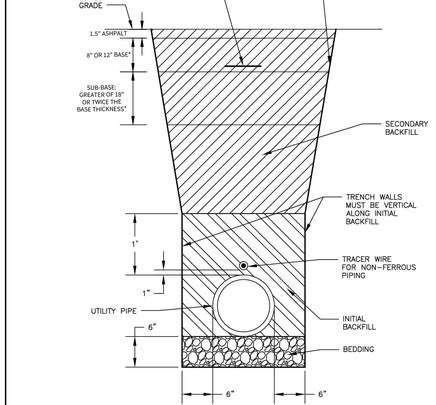
PROFILE

NOTES:
1. TRACER WIRE REQUIRED IF POLYETHYLENE (PE) WATER SERVICE LINE IS USED.

CITY OF BOERNE

DUAL 3/4 IN WATER SERVICES

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-4.1	MAY 2024



NOTES:
1. TYPICAL BEDDING PER APPLICABLE UTILITY BACKFILL STANDARD SPECIFICATIONS.
2. SECONDARY BACKFILL TO BE COMPACTED IN LIFTS PER ASTM D1557 (MODIFIED PROCTOR) AND SPECIFICATION 02221.

*NOTE:
PAVEMENT THICKNESS BASED ON GEOTECHNICAL REPORT (REF. MLA REPORT #21201100.010 - DATED JULY 2021). THE ACTUAL SUBGRADE CONDITION AT A PARTICULAR LOCATION WILL NEED TO BE EVALUATED BY A GEOTECHNICAL ENGINEER REPRESENTATIVE DURING CONSTRUCTION ONCE THE SUBGRADE IS CUT/FILLED TO THE PROPER GRADE.

CITY OF BOERNE

UTILITY PIPE TRENCH

SCALE:	DRAWING No.	DATE:
N.T.S.	02221-1.0	MAY 2024

MODIFIED

FENCE NOTE:
GATES ACROSS EASEMENT: DOUBLE SWING GATES WITH A MINIMUM CLEAR OPENING OF 12 FEET WIDE SHALL BE INSTALLED WHEREVER FENCES CROSS UTILITY EASEMENTS.

CUDEENGINEERS.COM

CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH
UNIT 2A

WATER DISTRIBUTION STANDARD DETAILS

DATE
4/15/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS
1. 2025-03-19 - UPDATED DETAIL
2. 2025-04-15 - UPDATED DETAIL
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C5.D1

P:\03546\Docs\2-Civil\Cad Files\C4.D1_WDSP.dwg 4/25/2025 10:02am tmathis

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

LOCATION MAP N.T.S.

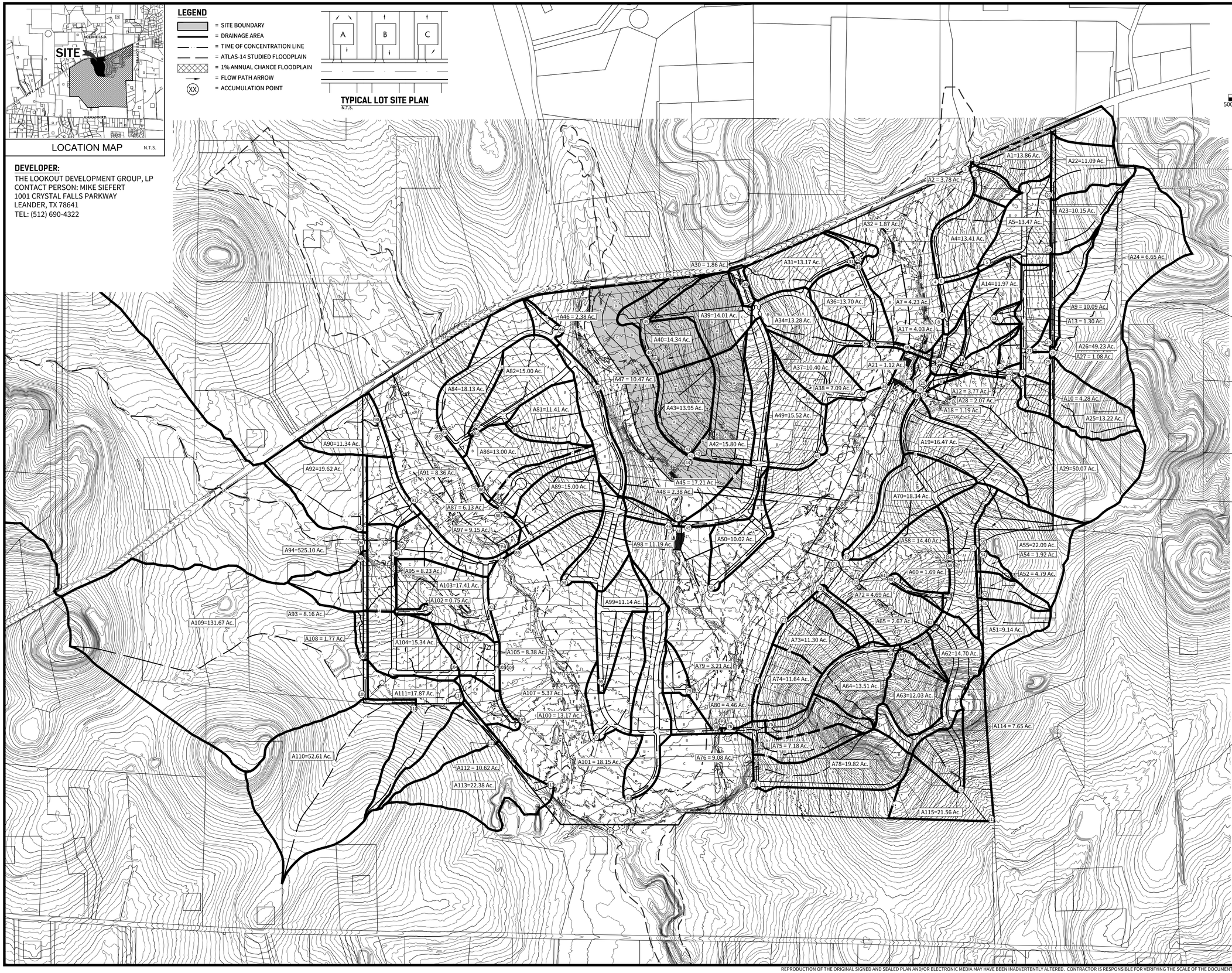
DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

LEGEND

= SITE BOUNDARY
= DRAINAGE AREA
= TIME OF CONCENTRATION LINE
= ATLAS-14 STUDIED FLOODPLAIN
= 1% ANNUAL CHANCE FLOODPLAIN
= FLOW PATH ARROW
(XX) = ACCUMULATION POINT

TYPICAL LOT SITE PLAN
N.T.S.

SCALE: 1"=500'
500 250 0 500



CUDEENGINEERS.COM

CUDE

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

OVERALL MASTER DRINAGE AREA MAP

DATE
3/18/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-17 ADDITIONAL CONTOUR LABELS ADDED NORTH OF SITE
2.
3.
4.
5.
6.
7.
8.
9.

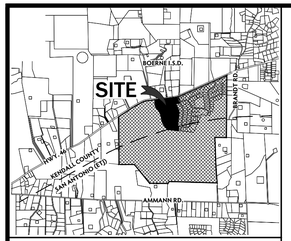
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

C6.00

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

C:\03546\008\3-Drwgs\1-Plans\Civil\DS_Drwgs\Proj 2025\03\17 4:23pm mmadmond



LOCATION MAP N.T.S.

DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

	PT. #	AREA (Ac.)	AREA OF ACCUMULATION (Ac.)	TOTAL ACRES	C	Tc	I5	I10	I25	I100	Q5	Q10	Q25	Q100
	1	13.86	=A1	13.86	0.64	18.71	5.04	5.79	6.77	8.34	44.71	51.36	60.05	73.98
	2	3.78	=A2	3.78	0.64	18.25	5.11	5.87	6.86	8.45	12.36	14.20	16.60	20.44
	3	0	=A1:A3	17.64	0.64	19.22	4.97	5.71	6.68	8.22	56.11	64.46	75.41	92.80
	4	13.41	=A4	13.41	0.64	22.14	4.60	5.28	6.18	7.62	39.48	45.32	53.04	65.40
	5	13.47	=A5	13.47	0.64	23.17	4.48	5.14	6.02	7.43	38.62	44.31	51.90	64.05
	6	0	=A4:A6	26.88	0.64	24.86	4.30	4.94	5.79	7.14	73.97	84.98	99.61	122.83
	7	4.23	=A7	4.23	0.64	20.56	4.79	5.50	6.44	7.93	12.97	14.89	17.43	21.47
	8	0	=A4:A8	31.11	0.64	26.07	4.19	4.81	5.63	6.95	83.42	95.77	112.10	138.38
	9	10.09	=A9	10.09	0.64	21.61	4.66	5.35	6.26	7.72	30.09	34.55	40.42	49.85
	10	4.28	=A10	4.28	0.64	17.40	5.24	6.02	7.03	8.66	14.35	16.49	19.26	23.72
	11	0.00	=A9:A11	14.37	0.64	21.94	4.62	5.31	6.21	7.66	42.49	48.84	57.11	70.45
	12	3.77	=A12	3.77	0.64	22.40	4.57	5.24	6.14	7.57	11.03	12.64	14.81	18.26
	13	1.30	=A13	1.30	0.64	18.39	5.09	5.84	6.83	8.42	4.23	4.86	5.68	7.01
	14	11.97	=A13:A14	13.27	0.64	23.63	4.43	5.09	5.96	7.35	37.62	43.23	50.62	62.42
	15	0	=A9:A15	31.41	0.64	23.94	4.40	5.05	5.91	7.30	88.45	101.52	118.81	146.75
	16	0	=A4:A16	62.52	0.64	27.61	4.05	4.65	5.45	6.73	162.05	186.06	218.07	269.29
	17	4.03	=A17	4.03	0.64	20.87	4.75	5.46	6.38	7.87	12.25	14.08	16.46	20.30
	18	1.19	=A18	1.19	0.64	19.60	4.92	5.65	6.61	8.14	3.75	4.30	5.03	6.20
	19	16.47	=A19	16.47	0.64	22.26	4.58	5.26	6.16	7.60	48.28	55.44	64.93	80.11
	20	0	=A18:A20	17.66	0.64	22.48	4.56	5.24	6.13	7.56	51.54	59.22	69.28	85.45
	21	1.12	=A4:A21	85.33	0.64	28.62	3.96	4.55	5.33	6.59	216.26	248.48	291.08	359.89
	22	11.09	=A22	11.09	0.63	20.63	4.78	5.49	6.43	7.92	33.40	38.36	44.92	55.33
	23	10.15	=A22:A23	21.24	0.64	22.10	4.60	5.28	6.19	7.63	62.53	71.77	84.14	103.72
	24	6.65	=A22:A24	27.89	0.62	23.91	4.40	5.05	5.92	7.30	76.08	87.32	102.37	126.23
	25	13.22	=A25	13.22	0.58	20.47	4.80	5.52	6.45	7.95	36.80	42.33	49.46	60.96
	26	49.23	=A22:A26	90.34	0.58	25.70	4.22	4.85	5.68	7.01	221.12	254.13	297.62	367.30
	27	1.08	=A22:A27	91.42	0.58	26.60	4.14	4.75	5.57	6.87	219.52	251.86	295.34	364.27
	28	2.07	=A22:A28	93.49	0.58	28.23	3.99	4.58	5.38	6.64	216.35	248.35	291.73	360.05
*	29	50.07	=A22:A29	143.56	0.59	31.86	3.71	4.26	5.00	6.18	314.24	360.82	423.50	523.45
	30	1.86	=A30	1.86	0.62	15.33	5.59	6.42	7.50	9.23	6.45	7.40	8.65	10.64
	31	13.17	=A30:A31	15.03	0.62	21.76	4.64	5.33	6.24	7.69	43.24	49.67	58.15	71.66
	32	1.87	=A32	1.87	0.62	21.01	4.73	5.44	6.36	7.84	5.48	6.31	7.37	9.09
	33	0	=A30:A33	16.9	0.62	21.76	4.64	5.33	6.24	7.69	48.62	55.85	65.38	80.58
	34	13.28	=A34	13.28	0.64	21.76	4.64	5.33	6.24	7.69	39.44	45.30	53.04	65.36
	35	0	=A30:A35	30.18	0.64	24.43	4.35	4.99	5.85	7.21	84.02	96.38	112.99	139.26
	36	13.7	=A36	13.7	0.62	23.43	4.45	5.11	5.99	7.38	37.80	43.40	50.88	62.69
	37	10.4	=A37	10.4	0.62	21.30	4.70	5.39	6.31	7.78	30.31	34.75	40.69	50.17
	38	7.09	=A30:A38	61.37	0.62	25.88	4.20	4.83	5.66	6.98	159.81	183.78	215.36	265.58
	39	14.01	=A39	14.01	0.62	21.19	4.71	5.41	6.33	7.80	40.91	46.99	54.98	67.75
	40	14.34	=A40	14.34	0.62	21.87	4.63	5.32	6.22	7.67	41.16	47.30	55.30	68.19
	40A	0	=A39:A40	28.35	0.62	21.87	4.63	5.32	6.22	7.67	81.38	93.51	109.33	134.82
	41	0	=A42:A43	29.75	0.62	22.69	4.53	5.21	6.10	7.52	83.56	96.10	112.51	138.71
	42	15.80	=A42	15.80	0.62	25.37	4.25	4.88	5.72	7.06	41.63	47.80	56.03	69.16
	43	13.95	=A43	13.95	0.62	20.77	4.76	5.47	6.40	7.89	41.17	47.31	55.35	68.24
	44	0	=A39+A40+A42+A43	58.10	0.62	25.37	4.25	4.88	5.72	7.06	153.09	175.79	206.05	254.32
	45	17.21	=A45	17.21	0.62	26.19	4.17	4.79	5.62	6.93	44.49	51.11	59.97	73.94
	46	2.38	=A46	2.38	0.62	22.10	4.60	5.28	6.19	7.63	6.79	7.79	9.13	11.26
	47	10.47	=A47	10.47	0.62	23.84	4.41	5.06	5.93	7.31	28.63	32.85	38.49	47.45
	48	2.38	=A48	2.38	0.62	18.59	5.06	5.81	6.79	8.37	7.47	8.57	10.02	12.35
	49	15.52	=A49	15.52	0.62	20.51	4.80	5.51	6.45	7.94	46.19	53.02	62.06	76.40
	50	10.02	=A50	10.02	0.62	22.34	4.57	5.25	6.15	7.58	28.39	32.62	38.21	47.09
	51	9.14	=A51	9.14	0.55	21.64	4.66	5.35	6.26	7.72	23.43	26.89	31.47	38.81
	52	4.79	=A52	4.79	0.58	21.89	4.63	5.31	6.22	7.67	12.86	14.75	17.28	21.31
	53	0	=A51:A53	13.93	0.56	22.12	4.60	5.28	6.18	7.62	35.88	41.19	48.21	59.44
	54	1.92	=A54	1.92	0.59	18.23	5.11	5.87	6.87	8.46	5.79	6.65	7.78	9.58
	55	22.09	=A55	22.09	0.57	21.37	4.69	5.39	6.30	7.77	59.05	67.87	79.33	97.83
	56	0	=A54:A56	24.01	0.57	21.58	4.66	5.36	6.27	7.73	63.78	73.36	85.81	105.79
	57	0	=A51:A57	37.94	0.57	23.56	4.44	5.10	5.97	7.36	96.02	110.29	129.11	159.17
	58	14.4	=A58	14.4	0.64	19.96	4.87	5.59	6.54	8.06	44.88	51.52	60.27	74.28
	59	0	=A51:A59	52.34	0.59	25.18	4.27	4.90	5.75	7.09	131.86	151.31	177.56	218.94
	60	1.69	=A60	1.69	0.64	16.75	5.34	6.14	7.17	8.83	5.78	6.64	7.76	9.55
	61	0	=A51:A61	54.03	0.59	28.69	3.96	4.54	5.33	6.58	126.24	144.72	169.91	209.76
	62	14.7	=A62	14.7	0.64	18.66	5.05	5.80	6.78	8.35	47.51	54.57	63.79	78.56
	63	12.03	=A63	12.03	0.64	15.13	5.63	6.46	7.55	9.28	43.35	49.74	58.13	71.45
	64	13.51	=A64	13.51	0.64	18.86	5.02	5.77	6.74	8.30	43.40	49.89	58.28	71.77
	65	2.67	=A65	2.67	0.64	15.20	5.61	6.45	7.53	9.26	9.59	11.02	12.87	15.82
	66	0	=A64:A66	16.18	0.64	19.08	4.99	5.73	6.70	8.26	51.67	59.34	69.38	85.53
	67	0	=A63:A67	28.21	0.64	19.18	4.97	5.71	6.68	8.23	89.73	103.09	120.60	148.59
	68	0	=A62:A68	42.91	0.64	19.50	4.93	5.66	6.62	8.16	135.39	155.44	181.80	224.09
	69	0	=A51:A69	96.94	0.61	29.62	3.88	4.45	5.22	6.45	229.44	263.14	308.68	381.41
	70	18.34	=A70	18.34	0.64	19.23	4.97	5.71	6.67	8.22	58.34	67.02	78.29	96.48
*	71	0	=A51:A71	115.28	0.62	30.54	3.81	4.37	5.13	6.34	272.31	312.34	366.66	453.14
	72	4.69	=A72	4.69	0.64	18.06	5.14	5.90	6.90	8.49	15.43	17.71	20.71	25.48
	73	11.3	=A73	11.3	0.64	18.63	5.05	5.80	6.79	8.36	36.52	41.95	49.11	60.46
	74	11.64	=A74	11.64	0.64	16.42	5.40	6.20	7.25	8.92	40.23	46.19	54.01	66.45
	75	7.18	=A75	7.18	0.64	17.11	5.28	6.07	7.09	8.73	24.26	27.89	32.58	40.12
	76	9.08	=A76	9.08	0.64	15.51	5.56	6.38	7.46	9.17	32.31	37.08	43.35	53.29
	77	0	=A75:A77	16.26	0.64	17.47	5.23	6.01	7.02	8.64	54.43	62.54	73.05	89.91
	78	19.82	=A78	19.82	0.64	16.35	5.41	6.22	7.26	8.94	68.62	78.90	92.09	113.40
	79	3.21	=A79	3.21	0.62	23.92	4.40	5.05	5.92	7.30	8.76	10.05	11.78	14.53
	80	4.46	=A80	4.46	0.62	22.02	4.61	5.29	6.20	7.64	12.75	14.63	17.14	21.13
	81	11.41	=A81	11.41	0.62	21.86	4.63	5.32	6.22	7.67	32.75	37.63	44.00	54.26
	82	15	=A82	15	0.62	23.74	4.42	5.07	5.94	7.33	41.11	47.15	55.24	68.17
	83	0	=A81:A83	26.41	0.62	23.79	4.41	5.07	5.94	7.32	72.21	83.02	97.26	119.86
	84	18.13	=A84	18.13	0.62	23.42	4.45	5.11	5.99	7.39	50.02	57.44	67.33	83.07
	85	0	=A81:A85	44.54	0.62	24.02	4.39	5.04	5.90	7.28	121.23	139.18	162.93	201.04
	86	13	=A86	13	0.62	23.23	4.47	5.14	6.02	7.42	36.03	41.43	48.52	59.81
	87	6.13	=A87	6.13	0.62	23.09	4.49	5.16	6.04	7.44	17.06	19.61	22.96	28.28
	88	0	=A86:A88	19.13	0.62	23.38	4.46	5.12	5.99	7.39	52.90	60.73	71.04	87.65
	89	15	=A89	15	0.62	23.13	4.48	5.15	6.03	7.44	41.66	47.90	56.08	69.19
	90	11.34	=A90	11.34	0.57	23.16	4.48	5.15	6.03	7.43	28.96	33.29	38.98	48.03
	91	8.36	=A91	8.36	0.62	22.64	4.54	5.21	6.10	7.53	23.53	27.00	31.62	39.03
	92	19.62	=A92	19.62	0.54	23.68	4.43	5.08	5.95	7.34	46.93	53.82	63.04	77.77
	93	8.16	=A93	8.16	0.58	24.74	4.32	4.96	5.80	7.16	20.45	23.47	27.45	33.89
*	94	525.1	=A92:A94	552.88	0.62	50.93	2.75	3.16	3.72	4.60	942.66	1083.20	1275.16	1576.81
	95	8.23	=A95	8.23	0.62	20.28	4.83	5.54	6.48	7.99	24.65	28.27	33.06	40.77
*	96	0	=A92:A96	561.11	0.62	25.01	4.29	4.92	5.77	7.12	1492.44	1711.61	2007.31	2476.96
	97	9.15	=A97	9.15	0.62	26.13	4.18	4.80	5.62	6.94	23.71	27.23	31.88	39.37
	98	11.19	=A98	11.19	0.62	20.51	4.80	5.51	6.45	7.95	33.30	38.23	44.75	55.16
	99	11.14	=A99	11.14	0.62	25.11	4.28	4.91	5.76	7.10	29.56	33.91	39.78	49.04
	100	13.17	=A100	13.17	0.62	24.71	4.32	4.96	5.81	7.17	35.27	40.50	47.44	58.55
	101	18.15	=A101	18.15	0.62	24.71	4.32	4.96	5.81	7.17	48.61	55.81	65.38	80.68
	102	0.75	=A102	0.75	0.62	17.13	5.28	6.07	7.09	8.73	2.46	2.82	3.30	4.06
	103	17.41	=A102:A103	18.16	0.62	19.37	4.95	5.68	6.65	8.19	55.73	63.95	74.87	92.21
	104	15.34	=A104	15.34	0.62	21.51	4.67	5.37	6.28	7.74	44.42	51.07	59.73	73.61
	105	8.38	=A105	8.38	0.62	22.41	4.57	5.24	6.14	7.57	23.74	27.22	31.90	39.33
	106	0	=A104:A106	23.72	0.62	22.41	4.57	5.24	6.14	7.57	67.21	77.06	90.30	111.33
	107	5.37	=A107	5.37	0.62	24.64	4.33	4.97	5.82	7.18	14.42	16.55	19.38	23.91
	108	1.77	=A108	1.77	0.56	18.84	5.02	5.77	6.75	8.31	4.98	5.72	6.69	8.24
*	109	131.67	=A108:A109	133.44	0.62	17.98	5.15	5.91	6.91	8.51	426.07	488.95	571.68	704.06
*	110	52.61	=A108:A110	186.05	0.59	24.56	4.33	4.98	5.83	7.19	475.30	546.65	639.96	789.24
*	111	17.87	=A108:A111	203.92	0.59	23.25	4.47	5.13	6.01	7.42	537.80	617.20	723.08	892.72
*	112	10.62	=A108:A112	214.54	0.59	23.42	4.45	5.11	5.99	7.39	563.27	646.82	758.21	935.42
*	113	22.38	=A108:A113	236.92	0.58	23.67	4.43	5.08	5.95	7.34	608.74	698.06	817.61	1008.62
	114	7.65	=A114	7.65	0.64	16.43	5.40	6.20	7.24	8.92	26.44	30.36	35.45	43.67
	115	21.56	=A114:A115	29.21	0.64	16.55	5.38	6.18	7.22	8.88	100.58	115.53	134.97	166.01

* - DENOTES DRAINAGE AREA ANALYZED USING THE SCS HYDROLOGY METHOD DUE TO DRAINAGE AREA SIZE AND DETENTION CONSIDERATIONS. ALL HYDRAULIC CALCULATIONS FOR DRAINAGE STRUCTURES ASSOCIATED WITH THESE DRAINAGE AREAS SHOULD BE DERIVED FROM THE SCS METHOD HYDROLOGY CHART FOUND BELOW.

