GENERAL CONSTRUCTION NOTES

- C1 - CITY OF BOERNE - GENERAL CONSTRUCTION NOTES

STREET & DRAINAGE CONSTRUCTION PLANS

- C2 - OVERALL MASTER DRAINAGE & GRADING PLAN
- C3 - OVERALL MASTER DRAINAGE & GRADING PLAN
- C4 - STREET PLAN & PROFILE - NEWCROFT CROSSING & HANFRO WAY
- C5 - STREET PLAN & PROFILE - TORRINGTON CT. & WILBURN LANE
- C6 - STREET PLAN & PROFILE - TIMBER HOLLOW
- C7 - STREET PLAN & PROFILE - TURTLE COVE
- C8 - STREET PLAN & PROFILE - WESTHAVEN CT. SHEET 1 OF 2
- C9 - STREET PLAN & PROFILE - WESTHAVEN CT. SHEET 2 OF 2
- C10 - CITY OF BOERNE - STREET STANDARD DETAILS *
- C11 - TRAFFIC SIGNAGE PLAN
- C12 - DRAINAGE PLAN & PROFILE - DRAIN ''A7''
- C13 - DRAINAGE PLAN & PROFILE - DRAIN ''A7''
- C14 - DRAINAGE PLAN & PROFILE - DRAIN ''C7'' & ''D7''
- C15 - DRAINAGE PLAN & PROFILE - DRAIN ''E7'' & ''G7''
- C16 - CITY OF BOERNE - DRAINAGE STANDARD DETAILS *
- C17 - CURB INLET DETAILS - TYPE 'C' *
- C18 - JUNCTION BOX PRE-CAST DETAILS *
- C19 - SINGLE BOX CULVERTS CAST-IN-PLACE DETAILS *
- C20 - SINGLE BOX CULVERTS PRE-CAST DETAILS *
- C21 - CAST-IN-PLACE DETAILS FOR 6' SPAN CULVERTS *
- C22 - CONCRETE WINGWALL DETAILS *

SANITARY SEWER CONSTRUCTION PLANS

- C23 - OVERALL SANITARY SEWER PLANS
- C24 - SANITARY SEWER PLAN & PROFILE - LINE 'II'
- C25 - SANITARY SEWER PLAN & PROFILE - LINE 'II'
- C26 - SANITARY SEWER PLAN & PROFILE - LINE 'QQ'
- C27 - SANITARY SEWER PLAN & PROFILE - LINE 'RR' & LINE 'SS'
- C28 - SANITARY SEWER PLAN & PROFILE - LINE 'UU' & LINE 'VV'
- C29 - SANITARY SEWER PLAN & PROFILE - LINE 'P'
- C30 - SANITARY SEWER PLAN & PROFILE - LINE 'P' & LINE 'WW'
- C31 - CITY OF BOERNE - SANITARY SEWER GENERAL NOTES *
- C32 - CITY OF BOERNE - SANITARY SEWER STANDARD DETAILS *

WATER DISTRIBUTION CONSTRUCTION PLANS

- C33 - WATER DISTRIBUTION PLAN
- C34 - WATER DISTRIBUTION PLAN
- C35 - WATER DISTRIBUTION PLAN
- C36 - CITY OF BOERNE - WATER DISTRIBUTION STANDARD DETAILS *

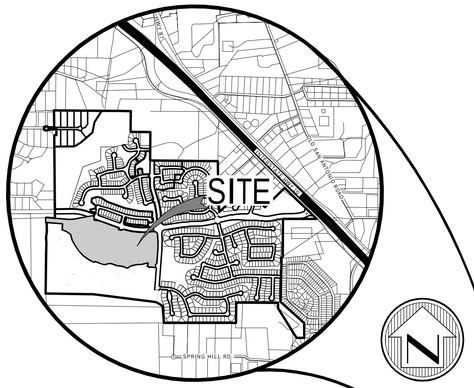
MISCELLANEOUS CONSTRUCTION PLANS

- C37 - UTILITY LAYOUT PLAN
- C38 - UTILITY LAYOUT PLAN
- C39 - NATURAL GAS DISTRIBUTION PLAN
- C40 - NATURAL GAS DISTRIBUTION PLAN
- C41 - CITY OF BOERNE - NATURAL GAS DISRIBUTION DETAILS *
- C42 - STORM WATER POLLUTION PREVENTION PLAN
- C43 - STORM WATER POLLUTION PREVENTION PLAN

* DENOTES STANDARD DETAILS ADOPTED FOR USE ON THIS PROJECT.

BANDERA ELECTRIC PLANS

- E0 - PROJECT COVER SHEET AND DRAWING LIST
- E1 - UNDERGROUND ELECTRIC LAYOUT (SHEET 1 OF 2)
- E2 - UNDERGROUND ELECTRIC LAYOUT (SHEET 2 OF 2)
- E3 - SECONDARY PEDESTAL DETAILS
- E4 - TRENCH DETAILS
- E5 - CONDUIT CONFIGURATION DETAILS
- E6 - THREE PHASE SECTIONALIZING CABINET DETAILS (TYPE 1)
- E7 - SINGLE PHASE SECTIONALIZING CABINET DETAILS
- E8 - SINGLE PHASE TRANSFORMER DETAILS
- E9 - TYPICAL EQUIPMENT ORIENTATION AND SINGLE PHASE RISER DETAILS
- E10 - THREE PHASE RISER DETAILS

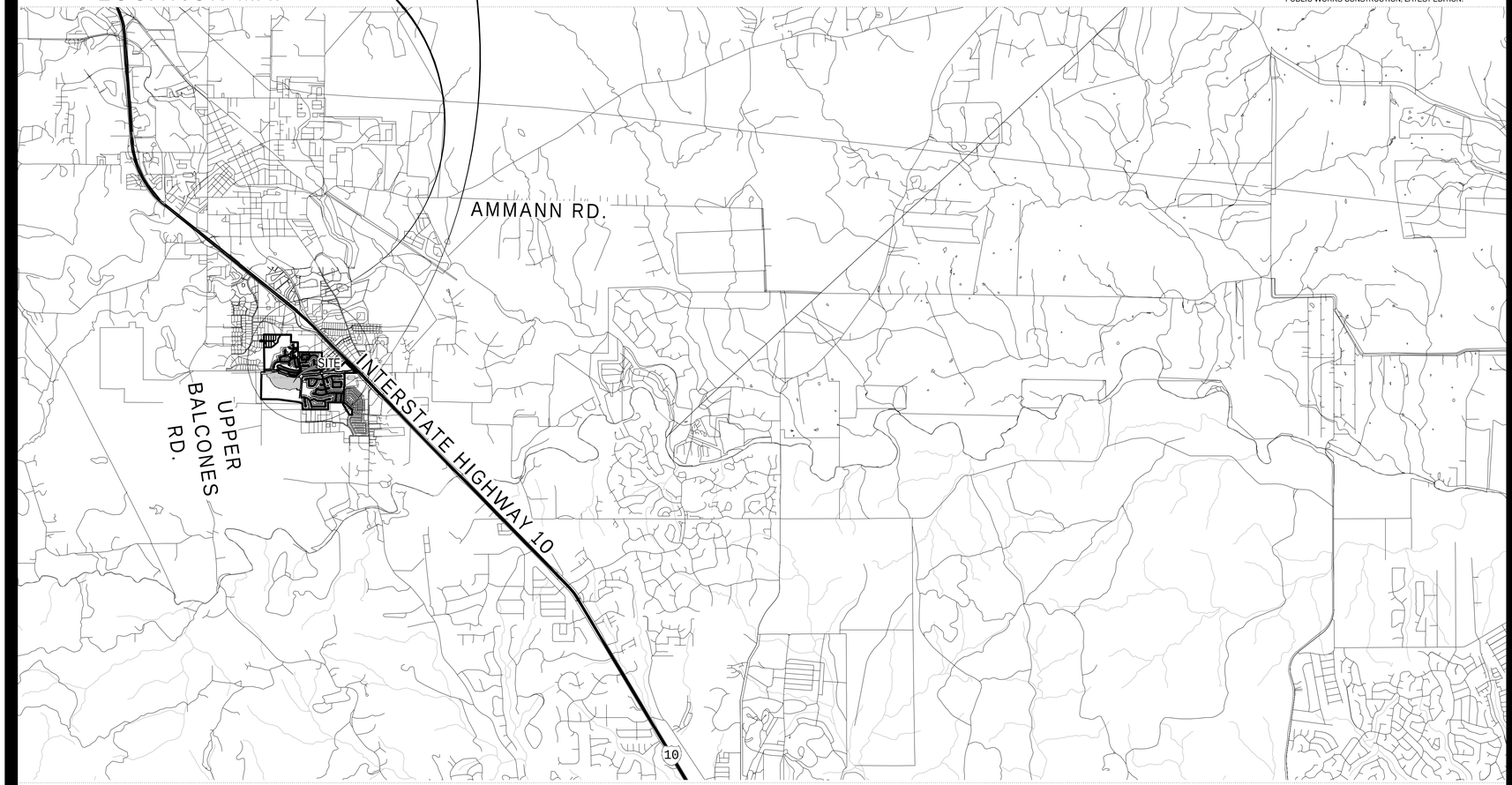


LOCATION MAP

SEQUENCE OF CONSTRUCTION

A) INSTALLATION OF EROSION AND SEDIMENTATION CONTROLS
B) SITE CLEARING
C) ROUGH CUTTING/FILLING OF DETENTION POND
D) SITE ROUGH GRADING
E) SANITARY SEWER INSTALLATION
F) WATER MAIN INSTALLATION
G) DRY UTILITY CROSSINGS INSTALLATION
H) STREET AND DRAINAGE INFRASTRUCTURE INSTALLATION
I) SITE FINAL GRADING
J) DRY UTILITY INSTALLATION
K) SITE CLEAN UP & INFRASTRUCTURE SOIL STABILIZATION
L) SINGLE-FAMILY RESIDENTIAL HOME CONSTRUCTION
M) HOMEBUILDING SOIL STABILIZATION
N) REMOVAL OF TEMPORARY EROSION AND SEDIMENTATION CONTROLS

CONSTRUCTION OF ALL FACILITIES TO BE DEDICATED TO THE PUBLIC SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.