SCS METHOD HYDROLOGY

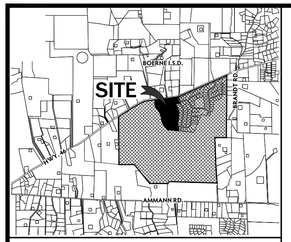
ANALYSIS POINT	DRAINAGE AREA (AC)	TIME OF CONCENTRATION (MIN)	PEAK DISCHARGE (CFS) 2 YR	5 YR	10 YR	25 YR	50 YR	100 YR
29	143.56	27.30	338.10	423.70	494.50	595.90	675.80	755.80
71	146.72	30.54	283.92	404.81	504.13	645.23	756.24	867.55
94	552.70	50.93	599.69	940.62	1237.39	1669.11	2019.13	2371.93
96	560.92	51.92	605.35	948.80	1247.42	1681.69	2033.97	2389.47
109	131.63	31.26	193.05	296.57	387.21	517.37	621.15	725.47
110	184.22	33.02	262.93	405.43	528.05	702.73	843.30	982.91
111	202.09	34.58	284.45	439.13	571.63	760.78	912.71	1063.97
112	212.70	36.33	288.52	448.44	585.03	780.57	937.65	1094.50
113	235.07	38.85	308.78	475.00	621.09	830.90	999.60	1168.75

RATIONAL METHOD HYDROLOGY

Project Name: George's Ranch

Calculation Summary for Time of Concentrations

Drainage Point	Drainage Area (Ac.)	Sheet Flow Tc Compuations: Length	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	Shallow Conc. Tc Compuations: Length	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	Channel Flow Tc Computations: Length	Velocity (fps)	Time of Concentration	Overall: Time of Concentration (min)	Lag Time (0.6 x Tc) (min)	Time of Concentration (hrs)	Lag Time (0.6 x Tc) (hrs)
1	13.86	300.0	N	1502.5	1484.7	5.93%	**16**	600.0	N	1484.7	1448.3	6.07%	**2.51**	73.02	6	0.20	**18.71**	11.23	**0.312**	**0.187**
2	3.78	300.0	N	1482.8	1466.0	5.60%	**16**	395.2	N	1466.0	1450.0	4.05%	**2.03**	78.32	6	0.22	**18.25**	10.95	**0.304**	**0.182**
3	0.00	300.0	N	1502.5	1484.7	5.93%	**16**	600.0	N	1484.7	1448.3	6.07%	**2.51**	255.62	6	0.71	**19.22**	11.53	**0.320**	**0.192**
4	13.41	300.0	N	1481.5	1471.0	3.50%	**18**	408.9	N	1471.0	1447.1	5.85%	**1.74**	862.9	6	2.40	**22.14**	13.28	**0.369**	**0.221**
5	13.47	300.0	N	1494.3	1485.6	2.90%	**18**	600.0	N	1485.6	1467.8	2.97%	**3.61**	562.6	6	1.56	**23.17**	13.90	**0.386**	**0.232**
6	0.00	300.0	N	1494.3	1485.6	2.90%	**18**	600.0	N	1485.6	1467.8	2.97%	**3.61**	1169.5	6	3.25	**24.86**	14.92	**0.414**	**0.249**
7	4.23	300.0	N	1450.5	1442.8	2.57%	**19**	194.4	N	1442.8	1438.0	2.47%	**1.28**	99.5	6	0.28	**20.56**	12.33	**0.343**	**0.206**
8	0.00	300.0	N	1494.3	1485.6	2.90%	**18**	600.0	N	1485.6	1467.8	2.97%	**3.61**	1605	6	4.46	**26.07**	15.64	**0.434**	**0.261**
9	10.09	300.0	N	1476.0	1462.9	4.37%	**18**					#DIV/0!		1298.4	6	3.61	**21.61**	12.96	**0.360**	**0.216**
10	4.28	300.0	N	1471.2	1454.6	5.53%	**16**	428	N	1454.6	1453.1	3.50%	**0.24**	418.2	6	1.16	**17.40**	10.44	**0.290**	**0.174**
11	0.00	300.0	N	1476.0	1462.9	4.37%	**18**					#DIV/0!		1418.7	6	3.94	**21.94**	13.16	**0.366**	**0.219**
12	3.77	300.0	N	1454.2	1446.6	2.53%	**19**	510.1	N	1446.6	1433.5	2.57%	**3.29**	41.06	6	0.11	**22.40**	13.44	**0.373**	**0.224**
13	1.30	300.0	N	1458.3	1448.7	3.20%	**18**	30.5	N	1448.7	1448.0	2.30%	**0.21**	65.5	6	0.18	**18.39**	11.04	**0.307**	**0.184**
14	11.97	300.0	N	1462.9	1453.6	3.10%	**18**	600.0	N	1453.6	1440.8	2.13%	**4.25**	497.6	6	1.38	**23.63**	14.18	**0.394**	**0.236**
15	0.00	300.0	N	1462.9	1453.6	3.10%	**18**	600.0	N	1453.6	1440.8	2.13%	**4.25**	608.6	6	1.69	**23.94**	14.36	**0.399**	**0.239**
16	0.00	300.0	N	1494.3	1485.6	2.90%	**18**	600.0	N	1485.6	1467.8	2.97%	**3.61**	2159.2	6	6.00	**27.61**	16.56	**0.460**	**0.276**
17	4.03	300.0	N	1444.8	1437.0	2.60%	**19**	125.0	N	1437.0	1432.9	3.28%	**0.71**	419.1	6	1.16	**20.87**	12.52	**0.348**	**0.209**
18	1.19	300.0	N	1434.1	1425.6	2.83%	**18**	200.9	N	1425.6	1418.9	3.33%	**1.13**	167.8	6	0.47	**19.60**	11.76	**0.327**	**0.196**
19	16.47	300.0	N	1480.0	1468.4	3.87%	**18**	600.0	N	1468.4	1425.5	7.15%	**2.31**	701.3	6	1.95	**22.26**	13.35	**0.371**	**0.223**
20	0.00	300.0	N	1480.0	1468.4	3.87%	**18**	600.0	N	1468.4	1425.5	7.15%	**2.31**	779.5	6	2.17	**22.48**	13.49	**0.375**	**0.225**
21	1.12	300.0	N	1494.3	1485.6	2.90%	**18**	600.0	N	1485.6	1467.8	2.97%	**3.61**	2521.9	6	7.01	**28.62**	17.17	**0.477**	**0.286**
22	11.09	300.0	N	1540.0	1526.0	4.67%	**17**	600.0	N	1526.0	1495.8	5.03%	**2.75**	316.1	6	0.88	**20.63**	12.38	**0.344**	**0.206**
23	10.15	300.0	N	1537.8	1525.5	4.10%	**18**	600.0	N	1525.5	1495.8	4.95%	**2.77**	479.9	6	1.33	**22.10**	13.26	**0.368**	**0.221**
24	6.65	300.0	N	1509.1	1495.8	4.43%	**18**	600.0	N	1495.8	1480.0	2.63%	**3.82**	751	6	2.09	**23.91**	14.34	**0.398**	**0.239**
25	13.22	300.0	N	1554.0	1532.7	7.10%	**16**	600.0	N	1532.7	1488.1	7.43%	**2.28**	788.6	6	2.19	**20.47**	12.28	**0.341**	**0.205**
26	49.23	300.0	N	1540.0	1526.0	4.67%	**17**	600.0	N	1526.0	1495.8	5.03%	**2.75**	2141.6	6	5.95	**25.70**	15.42	**0.428**	**0.257**
27	1.08	300.0	N	1540.0	1526.0	4.67%	**17**	600.0	N	1526.0	1495.8	5.03%	**2.75**	2465	6	6.85	**26.60**	15.96	**0.443**	**0.266**
28	2.07	300.0	N	1540.0	1526.0	4.67%	**17**	600.0	N	1526.0	1495.8	5.03%	**2.75**	3053.2	6	8.48	**28.23**	16.94	**0.471**	**0.282**
29	50.07	300.0	N	1540.0	1526.0	4.67%	**17**	600.0	N	1526.0	1495.8	5.03%	**2.75**	4360.8	6	12.11	**31.86**	19.12	**0.531**	**0.319**
30	1.86	123.6	N	1477.5	1475.4	1.70%	**15**					#DIV/0!		118.7	6	0.33	**15.33**	9.20	**0.255**	**0.153**
31	13.17	300.0	N	1474.9	1460.9	4.67%	**17**	539.1	N	1460.9	1442.0	3.51%	**2.96**	646.7	6	1.80	**21.76**	13.05	**0.363**	**0.218**
32	1.87	300.0	N	1448.7	1441.0	2.57%	**19**	231.9	N	1441.0	1435.0	2.59%	**1.49**	186.9	6	0.52	**21.01**	12.61	**0.350**	**0.210**
33	0.00	300.0	N	1474.9	1460.9	4.67%	**17**	539.1	N	1460.9	1442.0	3.51%	**2.96**	646.7	6	1.80	**21.76**	13.05	**0.363**	**0.218**
34	13.28	300.0	N	1480.2	1467.0	4.40%	**18**	600.0	N	1467.0	1430.4	6.10%	**2.5**	453.1	6	1.26	**21.76**	13.06	**0.363**	**0.218**
35	0.00	300.0	N	1474.9	1460.9	4.67%	**17**	539.1	N	1460.9	1442.0	3.51%	**2.96**	1610	6	4.47	**24.43**	14.66	**0.407**	**0.244**
36	13.70	300.0	N	1442.0	1433.1	2.97%	**18**	600.0	N	1433.1	1417.2	2.65%	**3.81**	584.4	6	1.62	**23.43**	14.06	**0.391**	**0.234**
37	10.40	300.0	N	1478.4	1461.9	5.50%	**17**	600.0	N	1461.9	1425.2	6.12%	**2.5**	648.66	6	1.80	**21.30**	12.78	**0.355**	**0.213**
38	0.00	300.0	N	1474.9	1460.9	4.67%	**17**	539.1	N	1460.9	1442.0	3.51%	**2.96**	2130.3	6	5.92	**25.88**	15.53	**0.431**	**0.259**
39	14.01	300.0	N	1476.0	1464.6	3.80%	**18**	470.7	N	1464.6	1440.2	5.18%	**2.13**	382.69	6	1.06	**21.19**	12.72	**0.353**	**0.212**
40	14.34	300.0	N	1473.2	1457.3	5.47%	**17**	740.5	N	1457.3	1423.4	4.58%	**3.56**	471.66	6	1.31	**21.87**	13.12	**0

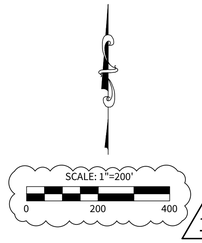


LOCATION MAP N.T.S.

DEVELOPER:

THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322





CUDEENGINEERS.COM

CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

DRAIN INDEX SHEET

DATE
2/5/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-19 - UPDATED SCALE
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

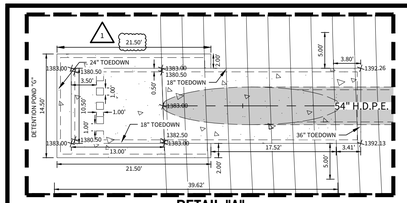
3/24/2025

CUDE ENGINEERS
TBPE L No. 455

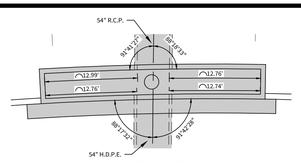
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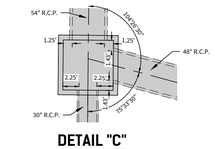
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



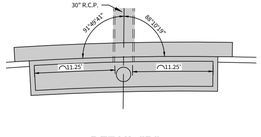
DETAIL "A"
(1"=10')



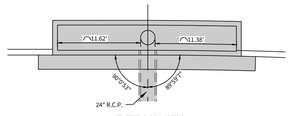
DETAIL "B"
30' CURB INLET "A-1"
(1"=10')



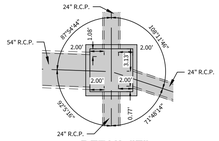
DETAIL "C"
7'X7' JUNCTION BOX "A-2"
(1"=10')



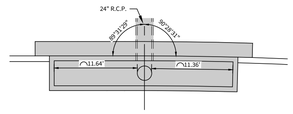
DETAIL "D"
25' CURB INLET "A-3"
(1"=10')



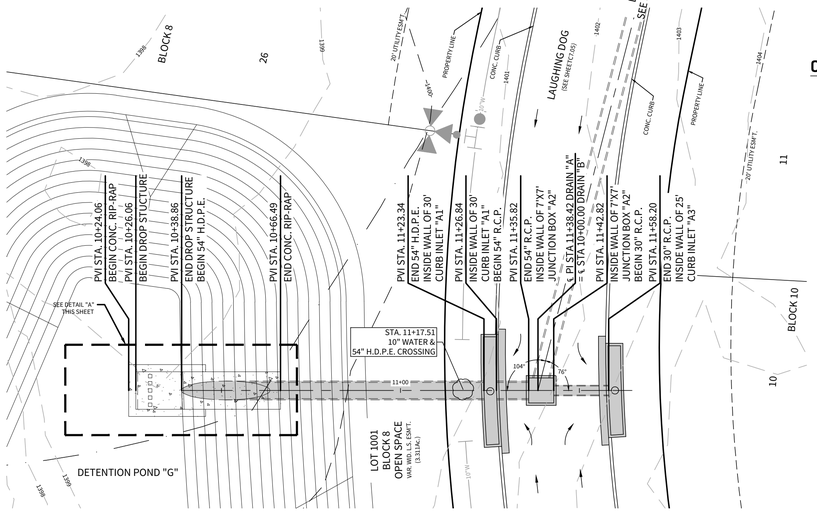
DETAIL "E"
25' CURB INLET "C-1"
(1"=10')



DETAIL "F"
6'X6' JUNCTION BOX "B-4"
(1"=10')



DETAIL "G"
25' CURB INLET "C-2"
(1"=10')



DROP STRUCTURE CALCULATIONS – POND G

h = 2.5'

V_0 = 12.36 fps

FLOW RATE (Q) = 175.79 cfs

W_0 = 10.50'

$Y_C = (q^2/g)^{1/3} = (16.74^2/32.2)^{1/3} = 2.057'$

$H_2 = -(H\text{-}Y_0) = -(2.50\text{-}2.00) = -0.50'$

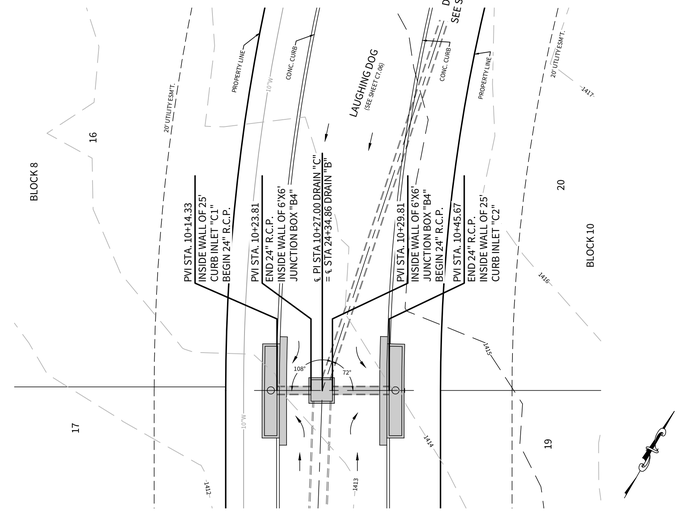
$H_3 = H_2\text{-}Y_3 = (-2.50\text{-}0.00) = -2.50'$

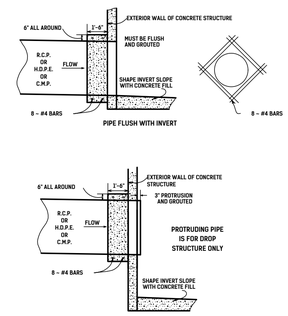
$L_1 = L_4 + L_5/2 = 6.765 + 8.114/2 = 7.439'$

$L_2 = 0.8Y_C = 0.8 * 2.057 = 1.646$

$L_3 = 1.75Y_C = 1.75 * 2.057 = 3.60$

$L_R = L_1 + L_2 + L_3 = 7.439 + 1.646 + 3.60 = 12.68$ L_R USED = 13.00'





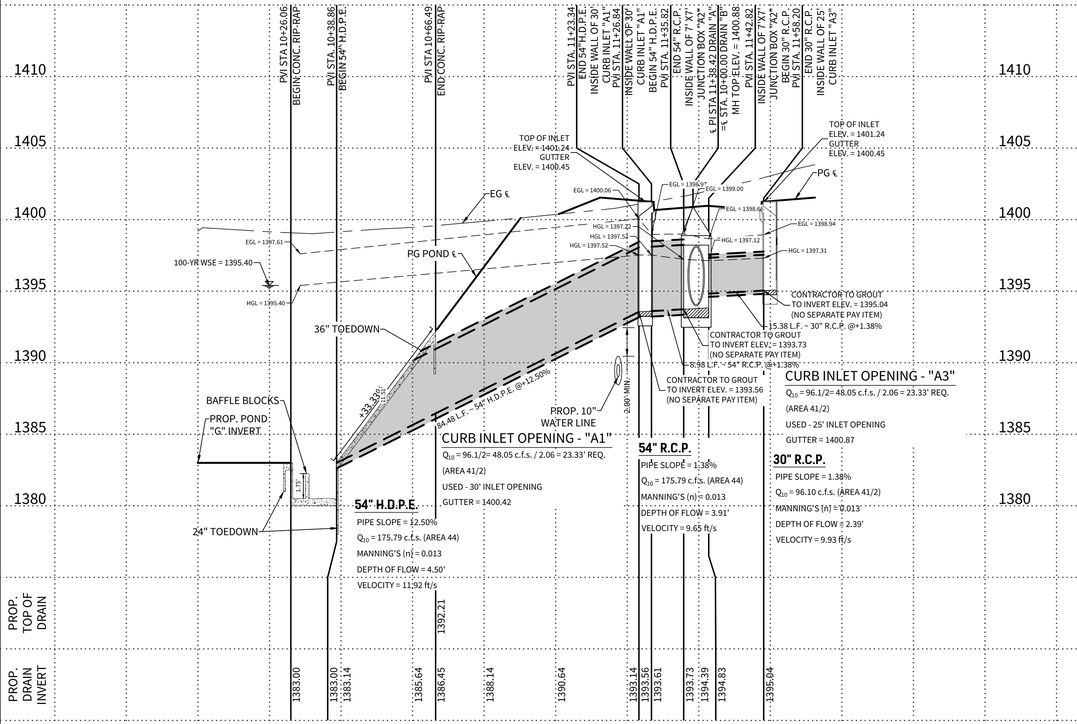
CONCRETE COLLAR DETAIL
"NO SEPARATE PAY ITEM (N.T.S.)

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI IN 28 DAYS.
2. ALL REINFORCING TO STEEL TO BE GRADE 60.

DRAIN A

STA. 10+28.68 TO STA. 11+58.20



CURB INLET OPENING - "A1"

Q_{10} = 96.1/2= 48.05 c.f.s. / 2.06 = 23.33' REQ.

(AREA 41/2)

USED - 30' INLET OPENING

GUTTER = 1400.42

54" H.D.P.E.

PIPE SLOPE = ±2.50%

Q_{10} = 175.79 c.f.s. (AREA 44)

MANNING'S (n) = 0.013

DEPTH OF FLOW = 4.50'

VELOCITY = 11.92 ft/s

54" R.C.P.

PIPE SLOPE = 1.38%

Q_{10} = 175.79 c.f.s. (AREA 44)

MANNING'S (n) = 0.013

DEPTH OF FLOW = 3.91'

VELOCITY = 9.65 ft/s

CURB INLET OPENING - "A3"

Q_{10} = 96.1/2= 48.05 c.f.s. / 2.06 = 23.33' REQ.

(AREA 41/2)

USED - 25' INLET OPENING

GUTTER = 1400.87

30" R.C.P.

PIPE SLOPE = 1.38%

Q_{10} = 96.10 c.f.s. (AREA 41/2)

MANNING'S (n) = 0.013

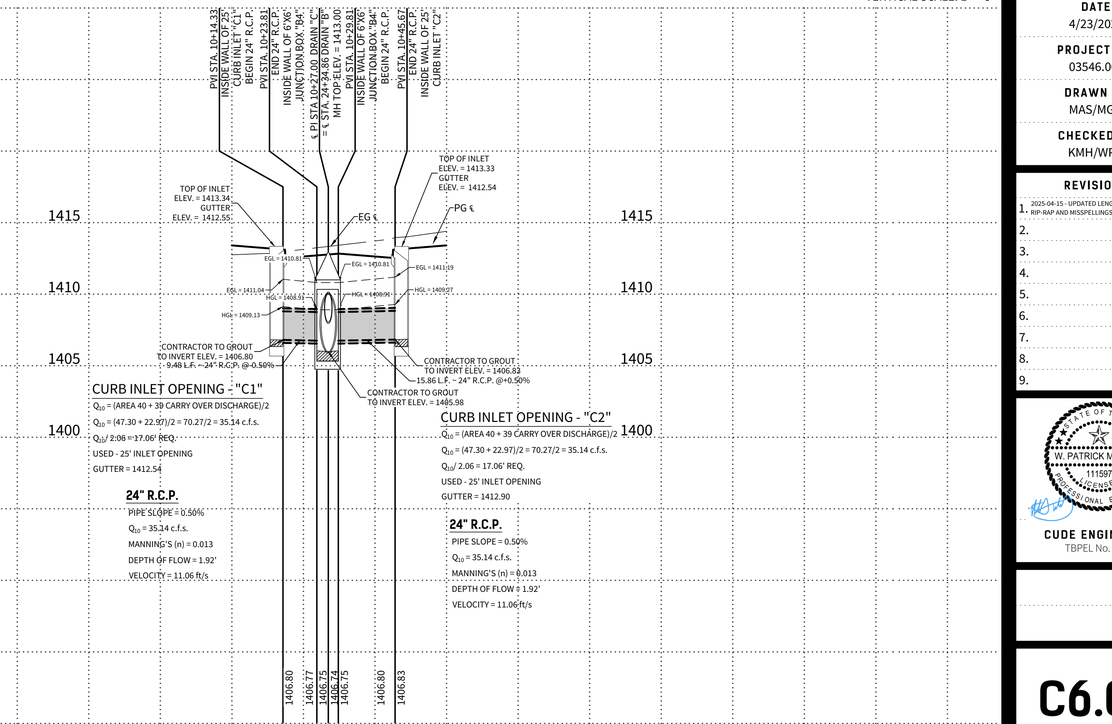
DEPTH OF FLOW = 2.39'

VELOCITY = 9.93 ft/s

DRAIN C

STA. 10+14.33 TO STA. 10+45.67

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



CURB INLET OPENING - "C1"

Q_{10} = (AREA 40 + 39 CARRY OVER DISCHARGE)/2

Q_{10} = (47.30 + 22.97)/2 = 70.27/2 = 35.14 c.f.s.

Q_{10}/ 2.06 = 17.06' REQ.

USED - 25' INLET OPENING

GUTTER = 1412.54

24" R.C.P.

PIPE SLOPE = 0.50%

Q_{10} = 35.14 c.f.s.

MANNING'S (n) = 0.013

DEPTH OF FLOW = 1.92'

VELOCITY = 11.06 ft/s

CURB INLET OPENING - "C2"

Q_{10} = (AREA 40 + 39 CARRY OVER DISCHARGE)/2

Q_{10} = (47.30 + 22.97)/2 = 70.27/2 = 35.14 c.f.s.

Q_{10}/ 2.06 = 17.06' REQ.

USED - 25' INLET OPENING

GUTTER = 1412.90

24" R.C.P.

PIPE SLOPE = 0.50%

Q_{10} = 35.14 c.f.s.

MANNING'S (n) = 0.013

DEPTH OF FLOW = 1.92'

VELOCITY = 11.06 ft/s

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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CUDE

4122 Pond Hill Road, Suite 101
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GEORGE'S RANCH
UNIT 2A

DRAINAGE PLAN AND PROFILE - DRAINS A AND C

DATE
4/23/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

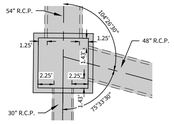
REVISIONS

1. 2025-04-15 - UPDATED LENGTH OF DRAIN 'A' RIP-RAP AND MISSPELLINGS
2.
3.
4.
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9.

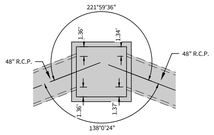
STATE OF TEXAS
W. PATRICK MURPHY
111507
LICENSED
PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C6.03

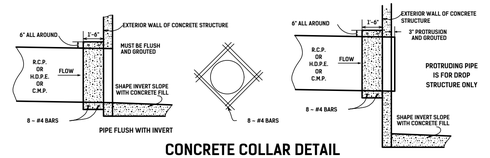
P:\03546\Docs\2_Civil\C-4 Plans\C6.03_DRAIN Plan 2025-04-23 10:09am tmiehle



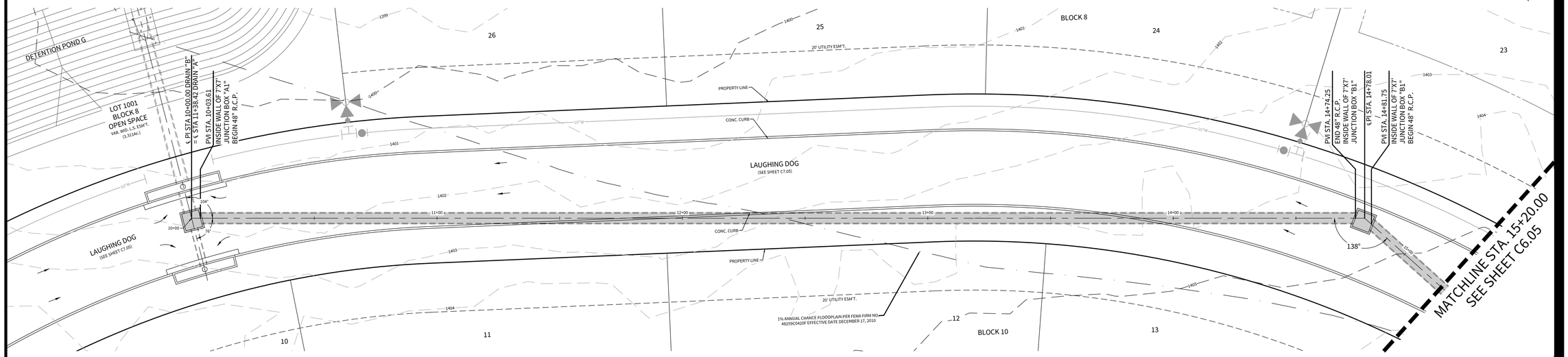
DETAIL "H"
7'X7' JUNCTION BOX "A-2"
(1"=10')



DETAIL "I"
7'X7' JUNCTION BOX "B-1"
(1"=10')



CONCRETE COLLAR DETAIL
*NO SEPARATE PAY ITEM (N.T.S.)

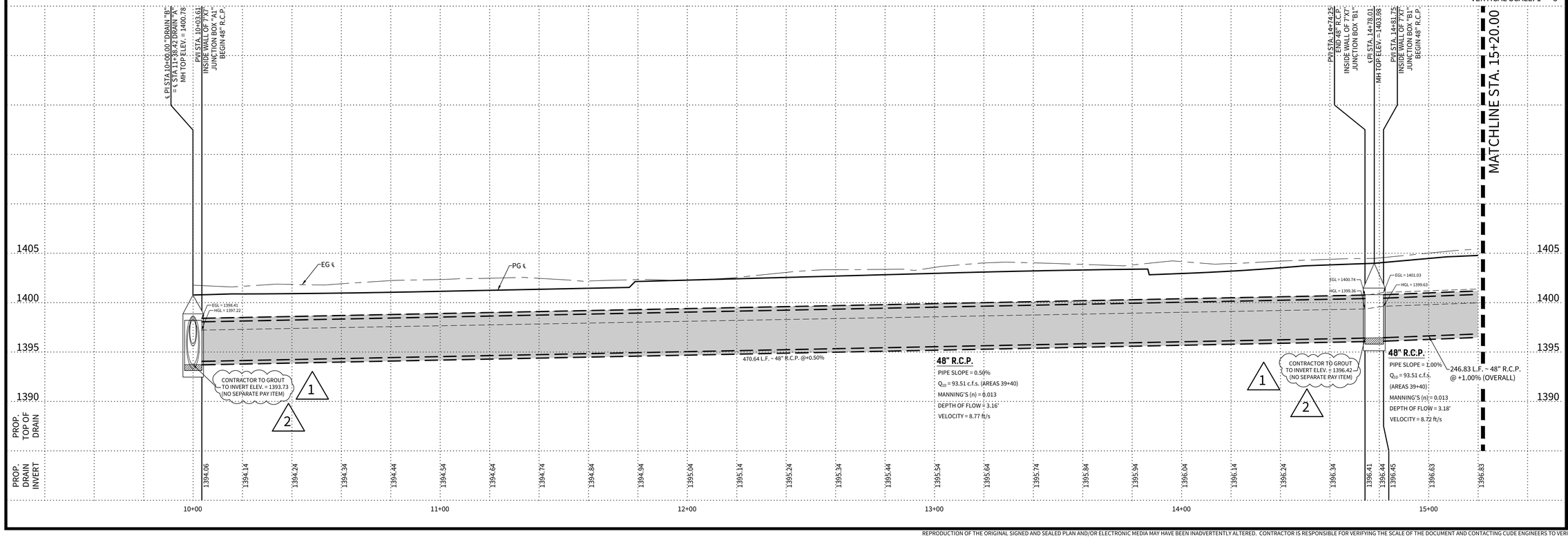


DRAIN B

STA. 10+00.00 TO STA. 15+20.00

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

NOTES:
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI IN 28 DAYS.
2. ALL REINFORCING TO STEEL TO BE GRADE 60.



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GEORGE'S RANCH
UNIT 2A

DRAINAGE PLAN AND PROFILE - DRAIN B

DATE
4/28/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

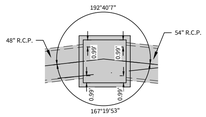
REVISIONS
1. 2025-03-19 - UPDATED GROUT CALLS
2. 2025-04-28 - UPDATED GROUT CALLS
3.
4.
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7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

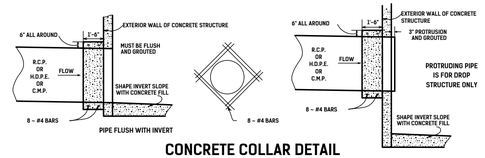
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C6.04

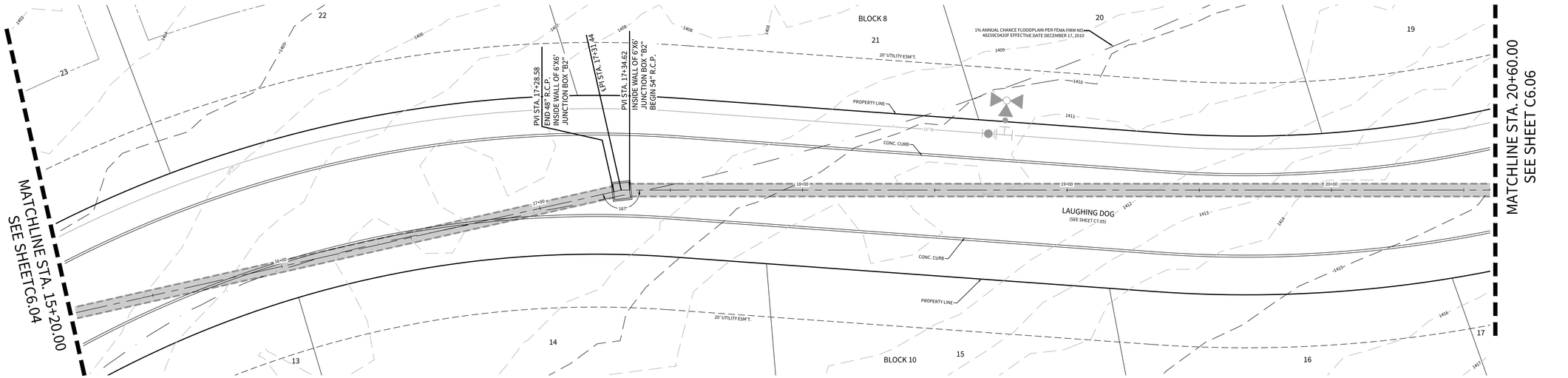
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



DETAIL "J"
6'X6' JUNCTION BOX "B-2"
(1"=10')



CONCRETE COLLAR DETAIL
*NO SEPARATE PAY ITEM **(N.T.S.)**

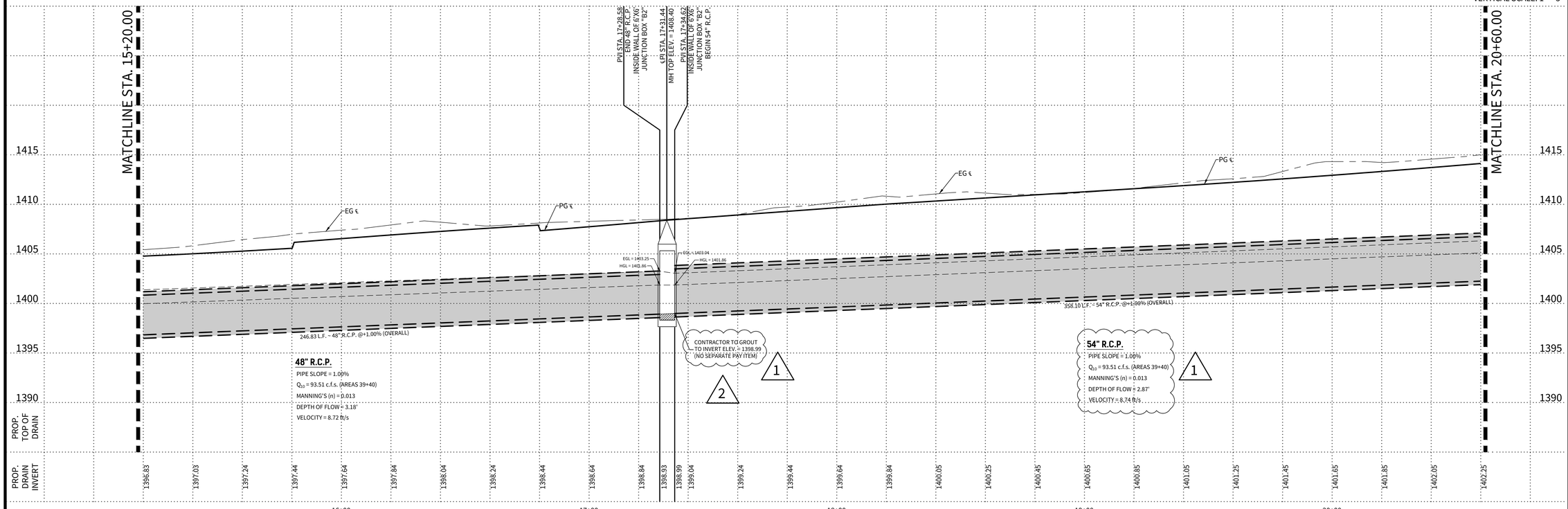


DRAIN B

STA. 15+20.00 TO STA. 20+60.00

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

NOTES:
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI IN 28 DAYS.
2. ALL REINFORCING TO STEEL TO BE GRADE 60.



REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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GEORGE'S RANCH UNIT 2A

DRAINAGE PLAN AND PROFILE - DRAIN B

DATE
4/28/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

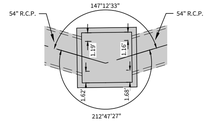
CHECKED BY
KMH/WPM

REVISIONS
1. 2025-03-19 - UPDATED GROUT CALLS AND PIPE SIZE
2. 2025-04-28 - UPDATED GROUT CALLS
3.
4.
5.
6.
7.
8.
9.

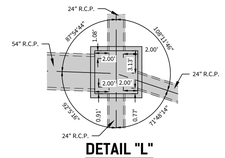
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C6.05

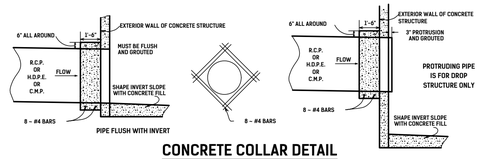
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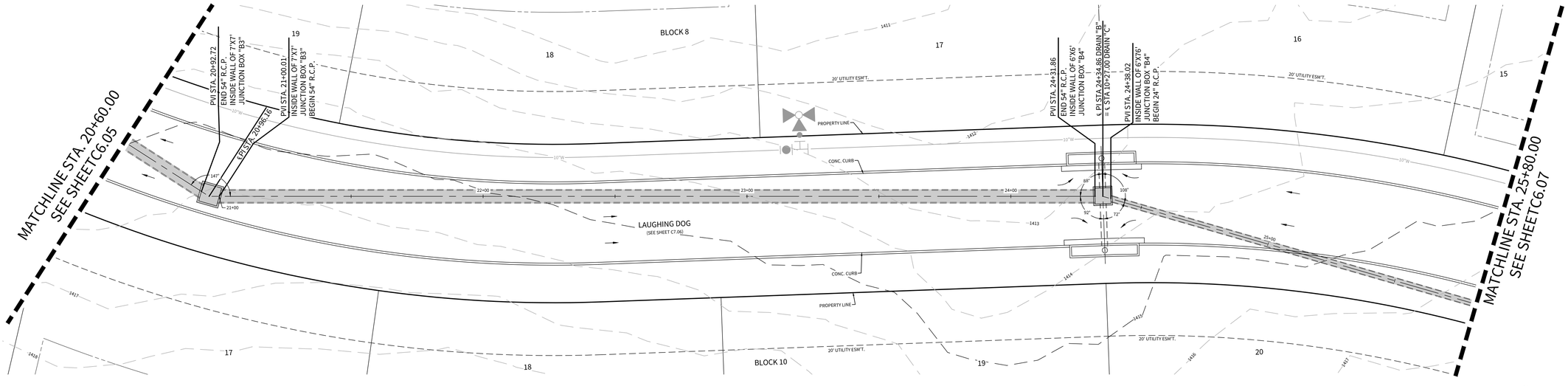
DETAIL "K"
7'X7' JUNCTION BOX "B-3"
(1"=10')



DETAIL "L"
6'X6' JUNCTION BOX "B-4"
(1"=10')



CONCRETE COLLAR DETAIL
*NO SEPARATE PAY ITEM **(N.T.S.)**

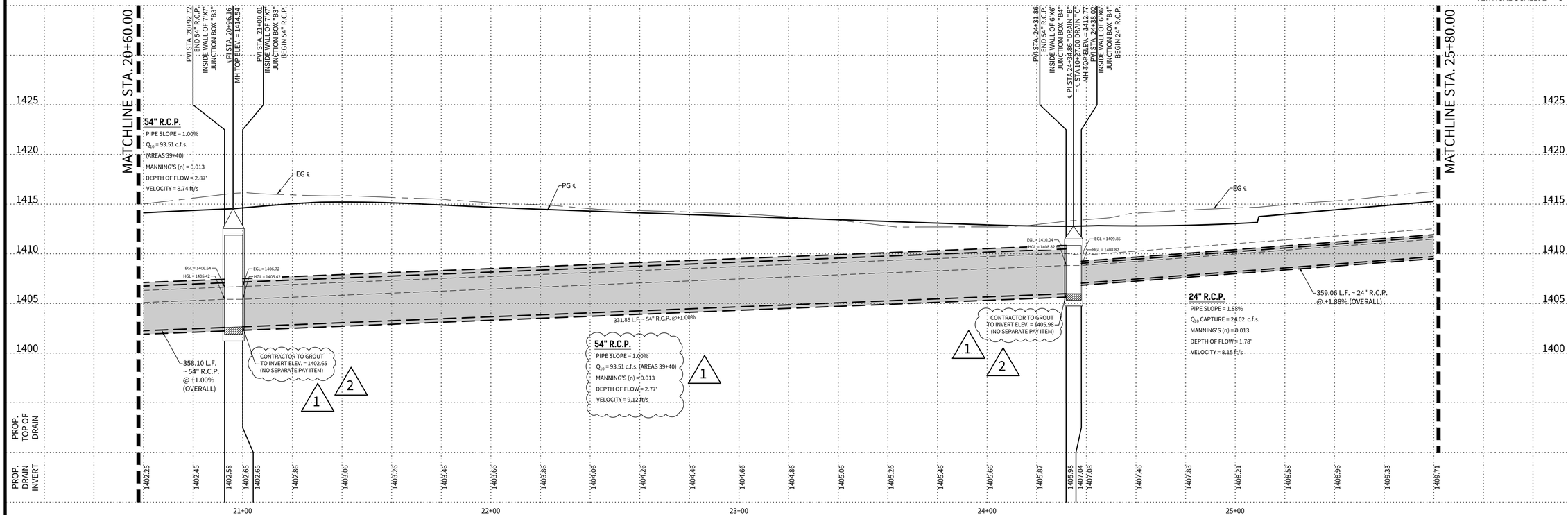


DRAIN B

STA. 20+60.00 TO STA. 25+80.00

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

NOTES:
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI IN 28 DAYS.
2. ALL REINFORCING TO STEEL TO BE GRADE 60.



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GEORGE'S RANCH
UNIT 2A

DRAINAGE PLAN AND PROFILE - DRAIN B

DATE
4/28/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

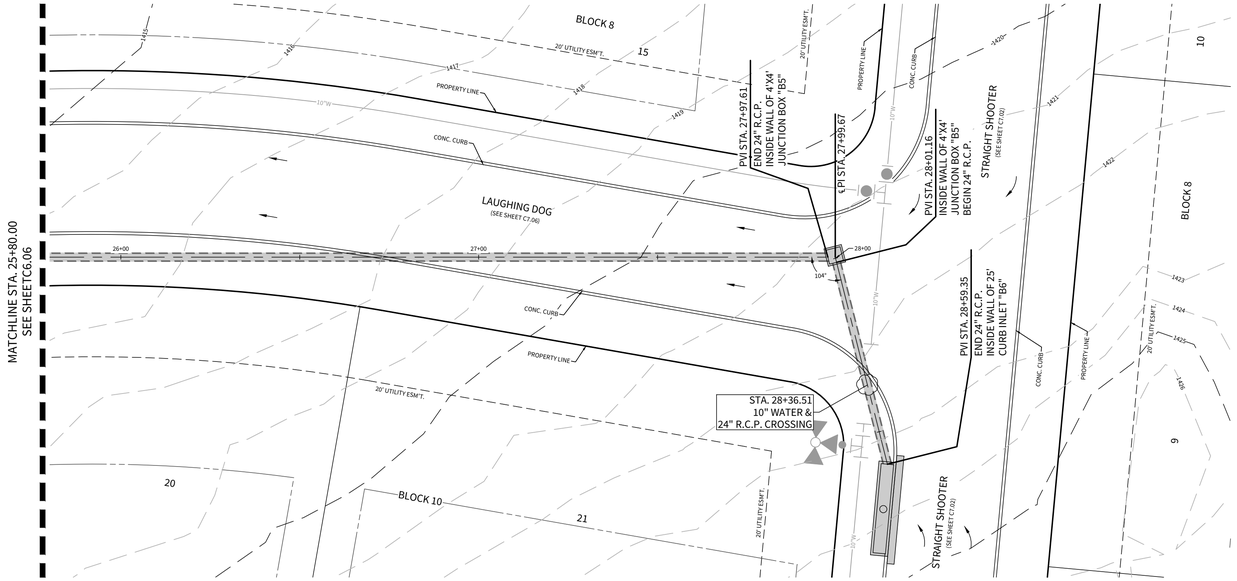
REVISIONS
1. 2025-03-19 - UPDATED GROUT CALLS AND PIPE SIZE
2. 2025-04-28 - UPDATED GROUT CALLS
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
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PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C6.06

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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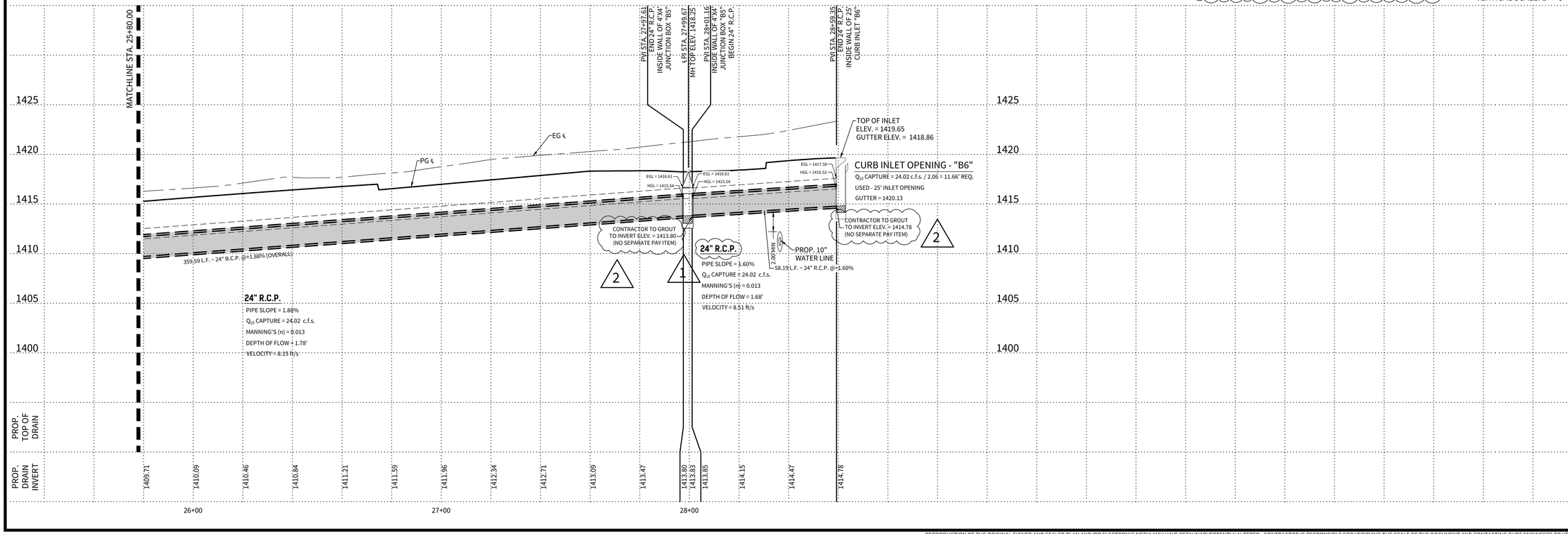


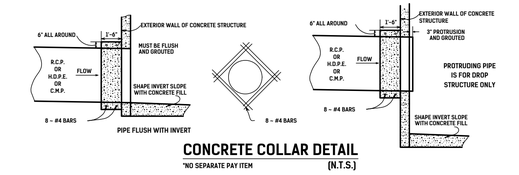
DRAIN B

STA. 25+80.00 TO STA. 28+59.35

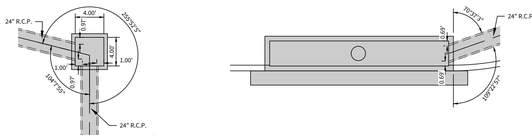
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI IN 28 DAYS.
2. ALL REINFORCING TO STEEL TO BE GRADE 60.





CONCRETE COLLAR DETAIL
*NO SEPARATE PAY ITEM (N.T.S.)



DETAIL "M"
4'X4' JUNCTION BOX "B-5"
(1"=10')

DETAIL "N"
25' CURB INLET "B-6"
(1"=10')

TxDOT INLET ON-GRADE CALCULATIONS

2

Inputs:

Q =	**46.99**	**Total Discharge (cfs)**
n =	**0.013**	**Manning's Roughness Coefficient**
S_x =	**0.0264**	**Pavement Cross Slope (ft/ft)**
S =	**0.0325**	**Pavement Longitudinal Slope (ft/ft)**
W =	**2**	**Width of Depressed Gutter Section at Inlet (ft)**
a =	**2.5**	**Local Depression at Curb Inlet (in)**
L_s =	**25**	**Design Length of Curb Inlet (ft)**

d =	0.502	Depth of Flow in Gutter (ft)
T =	19.01515	Ponded Width (ft)
A_w =	1.16	Area of Depressed Gutter Section (sf)
P_w =	2.017	Wetted Perimeter of Depressed Gutter Section (ft)
A_o =	3.822	Area of Road Section Beyond Depressed Gutter (sf)
P_o =	17.021	Wetted Perimeter Beyond the Depressed Gutter (ft)
K_w =	91.7	Conveyance of Depressed Gutter Section (cfs)
K_o =	161.4	Conveyance of Road Beyond Depressed Gutter Section (cfs)
E_o =	0.362	Ratio of Depression Flow to Total Flow
S_e =	0.064	Equivalent Cross Slope (ft/ft)

Results:

L_T =	**76.19**	**Length of Curb Inlet Required (ft)**
Q_{out} =	**22.97**	**Carry-Over Discharge (cfs)**
Q =	**24.02**	**Captured Discharge (cfs)**

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

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GEORGE'S RANCH
UNIT 2A

DRAINAGE PLAN AND PROFILE - DRAIN B

DATE
4/28/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-19 - UPDATED PIPE MATERIAL
2. 2025-04-28 - ADDED INLET CALCULATIONS AND UPDATE GROUT CALLS
3.
4.
5.
6.
7.
8.
9.

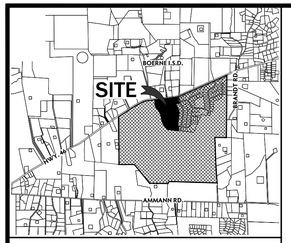
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C6.07

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

C:\Civil Integrity\Activate_2025\03546.008_GRP\Dwg\2025\04\28\10:36am\Mphillips



LOCATION MAP N.T.S.

DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

GENERAL NOTES

THE DETENTION POND FACILITY SHALL ALSO BE USED AS A TEMPORARY SEDIMENT TRAP FOR THE PURPOSES OF THE TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM CONSTRUCTION PERMIT FOR THIS SITE. THE CONTRACTOR SHALL CLEAN ALL SEDIMENT OUT OF THE DETENTION FACILITY UPON FINAL STABILIZATION OF THE SITE.

CONTRACTOR TO HYDROMULCH ENTIRE DRAINAGE EASEMENT. 85% OF POND SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY KENDALL COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT No. 4A.

THE CONTRACTOR SHALL NOTIFY A UTILITY LOCATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF ANY ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE KENDALL COUNTY PUBLIC WORKS DEPARTMENT.
ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.

WATER SURFACE ELEVATIONS AND DISCHARGE RATES PRESENTED ON THESE PLANS REPRESENT UNIT 1 DEVELOPMENT CONDITION ONLY. PLEASE REFER TO STORMWATER MANAGEMENT REPORT FOR ANALYSIS OF OTHER DEVELOPED CONDITIONS.