VICINITY MAP (SCALE 1"=4000')

REGENT PARK
UNIT 7
OVERALL CONSTRUCTION PLANS

DEVELOPER:

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DRAWN BY	DATE
AD/RM/MW/MS	03/28/2025
CHECKED BY	PROJECT NO.
W. PATRICK MURPHY, P.E.	02133.230

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

CITY OF BOERNE

GENERAL CONSTRUCTION NOTES

REV. 06/21/2024

GENERAL NOTES

1. CONSTRUCTION OF ALL FACILITIES TO BE DEDICATED TO THE PUBLIC SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, AND ANY OTHER GOVERNING AGENCY SUCH AS THE TCEQ, TxDOT, ETC., AS APPLICABLE.
2. IF ANY CONFLICT ARISES BETWEEN THESE GENERAL NOTES AND ANY OTHER NOTES FOUND IN THE PLANS, THE CITY OF BOERNE'S GENERAL NOTES SHALL TAKE PRECEDENCE. HOWEVER, THE CITY ENGINEER HAS THE AUTHORITY TO REVIEW AND APPROVE LEGITIMATE CONFLICTING PROJECT SPECIFIC NOTES, IF NEEDED.
3. ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE INFRASTRUCTURE DRAWINGS REMAINS WITH THE ENGINEER OF RECORDS. IN APPROVING THESE INFRASTRUCTURE DRAWINGS, THE CITY OF BOERNE MUST RELY UPON THE ADEQUACY OF THE WORK OF THE ENGINEER OF RECORD.
4. PRIOR TO A CONSTRUCTION RELEASE PERMIT AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY OF BOERNE ENGINEERING AND MOBILITY DEPARTMENT TO SCHEDULE A PRE-CONSTRUCTION MEETING. A SEPARATE ON-SITE PRE-CONSTRUCTION MEETING MAY BE REQUIRED WITH THE CONTRACTOR AND ANY SUBCONTRACTORS PRIOR TO STARTING WORK.
5. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL NOTIFY CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION AT (830) 248-1538.
7. THE CONTRACTOR IS REQUIRED TO SCHEDULE ALL NECESSARY INSPECTIONS AT LEAST 24 HOURS IN ADVANCE. FEES MAY BE ASSESSED FOR WORK THAT IS NOT READY AT THE TIME OF THE INSPECTION OR NO-SHOWS FOR SCHEDULED INSPECTIONS.
8. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES; THE APPROVED INFRASTRUCTURE DRAWINGS, INCLUDING ALL APPROVED REVISIONS; THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION; ALL NECESSARY PERMITS; NOTICE OF INTENT; EROSION CONTROL PLANS; AND SWPPP. IT IS ENCOURAGED TO KEEP AN EXTRA COPY OF APPROVED SUBMITTALS ON-SITE.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PUBLIC UTILITIES DURING CONSTRUCTION OF THE PROJECT.
10. THE CONTRACTOR SHALL DETERMINE THE DEPTH AND LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING, TRENCHING, OR DRILLING AND SHALL BE REQUIRED TO TAKE ANY PRECAUTIONARY MEASURES TO PROTECT ALL LINES SHOWN AND/OR ANY OTHER UNDERGROUND UTILITIES NOT OF RECORD OR NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PUBLIC AGENCIES AND FRANCHISE UTILITIES 48 HOURS PRIOR TO CONSTRUCTION (TEXAS811 1-800-344-8377). THE CONTRACTOR MAY BE REQUIRED TO EXPOSE THESE FACILITIES AT THEIR OWN COST.
11. THE CONTRACTOR MUST CONTACT CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT IMMEDIATELY IF ANY DAMAGE TO EXISTING UTILITIES OCCURS. ANY DAMAGE TO UTILITIES RESULTING FROM CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT THEIR EXPENSE. IF DAMAGE TO A LIVE GAS MAIN OCCURS, CALL 911 IMMEDIATELY PRIOR TO CALLING CITY OF BOERNE UTILITIES DEPARTMENT.
12. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PUBLIC AND PRIVATE PROPERTY, INCLUDING, BUT NOT LIMITED TO FENCES, WALLS, PAVEMENT, GRASS, TREES, AND LAWN SPRINKLER AND IRRIGATION SYSTEM AT THEIR OWN COST. ANY PERMITTED WORK LOCATED WITHIN EASEMENTS ON PRIVATE PROPERTY WILL REQUIRE A LETTER OF APPROVAL FROM EACH AFFECTED LANDOWNER PRIOR TO FINAL ACCEPTANCE OF CONSTRUCTION.
13. ANY DISCREPANCIES ON THE INFRASTRUCTURE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER AND CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM THE INFRASTRUCTURE DRAWINGS ARE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE CITY.
14. STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED PRIOR TO SITE CONSTRUCTION OR CLEARING AND BE MAINTAINED DURING THE PROGRESS OF CONSTRUCTION.
15. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY. ALL WORK REQUIRED SHALL BE CONDUCTED IN CONFORMANCE WITH CURRENT SAFETY CODES AND STANDARDS WITH JURISDICTION OVER THIS PROJECT.
16. THE CONTRACTOR SHALL PROVIDE THE CITY ACCESS TO CITY PROPERTY, EASEMENTS, UTILITIES, AND FACILITIES AT ALL TIMES DURING CONSTRUCTION.
17. THE CONTRACTOR SHALL FOLLOW THE CITY'S CURRENT NOISE ORDINANCE, ANY EXCEPTIONS OF WHICH MAY BE REQUESTED IN WRITING TO THE CITY OF BOERNE PERMITTING AND CODE COMPLIANCE DEPARTMENT.
18. THE CONTRACTOR IS RESPONSIBLE FOR REQUIRED CONSTRUCTION SURVEYING AND STAKING AND SHALL NOTIFY THE CITY OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH ANY WORK.
19. THE CONTRACTOR SHALL VERIFY BENCHMARKS AND DATUMS PRIOR TO COMMENCING CONSTRUCTION OR STAKING OF IMPROVEMENTS.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL SURVEY MARKERS INCLUDING IRON RODS, PROPERTY CORNERS, OR SURVEY MONUMENTS WITHIN THE LIMITS OF THE CONSTRUCTION SITE AND OUTSIDE THE RIGHT-OF-WAY DURING CONSTRUCTION. ANY SURVEY MARKERS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT THEIR OWN COST.
21. ALL CONCRETE SHALL BE PLANT MIXED MEETING CITY SPECIFICATIONS WITH A MINIMUM OF 4,000 PSI AT 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED. ANY CONCRETE INSTALLED WITHOUT AN APPROVED MIX DESIGN SUBMITTAL WILL BE REMOVED AT CONTRACTOR'S EXPENSE.
22. 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 THESE 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.
23. CONTRACTOR SHALL FURNISH A SET OF "AS-BUILT" DRAWINGS TO THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT AT THE TIME OF FINAL INSPECTION. CONTRACTOR SHALL GIVE CITY AT LEAST TWO WORKING DAYS NOTICE PRIOR TO FINAL INSPECTION.

GEOTECHNICAL TESTING

1. ALL COMPACTION, CONCRETE, AND OTHER REQUIRED TEST RESULTS SHALL BE SENT TO THE DESIGN ENGINEER AND CITY DIRECTLY FROM THE TESTING AGENCY. CITY OF BOERNE INSPECTORS SHALL BE PROVIDED A MINIMUM OF 24-HOUR NOTICE AND PROVIDED THE OPPORTUNITY TO OBSERVE ALL REQUIRED TESTING.
2. ALL PROCTOR TESTING SHALL BE COMPLETED PER ASTM D1557 (MODIFIED PROCTOR) AND PROCTOR SHALL BE SUBMITTED TO THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT PRIOR TO COMPACTION.
3. UPON COMPLETION OF CONSTRUCTION, A COPY OF ALL TESTING REPORTS SHALL BE COMPILED AND FORWARDED TO THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT PRIOR TO FINAL ACCEPTANCE.
4. IT IS THE RESPONSIBILITY OF THE DEVELOPER, CONTRACTOR, SUBCONTRACTORS, BUILDERS, GEOTECHNICAL ENGINEER, AND DESIGN ENGINEER TO IMMEDIATELY NOTIFY THE CITY AND DESIGN ENGINEER IF THE PRESENCE OF GROUNDWATER WITHIN THE SITE IS EVIDENT. UPON NOTIFICATION, THE DESIGN ENGINEER SHALL RESPOND WITH PLAN REVISIONS FOR THE MITIGATION OF THE GROUNDWATER ISSUE. ALL CONSTRUCTION ACTIVITY IMPACTED BY THE DISCOVERY OF GROUNDWATER SHALL BE SUSPENDED UNTIL THE CITY APPROVES THE GROUNDWATER MITIGATION PLAN IN WRITING.