Pond Outfall Structure Details: Pond G

55.00 LF of 3 - 36" HDPE @ 0.50% US Invert: 1388.00 DS Invert: 1387.73

30.00' Emergency Overflow Weir @ 1398.0

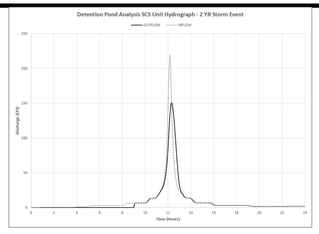
Pond G Characteristics Table:

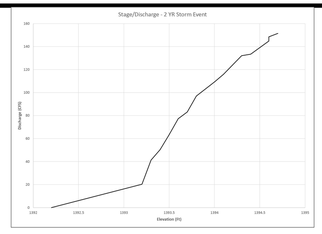
2 YR Storm Event		
Pond Inflow:	219.60	CFS
Pond Discharge:	151.50	CFS
Peak WSE	1394.7	FT
Storage Provided:	8.9	AC-FT
5 YR Storm Event		
Pond Inflow:	275.4	CFS
Pond Discharge:	179.30	CFS
Peak WSE	1395.3	FT
Storage Provided:	9.8	AC-FT
10 YR Storm Event		
Pond Inflow:	321.00	CFS
Pond Discharge:	200.30	CFS
Peak WSE	1395.8	FT
Storage Provided:	10.7	AC-FT
25 YR Storm Event		
Pond Inflow:	385.40	CFS
Pond Discharge:	227.50	CFS
Peak WSE	1396.6	FT
Storage Provided:	12	AC-FT
50 YR Storm Event		
Pond Inflow:	435.50	CFS
Pond Discharge:	247.40	CFS
Peak WSE	1397.2	FT
Storage Provided:	13	AC-FT
100 YR Storm Event		
Pond Inflow:	486.50	CFS
Pond Discharge:	266.50	CFS
Peak WSE	1397.9	FT
Storage Provided:	14.2	AC-FT

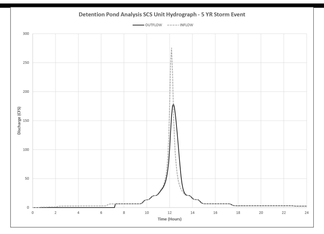
Overall Discharge Summary (POST-PROJECT Unit 2A)

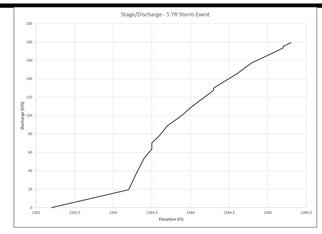
Discharge at Confluence of Trib A and Trib 1

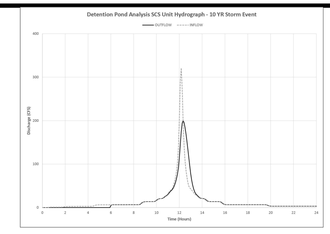
2 YR Storm Event				
Pre-Development Rate:	1179.20	CFS		
Post-Development Rate:	1083.10	CFS	96.10	CFS less than allowable
5 YR Storm Event				
Pre-Development Rate:	1614.00	CFS		
Post-Development Rate:	1520.20	CFS	93.80	CFS less than allowable
10 YR Storm Event				
Pre-Development Rate:	1987.70	CFS		
Post-Development Rate:	1889.40	CFS	98.30	CFS less than allowable
25 YR Storm Event				
Pre-Development Rate:	2518.10	CFS		
Post-Development Rate:	2409.10	CFS	109.00	CFS less than allowable
50 YR Storm Event				
Pre-Development Rate:	2934.00	CFS		
Post-Development Rate:	2817.20	CFS	116.80	CFS less than allowable
100 YR Storm Event				
Pre-Development Rate:	3351.10	CFS		
Post-Development Rate:	3239.70	CFS	111.40	CFS less than allowable

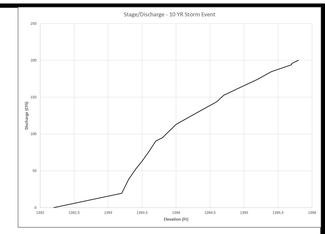


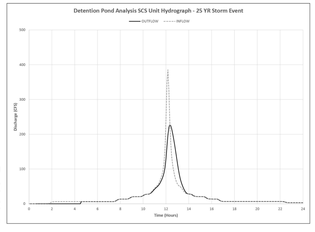


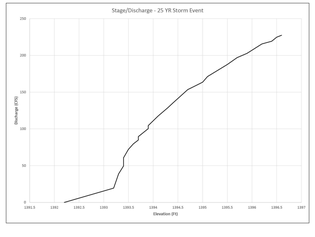


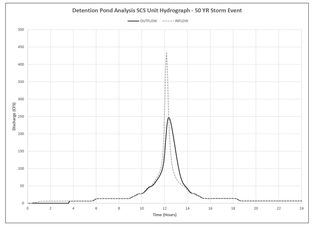


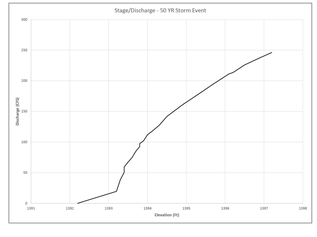


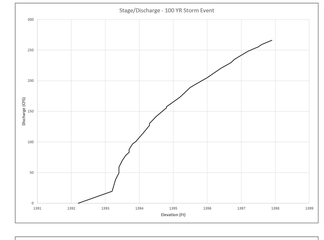


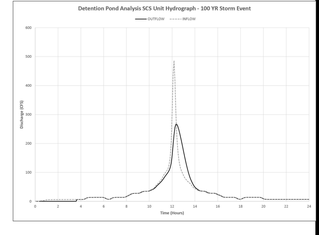


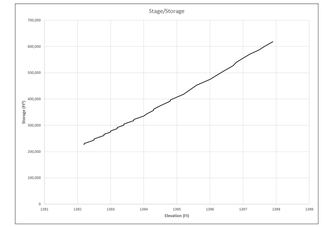




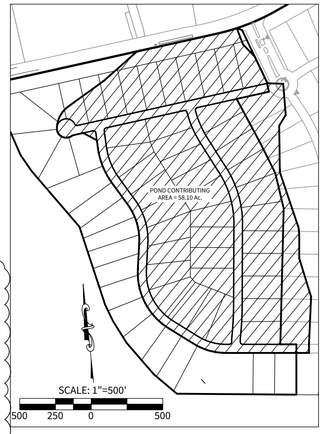








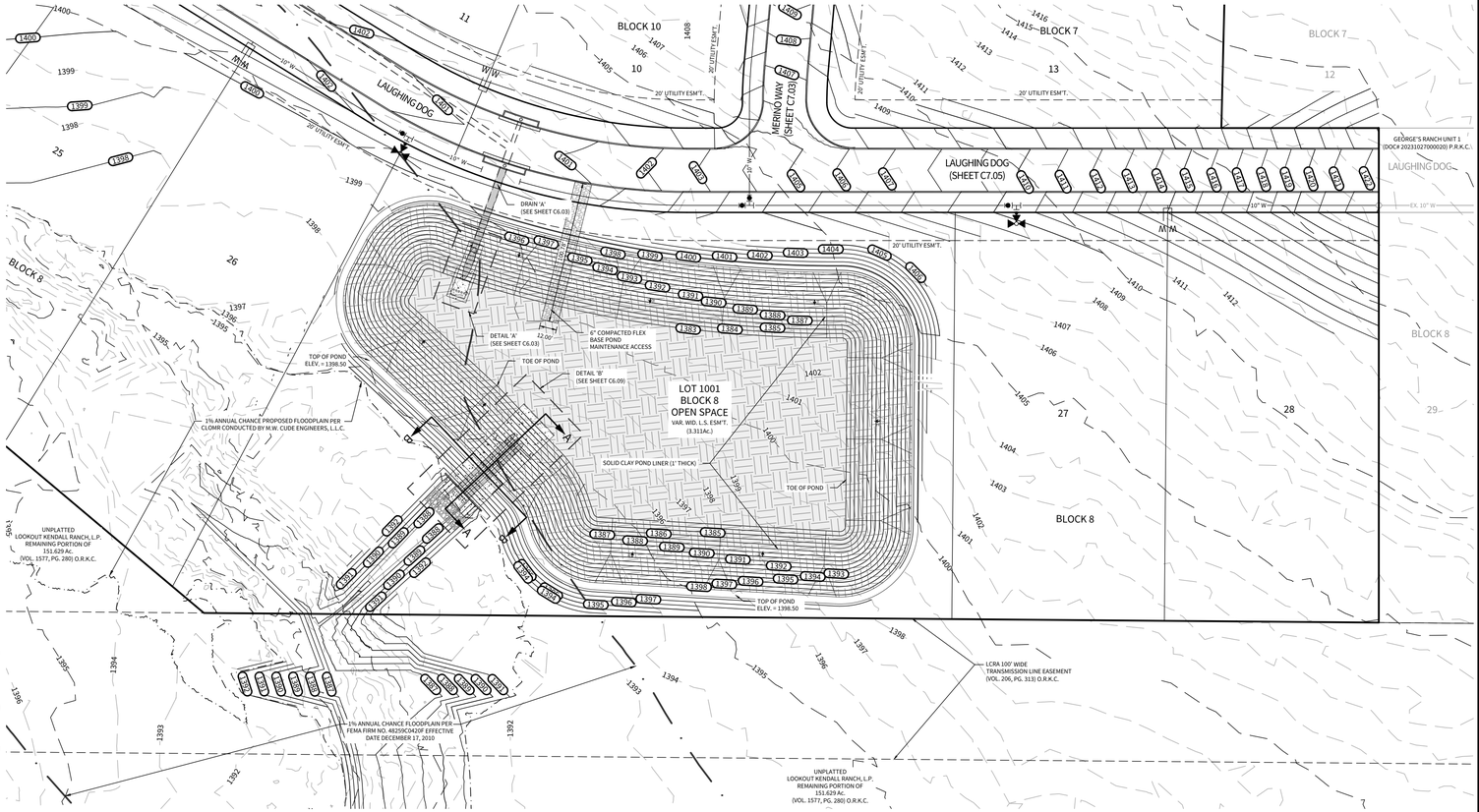
2



1

CLAY LINER SPECIFICATIONS:

THICKNESS - 12 INCHES
PERMEABILITY - 0.000001 CM/SEC (PER ASTM D-2434)
PLASTICITY INDEX - NOT LESS THAN 15% (PER ASTM D-423 AND D-424)
LIQUID LIMIT OF CLAY - NOT LESS THAN 30% (PER ASTM D-2216)
CLAY PARTICLE PASSING - NOT LESS THAN 30% (PER ASTM D-422)
CLAY COMPACTION - 95% OF STANDARD PROCTOR DENSITY (PER ASTM D-2216)



SCALE: 1"=50'
50 25 0 50

CUDEENGINEERS.COM

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

DETENTION POND PLAN

DATE
4/25/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

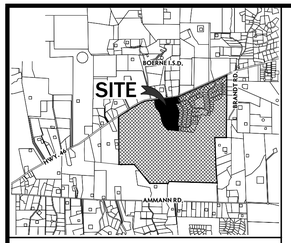
1. 2025-03-24 - UPDATE MAINTENANCE NOTE AND CLAY LINER THICKNESS
2. 2025-04-25 - POND HAS BEEN UPDATED BASED ON FLOODPLAIN TAILWATER CONDITION
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C6.08

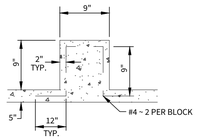
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

C:\CAD\Drawings\Active\03546.008\C6.04_CVMG.dwg, 2025/04/25 9:58am, mmata

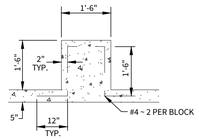


LOCATION MAP N.T.S.

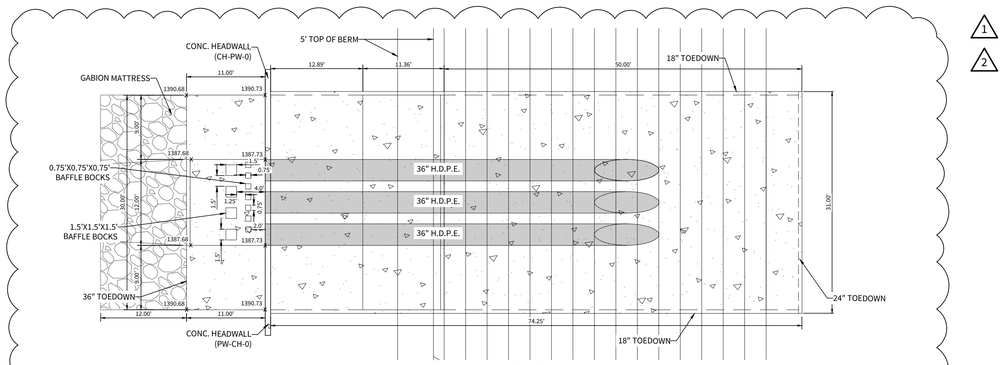
DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322



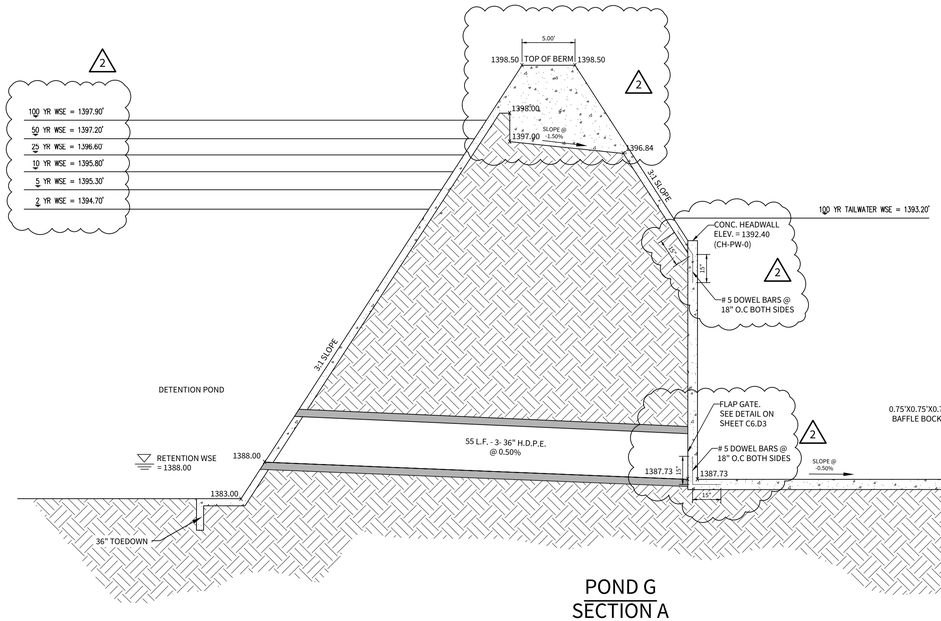
DISSIPATOR BLOCK DETAIL
(N.T.S.)



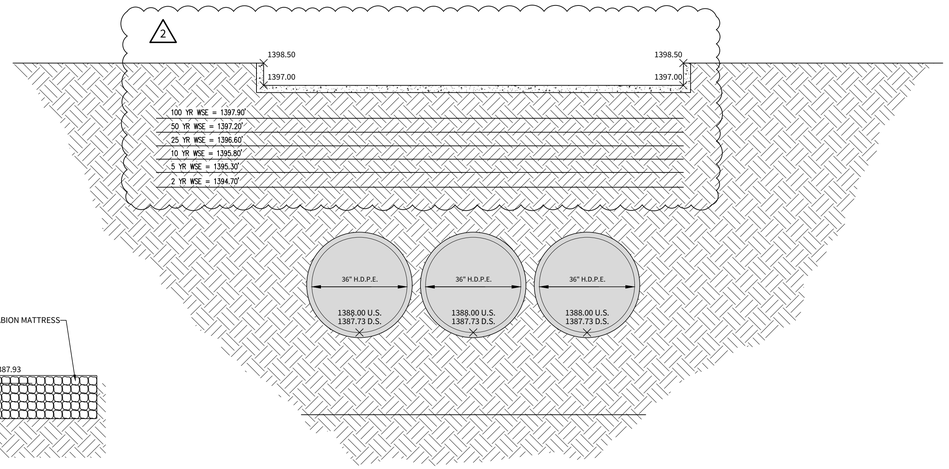
DISSIPATOR BLOCK DETAIL
(N.T.S.)



DETAIL 'B'
POND G
OUTFALL DETAIL
1" = 10'

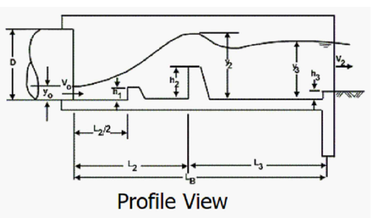


POND G
SECTION A
N.T.S.



POND G
SECTION B
N.T.S.

BAFFLE BLOCK CALCULATIONS – POND G



Profile View

Y_o = 1.81'
V_o = 8.48 fps
FLOW RATE (Q) = 266.50 cfs

$\phi = \text{acos}(1-\frac{2\,Y_o}{D}) = \text{acos}(1-\frac{2(1.81)}{3.00}) = 101.93$

$A = \frac{\phi}{180}\left(\frac{3.14D^2}{4}\right) - \left(\frac{D}{2}\sin\phi\right)\left(\frac{D}{2} - Y_o\right) = \frac{101.93}{180}\left(\frac{3.14*3^2}{4}\right) - \left(\frac{3}{2}\sin 101.93\right)\left(\frac{3}{2} - 1.81\right) = 4.46\ ft^2$

$Y_e = (A/2)^{1/2} = (4.46/2)^{1/2} = 1.49'$

$Fr = (V_o/gY_e)^{1/2} = (4.46/2)^{1/2} = 1.22$

$h_3/Y_e = ((1.35Fr^2)/(L_2/h_3))^{0.546} = ((1.35(1.22^2)/2.67)^{0.546} = 0.86$

$h_2 = Y_e(h_3/Y_e) = 1.49(0.86) = 1.11'$ H_2USED = 1.50'
$L_3 = 3.5h_3 = 3.5(1.11) = 3.88'$ L_2USED = 4.00'
$h_1 = 0.5h_2 = 0.5(1.11) = 0.55'$ h_1USED = 0.75'
$L_1 = 0.5L_2 = 0.5(3.87) = 1.94'$ L_1USED = 2.00'

$L_3/L_2 = 3.75(h_2/L_2)^{0.68} = 3.75(1.11/3.87)^{0.68} = 1.60'$

$L_3 = L_2(L_3/L_2) = 3.87(1.6) = 6.50'$

$Y_2/h_2 = 1.3(L_3/h_2)^{0.36} = 1.3(2.67)^{0.36} = 1.85'$

$Y_2 = h_2(Y_2/h_2) = 1.11(1.85) = 2.05'$

$h_3 = 0.1(Y_2) = 0.1(2.05) = 0.20'$ h_3USED = 0.25'

$V_2 = Q/A = 267.50(46.34) = 5.77$ ft/s

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GEORGE'S RANCH UNIT 2A

DETENTION POND DETAILS

DATE
4/25/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-19 ADDED DISSIPATER CALCULATIONS, SHOWED POND CONTOURS IN OUTFALL DETAIL, & REMOVED DETAIL 'A' SHOWN ON SHEET C6.03 .
2. 2025-04-25 ADDED CONCRETE REINFORCEMENTS, UPDATED WSE, UPDATED OVERFLOW WEIR
3.
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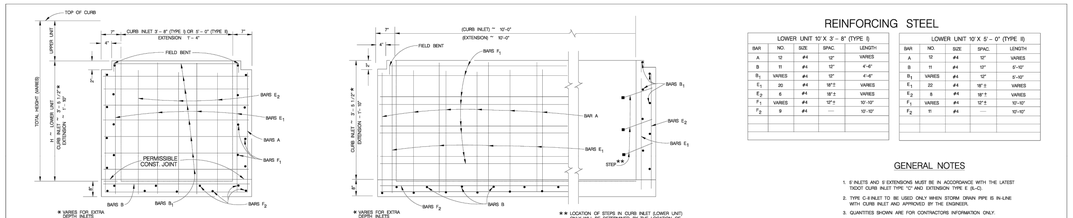
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
4/28/2025

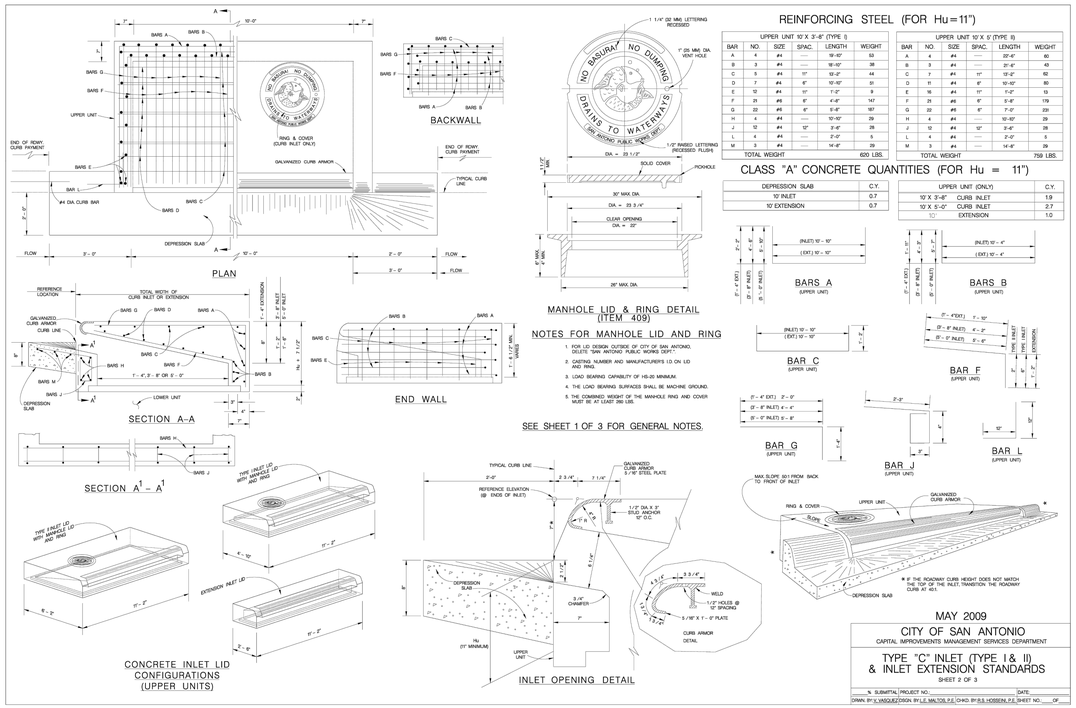
CUDE ENGINEERS
TBPEL No. 455

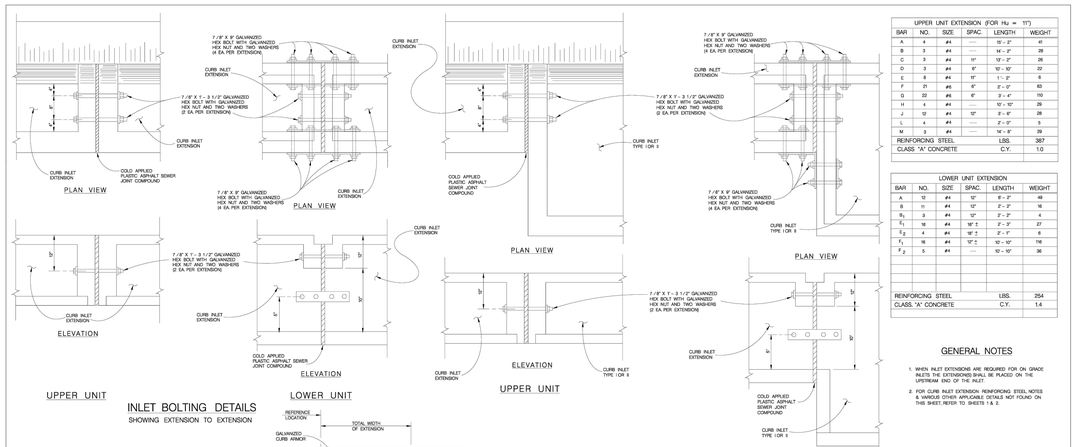
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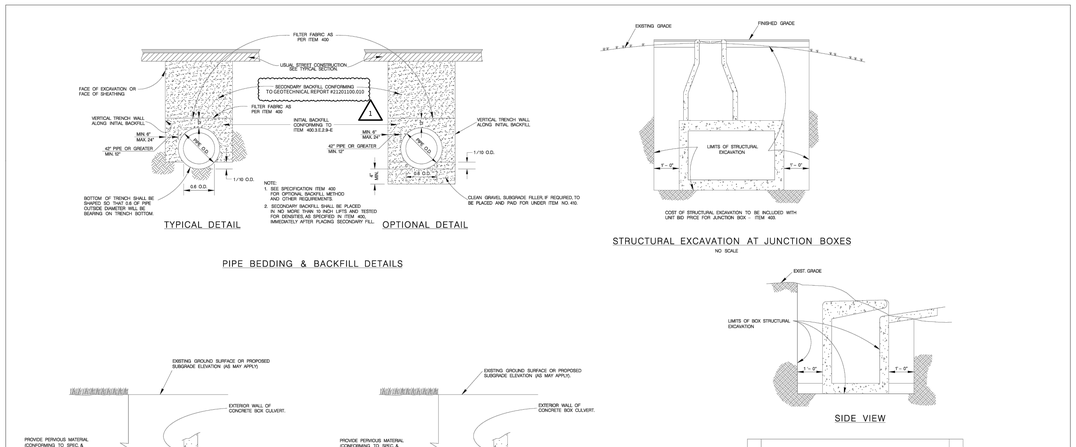
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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.