TRAFFIC CONTROL

1. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL IN ACCORDANCE WITH THE MINIMUM REQUIREMENTS OF THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND TXDOT BARRICADE AND CONSTRUCTION STANDARDS.
2. CONTRACTOR SHALL NOT IMPEDE TRAFFIC ON EXISTING STREETS, DRIVEWAYS, OR FIRE LANES OPEN TO THE PUBLIC.
3. CONTRACTOR TO PROVIDE TRAFFIC CONTROL PLAN TO CITY AT LEAST 3 BUSINESS DAYS IN ADVANCE OF COMPLETING WORK IN A CITY RIGHT-OF-WAY.
4. TEMPORARY LANE CLOSURES DURING THE HOURS OF 9AM TO 3PM MAY BE PERMITTED WHERE SHOWN AS NECESSARY WITHIN THE TRAFFIC CONTROL PLAN WITH PRIOR APPROVAL BY THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT. NO LANE CLOSURES ARE PERMITTED ON WEEKENDS OR HOLIDAYS WITH PRIOR WRITTEN APPROVAL.
5. TEMPORARY STEEL PLATES MAY BE UTILIZED AS PERMITTED BY THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT FOR A MAXIMUM OF TWO (2) WEEKS UNLESS PRIOR WRITTEN APPROVAL OF AN EXTENDED TIME IS PROVIDED.
6. ALL TEMPORARY SIGNS, BARRICADES, WARNING LIGHTS AND OTHER MISCELLANEOUS TRAFFIC CONTROL MEASURES SHALL NOT BE INSTALLED EARLIER THAN 24 HOURS BEFORE THE CONTRACTOR IS READY TO PROCEED WITH CONSTRUCTION FOR THAT SITE.
7. ALL TEMPORARY SIGNS, BARRICADES, WARNING LIGHTS AND OTHER MISCELLANEOUS TRAFFIC CONTROL MEASURES SHALL BE REMOVED AND ORIGINAL TRAFFIC CONTROL MEASURES REPLACED AT THE END OF THE CONTRACTOR'S CONSTRUCTION OPERATION.

EROSION CONTROL NOTES

1. ALL EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO SITE DISTURBANCE AND SHALL REMAIN IN PLACE UNTIL FINAL GRADING AND PAVING IS COMPLETE AND VEGETATION IS ESTABLISHED WITH 85% COVERAGE ACHIEVED.
2. CONTRACTOR IS RESPONSIBLE FOR PROPER MAINTENANCE OF THE REQUIRED EROSION CONTROL DEVICES THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS. EROSION CONTROLS SHALL BE REPAIRED OR REPLACED AS INSPECTION DEEMS NECESSARY, OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. ACCUMULATED SILT IN ANY EROSION CONTROL DEVICE SHALL BE REMOVED AND SHALL BE DISTRIBUTED ON-SITE IN A MANNER NOT CONTRIBUTING TO ADDITIONAL SILTATION.
3. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT EROSION CONTROL MEASURES AND STORMWATER CONTROL IS SUFFICIENT TO MITIGATE OFF-SITE IMPACTS ARE IN PLACE AT ALL STAGES OF CONSTRUCTION.
4. THE CITY 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 THE MODIFICATIONS.
5. CONSTRUCTION OPERATIONS SHALL BE MANAGED SO THAT AS MUCH OF THE SITE AS POSSIBLE IS LEFT COVERED WITH TOPSOIL AND VEGETATION.
6. CONTRACTOR TO REMOVE GRASS AND STRIP TOPSOIL TO DEPTHS ENCOUNTERED AND STOCKPILE TOPSOIL TO BE DISTRIBUTED DURING FINAL GRADING OF THE DISTURBED AREAS.
7. CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS. CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION TRAFFIC UTILIZES THE STABILIZED CONSTRUCTION ENTRANCES AT ALL TIMES FOR INGRESS/EGRESS TO THE SITE.
8. CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND DRIVEWAYS ADJACENT TO THE PROJECT FREE FROM ROCK, MUD, TRASH AND DEBRIS AT ALL TIMES. CONTRACTOR SHALL CLEAN AND REMOVE ALL LOOSE MATERIAL RESULTING FROM CONSTRUCTION OPERATIONS.
9. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST.
10. AS INLETS ARE COMPLETED, TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED. PRIOR TO FINAL ACCEPTANCE BY THE CITY OF BOERNE, ALL TEMPORARY INLET BARRIERS SHALL BE REMOVED. REPLACED WITH CONTROLS TO PREVENT SEDIMENT FROM ENTERING THE STREET ROW. CITY STREETS SHALL NOT BE USED AS SEDIMENT TRAPS WITHOUT WRITTEN APPROVAL FROM THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT.
11. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
12. DISTURBED PORTIONS OF THE SITE MUST BE STABILIZED. STABILIZATION PRACTICES MUST BE INITIATED WITHIN 14 DAYS IN PORTIONS OF THE SITE WHERE CONSTRUCTION HAS BEEN EITHER TEMPORARILY OR PERMANENTLY CEASED, UNLESS EXCEPTED WITHIN THE TPDES PERMIT.
13. CONTRACTOR SHALL INSPECT DISTURBED AREAS, MATERIAL STORAGE AREAS EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND VEHICLE ENTRY AND EXIT AREAS AT LEAST ONCE EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT OF 0.5 INCHES OR GREATER.
14. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY THE CITY OF BOERNE.

GRADING NOTES

1. CONTRACTOR IS REQUIRED TO OBTAIN AN APPROVED GRADING PERMIT FROM THE CITY, IF APPLICABLE.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL TIMES DURING CONSTRUCTION.
3. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES WHICH ARE TO REMAIN IN PLACE AND UNDISTURBED DURING CONSTRUCTION.
4. GRADING WORK SHALL BE COMPLETED TO WITHIN 0.10 FEET OF THE FINAL GRADE PRIOR TO INSTALLATION OF UTILITIES INCLUDING ANY UTILITY TYPE INSTALLATION OUTSIDE OF THE ROW TO ENSURE DEPTHS ARE APPROPRIATE FROM FINAL GRADE.
5. CONTRACTOR SHALL NOT PLACE ANY FILL OR WASTE MATERIAL IN THE LOCAL OR 100-YEAR FLOODPLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOODPLAIN DEVELOPMENT PERMIT.

PAVING NOTES

1. ALL CONSTRUCTION AND TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
2. SUBMITTALS FOR LIME, BASE, PRIME COAT, TACK COAT, AND ASPHALT, AS APPLICABLE, SHALL BE APPROVED PRIOR TO INSTALLATION. INSTALLATION PRIOR TO SUBMITTAL APPROVAL MY REQUIRE REMOVAL/REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
3. NO EARTHWORK, LIME APPLICATION, OR OTHER PREPARATION OF THE SUBGRADE FOR PAVING OF STREETS SHALL BE INITIATED WITHOUT AUTHORIZATION FROM THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT. THE CITY WILL AUTHORIZE THE SUBGRADE WORK IN PREPARATION FOR THE PAVING AFTER UTILITY TRENCH BACKFILL TESTING IS COMPLETE AND VERIFIED TO MEET CITY REQUIREMENTS.
4. EMBANKMENT/FILL MATERIAL UNDER PROPOSED STREETS MUST BE FREE OF LARGE STONES (4" WHEN BACKFILL IS 12" OR GREAT IN DEPTH OR 2.5" WHEN FILL IS LESS THAN 12" IN DEPTH), HAVE A PLASTICITY INDEX (PI) LESS THAN 20 PER ASTM D4318, AND BE COMPACTED TO 95% PER ASTM D1557 (MODIFIED PROCTOR).
5. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING CONSTRUCTION OF THE PAVING FOR THIS PROJECT.
6. FLEXIBLE BASE UNDER ROADWAYS REQUIRES 100% COMPACTION MEETING ASTM D1557 (MODIFIED PROCTOR) AND MUST EXTEND AT LEAST 18 INCHES BEHIND THE BACK OF CURB.
7. TESTING OF MATERIALS REQUIRED FOR THE CONSTRUCTION OF PAVING IMPROVEMENTS SHALL BE PERFORMED BY A GEOTECHNICAL TESTING COMPANY AND PROVIDE OPPORTUNITY TO BE WITNESSED BY A CITY INSPECTOR. ALL TESTING MUST BE SCHEDULED WITH THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT.

PEDESTRIAN NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING ALL STREETS, CROSSWALKS, SIDEWALKS AND CURB RAMPS, DRIVEWAYS, AND ANY OTHER SURFACE RELATED TO AN "ACCESSIBLE ROUTE" PER THE TEXAS ACCESSIBILITY STANDARDS (TAS), LATEST EDITION AND PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG), LATEST EDITION. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY CONSTRUCTED OR INSTALLED ITEMS NOT MEETING THE CURRENT TAS REQUIREMENTS AT THEIR OWN COST.
2. CONTRACTOR SHALL MAINTAIN ALL EXISTING PEDESTRIAN ROUTES AND ACCESS WITHIN AND ADJACENT TO THE SITE DURING THE DURATION OF CONSTRUCTION. A TEMPORARY PEDESTRIAN ROUTE SHALL BE PROVIDED WHEN ANY EXISTING SIDEWALK IS CLOSED DUE TO ANY CONSTRUCTION ACTIVITY. ANY SIGNAGE REQUIRED FOR THE DESIGNATION OF A TEMPORARY PEDESTRIAN ROUTE SHALL BE INCLUDED ON THE APPROVED TRAFFIC CONTROL PLAN. ANY TEMPORARY CLOSURES OF EXISTING SIDEWALKS MUST BE APPROVED BY THE CITY OF BOERNE ENGINEERING & MOBILITY DEPARTMENT IN ADVANCE OF CONSTRUCTION AND AN ALTERNATE ADA COMPLIANT PATH MUST BE PROVIDED IN THE INTERIM IN ACCORDANCE OF PROWAG.

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 AN 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 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.

WATER

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 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, PASSD 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 F 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 WITHOUR 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.

SEWER

20. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING NO SANITARY SEWER OVERFLOWS (SSOS) OCCUR AS A RESULT OF WORK. CONTRACTOR SHALL CONTACT THE CITY IMMEDIATELY UPON FINDING A SSO.
21. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH, SDR 26 MINIMUM PIPE STIFFNESS OF 115 PSI FROM MANHOLE TO MANHOLE.
22. ALL SANITARY SEWER MANHOLES REQUIRE CHIMNEY SEALS AND INTERIOR/EXTERIOR COATINGS PER CITY REQUIREMENTS.
23. ALL SANITARY SEWER MANHOLES MUST INCLUDE AT LEAST TWO (2) GRADE ADJUSTMENT RINGS FOR A MINIMUM OF FOUR (4) INCHES BUT NO MORE THAN FOUR (4) ADJUSTMENT RINGS FOR A MAXIMUM OF TWELVE (12) INCHES. IF MORE THAN 12 INCHES IS REQUIRED FOR ADJUSTMENT, A SECTION OF THE EXISTING MANHOLE MUST BE REPLACED TO ADJUST THE MANHOLE TO GRADE WITH THE MINIMUM OF 2 ADJUSTMENT RINGS FOR A MINIMUM OF 4 INCHES BEING PROVIDED.
24. AFTER COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL THOROUGHLY CLEAN THE SEWER MAINS AND SERVICE LINES AND TESTING WILL BE DONE BY TV CAMERA AND OBSERVED BY THE , WASTEWATER ENGINEERING PERSONNEL, AND CONTRACTOR AS THE CAMERA IS RUN. ANY ABNORMALITIES, SUCH AS BROKEN PIPE OR MISALIGNED JOINTS, MUST BE REPLACED BY THE CONTRACTOR AT THEIR OWN EXPENSE. THE CITY WILL REVIEW THE VIDEOS AND PROVIDE REVIEW COMMENTS FOR ACCEPTANCE.
25. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN EARLIER PROVIDED, THE CONNECTION MUST BE MADE WITH AN APPROVED SERVICE SADDLE PER CITY REQUIREMENTS.
26. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION OF THE SANITARY SEWER LINES. THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO: (1) MANDREL TEST; (2) AIR TEST; (3) TELEVISING.

GAS

27. ONLY THE CITY OF BOERNE SHALL OPERATE VALVES ON ANY ACTIVE GAS MAIN. IF A VALVE MUST BE OPERATED DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL SCHEDULE THE OPERATION IN ADVANCE THROUGH ENGINEERING & MOBILITY DEPARTMENT.
28. ONLY THE CITY OF BOERNE MAY PERFORM WORK ON ANY ACTIVE GAS MAIN.
29. GAS VALVE BOXES ON ACTIVE GAS MAINS MUST BE PROTECTED AND REMAIN ACCESSIBLE AT ALL TIMES DURING AND AFTER CONSTRUCTION.
30. BEFORE SCHEDULING THE CITY TO PERFORM ANY GAS SYSTEM TIE-IN, THE DESIGN ENGINEER MUST TURN IN PRELIMINARY GAS AS-BUILT RECORD DRAWINGS WITH ALL REQUIRED POLYETHYLENE PRINTLINE DATA INCLUDED FOR ENGINEERING AND MOBILITY DEPARTMENT TO REVIEW. APPROVAL OF AS-BUILT RECORD DOCUMENTS IS REQUIRED PRIOR TO ANY TIE-IN BEING PERFORMED.
31. PRINTLINE DATA MUST INCLUDE SERIAL NUMBERS, LOCATION AND FOOTAGE OF ALL MAIN LINE PIPE INSTALLED, SERIAL NUMBER, LOCATION AND FOOTAGE FOR EACH LOT ON ALL SERVICE PIPE, SERIAL NUMBER AND LOCATION OF ALL VALVES, AND LOCATION OF ALL TRACER WIRE LOCATE BOXES.

RECLAIMED WATER

32. ALL PORTIONS OF THE RECLAIMED SYSTEM WILL BE MANUFACTURED, PAINTED OR COVERED IN PURPLE MATERIAL TO BE EASILY IDENTIFIABLE.
33. ALL FITTINGS, VALVES AND OTHER UNDERGROUND APPURTENANCES NOT EASILY PAINTED MUST BE THOROUGHLY AND SECURELY COVERED IN AN APPROVED PURPLE POLYWRAP MATERIAL. ALL SERVICE FITTINGS, AIR RELEASE VALVES, ETC. MUST BE PAINTED WITH AN APPROVED PAINT, COLOR TO BE PANTONE 522C.
34. ALL PLASTIC METER BOX LIDS TO BE MANUFACTURED OF AN APPROVED PURPLE MATERIAL, NO PAINTING OF PLASTIC LIDS ALLOWED.
35. ALL DESIGN AND CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF 30 TAC 217.69
36. A MINIMUM OF 4 FT HORIZONTAL SEPARATION IS TO BE MAINTAINED BETWEEN POTABLE AND RECLAIMED WATER LINES AND SERVICES. WHERE THE MINIMUM 4 FT HORIZONTAL DISTANCE CANNOT BE MAINTAINED, EMBED THE RECLAIMED MAIN IN AN APPROVED CEMENT STABILIZED SAND WITHIN 4 FT OF THE POTABLE WATER LINE OR SERVICE.
37. WHERE RECLAIMED WATER MAINS CROSS POTABLE WATER MAINS AND SERVICES AND THE 4 FT MINIMUM DISTANCE CANNOT BE MAINTAINED, CENTER A JOINT OF THE RECLAIMED WATER ON THE POTABLE WATER PIPE, INSTALL THE RECLAIMED WATER MAIN BELOW THE POTABLE WATER WITH A MINIMUM OF 6 IN CLEARANCE, EMBED THE RECLAIMED MAIN IN AN APPROVED CEMENT STABILIZED SAND WITHIN 4 FT OF THE POTABLE WATER LINE OR SERVICE.
38. FINAL CONNECTION TO THE EXISTING RECLAIMED SYSTEM MAY NOT OCCUR UNTIL THE RECLAIMED MAINS AND SERVICES HAVE PASSED PRESSURE TESTING, CROSS CONNECTION TESTING AND ARE APPROVED FOR FINAL CONNECTION AND OPERATION BY THE CITY OF BOERNE.

ELECTRIC

39. ALL RIGID NON-METALLIC PIPE, FITTING AND SOLVENT CEMENT FOR UNDERGROUND PRIMARY INSTALLATION SHALL BE SUPPLIED BY THE SAME MANUFACTURER.
40. LONG SWEEP ELBOWS SHALL HAVE A MINIMUM 24 IN RADIUS.
41. THE CITY OF BOERNE MUST BE PRESENT TO INSPECT AT EACH STAGE OF CONDUIT INSTALLATION, BACKFILL, AND COMPACTION.
42. TORCH OR LOW FIRE BENDING OF CONDUITS WILL NOT BE ACCEPTED.
43. ALL MANDREL TESTING MUST BE COMPLETED PRIOR TO PROJECT ACCEPTANCE.
44. STREETLIGHTS, IF REQUIRED, MUST BE INSTALLED BEFORE ACCEPTANCE ON ALL ELECTRIC SYSTEMS NOT UNDER THE JURISDICTION OF THE CITY OF BOERNE.
45. EXCAVATION ADJACENT TO EXISTING POWER POLES WILL REQUIRE TEMPORARY BRACING AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO PROVIDE BRACING PLAN FOR UTILITY DEPARTMENT APPROVAL PRIOR TO EXCAVATION.

TREES

1. A TREE REMOVAL PERMIT IS REQUIRED PRIOR TO REMOVAL OF ANY TREE WITHIN THE CITY LIMITS.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN PROTECTIVE FENCING AT THE DRIP LINE OF ALL PROTECTED EXISTING TREES, UNLESS NOTED OTHERWISE ON THE CONSTRUCTION DRAWINGS. ANY DAMAGE TO ONSITE OR OFFSITE PRESERVED TREES DURING CONSTRUCTION RESULTING IN >25% CANOPY LOSS OR ROOT/TRUNK DAMAGE THAT WILL RESULT IN TREE MORTALITY SHALL BE MITIGATED ACCORDING TO SECTION 8.3.E OF THE CITY OF BOERNE UNIFIED DEVELOPMENT CODE AT THE CONTRACTOR'S EXPENSE.
3. ALL PROTECTIVE MEASURES SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY SITE OR GRADING WORK AND REMAIN IN PLACE UNTIL ALL EXTERIOR WORK HAS BEEN COMPLETED.
4. THE CITY URBAN FORESTER SHALL BE CONTACTED TO APPROVE THE PLACEMENT OF THE TREE PRESERVATION FENCING PRIOR TO BEGINNING OF SITE WORK ON PROPERTY.
5. THE FOLLOWING ACTIVITIES SHALL BE PROHIBITED WITHIN THE LIMITS OF THE PRIMARY ROOT ZONE: MATERIAL STORAGE, EQUIPMENT CLEANING/LIQUID DISPOSAL, AND CONSTRUCTION EQUIPMENT/VEHICULAR TRAFFIC. NO SIGNS OR WIRES SHALL BE ATTACHED TO TREES.
6. UNLESS SPECIFICALLY ALLOWED, NO GRADE CHANGES SHALL BE ALLOWED WITHIN THE LIMITS OF THE ROOT PROTECTION ZONE OF ANY PROTECTED TREE UNLESS THE CITY URBAN FORESTER APPROVES ADEQUATE CONSTRUCTION METHODS.
7. NO TRIMMING OF TREES MAY OCCUR WITHIN THE TREE PRESERVATION FENCING LIMITS WITHOUT PRIOR CONSENT OF THE CITY URBAN FORESTER.