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GEORGE'S RANCH UNIT 2A

DRAINAGE DETAILS

DATE 4/15/2025

PROJECT NO. 03546.008

DRAWN BY MAS/MGM

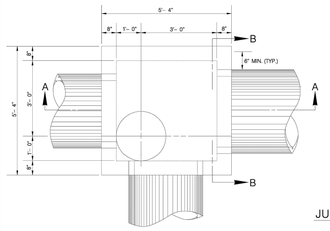
CHECKED BY KMH/WPM

REVISIONS
1. 2025-04-15 - UPDATED DETAIL
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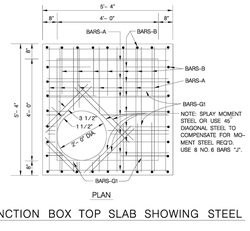
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

C6.D1

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

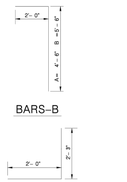


PLAN



PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



BARS-B

BARS-C

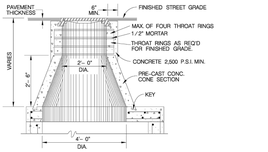
SCHEDULE FOR REINFORCING STEEL						
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	16	4	9" O.C.	5'- 1"	54
	B	32	5	8" O.C.	6'- 10"	228
	C	32	5	8" O.C.	4'- 3"	142
STRAIGHT	D	16	4	9" O.C.	5'- 1"	54
STRAIGHT	E	16	3	12" O.C.	3'-11"	24
STRAIGHT	G	16	4	12" O.C.	5'-1"	54
STRAIGHT	G_1	8	4	AS SHOWN	5'-1"	27
STRAIGHT	H	20	3	12" O.C.	4'-5"	33
STRAIGHT	J	8	6	3 1/2"	2'- 10"	34
					TOTAL	650 LBS.

A= 4'X 4'X 4'-J.B.NO.1 & 4

CLASS "A" CONCRETE– 3.43 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

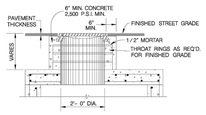
★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQD.

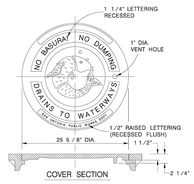
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3 /4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15. THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD-CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".



VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.



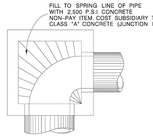


COVER SECTION

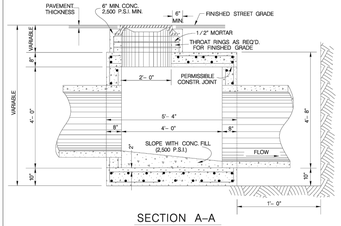
MANHOLE LID & RING DETAIL

SCALE: 1 : 16

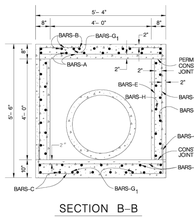
NOTES FOR MANHOLE LID AND RING.
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.



CURVED DEFLECTOR DETAIL



SECTION A–A



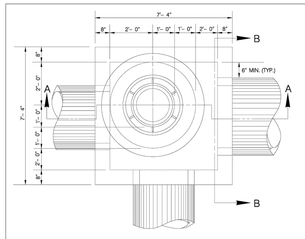
SECTION B–B

JANUARY 2005

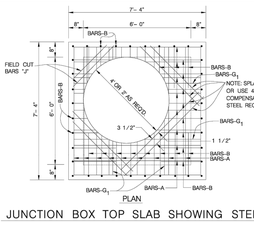
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

4'x4'x4' JUNCTION BOX STANDARDS

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



PLAN



PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



BARS-B

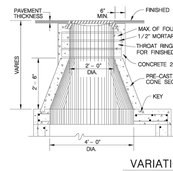
BARS-C

SCHEDULE FOR REINFORCING STEEL						
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	21	4	9" O.C.	7'- 1"	99
	B	46	5	8" O.C.	8'- 6"	408
	C	46	5	8" O.C.	5'- 3"	252
STRAIGHT	D	21	4	9" O.C.	7'- 1"	99
STRAIGHT	E	28	3	12" O.C.	7'- 1"	62
STRAIGHT	G	20	4	12" O.C.	7'- 1"	95
STRAIGHT	G_1	8	4	AS SHOWN	6'- 1"	33
STRAIGHT	H	27	3	12" O.C.	7'- 1"	72
STRAIGHT	J	8	6	3 1/2" O.C.	4'- 11"	59
					TOTAL	1,179 LBS.

CLASS "A" CONCRETE – 6.84 CU YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

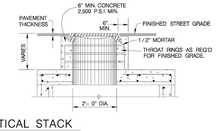
★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQ'D.

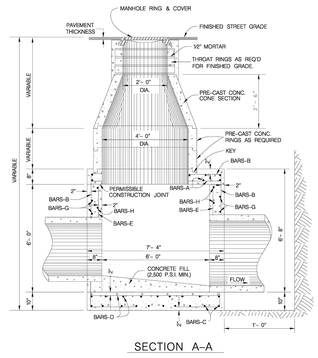
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3 /4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15. THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD-CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".



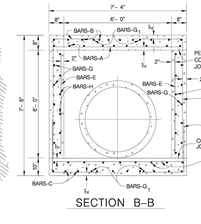
VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.

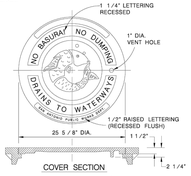




SECTION A–A



SECTION B–B

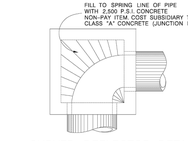


COVER SECTION

MANHOLE LID & RING DETAIL

SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING.
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.



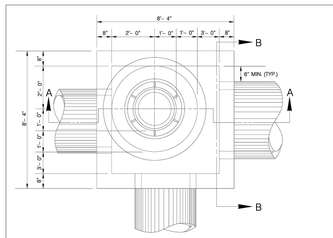
CURVED DEFLECTOR DETAIL

JANUARY 2005

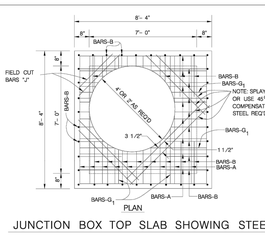
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

6'x6'x6' JUNCTION BOX STANDARDS

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



PLAN



PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



BARS-B

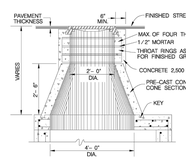
BARS-C

SCHEDULE FOR REINFORCING STEEL						
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	24	4	9" O.C.	8'- 1"	130
	B	48	5	8" O.C.	9'- 6"	476
	C	48	5	8" O.C.	4'- 3"	213
STRAIGHT	D	24	4	9" O.C.	8'- 1"	130
STRAIGHT	E	28	3	12" O.C.	6'- 11"	73
STRAIGHT	G	28	4	12" O.C.	8'- 6"	151
STRAIGHT	G_1	8	4	AS SHOWN	8'- 1"	43
STRAIGHT	H	32	3	12" O.C.	7'- 5"	89
STRAIGHT	J	8	6	3 1/2" O.C.	4'- 11"	59
					TOTAL	1,364 LBS

CLASS "A" CONCRETE – 9.16 C.U. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

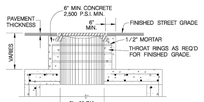
★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQD.

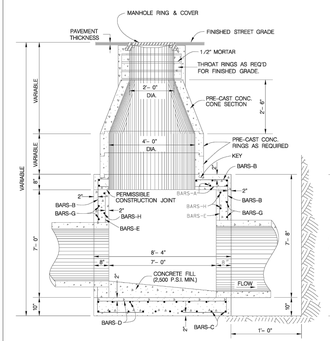
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15. THE DEFORMATION SHALL CONFORM TO ASTM A-305.
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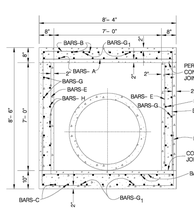
VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.





SECTION A–A



SECTION B– B

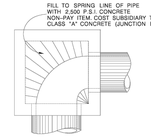


COVER SECTION

MANHOLE LID & RING DETAIL

SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING.
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.



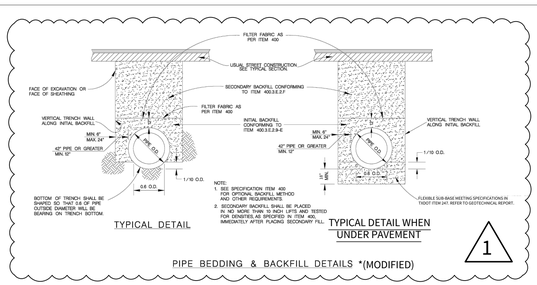
CURVED DEFLECTOR DETAIL

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

7'x7'x7' JUNCTION BOX STANDARDS

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

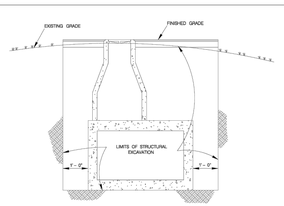


TYPICAL DETAIL

TYPICAL DETAIL WHEN UNDER PAVEMENT

1

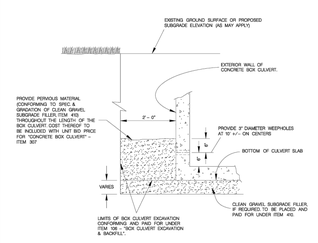
PIPE BEDDING & BACKFILL DETAILS *(MODIFIED)



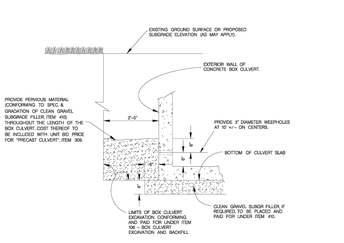
COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR JUNCTION BOX – ITEM 403.

STRUCTURAL EXCAVATION AT JUNCTION BOXES

NO SCALE

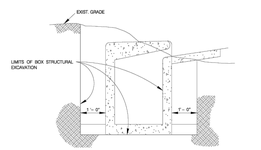


CAST–IN–PLACE BOX CULVERT

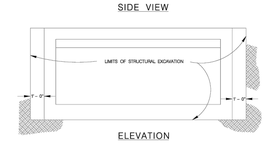


PRECAST BOX CULVERT

CONCRETE BOX CULVERT



SIDE VIEW



ELEVATION

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

STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS

NO SCALE

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

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

CUDEENGINEERS.COM

CUDE ENGINEERS — EST. 1980

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

DRAINAGE DETAILS

DATE
3/19/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-19 - UPDATED DETAILS
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS — W. PATRICK MURPHY — 115597 — LICENSED PROFESSIONAL ENGINEER — 3/24/2025

CUDE ENGINEERS
TBPEL No. 455

C6.D2

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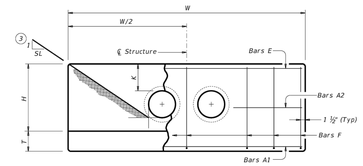
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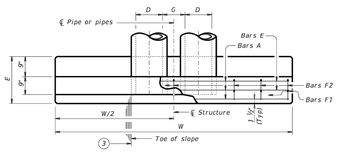
DATE:
FILE:

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

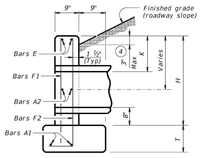
Slope	Dia of Pipe (D)	Values for One Pipe: W	Reinf (Lbs) (1)	Conc (CY) (2)	Values To Be Added for Each Add'l Pipe: W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' - 0"	122	1.1	1' - 9"	15	0.2
	15"	10' - 3"	136	1.3	2' - 2"	16	0.2
	18"	11' - 6"	163	1.5	2' - 3"	19	0.3
	21"	12' - 9"	200	1.8	3' - 1"	31	0.4
	24"	14' - 0"	217	2.1	3' - 7"	34	0.4
	27"	15' - 3"	254	2.4	3' - 11"	37	0.5
	30"	16' - 6"	272	2.7	4' - 4"	40	0.6
	33"	17' - 9"	314	3.1	4' - 8"	43	0.6
	36"	19' - 0"	371	3.9	5' - 1"	46	0.8
	42"	21' - 6"	442	4.9	5' - 10"	52	1.0
	48"	25' - 0"	569	6.4	6' - 7"	59	1.3
	54"	27' - 6"	701	7.5	7' - 6"	82	1.6
	60"	30' - 0"	794	8.8	8' - 3"	90	1.8
	66"	32' - 6"	894	10.2	8' - 9"	96	2.0
	72"	35' - 0"	1,055	11.7	9' - 4"	103	2.3
3:1	12"	13' - 0"	173	1.6	1' - 9"	14	0.2
	15"	14' - 9"	193	1.9	2' - 2"	17	0.2
	18"	16' - 6"	228	2.2	2' - 8"	19	0.3
	21"	18' - 3"	299	2.6	3' - 1"	31	0.4
	24"	20' - 0"	323	3.0	3' - 7"	33	0.4
	27"	21' - 9"	371	3.5	3' - 11"	37	0.5
	30"	23' - 6"	415	4.0	4' - 4"	40	0.5
	33"	25' - 3"	469	4.6	4' - 8"	43	0.6
	36"	27' - 0"	556	5.7	5' - 1"	46	0.8
	42"	30' - 6"	675	7.1	5' - 10"	52	1.0
	48"	35' - 6"	837	9.2	6' - 7"	59	1.3
	54"	39' - 0"	1,015	11.0	7' - 6"	84	1.6
	60"	42' - 6"	1,171	12.9	8' - 3"	91	1.8
	66"	46' - 0"	1,298	14.9	8' - 9"	98	2.0
	72"	49' - 6"	1,561	17.1	9' - 4"	103	2.3
4:1	12"	17' - 0"	229	2.0	1' - 9"	15	0.2
	15"	19' - 3"	266	2.4	2' - 2"	17	0.2
	18"	21' - 6"	308	2.9	2' - 8"	19	0.3
	21"	23' - 9"	382	3.5	3' - 1"	31	0.3
	24"	26' - 0"	430	3.9	3' - 7"	34	0.4
	27"	28' - 3"	486	4.7	3' - 11"	37	0.5
	30"	30' - 6"	539	5.2	4' - 4"	40	0.6
	33"	32' - 9"	603	6.0	4' - 8"	42	0.6
	36"	35' - 0"	738	7.5	5' - 1"	47	0.8
	42"	39' - 6"	881	9.3	5' - 10"	52	1.0
	48"	46' - 0"	1,102	12.1	6' - 7"	61	1.3
	54"	50' - 6"	1,364	14.4	7' - 6"	84	1.6
	60"	55' - 0"	1,547	16.9	8' - 3"	91	1.8
	66"	59' - 6"	1,741	19.5	8' - 9"	98	2.0
	72"	64' - 0"	2,077	22.4	9' - 4"	102	2.3
6:1	12"	25' - 0"	336	3.0	1' - 9"	14	0.2
	15"	28' - 3"	384	3.6	2' - 2"	17	0.2
	18"	31' - 6"	452	4.2	2' - 8"	19	0.3
	21"	34' - 9"	581	5.1	3' - 1"	31	0.4
	24"	38' - 0"	644	5.8	3' - 7"	34	0.4
	27"	41' - 3"	731	6.9	3' - 11"	37	0.5
	30"	44' - 6"	807	7.7	4' - 4"	39	0.6
	33"	47' - 9"	912	8.9	4' - 8"	44	0.6
	36"	51' - 0"	1,108	11.0	5' - 1"	48	0.8
	42"	57' - 6"	1,318	13.7	5' - 10"	54	1.0
	48"	67' - 0"	1,682	17.9	6' - 7"	59	1.3
	54"	73' - 6"	2,072	21.3	7' - 6"	83	1.6
	60"	80' - 0"	2,351	24.9	8' - 3"	89	1.8
	66"	86' - 6"	2,643	28.9	8' - 9"	96	2.0
	72"	93' - 0"	3,121	33.1	9' - 4"	101	2.3



ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE



BARS F2

(1) Total quantities include one 3'-1" lap for bars over 60' in length.

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

(3) Indicated slope is perpendicular to centerline pipe or pipes.

(4) 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.

(5) Dimensions shown are usual and maximum.

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

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (5)	H	T	E
12"	0' - 9"	1' - 0"	2' - 8"	0' - 9"	1' - 9"
15"	0' - 11"	1' - 0"	2' - 11"	0' - 9"	1' - 9"
18"	1' - 2"	1' - 0"	3' - 2"	0' - 9"	1' - 9"
21"	1' - 4"	1' - 0"	3' - 5"	0' - 9"	2' - 0"
24"	1' - 7"	1' - 0"	3' - 8"	0' - 9"	2' - 0"
27"	1' - 8"	1' - 0"	3' - 11"	0' - 9"	2' - 3"
30"	1' - 10"	1' - 0"	4' - 2"	0' - 9"	2' - 3"
33"	1' - 11"	1' - 0"	4' - 5"	0' - 9"	2' - 6"
36"	2' - 1"	1' - 0"	4' - 8"	1' - 0"	2' - 6"
42"	2' - 4"	1' - 0"	5' - 2"	1' - 0"	2' - 9"
48"	2' - 7"	1' - 3"	5' - 11"	1' - 0"	3' - 0"
54"	3' - 0"	1' - 3"	6' - 5"	1' - 0"	3' - 3"
60"	3' - 3"	1' - 3"	6' - 11"	1' - 0"	3' - 6"
66"	3' - 3"	1' - 3"	7' - 5"	1' - 0"	3' - 9"
72"	3' - 4"	1' - 3"	7' - 11"	1' - 0"	4' - 0"

TABLE OF REINFORCING STEEL (6)

Bar	Size	Spa	No.
A1	#5	–	2
A2	#5	1' - 6"	–
E	#5	–	2
F	#5	1' - 0"	–

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.

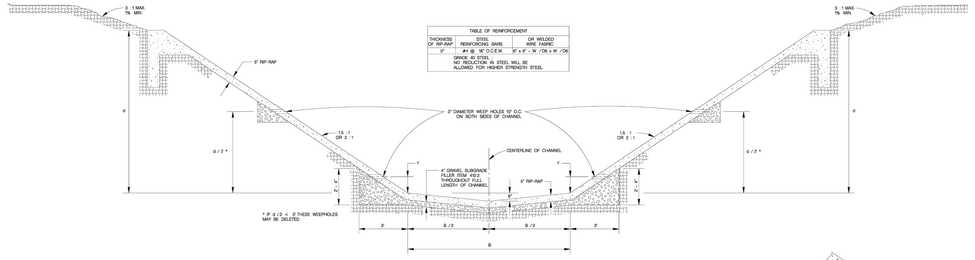
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation | Bridge Division Standard

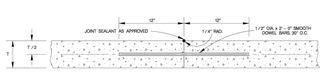
CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

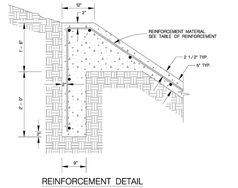
FILE: CD-CH-PW0-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.



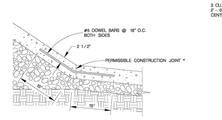
TYPICAL CHANNEL SECTION LOOKING DOWNSTREAM
SCALE: 1" = 4'



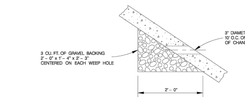
CONVERSE CONTRACTION OR CONSTRUCTION JOINT
SCALE: 1" = 1'



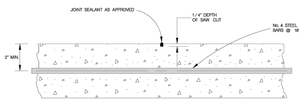
REINFORCEMENT DETAIL TOE-DOWN
SCALE: 1" = 3'



ALL SECTIONS
SCALE: 1" = 3'



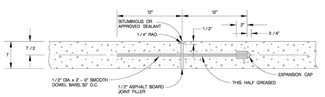
WEEP HOLES DETAILS FOR SIDE SLOPES
SCALE: 1" = 2'



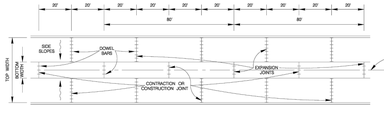
"SAW CUT" CONTRACTION JOINT
SCALE: 1" = 6"

GENERAL NOTES

1. CONCRETE FOR CHANNEL RIP-RAP SHALL BE CLASS "A" 3000 P.S.I.
2. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN.
3. ALL REINFORCEMENT STEEL SHALL MEET ASTM DESIGNATIONS AS CALLED FOR IN THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
4. NEW RIP-RAP SHOULD BE ATTACHED TO EXISTING RIP-RAP BY NO. 4 BARS DOWELED 6" INTO EXISTING RIP-RAP. THESE BARS ARE TO BE SPACED 18" O.C. AND HAVE A LENGTH OF 18".



TRANSVERSE EXPANSION JOINT
SCALE: 1" = 1'



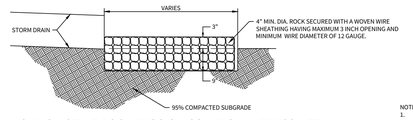
EXPANSION AND CONTRACTION JOINTS FOR CONCRETE CHANNEL LINING
SCALE: 1" = 40'

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

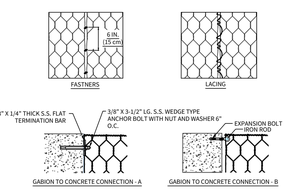
TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS

% SUBMITTAL | PROJECT NO.: | DATE:
DRAWN BY: X. VASQUEZ | DSIGN BY: | DHKD BY: | SHEET NO.: | OF

1



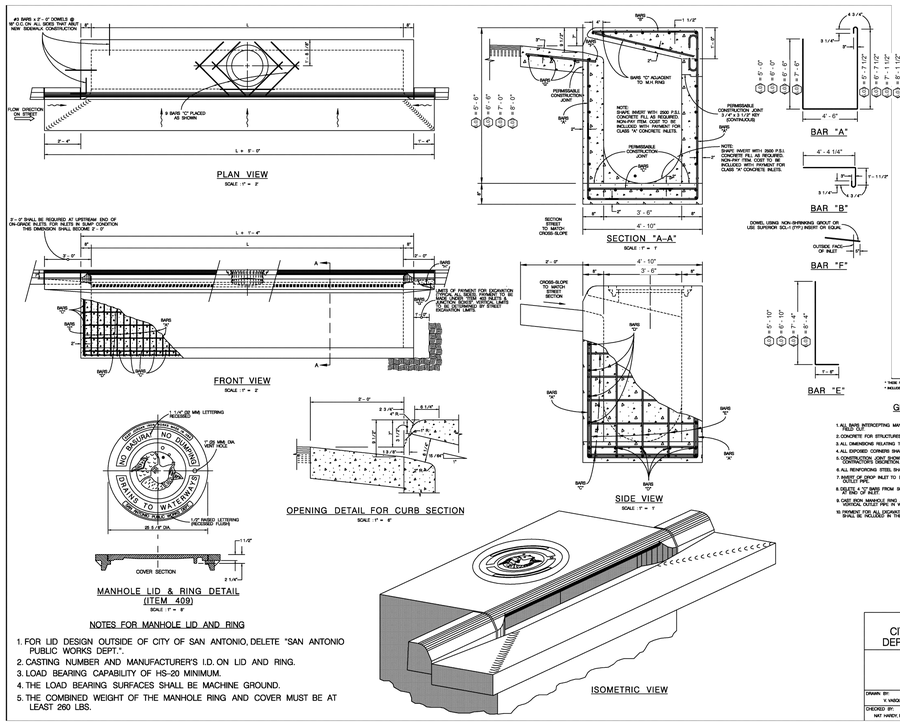
GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL
N.T.S.



NOTES:
1. EDGES ARE JOINED TOGETHER, USING THE APPROPRIATE LACING TECHNIQUES OR FASTENERS.
   LACING: CONTINUOUS WIRE LOOPED TIGHTLY AROUND EVERY MESH OPENING, ALTERNATING SINGLE AND DOUBLE LOOPS
   FASTENERS: USE A PNEUMATIC OR HAND POWER TOOL, EMPLOYING SPENAX "C" SHAPED FASTENERS (FIG. 6.3 FOR CLOSURE AND STRENGTH, THE RECOMMENDED SPACING IS EVERY MESH OPENING, NOT TO EXCEED 6 INCHES (150 MM).
2. GABION MATRESS MESH TO ASTM A975.
3. GABIONS USED SHALL BE ZINC.
4. BACKFILL COMPACTION 95% TO ASTM D698/D1557
5. GABION FILL TO ASTM D6711:
   6.1. ROCK SIZE 4" - 12", D50 = 6"
   6.2. ROCK UNIT WEIGHT 157 PCF MIN.
   6.3. VOIDS 30% MAX.
6. TYPE 2 FILTER FABRIC IN ACCORDANCE WITH DMS-6200, TO BE USED BELOW GABION MATTRESS AT ALL LOCATIONS. SIDES AND TOP OF MATTRESS TO BE FREE OF FILTER FABRIC.
7. GABION WIRE SHALL MEET THE REQUIREMENTS OF 12 WIRE GAUGE FOR GABION MATTRESS.



WEATHERED CONCRETE RIP-RAP FINISH



NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE TIED TOP.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 / 4".
5. CONSTRUCTION JOINTS AT CURB AND GUTTER, AS SHOWN, & SIDEWALK, OR AT THE CONTRACTOR'S OPTION, AT EACH LOCATION OF SIDEWALK STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M.A-615, GRADE 60 REQUIREMENTS.
7. BASKET OF CROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE A "D" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. CARE SHALL BE TAKEN IN THE PLACING AND CURING OF CONCRETE IN CURB AND GUTTER FOR SIDEWALK CONSTRUCTION ADJACENT TO THE INLET.
10. DIMENSIONS OF CURB AND GUTTER, REINFORCING STEEL BEND AND CURVE SHALL BE ADJUSTED IN THE FIELD TO FIT THE ACTUAL CURB RADIUS WHERE NECESSARY.

* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC PIPE
** INCLUDES CONCRETE SLOPE FOR ON GRADE INLET, INCLUD BY (2) FOR INLETS IN SUMP.

(4) INLET SIZE — Reinforcing Steel Schedule

L = 25'-0"
D = 5'-6"

INLET(S): A-2

Bar	No.	Size	Spa.	Length	Weight (lbs.)
A	63	4	5" o.c.	15' - 9 1/2"	664.58
B	63	4	5"	6' - 7 3/4"	279.68
C	58	4	9"	4' - 6"	174.35
D	25	4	10"	26' - 1"	435.59
E	12	4	10 1/2"	7' - 4"	58.78
F	27	5	12"	2' - 3"	63.36
G	3	4	12"	29' - 8"	59.45
H	5	5	12"	1' - 8"	8.69

*Concrete Total = 14.34 c.y. Manhole Casting = 260 lbs. Steel Total = 1744.49 lbs.

(4) INLET SIZE — Reinforcing Steel Schedule

L = 25'-0"
D = 6'-6"

INLET(S): B-6

Bar	No.	Size	Spa.	Length	Weight (lbs.)
A	63	4	5" o.c.	17' - 9 1/2"	748.74
B	63	4	5"	7' - 7 3/4"	321.77
C	60	4	9"	4' - 6"	180.36
D	27	4	10"	26' - 1"	470.44
E	12	4	10 1/2"	8' - 4"	66.80
F	27	5	12"	2' - 3"	63.36
G	3	4	12"	29' - 8"	59.45
H	5	5	12"	1' - 8"	8.69

*Concrete Total = 15.82 c.y. Manhole Casting = 260 lbs. Steel Total = 1919.62 lbs.

(4) INLET SIZE — Reinforcing Steel Schedule

L = 25'-0"
D = 7'-0"

INLET(S): C-1 C-2

Bar	No.	Size	Spa.	Length	Weight (lbs.)
A	63	4	5" o.c.	18' - 9 1/2"	790.83
B	63	4	5"	8' - 1 3/4"	342.81
C	61	4	9"	4' - 6"	183.37
D	28	4	10"	26' - 1"	487.86
E	12	4	10 1/2"	8' - 10"	70.81
F	27	5	12"	2' - 3"	63.36
G	3	4	12"	29' - 8"	59.45
H	5	5	12"	1' - 8"	8.69

*Concrete Total = 16.55 c.y. Manhole Casting = 260 lbs. Steel Total = 2007.18 lbs.

(4) INLET SIZE — Reinforcing Steel Schedule

L = 30'-0"
D = 8'-0"

INLET(S): A-1

Bar	No.	Size	Spa.	Length	Weight (lbs.)
A	75	4	5" o.c.	20' - 9 1/2"	1041.66
B	75	4	5"	9' - 1 3/4"	458.21
C	71	4	9"	4' - 6"	213.43
D	29	4	10"	31' - 1"	602.15
E	12	4	10 1/2"	9' - 10"	78.82
F	32	5	12"	2' - 3"	75.10
G	3	4	12"	34' - 8"	69.47
H	5	5	12"	1' - 8"	8.69

*Concrete Total = 21.22 c.y. Manhole Casting = 260 lbs. Steel Total = 2547.52 lbs.

JANUARY 2005
STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

TYPE "C" INLET DETAILS

DRAWN BY: X. VASQUEZ	DATE	REVISIONS	SCALE:	SEE ABOVE
CHECKED BY: MAT HARDY, P.E.			DATE:	
			SHEET:	OF

HARRIS COUNTY FLOOD CONTROL DISTRICT

Flap Gate Spec

SECTION 02633

FLAP GATES

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for providing and installing flap gates to prevent backflow.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 - Measurement and payment for unit price procedures.

1.3 SUBMITTALS

A. Refer to Section 01330 - Submittal Procedures.
B. Provide fabrication drawings for each flap gate to be installed.
C. Provide descriptions of methods for delivery, storage, and handling to prevent distortion or damage.
D. Provide field installation drawings with a detailed description of field installation procedures.

LAN Incorporated HCFCD Backflow Preventer Guidance and Vendor Info into Spec 02633

PART 2 – PRODUCTS

2.1 FLAP GATE FRAME

A. All structural components shall have adequate strength to prevent distortion during normal handling, during installation, and while in service.
B. Frame design shall be of the flanged back type suitable for mounting directly to a wall with stainless steel anchor bolts and grouted in place.
C. The angle of the flap when seated against the frame shall be between 3 degrees and 10 degrees from the vertical.

01/31/2022
Lockwood, Andrews and Newman, Inc.
Project ID: P500-06-00-E006 | 02633 - 1/3 | Flap Gates

2.2 FLAP GATE HINGE ARMS

A. Hinge arms shall be constructed of HDPE (300 grade).
B. Dual hinge arms shall be provided on all flap gates in excess of 18 inches wide.
C. The hinge pin shall be of ample section to safely withstand the forces created by operation of the gate under the design parameters shown on the plan and be constructed of solid stainless-steel rod.
D. The hinge pin bushing shall be UHMW or bronze.
E. Links connecting the cover and pivot lugs shall be designed to prevent the cover from rotating sufficiently to become wedged in the open position.

2.3 FLAP GATE

A. Provide wall mounted HDPE (300 grade) flap gates.
B. The flap gate shall have an integral lifting eye for manual operation.
C. All fasteners shall be of ample section to safely withstand the forces created by operation of the gate under the design parameters shown on the Plans.
D. Provide flap gates designed to operate within the design seating head shown on the Plans.

2.4 FLAP GATE SEALS

A. All flap gates shall be provided with a seal system to restrict leakage in accordance with the requirements listed in this specification.
B. A continuous resilient seal shall be mounted to the seating surface to restrict leakage. The seal system shall be durable and shall be designed to accommodate frequent operation without loosening or suffering damage.
C. The seals shall be mounted so as not to obstruct the water way opening.

FLAP GATE SPECIFICATION

CUDEENGINEERS.COM

CUDE ENGINEERS — EST. 1980

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

DRAINAGE DETAILS

DATE
3/19/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS
1. 2025-03-19 - UPDATED DETAILS
2.
3.
4.
5.
6.
7.
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9.

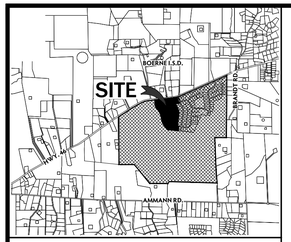
STATE OF TEXAS — W. PATRICK MURPHY — 111597 — LICENSED PROFESSIONAL ENGINEER
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

C6.D3

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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

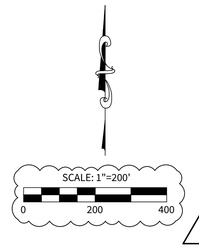


LOCATION MAP N.T.S.

DEVELOPER:

THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322





1

CUDEENGINEERS.COM

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

STREET INDEX SHEET

DATE
3/18/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-18 - UPDATE SCALE
2.
3.
4.
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7.
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

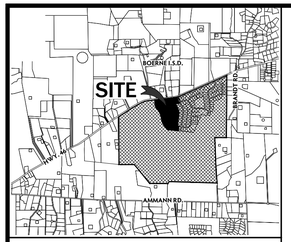
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

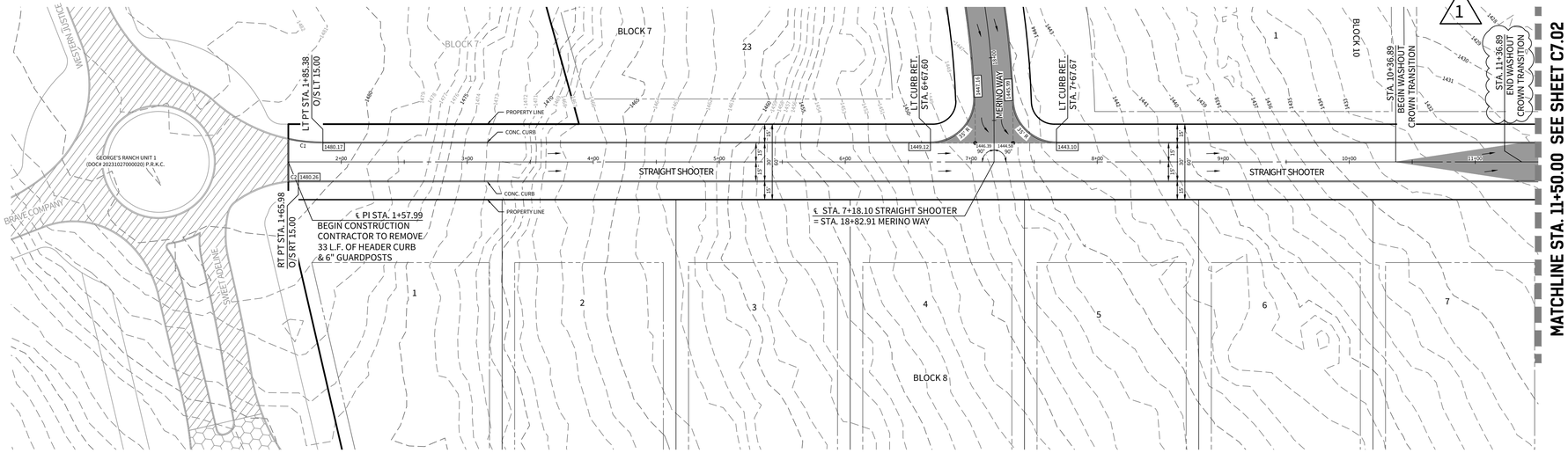
C7.00

P:\03546\Docs\2-Design\4-Plans\C7.00_STREET INDEX Sheet.dwg, 2025/03/18 9:50pm, Mike Abela

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322



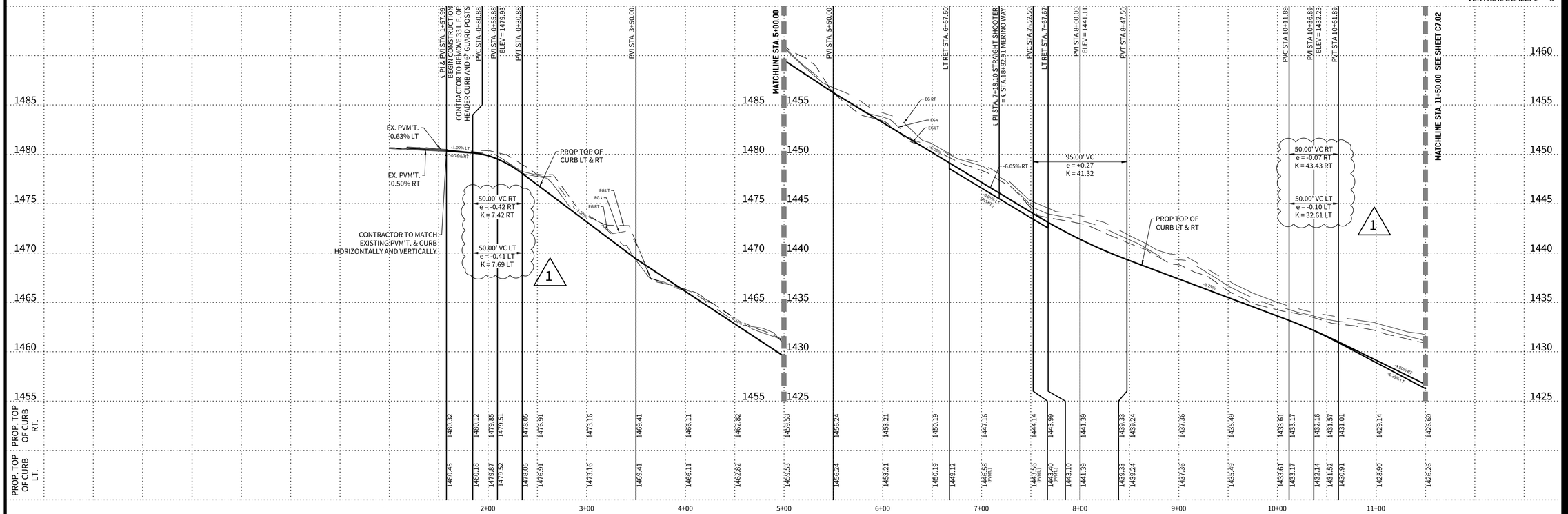
CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	27.60'	130.00'	12°09'56"	S89° 28' 05"W	27.55'
C2	8.00'	85.00'	5°23'30"	N80° 41' 24"E	8.00'

STRAIGHT SHOOTER

STA. 1+57.99 TO STA. 11+50.00

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- DIRECTION OF FLOW

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



REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

CUDEENGINEERS.COM
CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

STREET PLAN & PROFILE - STRAIGHT SHOOTER

DATE
3/18/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

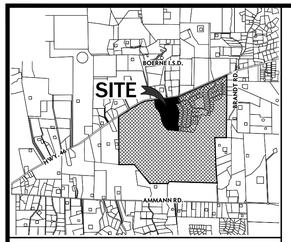
CHECKED BY
KMH/WPM

REVISIONS
1. 2025-03-18 - ADDED VERICAL CURVES AND REVISED WASHOUT CROWN TRANSITION
2.
3.
4.
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025
CUDE ENGINEERS
TBPEL No. 455

C7.01

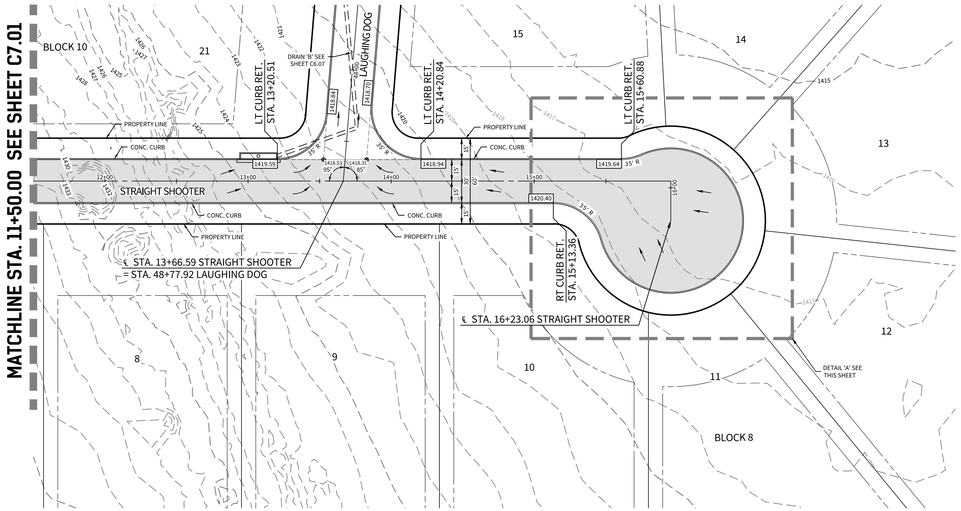
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LOCATION MAP N.T.S.

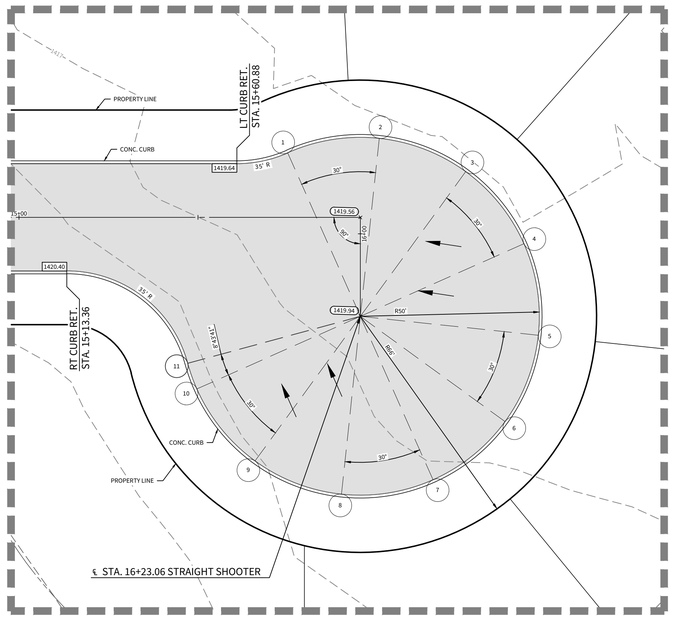
DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

SCALE: 1"=50'
0 50 100



STRAIGHT SHOOTER CDS	
POINT	TOP OF CURB ELEVATION
1	1419.74
2	1419.92
3	1420.11
4	1420.29
5	1420.47
6	1420.66
7	1420.84
8	1421.02
9	1420.96
10	1420.77
11	1420.72

1



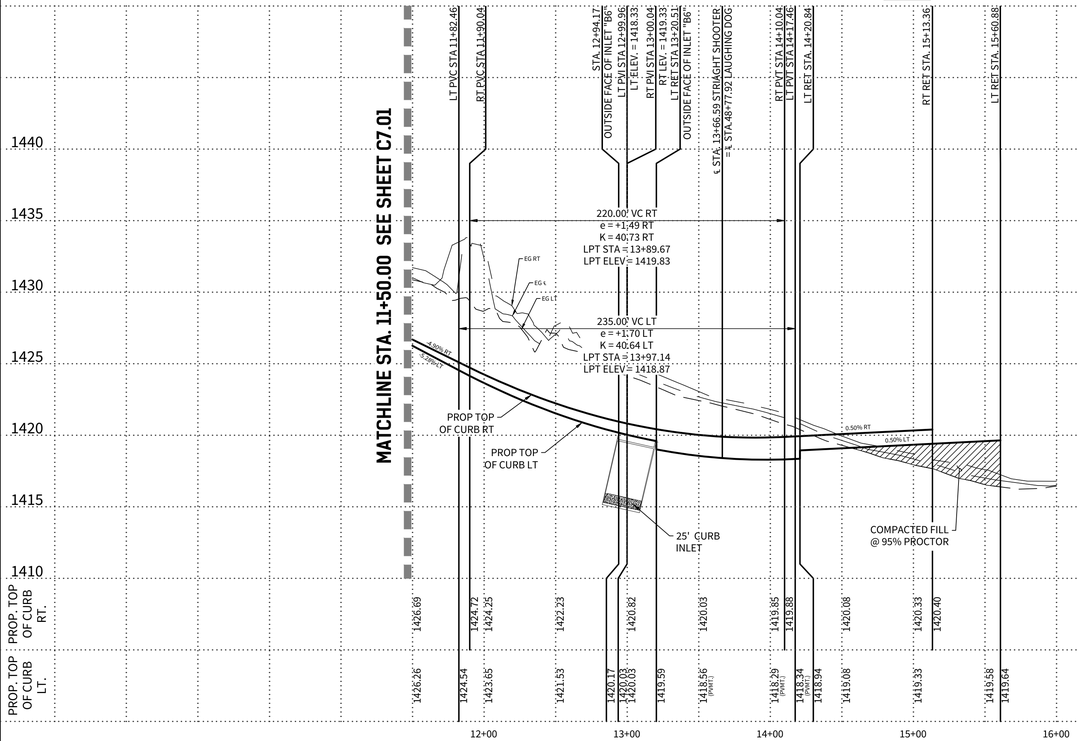
DETAIL 'A'
SCALE : 1" = 20'

STRAIGHT SHOOTER
STA. 11+50.00 TO STA. 16+23.06

1

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- DIRECTION OF FLOW

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



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GEORGE'S RANCH UNIT 2A

STREET PLAN & PROFILE - STRAIGHT SHOOTER

DATE
3/18/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

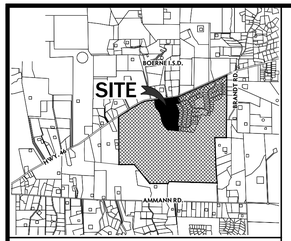
REVISIONS
1. 2025-03-18 - UPDATED ELEVATIONS, STATIONS
2.
3.
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8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

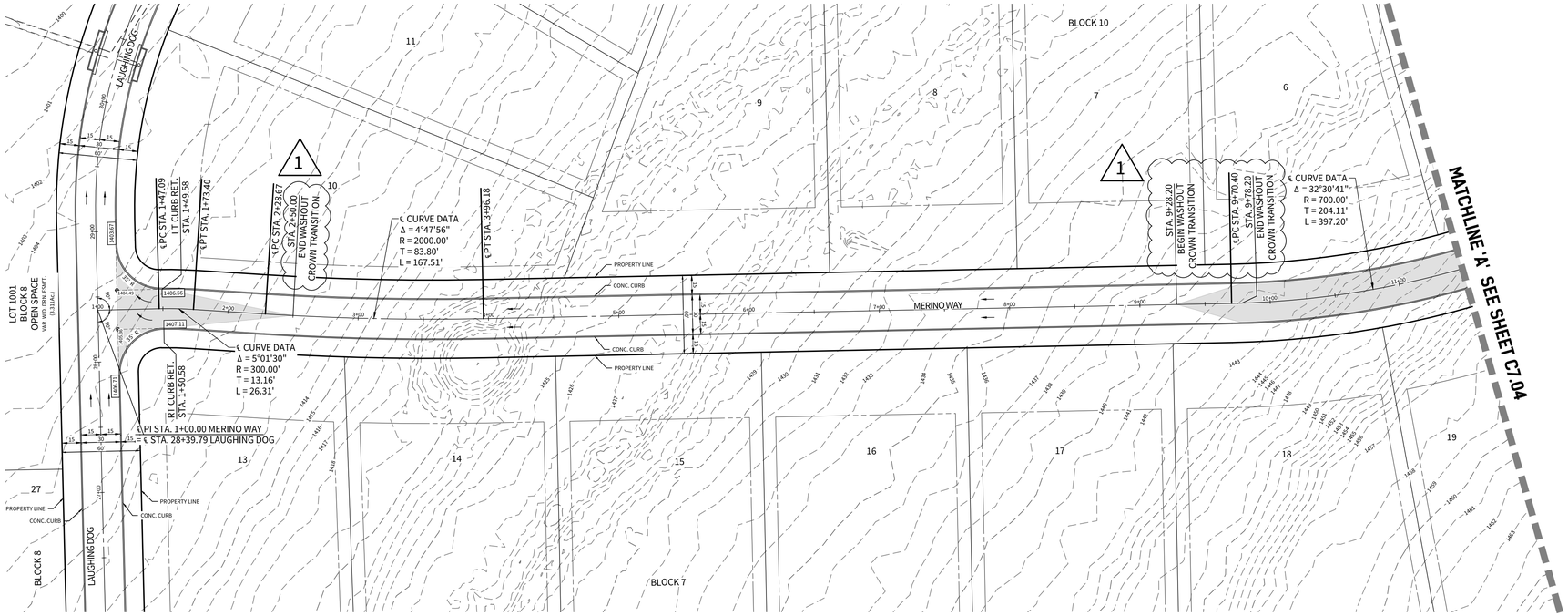
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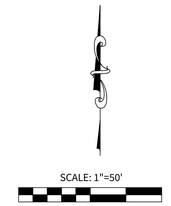
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP N.T.S.

DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322



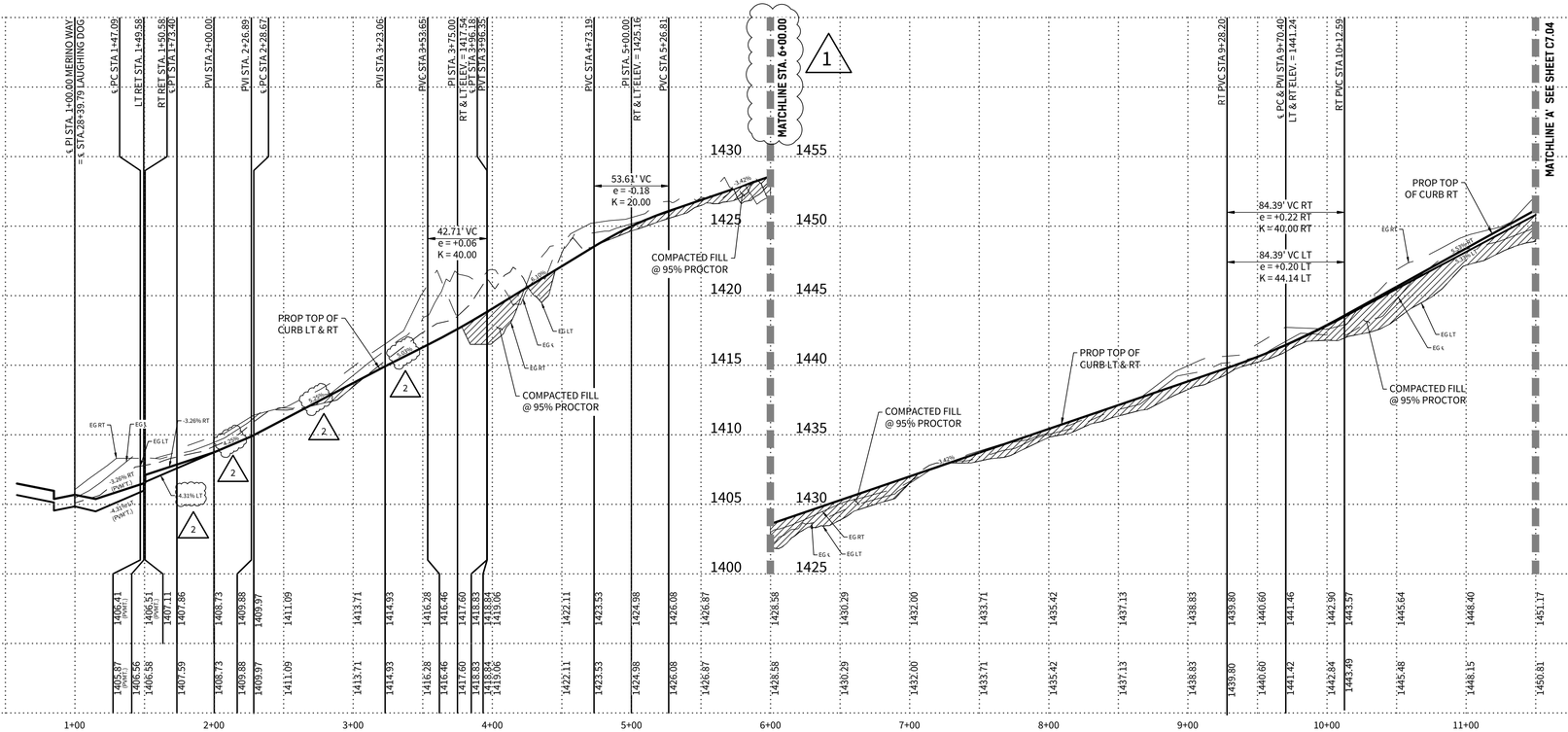


MERINO WAY

STA. 1+00.00 TO STA. 11+50.00

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- DIRECTION OF FLOW

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



REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

CUDEENGINEERS.COM
CUDE ENGINEERS EST. 1980
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

GEORGE'S RANCH UNIT 2A

STREET PLAN & PROFILE - MERINO WAY

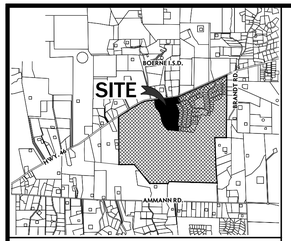
DATE 4/15/2025
PROJECT NO. 03546.008
DRAWN BY MAS/MGM
CHECKED BY KMH/WPM

REVISIONS
1. 2025-03-19 - ADDED MATCHLINE AND WASHOUT CROWN LABELS
2. 2025-04-14 - REVISED STREET SLOPES
3.
4.
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

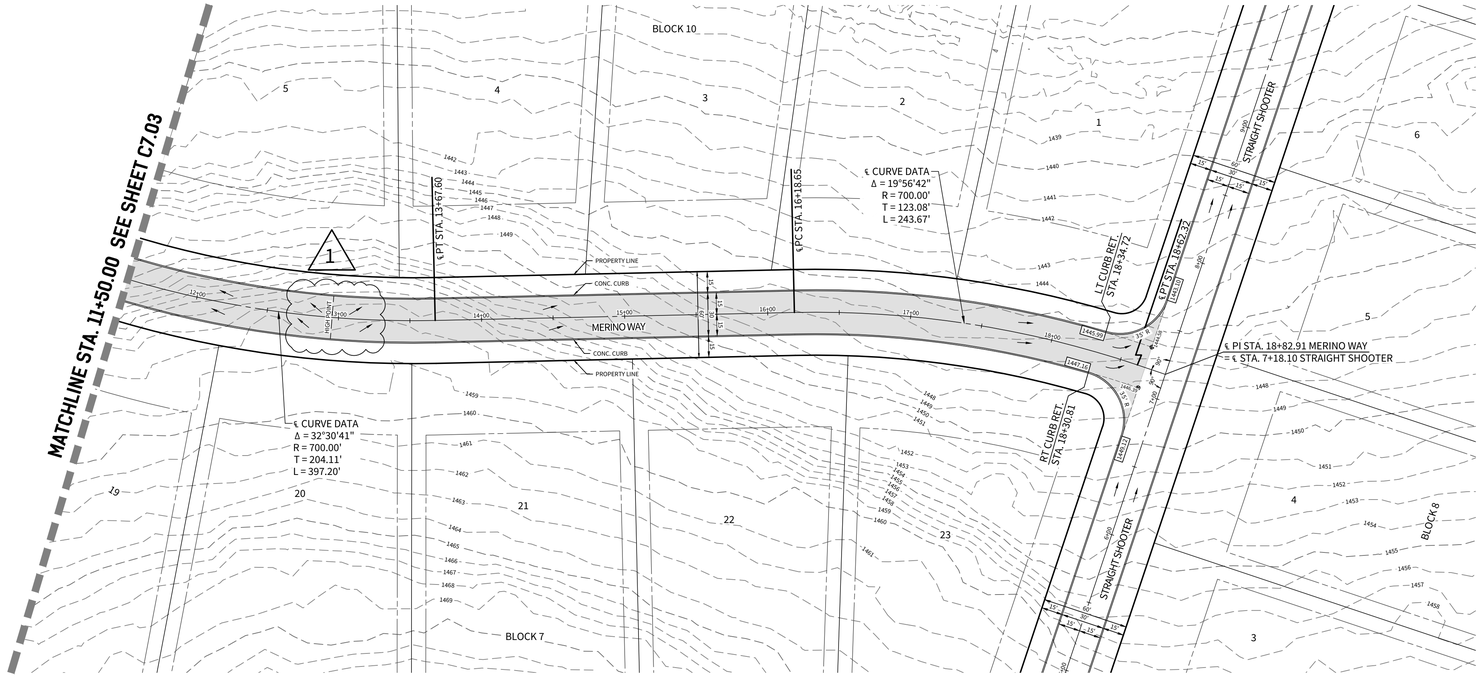
C7.03

P:\03546\000\3.ENGR\Plans\C7.03_STP.dwg, 2025/04/28 8:47 am, kmurphy



LOCATION MAP N.T.S.

DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322



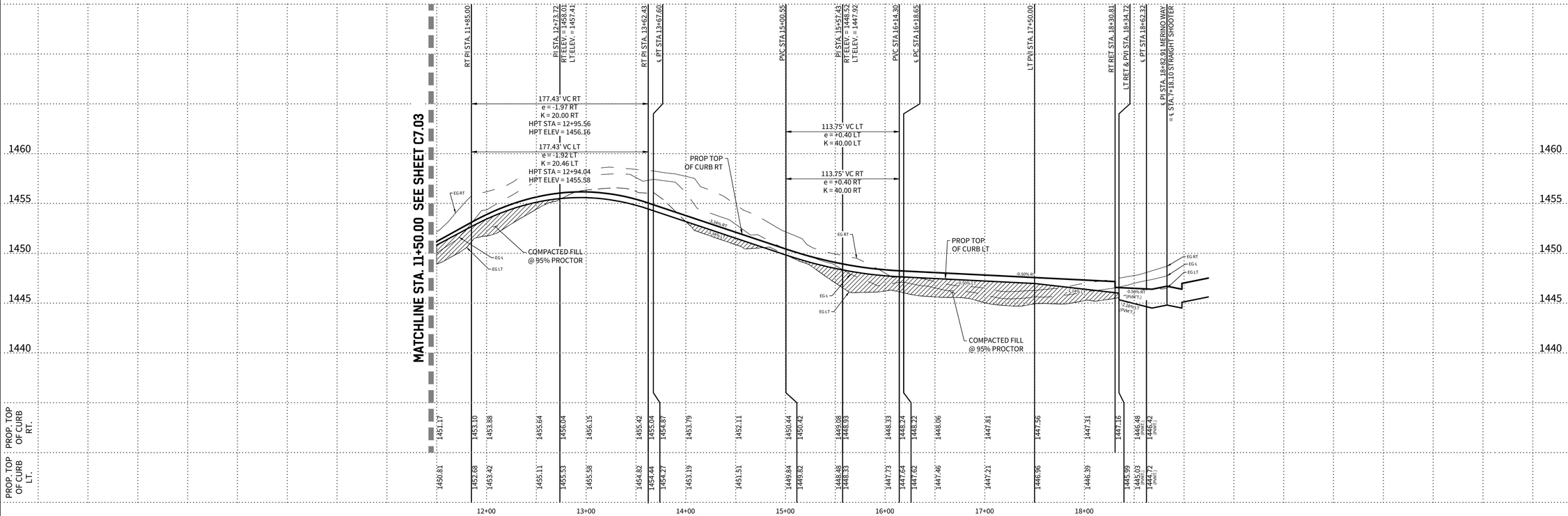
SCALE: 1"=50'
0 50 100

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- DIRECTION OF FLOW

MERINO WAY

STA. 11.50.00 TO STA. 18+82.91

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



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GEORGE'S RANCH UNIT 2A

STREET PLAN & PROFILE - MERINO WAY

DATE
3/18/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

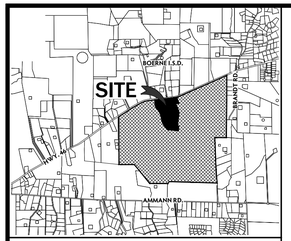
REVISIONS
1. 2025-03-19 - UPDATED FLOW ARROWS
2.
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

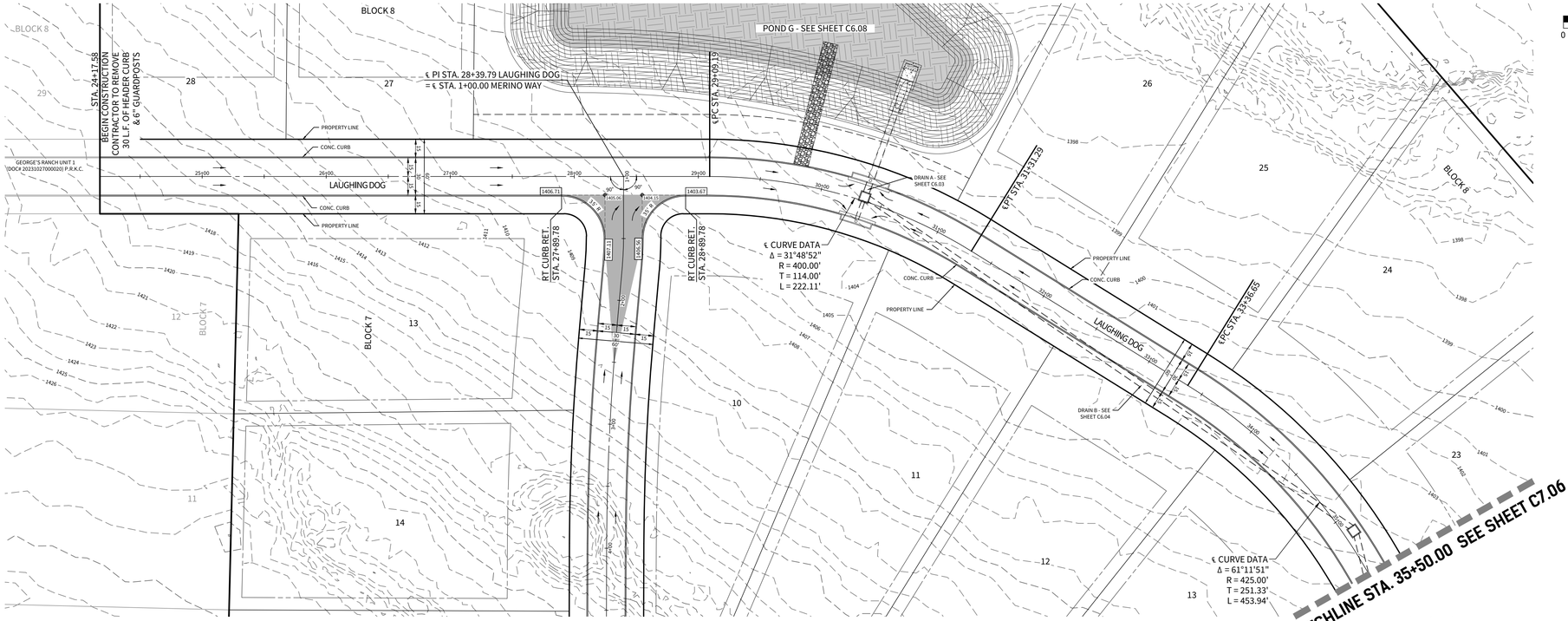
C7.04

REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP N.T.S.

DEVELOPER:
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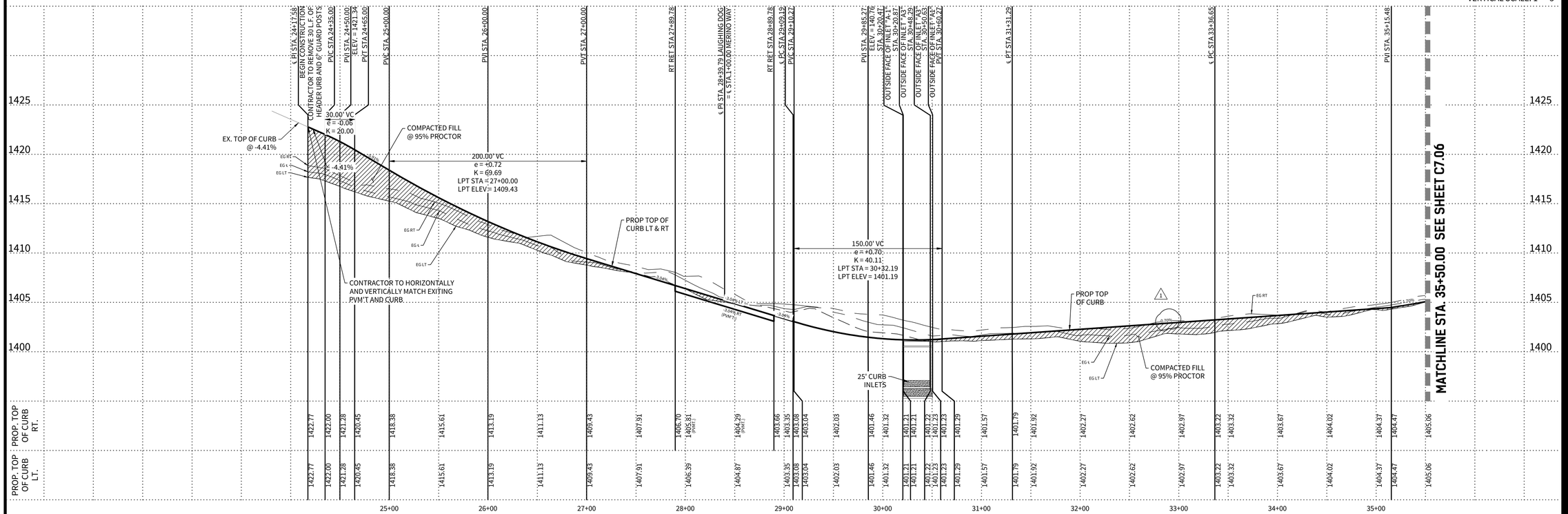
SCALE: 1"=50'
0 50 100

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- DIRECTION OF FLOW

LAUGHING DOG

STA. 24+17.58 TO STA. 35+50.00

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



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GEORGE'S RANCH UNIT 2A

STREET PLAN & PROFILE - LAUGHING DOG

DATE
3/24/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

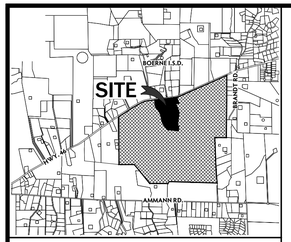
CHECKED BY
KMH/WPM

REVISIONS
1. 04/28/2025 - UPDATE SLOPE
2.
3.
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
4/28/2025
CUDE ENGINEERS
TBPEL No. 455

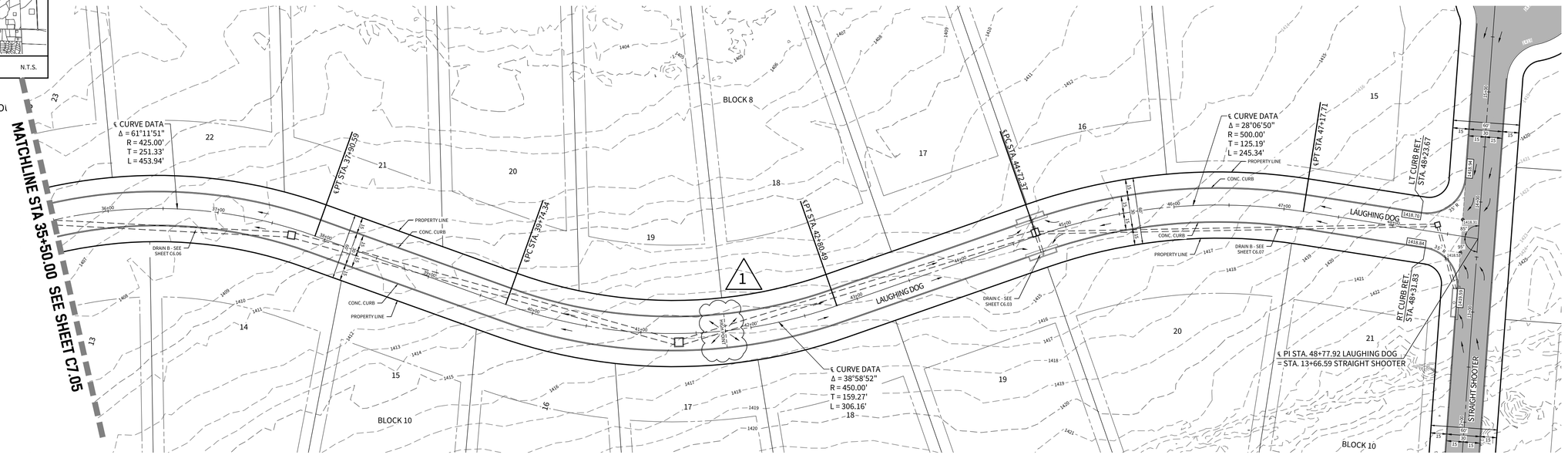
C7.05

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LOCATION MAP N.T.S.

DEVELOPER:
THE LOOKOUT DEVELOPMENT GROU
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322

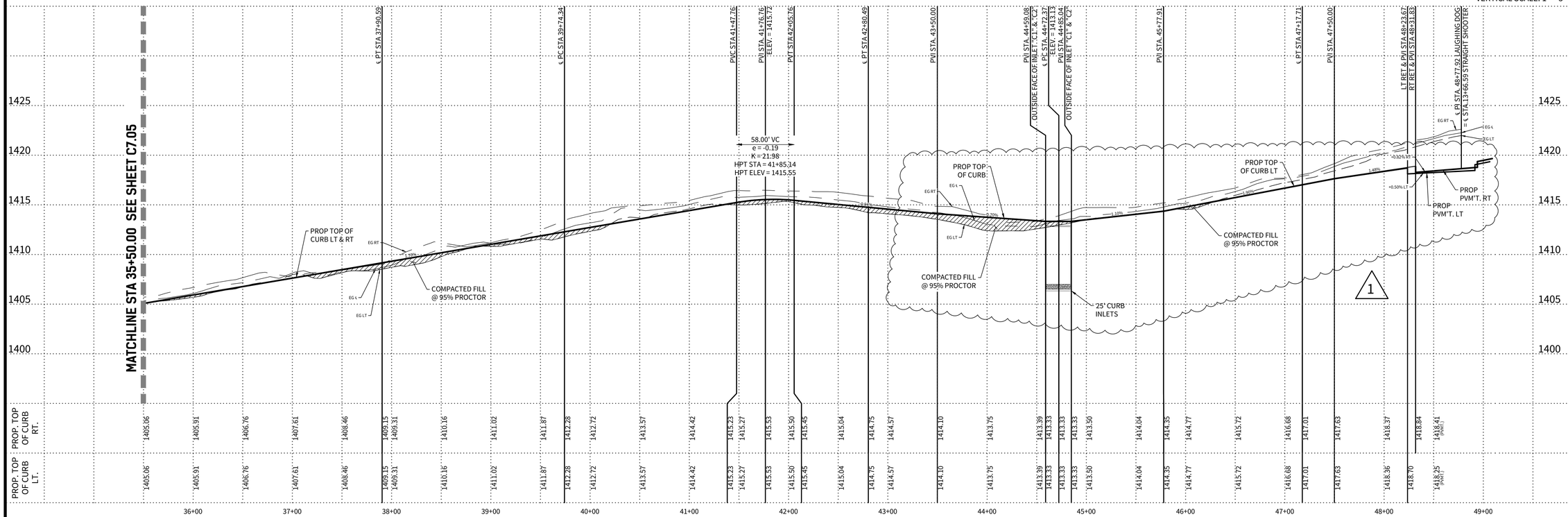


- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- DIRECTION OF FLOW

LAUGHING DOG

STA. 35+50.00TO STA. 48+77.92

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



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EST. 1980 CUDE ENGINEERS
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GEORGE'S RANCH UNIT 2A

STREET PLAN & PROFILE - LAUGHING DOG

DATE
3/24/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS
1. 2025-03-19 - UPDATE FLOW ARROWS AND PVIs
2.
3.
4.
5.
6.
7.
8.
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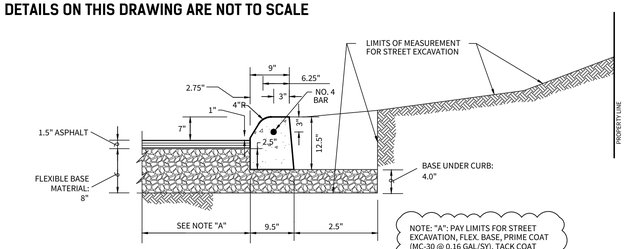
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/24/2025

CUDE ENGINEERS
TBPEL No. 455

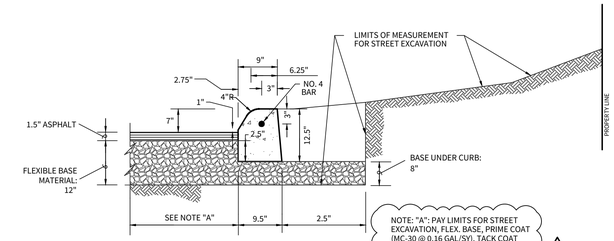
C7.06

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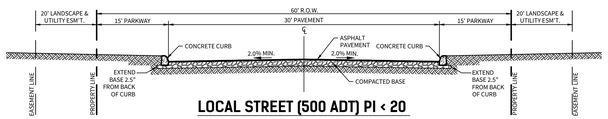
DETAILS ON THIS DRAWING ARE NOT TO SCALE



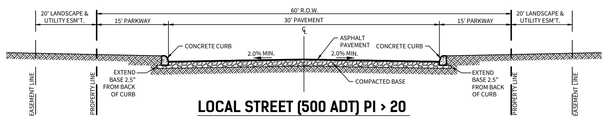
LOCAL STREET (500 ADT) PI < 20



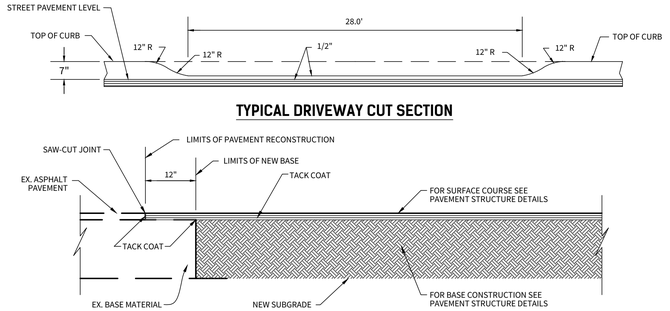
LOCAL STREET (500 ADT) PI > 20



LOCAL STREET (500 ADT) PI < 20

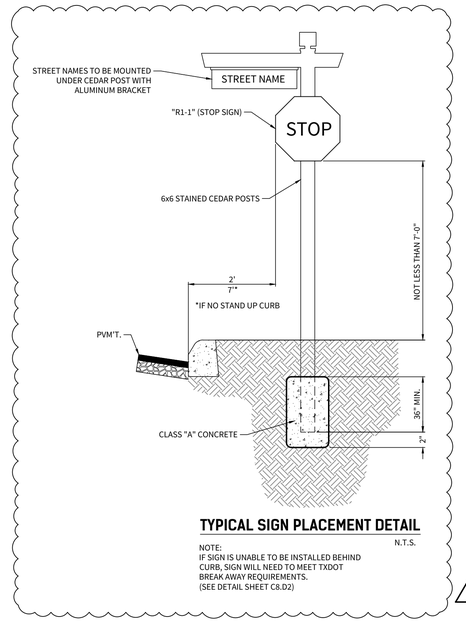


LOCAL STREET (500 ADT) PI > 20



TYPICAL DRIVEWAY CUT SECTION

PAVEMENT JUNCTION DETAIL

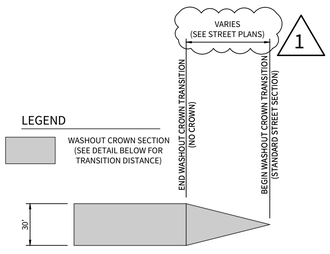


TYPICAL SIGN PLACEMENT DETAIL

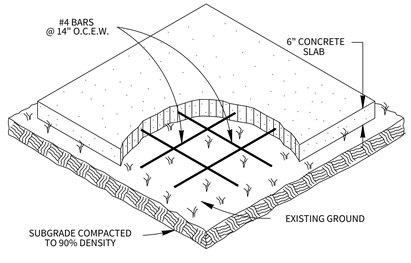
N.T.S.