REVEGETATION

1. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH. THE CONTRACTOR MUST LOOSEN THE SURFACE OF THE SOIL TO A DEPTH OF 2 INCHES AND REMOVE ALL STONES AND DEBRIS OVER 2 INCHES IN ANY DIMENSION. ALL AREAS FOR REVEGETATION REQUIRE A MINIMUM OF 4 INCHES OF SOIL, OVERCUTTING OF ROCK SUBGRADE MAY BE REQUIRED. ADDITIONAL TOPSOIL FROM THE STOCKPILED TOPSOIL MAY BE NECESSARY TO BRING TO REQUIRED GRADES AND FOR RE-ESTABLISHING VEGETATION. THE AREA SHALL THEN BE REVEGETATED AND MAINTAINED UNTIL SOIL IS STABILIZED IN ALL AREAS. ANY AREA DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE PROJECT SHALL BE CORRECTED BY THE CONTRACTOR.
2. THE CONTRACTOR MUST CONSTRUCT AND MAINTAIN A PERMANENT STABLE PROTECTIVE COVER (GRASS) FOR EROSION AND SEDIMENT CONTROL ON ALL LAND SURFACES EXPOSED OR DISTURBED BY CONSTRUCTION OF THE PERMITTED PROJECT. THE PROTECTIVE COVER MUST BE INSTALLED WITHIN 14 DAYS AFTER FINAL GRADING OF THE AFFECTED LAND SURFACE. A PERMANENT STABLE COVER MUST BE ESTABLISHED WITHIN 60 DAYS OF ITS INSTALLATION.
3. AT LEAST 85% OF ALL DISTURBED AREAS MUST HAVE VEGETATION ESTABLISHED PRIOR TO ACCEPTANCE BY THE CITY OF BOERNE.
4. DISTURBED AREAS THAT ARE SEEDED OR SODDED SHALL BE CHECKED PERIODICALLY TO SEE THAT GRASS COVERAGE IS PROPERLY MAINTAINED. DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND RE-SEEDED OR RE-SODDED IF NECESSARY.

RECORD DRAWINGS

1. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE DESIGN ENGINEER A COPY OF AS-BUILT PLANS IDENTIFYING ALL DEVIATIONS OR VARIATIONS FROM THE ORIGINAL PLANS.
2. THE DESIGN ENGINEER SHALL PROVIDE TO THE CITY OF BOERNE THE "PLAN OF RECORD", SIGNED AND SEALED BY THE DESIGN ENGINEER.
3. THE "PLAN OF RECORD" MUST INCLUDE PRINT LINE DATA AND PIPE TESTING INFORMATION FOR ALL GAS MAINS AND SERVICE LINES.

CUDEENGINEERS.COM

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REGENT PARK
UNIT 7

CITY OF BOERNE - GENERAL CONSTRUCTION NOTES

DATE: 02/11/2025
PROJECT NO.: 02133.230
DRAWN BY: MW/RM/JF
CHECKED BY: WPM

REVISIONS
1. 09/27/2024 - UPDATE TO CURRENT CoB NOTES
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C1

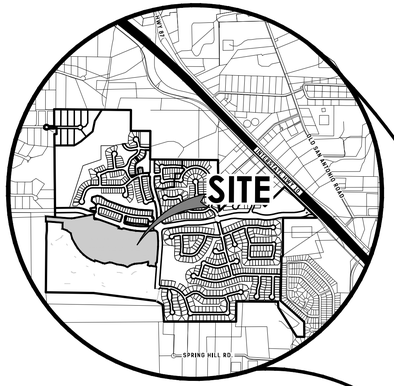
P:\02133\230\2-Drawings\07_01 CBGN.dwg 2025/02/11 3:36pm wmurphy

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.

STREET & DRAINAGE CONSTRUCTION PLANS

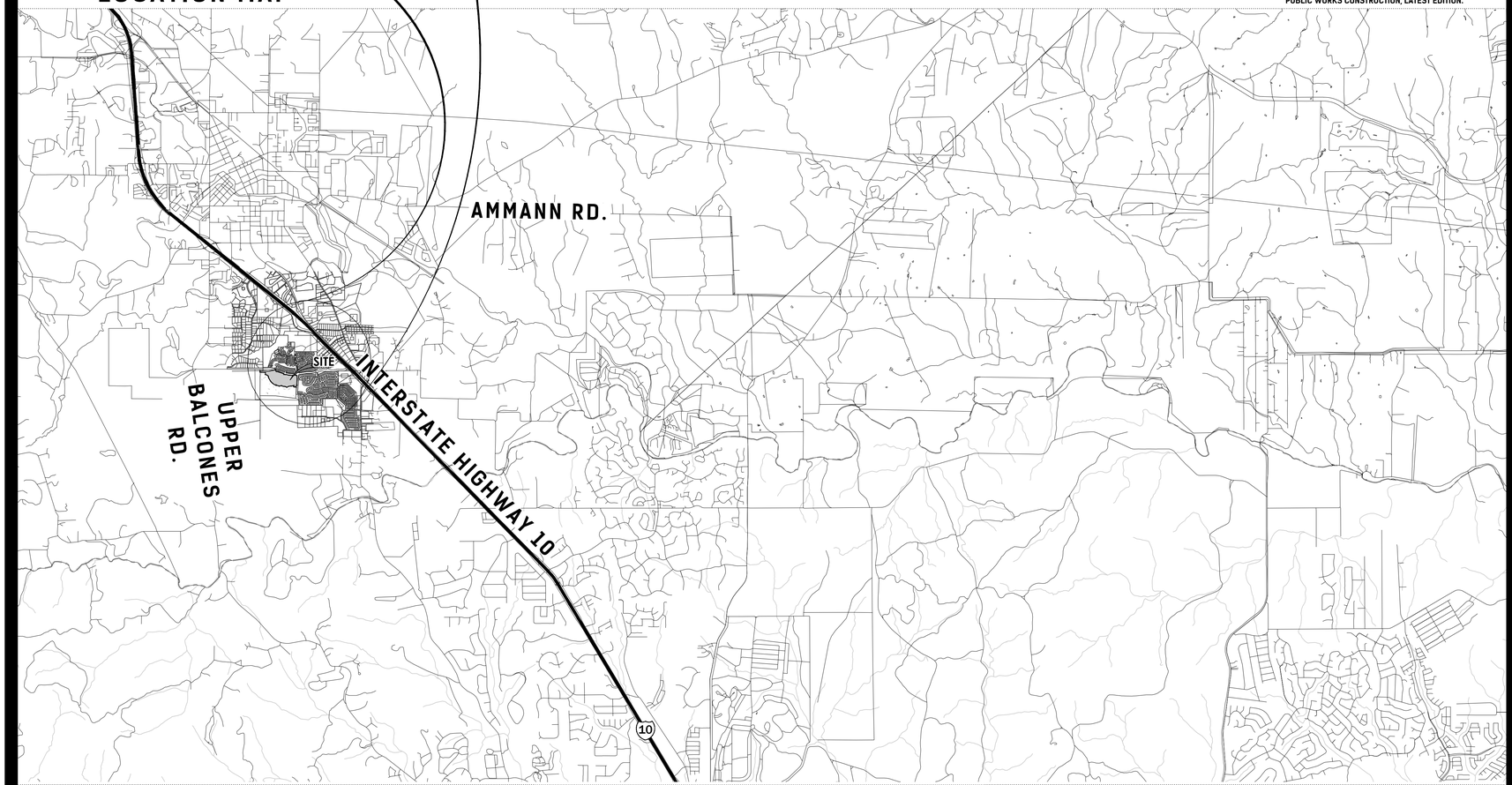
- C2 – OVERALL MASTER DRAINAGE & GRADING PLAN
- C3 – OVERALL MASTER DRAINAGE & GRADING PLAN
- C4 – STREET PLAN & PROFILE – NEWCROFT CROSSING & HANFRO WAY
- C5 – STREET PLAN & PROFILE – TORRINGTON CT. & WILBURN LANE
- C6 – STREET PLAN & PROFILE – TIMBER HOLLOW
- C7 – STREET PLAN & PROFILE – TURTLE COVE
- C8 – STREET PLAN & PROFILE – WESTHAVEN CT. SHEET 1 OF 2
- C9 – STREET PLAN & PROFILE – WESTHAVEN CT. SHEET 2 OF 2
- C10 – CITY OF BOERNE – STREET STANDARD DETAILS
- C11 – TRAFFIC SIGNAGE PLAN
- C12 – DRAINAGE PLAN & PROFILE – DRAIN "A7"
- C13 – DRAINAGE PLAN & PROFILE – DRAIN "A7"
- C14 – DRAINAGE PLAN & PROFILE – DRAIN "C7" & "D7"
- C15 – DRAINAGE PLAN & PROFILE – DRAIN "E7" & "G7"
- C16 – CITY OF BOERNE – DRAINAGE STANDARD DETAILS *
- C17 – CURB INLET DETAILS – TYPE 'C' *
- C18 – JUNCTION BOX PRE-CAST DETAILS *
- C19 – SINGLE BOX CULVERTS CAST-IN-PLACE DETAILS *
- C20 – SINGLE BOX CULVERTS PRE-CAST DETAILS *
- C21 – CAST-IN-PLACE DETAILS FOR 6' SPAN CULVERTS *
- C22 – CONCRETE WINGWALL DETAILS *

* DENOTES STANDARD DETAILS ADOPTED FOR USE ON THIS PROJECT.