NOTE:
IF SIGN IS UNABLE TO BE INSTALLED BEHIND CURB, SIGN WILL NEED TO MEET TXDOT BREAK AWAY REQUIREMENTS.
(SEE DETAIL SHEET C8.D2)

1



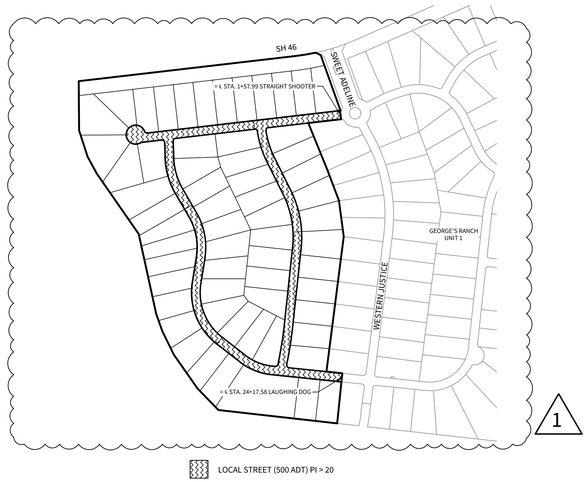
WASHOUT CROWN TRANSITION DETAIL



MAIL BOX PAD NOTE:

1. THE CONTRACTOR WILL CONSTRUCT SLABS FOR "TEMPORARY MAIL BOX COLLECTION PAD" FOR THE UNITED STATES POSTAL SERVICE WITH LOCATIONS AND SIZES SPECIFIED BY THE CITY ENGINEER DURING CONSTRUCTION.
2. THE CONSTRUCTION OF SLABS SHALL CONFORM TO ITEM 513 "REMOVING AND RELOCATING MAILBOXES".
3. PAYMENT WILL BE MADE UNDER ITEM 513.2 "COMMUNITY MAILBOX SLAB - PER SQUARE YARD".
4. UNIT PRICE WILL INCLUDE REMOVAL OF "TEMPORARY MAIL BOX COLLECTION PAD" SLABS AT THE END OF THE PROJECT. NO SEPARATE PAY ITEM.

COMMUNITY MAIL BOX SLAB
ITEM 513.2



STREET PAVEMENT DESIGN DETAIL

STREET PAVEMENT DESIGN OPTIONS

1. SUBGRADE - GEOTECH ENGINEER WILL BE PRESENT TO DETERMINE IF NATIVE LIMESTONE/ROCK SUBGRADE IS SUFFICIENT TO REPLACE LIME TREATMENT. IF LIME TREATMENT IS REPLACED BY NATIVE MARL/ROCK, KENDALL COUNTY PUBLIC WORKS WILL BE INFORMED OF ALL CHANGES. REVISIONS WILL BE SUBMITTED INDICATING WHERE LIME TREATMENT WAS USED, ALONG WITH STATIONING. CONTRACTOR TO REVIEW GEOTECH RECOMMENDATIONS PRIOR TO FINAL SUBGRADE PREPARATION. (REF. MLA GEOTECHNICAL REPORT #21201100.010)

NOTES:
1. ALL CURB SHALL BE CLASS C CONCRETE.

STREET TYPE	HMAC TYPE "D"	FLEX BASE (TY A GR 2)	LIME TREATED SUBGRADE (27 LB/SY)	BASE UNDER CURB	SUBGRADE PI
LOCAL STREET (500 ADT) PI < 20	1.5"	8"	----	4"	< 20
LOCAL STREET (500 ADT) PI > 20	1.5"	12"	----	8"	> 20

1. PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT (REF. MLA GEOTECHNICAL REPORT #21201100.010 - DATED JULY 2021). REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS.
2. A GEOTECHNICAL ENGINEERING REPRESENTATIVE SHALL BE RETAINED TO: (1) OBSERVE THE SITE PREPARATION AND SUBGRADE OPERATIONS. (2) EVALUATE THE ACTUAL SUBGRADE MATERIAL CLASSIFICATION; AND (3) VERIFY THAT RECOMMENDATIONS ARE FOLLOWED. THE ACTUAL SUBGRADE CONDITION AT A PARTICULAR LOCATION WILL NEED TO BE EVALUATED DURING CONSTRUCTION ONCE THE SUBGRADE IS CUT/FILLED TO THE PROPER GRADE.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.
4. CONTRACTOR MAY LEAVE VERTICAL CUT BANKS AT R.O.W. LINE AND MEDIANS PROVIDED PROJECT GEOTECHNICAL ENGINEER DETERMINES ROCK IS COMPETENT TO STAND ON ITS OWN.
5. IF ALTERNATE PAVEMENT SECTION CHOSEN, KENDALL COUNTY SHALL BE PROVIDED WITH REVISED CONSTRUCTION PLANS INDICATING SELECTED PAVEMENT DESIGN PRIOR TO CONSTRUCTION.
6. PAVEMENT SECTIONS ARE SUBJECT TO CHANGE DUE TO RETESTING OF SOIL AFTER STREET EXCAVATION HAS BEEN DONE TO TOP OF CURB.
7. CONTRACTOR SHALL CONTACT ENGINEER 48 HRS IN ADVANCE FOR FIELD OBSERVATION DURING STREET CONSTRUCTION. CONTRACTOR WILL BE REQUIRED TO CONTACT ENGINEER FOR INSPECTION OF THE SUBGRADE, BASE, ASPHALT, AND CURB.
8. GENERAL FILL MATERIALS SHOULD CONSIST OF ONSITE SOILS OR CLEAN IMPORTED FILL SOILS WITH EQUAL OR BETTER CBR CHARACTERISTICS TO THE ONSITE SOILS. GENERAL FILL MATERIAL SHOULD BE CLEAN AND FREE OF ANY VEGETATION ROOTS, ORGANIC MATERIALS, TRASH OR GARBAGE, CONSTRUCTION DEBRIS, OR OTHER DELETERIOUS MATERIALS AND SHOULD CONTAIN NO LARGER THAT THREE (3) INCHES IN MAXIMUM DIMENSION.

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GEORGE'S RANCH UNIT 2A

STANDARD STREET DETAILS

DATE
3/18/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

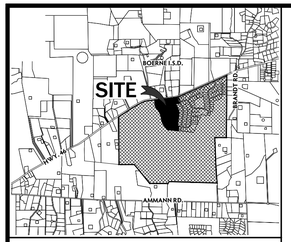
REVISIONS
1. 2025-03-18 - UPDATED DETAILS
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STATE OF TEXAS
W. PATRICK MURPHY
111597
PROFESSIONAL ENGINEER
3/24/2025

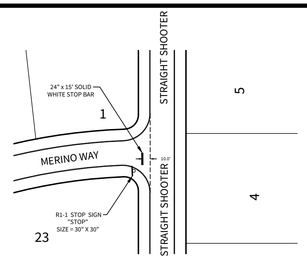
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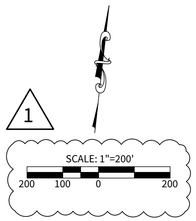


LOCATION MAP N.T.S.



TYPICAL STOP BAR PLACEMENT DETAIL

N.T.S.

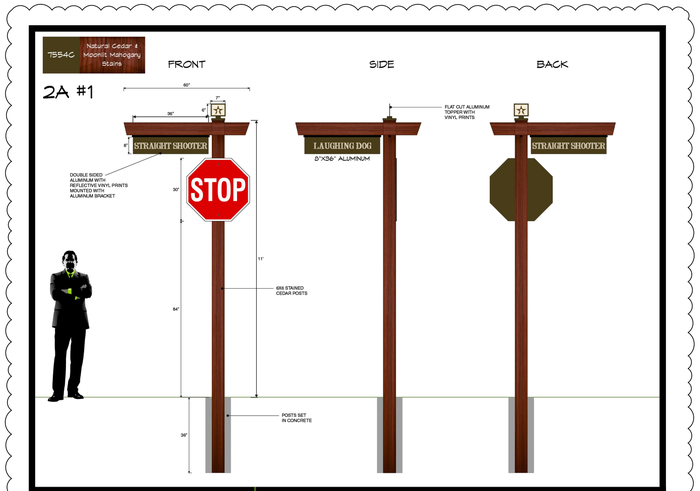


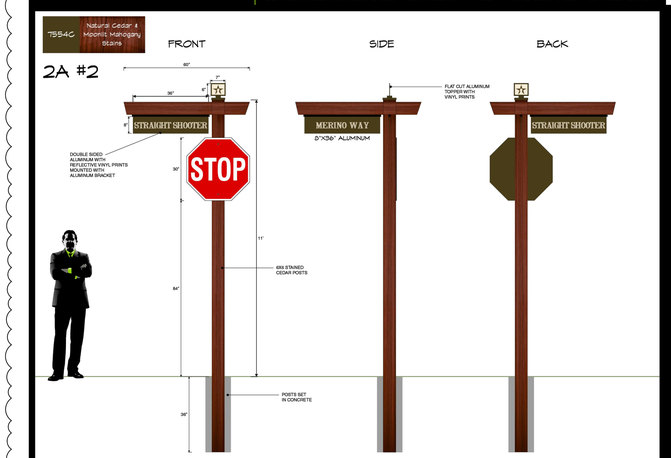
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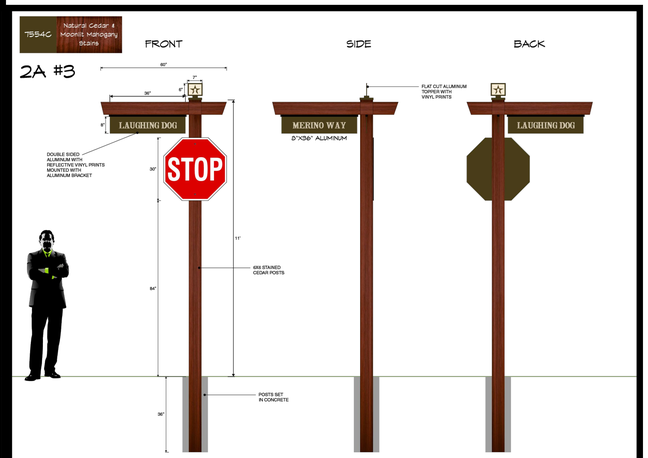
NOTES

1. CONTRACTOR TO COORDINATE SIGN PLACEMENT WITH STREET CONSTRUCTION TO AVOID ANY POSSIBLE CONFLICTS.
2. ALL PAVEMENT MARKINGS SHALL BE HOT-APPLIED THERMOPLASTIC PAVEMENT MARKINGS PER TxDOT ITEM NO. 666.
3. ALL STREET NAME SIGNS SHALL BE BROWN IN COLOR WITH WHITE LETTERING. CONTRACTOR TO SUBMIT SIGN MATERIAL SUBMITTAL TO OWNER PRIOR TO ORDERING/INSTALLATION.

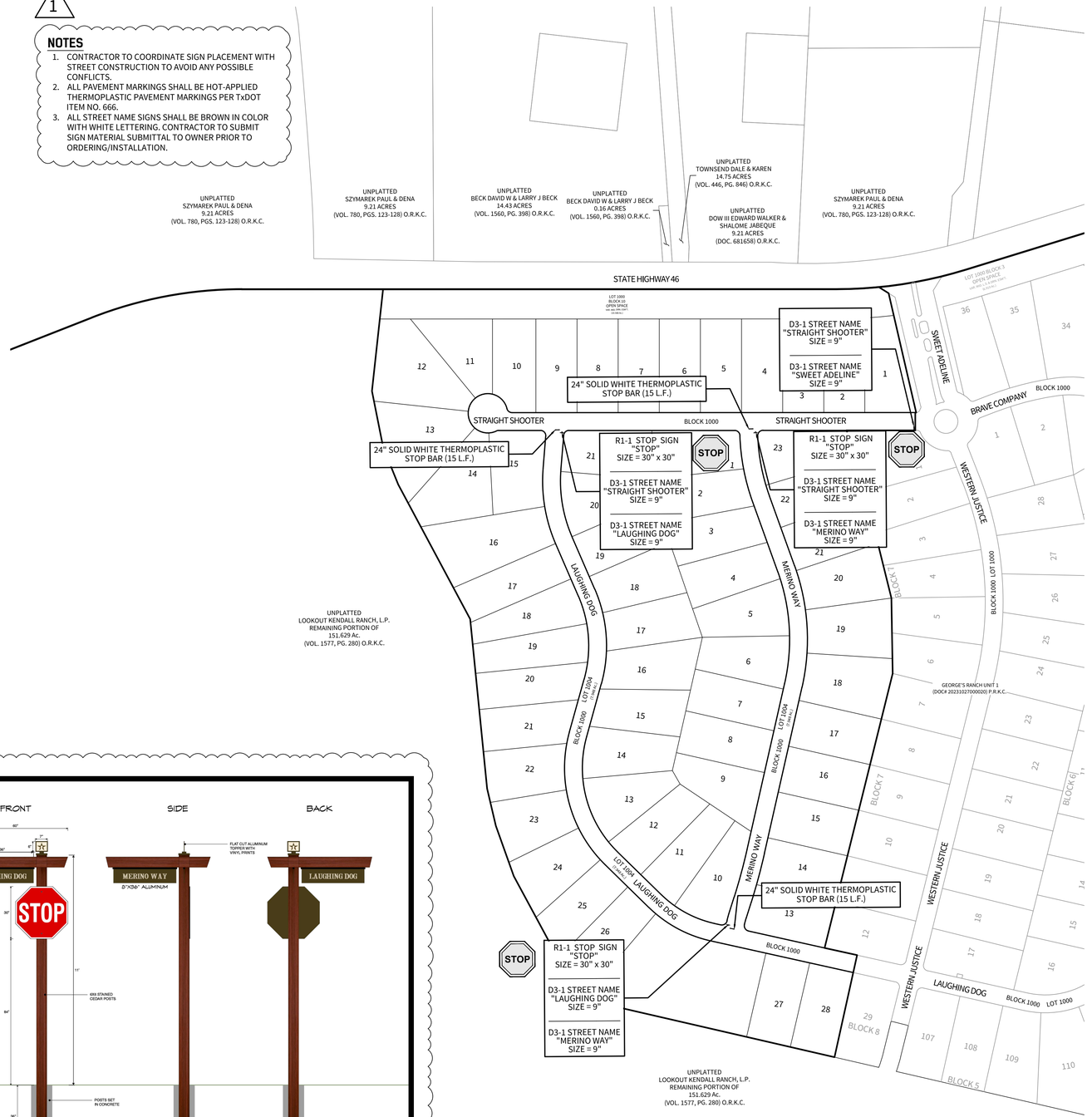
DEVELOPER:
THE LOOKOUT DEVELOPMENT GROUP, LP
CONTACT PERSON: MIKE SIEFERT
1001 CRYSTAL FALLS PARKWAY
LEANDER, TX 78641
TEL: (512) 690-4322







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GEORGE'S RANCH UNIT 2A

TRAFFIC SIGNAGE PLAN

DATE
3/21/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS

1. 2025-03-18 - UPDATE SIGN DETAIL, SCALE AND NOTE
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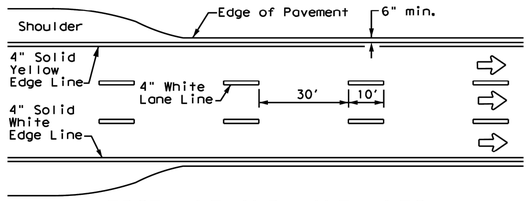
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3/24/2025

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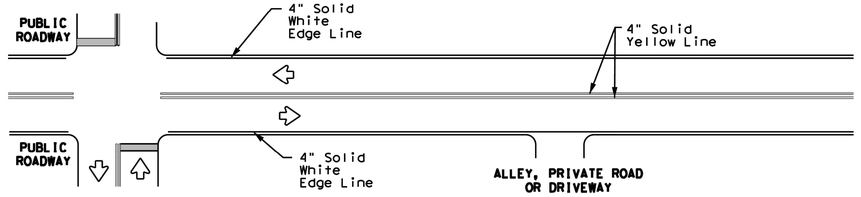
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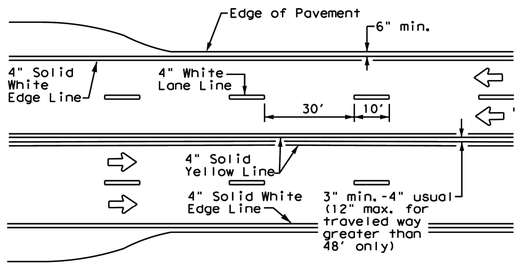
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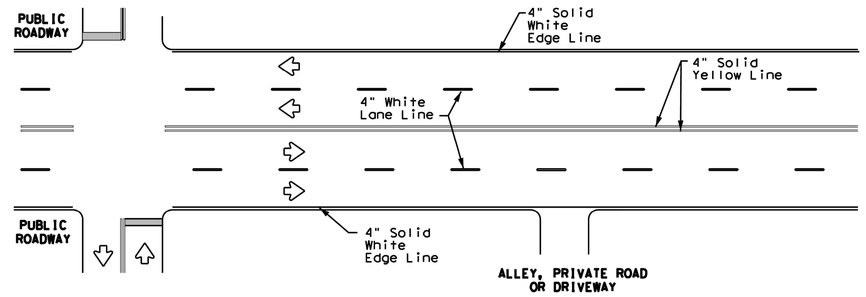
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



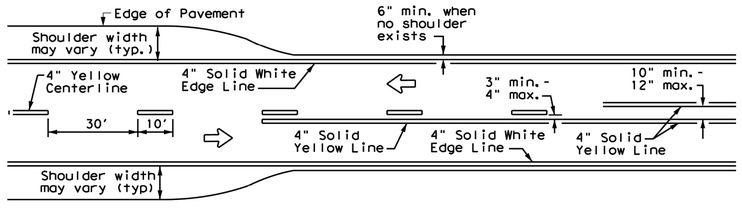
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



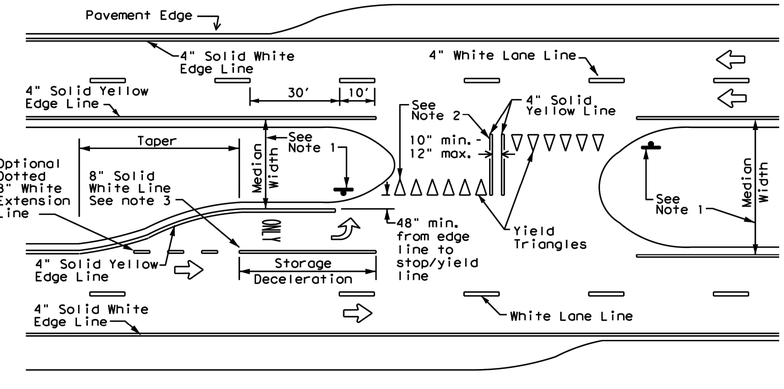
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



For posted speed on road being marked equal to or less than 40 MPH.

For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

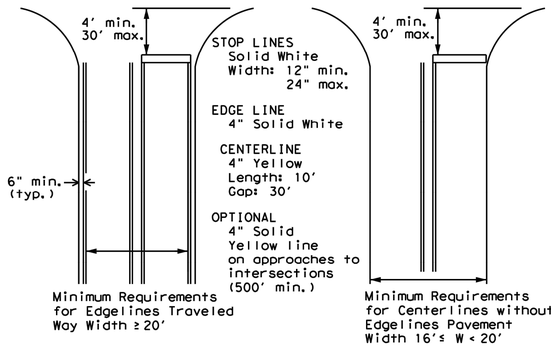
GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.

2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
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REVISIONS 8-95 3-03				
5-00 2-12	DIST	COUNTY		SHEET NO.
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GEORGE'S RANCH
UNIT 2A

TXDOT - TYPICAL STANDARD PAVEMENT MARKINGS

DATE
2/6/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS
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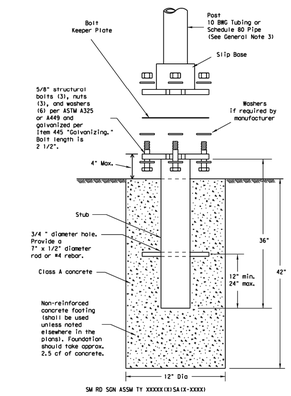
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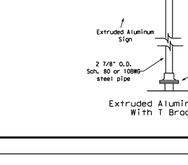
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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(1)SA(X-XXXX)

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness noncoated shall be within the range of 0.122" to 0.138".
   Outside diameter noncoated shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter and seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the followings
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness noncoated shall be within the range of 0.248" to 0.304"
   Outside diameter noncoated shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe and of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the traveltay (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the traveltay. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

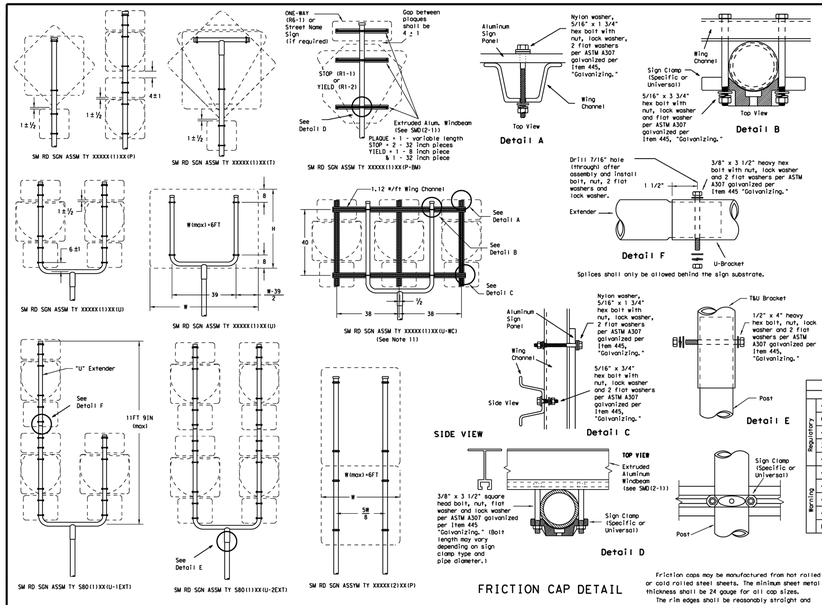
SMD(SLIP-1)-08

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

268

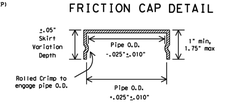
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DATE:
FILE:



All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided that the total sign height does not exceed the maximum allowable sheet per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-DW)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-DW)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-DW)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY SB0(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY SB0(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

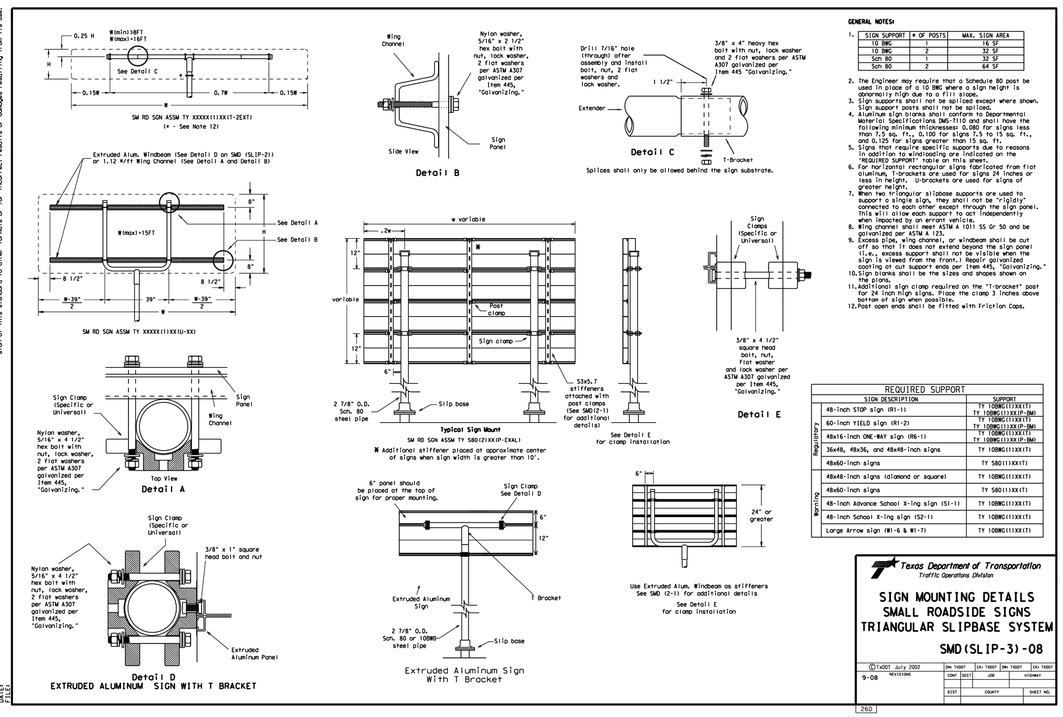
SMD(SLIP-2)-08

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

26C

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DATE:
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GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-DW)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-DW)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-DW)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY SB0(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY SB0(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
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GEORGE'S RANCH
UNIT 2A

TXDOT - SIGN MOUNTING DETAILS

DATE
2/6/2025

PROJECT NO.
03546.008

DRAWN BY
MAS/MGM

CHECKED BY
KMH/WPM

REVISIONS
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

2/10/2025
CUDE ENGINEERS
TBPEL No. 455

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