LOCATION MAP

CONSTRUCTION OF ALL FACILITIES TO BE DEDICATED TO THE PUBLIC SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.



VICINITY MAP

REGENT PARK UNIT 7

STREET & DRAINAGE CONSTRUCTION PLANS

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 N.W. MILITARY, SUITE 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

DRAWN BY	DATE
AD/RM/MW/MS	03/28/2025
CHECKED BY	**PROJECT NO.**
W. PATRICK MURPHY, P.E.	02133.230

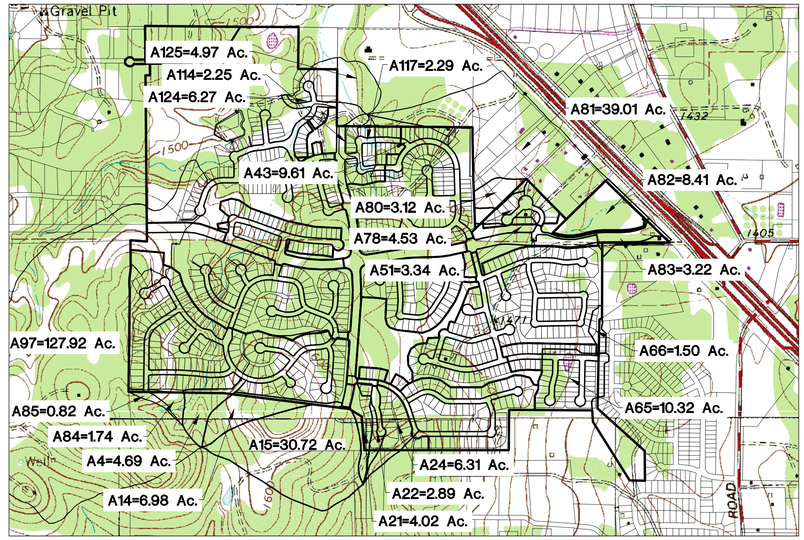
STATE OF TEXAS · W. PATRICK MURPHY · 111567 · LICENSED PROFESSIONAL ENGINEER

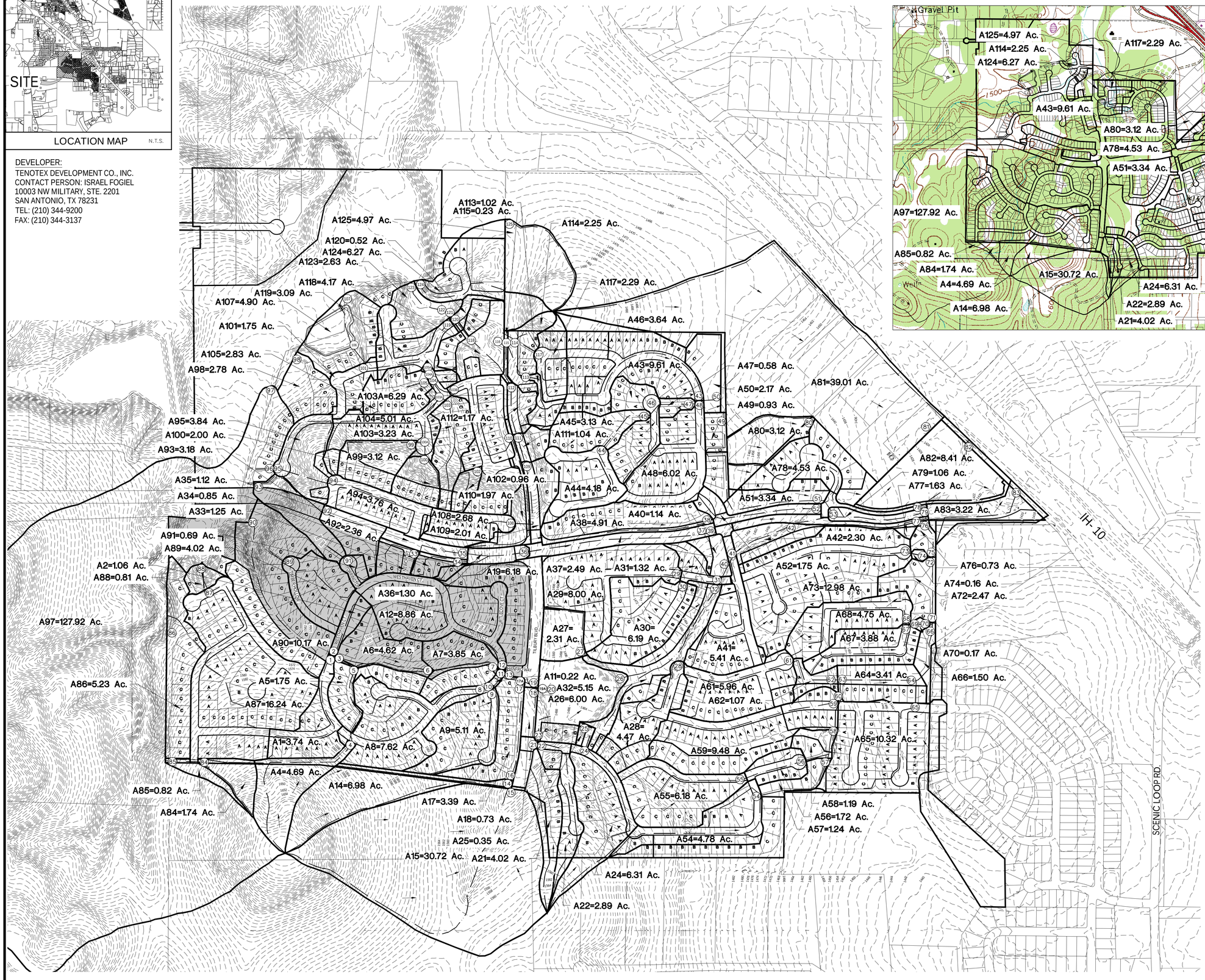
3/28/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

LOCATION MAP N.T.S.

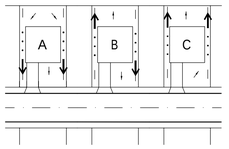
DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137





SCALE: 1"=800'
0 800 1600

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



TYPICAL LOT SITE PLAN
N.T.S.

SCALE: 1"=300'
0 300 600

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REGENT PARK UNIT 7

OVERALL MASTER DRAINAGE & GRADING PLAN

DATE
02/11/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATED UNIT 9 HYDROLOGY
2.
3.
4.
5.
6.
7.
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C2

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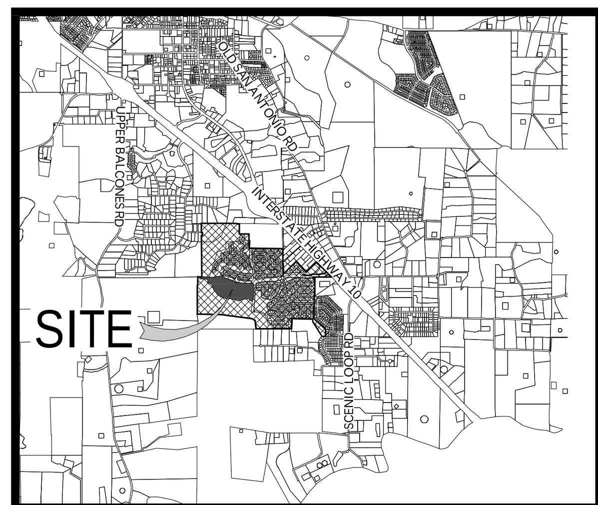

LOCATION MAP N.T.S.

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

Project Name: Regent Park Subdivision

Calculation Summary for Time of Concentrations

		Sheet Flow Tc Compuations						Shallow Conc. Tc Computations						Channel Flow Tc Computations			Overall			
Drainage Point	Drainage Area (Ac.)	Length	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	Length	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	Length	Velocity (fps)	Time of Concentration	Time of Concentration (min)	Lag Time (0.6 x Tc) (min)	Time of Concentration (hrs)	Lag Time (0.6 x Tc) (hrs)
1	3.74	186.0	N	1626.90	1617.10	5.27%	14	0.0	N	1250.40	1223.20		0	969.0	6	2.69	16.69	10.02	0.278	0.167
2	1.06	125.0	N	1577.98	1576.10	1.50%	15	0.0	N	1255.20	1235.40		0	395.0	6	1.10	16.10	9.66	0.268	0.161
3	0.00	186.0	N	1626.90	1617.10	5.27%	14	0.0	N	1250.40	1223.20		0	969.0	6	2.69	16.69	10.02	0.278	0.167
4	4.69	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	627.0	6	1.74	19.08	11.45	0.318	0.191
5	1.75	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	1185.0	6	3.29	20.63	12.38	0.344	0.206
6	4.62	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	1744.0	6	4.84	22.18	13.31	0.370	0.222
7	3.85	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	2190.0	6	6.08	23.42	14.05	0.390	0.234
8	7.62	300.0	N	1582.18	1564.04	6.05%	16	107.6	N	1564.04	1556.00	7.47%	0.4	592.0	6	1.64	18.05	10.83	0.301	0.181
9	5.11	300.0	N	1565.80	1543.80	7.33%	16	56.2	N	1543.80	1539.10	8.36%	0.2	590.0	6	1.64	17.84	10.70	0.297	0.178
10	0.00	300.0	N	1582.18	1564.04	6.05%	16	107.6	N	1564.04	1556.00	7.47%	0.4	592.0	6	1.64	18.05	10.83	0.301	0.181
11	0.22	300.0	N	1582.18	1564.04	6.05%	16	107.6	N	1564.04	1556.00	7.47%	0.4	746.0	6	2.07	18.48	11.09	0.308	0.185
12	8.86	300.0	N	1577.00	1568.40	2.87%	18	212.6	N	1568.40	1552.10	7.67%	0.8	612.0	6	1.70	20.49	12.29	0.342	0.205
13	0.00	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	2275.0	6	6.32	23.66	14.20	0.394	0.237
14	6.98	300.0	N	1680.00	1651.90	9.37%	15	550.0	N	1651.90	1591.60	10.96%	1.7	796.0	6	2.21	18.93	11.36	0.316	0.189
15	30.72	300.0	N	1680.00	1655.20	8.27%	15	550.0	N	1655.20	1585.00	12.76%	1.6	1530.0	6	4.25	20.83	12.50	0.347	0.208
16	0.00	300.0	N	1680.00	1655.20	8.27%	15	550.0	N	1655.20	1585.00	12.76%	1.6	1530.0	6	4.25	20.83	12.50	0.347	0.208
17	3.39	300.0	N	1680.00	1655.20	8.27%	15	550.0	N	1655.20	1585.00	12.76%	1.6	2268.0	6	6.30	22.88	13.73	0.381	0.229
17A	0.00	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	2397.0	6	6.66	24.00	14.40	0.400	0.240
18	0.73	12.0	N	1504.70	1504.46	2.00%	13	0.0	N	1661.10	1626.70		0	347.0	6	0.96	13.96	8.38	0.233	0.140
19	6.18	300.0	N	1555.96	1537.69	6.09%	16	347.4	N	1537.69	1509.10	8.23%	1.2	905.0	6	2.51	19.75	11.85	0.329	0.198
19A	0.00	300.0	N	1555.96	1537.69	6.09%	16	347.4	N	1537.69	1509.10	8.23%	1.2	905.0	6	2.51	19.75	11.85	0.329	0.198
20	0.00	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	2515.0	6	6.99	24.33	14.60	0.405	0.243
21	4.02	300.0	N	1573.00	1560.00	4.33%	18	550.0	N	1560.00	1523.60	6.62%	2.2	394.0	6	1.09	21.28	12.77	0.355	0.213
22	2.89	300.0	N	1573.00	1558.90	4.70%	17	280.1	N	1558.90	1546.40	4.46%	1.4	796.0	6	2.21	20.57	12.34	0.343	0.206
23	0.00	300.0	N	1573.00	1560.00	4.33%	18	550.0	N	1560.00	1523.60	6.62%	2.2	394.0	6	1.09	21.28	12.77	0.355	0.213
24	6.31	300.0	N	1573.00	1558.10	4.97%	17	537.7	N	1558.10	1527.30	5.73%	2.3	682.0	6	1.89	21.20	12.72	0.353	0.212
25	0.35	300.0	N	1573.00	1558.10	4.97%	17	537.7	N	1558.10	1527.30	5.73%	2.3	915.0	6	2.54	21.85	13.11	0.364	0.219
26	6.00	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	3149.0	6	8.75	26.09	15.65	0.435	0.261
27	2.31	267.6	N	1502.90	1485.90	6.35%	15	0.0	N	1.00	0.00	0.00%	0	290.0	6	0.81	15.81	9.48	0.263	0.158
28	4.47	300.0	N	1501.70	1487.90	4.60%	17	94.3	N	1487.90	1483.70	4.45%	0.5	505.0	6	1.40	18.86	11.32	0.314	0.189
29	8.00	300.0	N	1502.40	1484.10	6.10%	16	112.2	N	1484.10	1478.20	5.26%	0.5	702.0	6	1.95	18.45	11.07	0.308	0.185
30	6.19	300.0	N	1480.90	1470.90	3.33%	18	309.8	N	1470.90	1462.60	2.68%	2	84.0	6	0.23	20.19	12.12	0.337	0.202
31	1.32	300.0	N	1502.40	1484.10	6.10%	16	112.2	N	1484.10	1478.20	5.26%	0.5	997.0	6	2.77	19.27	11.56	0.321	0.193
32	5.15	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	4086.0	6	11.35	28.69	17.21	0.478	0.287
33	1.25	270.2	N	1572.34	1558.34	5.18%	16		N			0.00%	0	200.0	6	0.56	16.56	9.93	0.276	0.166
34	0.85	230.1	N	1566.90	1555.63	4.90%	15		N			0.00%	0	235.0	6	0.65	15.65	9.39	0.261	0.157
35	1.12	270.2	N	1572.34	1558.34	5.18%	16		N			0.00%	0	576.0	6	1.60	17.60	10.56	0.293	0.176
36	1.30	270.2	N	1572.34	1558.34	5.18%	16		N			0.00%	0	985.0	6	2.74	18.74	11.24	0.312	0.187
37	2.49	270.2	N	1572.34	1558.34	5.18%	16		N			0.00%	0	2276.0	6	6.32	22.32	13.39	0.372	0.223
38	4.91	186.7	N	1498.02	1489.23	4.71%	14	0.0	N	1.00	0.00	0.00%	0	870.0	6	2.42	16.42	9.85	0.274	0.164
39	0.00	270.2	N	1572.34	1558.34	5.18%	16		N			0.00%	0	2276.0	6	6.32	22.32	13.39	0.372	0.223
40	1.14	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	4249.0	6	11.80	29.14	17.49	0.486	0.291
41	5.41	273.7	N	1469.80	1461.60	3.00%	18	0.0	N	1.00	0.00	0.00%	0	750.0	6	2.08	20.08	12.05	0.335	0.201
42	2.30	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	4793.0	6	13.31	30.65	18.39	0.511	0.307
43	9.61	251.0	N	1501.40	1493.60	3.11%	17	0.0	N	1.00	0.00	0.00%	0	1198.0	6	3.33	20.33	12.20	0.339	0.203
44	4.18	227.3	N	1504.50	1501.10	1.50%	19		N	1.00	0.00	0.00%	0	569.0	6	1.58	20.58	12.35	0.343	0.206
45	3.13	227.3	N	1504.50	1501.10	1.50%	19		N	1.00	0.00	0.00%	0	985.0	6	2.74	21.74	13.04	0.362	0.217
46	3.64	294.9	N	1500.96	1485.06	5.39%	16	0.0	N	1.00	0.00	0.00%	0	340.0	6	0.94	16.94	10.17	0.282	0.169
47	0.58	227.3	N	1504.50	1501.10	1.50%	19		N	1.00	0.00	0.00%	0	1331.0	6	3.70	22.70	13.62	0.378	0.227
48	6.02	288.9	N	1501.00	1484.80	5.61%	16	0.0	N	1.00	0.00	0.00%	0	676.0	6	1.88	17.88	10.73	0.298	0.179
49	0.93	149.0	N	1472.10	1467.70	2.95%	14	0.0	N	1.00	0.00	0.00%	0	240.0	6	0.67	14.67	8.80	0.244	0.147
50	2.17	227.3	N	1504.50	1501.10	1.50%	19		N	1.00	0.00	0.00%	0	1512.0	6	4.20	23.20	13.92	0.387	0.232
51	3.34	150.8	N	1472.10	1467.80	2.85%	14	0.0	N	1.00	0.00	0.00%	0	1021.0	6	2.84	16.84	10.10	0.281	0.168
52	1.75	195.2	N	1474.00	1468.40	2.87%	16	0.0	N	1.00	0.00	0.00%	0	731.0	6	2.03	18.03	10.82	0.301	0.180
53	0.00	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	5036.0	6	13.99	31.33	18.80	0.522	0.313
54	4.78	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	93.0	6	0.26	19.08	11.45	0.318	0.191
55	6.18	300.0	N	1517.80	1497.40	6.80%	16	100.4	N	1497.40	1491.10	6.27%	0.4	527.0	6	1.46	17.87	10.72	0.298	0.179
56	1.72	300.0	N	1517.80	1497.40	6.80%	16	100.4	N	1497.40	1491.10	6.27%	0.4	956.0	6	2.66	19.07	11.44	0.318	0.191
57	1.24	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	687.0	6	1.91	20.73	12.44	0.345	0.207
58	1.19	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	909.0	6	2.53	21.35	12.81	0.356	0.213
59	9.48	300.0	N	1493.90	1481.40	4.17%	18	36.2	N	1481.40	1480.50	2.49%	0.2	1187.0	6	3.30	21.54	12.92	0.359	0.215
60	0.00	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	1093.0	6	3.04	21.86	13.11	0.364	0.219
61	5.96	297.4	N	1477.60	1469.10	2.86%	18	0.0	N	1.00	0.00	0.00%	0	614.0	6	1.71	19.71	11.82	0.328	0.197
62	1.07	297.4	N	1477.60	1469.10	2.86%	18	0.0	N	1.00	0.00	0.00%	0	1019.0	6	2.83	20.83	12.50	0.347	0.208
63	0.00	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	1241.0	6	3.45	22.27	13.36	0.371	0.223
64	3.41	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	1808.0	6	5.02	23.84	14.31	0.397	0.238
65	10.32	300.0	N	1458.19	1450.88	2.44%	19	108.4	N	1450.88	1448.87	1.85%	0.8	600.0	6	1.67	21.49	12.89	0.358	0.215
66	1.50	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	2204.0	6	6.12	24.94	14.97	0.416	0.249
67	3.88	150.4	N	1457.70	1454.90	1.86%	15	0.0	N	1.00	0.00	0.00%	0	783.0	6	2.18	17.18	10.31	0.286	0.172
68	4.75	232.6	N	1457.00	1454.40	1.50%	20	0.0	N	1.00	0.00	0.00%	0	889.0	6	2.47	22.47	13.48	0.374	0.225
69	0.00	232.6	N	1457.00	1454.40	1.50%	20	0.0	N	1.00	0.00	0.00%	0	889.0	6	2.47	22.47	13.48	0.374	0.225
70	0.17	232.6	N	1457.00	1454.40	1.50%	20	0.0	N	1.00	0.00	0.00%	0	1038.0	6	2.88	22.88	13.73	0.381	0.229
71	0.00	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	2204.0	6	6.12	24.94	14.97	0.416	0.249
72	2.47	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	2609.0	6	7.25	26.07	15.64	0.434	0.261
73	12.98	300.0	N	1459.50	1452.40	2.37%	19	33.1	N	1452.40	1451.80	1.81%	0.3	1361.0	6	3.78	23.03	13.82	0.384	0.230
74	0.16	300.0	N	1459.50	1452.40	2.37%	19	33.1	N	1452.40	1451.80	1.81%	0.3	1513.0	6	4.20	23.45	14.07	0.391	0.235
75	0.00	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	2609.0	6	7.25	26.07	15.64	0.434	0.261
76	0.73	300.0	N	1490.60	1480.70	3.30%	18	129.8	N	1480.70	1477.20	2.70%	0.8	2878.0	6	7.99	26.81	16.09	0.447	0.268
77	1.63	94.8	N	1434.10	1432.20	2.00%	13	0.0	N	1.00	0.00	0.00%	0	171.0	6	0.48	13.48	8.09	0.225	0.135
78	4.53	300.0	N	1466.50	1453.10	4.47%	18	52.7	N	1453.10	1451.70	2.66%	0.3	835.0	6	2.32	20.65	12.39	0.344	0.206
79	1.06	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	5725.0	6	15.90	33.24	19.95	0.554	0.332
80	3.12	300.0	N	1466.20	1453.00	4.40%	18	330.5	N	1453.00	1444.10	2.69%	2.1		6	0.00	20.08	12.05	0.335	0.201
81	39.01	300.0	N	1507.00	1501.90	1.70%	20	550.0	N	1501.90	1472.60	5.33%	2.5	2435.0	6	6.76	29.21	17.53	0.487	0.292
82	8.41	300.0	N	1680.00	1661.10	6.30%	16	387.1	N	1661.10	1626.70	8.89%	1.3	6314.0	6	17.54	34.88	20.93	0.581	0.349
83	3.22	182.4	N	1434.10	1425.80	4.55%	14	0.0	N		0.00	0.00%	0	585.0	6	1.63	15.63	9.38	0.260	0.156
84	1.74	300.0	N	1667.40	1626.10	13.77%	13	227.3	N	1626.10	1600.16	11.41%	0.7		6	0.00	13.69	8.21	0.228	0.137
85	0.82	300.0	N	1667.40	1626.10	13.77%	13	227.3	N	1626.10	1600.16	11.41%	0.7	229.0	6	0.64	14.33	8.60	0.239	0.143
86	5.23	300.0	N	1563.30	1540.70	7.53%	15	72.7	N	1540.70	1509.60	42.78%	0.1		6	0.00	15.11	9.07	0.252	0.151
87	16.24	300.0	N	1606.30	1590.40	5.30%	17	335.4	N	1590.40	1569.70	6.17%	1.4	869.0	6	2.41	20.80	12.48	0.347	0.208
88	0.81	300.0	N	1606.30	1590.40	5.30%	17	335.4	N	1590.40	1569.70	6.17%	1.4	1075.0	6	2.99	21.38	12.83	0.356	0.214
89	4.02	300.0	N	1573.10	1561.50	3.87%	18	216.4	N	1561.50	1550.90	4.90%	1	97.0	6	0.27	19.27	11.56	0.321	0.193
90	10.17	300.0	N	1577.20	1565.20	4.00%	18	469.7	N	1565.20	1543.80	4.56%	2.3	538.0	6	1.49	21.75	13.05	0.363	0.218
91	0.69	100.7	N	1572.60	1570.20	2.38%	12		N			0.00%	0	135.0	6	0.38	12.38	7.43	0.206	0.124
92	2.36	292.5	N	1572.50	1558.00	4.96%	17		N			0.00%	0	445.0	6	1.24	18.24	10.94	0.304	0.182
93	3.18	292.5	N	1572.50	1558.00	4.96%	17		N			0.00%	0	1030.0	6	2.86	19.86	11.92	0.331	0.199
94	3.76	182.8	N	1552.90	1541.90	6.02%	13		N			0.00%	0	488.0	6	1.36	14.36	8.61	0.239	0.144
95	3.84	244.8	N	1521.38	1490.64	12.56%	13		N			0.00%	0	573.9	6	1.59	14.59	8.76	0.243	0.146
96	0.00	182.8	N	1552.90	1541.90	6.02%	13		N			0.00%	0	840.1	6	2.33	15.33	9.20	0.256	0.153
97	127.92	0.0	N	1531.60	1503.30	#DIV/0!	0		N			0.00%	0		6	0.00				
98	2.78		N	1531.60	1502.34	#DIV/0!	0		N	1502.34	1488.68	0.00%	0		6	0.00				
99	3.12	258.7	N	1534.13	1499.65	13.33%	13		N	1504.10	1481.50	0.00%	0	474.9	6	1.32	14.32	8.59	0.239	0.143
100	2.00	250.2	N	1538.00	1490.00	19.18%	12					0.00%		148.7	6	0.41	12.41	7.45	0.207	0.124
100A	0.00	258.7	N	1534.13	1499.65	13.33%	13		N	1504.10	1481.50	0.00%	0	533.5	6	1.48	14.48	8.69	0.241	0.145
101	1.75	106.4	N	1483.80	1479.60	3.95%	11		N			0.00%	0	298.6	6	0.83	11.83	7.10	0.197	0.118
102	0.96	300.0	N	1537.44	1493.58	14.62%	13	29.9	N	1493.58	1485.92	25.58%	0.1	59.0	6	0.16	13.22	7.93	0.220	0.132
103	3.23	300.0	N	1537.39	1491.06	15.44%	13	190.5	N	1491.06	1468.52	11.83%	0.6	320.1	6	0.89	14.46	8.68	0.241	0.145
103A	0.00	258.7	N	1534.13	1499.65	13.33%	13		N	1504.10	1481.50	0.00%	0	879.9	6	2.44	15.44	9.27	0.257	0.154
103B	6.29	195.7	N	1478.80	1470.30	4.34%	15		N			0.00%	0	677.0	6	1.88	16.88	10.13	0.281	0.169
104	5.01	195.7	N	1478.80	1470.30	4.34%	15		N			0.00%	0	849.0	6	2.36	17.36	10.42	0.289	0.174
104A	0.00	195.7	N	1478.80	1470.30	4.34%	15		N			0.00%	0	849.0	6	2.36	17.36	10.42	0.289	0.174
105	2.83	158.3	N	1473.80	1467.60	3.92%	14		N			0.00%	0	363.0	6	1.01	15.01	9.01	0.250	0.150
105A	0.00	195.7	N	1478.80	1470.30	4.34%	15		N			0.00%	0	849.0	6	2.36	17.36	10.42	0.289	0.174
106	0.00	195.7	N	1478.80	1470.30	4.34%	15		N			0.00%	0	1597.9	6	4.44	19.44	11.66	0.324	0.194
107	4.90	195.7	N	1478.80	1470.30	4.34%	15		N			0.00%	0	1976.0	6	5.49	20.49	12.29	0.341	0.205
108	2.68	300.0	N	1544.20	1528.60	5.20%	17	5.3	N	1528.60	1528.50	1.89%	0	153.0	6	0.43	17.47	10.48	0.291	0.175
109	2.01	300.0	N	1544.20	1528.60	5.20%	17	5.3	N	1528.60	1528.50	1.89%	0	726.0	6	2.02	19.06	11.43	0.318	0.191
110	1.97	300.0	N	1542.00	1516.70	8.43%	15	129.4	N	1516.70	1508.50	6.34%	0.5	704.0	6	1.96	17.49	10.49	0.291	0.175
111	1.04	300.0	N	1544.20	1528.60	5.20%	17	5.3	N	1528.60	1528.50	1.89%	0	923.0	6	2.56	19.60	11.76	0.327	0.196
112	1.17	300.0	N	1544.20	1528.60	5.20%	17	5.3	N	1528.60	1528.50	1.89%	0	1258.0	6	3.49	20.53	12.32	0.342	0.205
113	1.02	169.5	N	1502.00	1492.60	5.55%	13		N			0.00%	0	322.0	6	0.89	13.89	8.34	0.232	0.139
114	2.25	216.5	N	1478.10	1469.30	4.06%	16		N			0.00%	0	52.0	6	0.14	16.14	9.69	0.269	0.161
115	0.23	1.0	N	1430.50	1430.40	10.00%	10		N			0.00%	0	277.3	6	0.77	10.77	6.46	0.180	0.108
116	0.00	216.5	N	1478.10	1469.30	4.06%	16		N			0.00%	0	52.0	6	0.14	16.14	9.69	0.269	0.161
117	2.29	268.5	N	1502.05	1488.75	4.95%	16		N			0.00%	0	215.0	6	0.60	16.60	9.96	0.277	0.166
118	4.17	300.0	N	1544.20	1528.60	5.20%	17	5.3	N	1528.60	1528.50	1.89%	0	1706.0	6	4.74	21.78	13.07	0.363	0.218
119	3.09	71.1	N	1470.27	1469.20	1.50%	14		N			0.00%	0	666.0	6	1.85	15.85	9.51	0.264	0.159
120	0.52	62.8	N	1452.00	1451.06	1.50%	14		N			0.00%	0	58.0	6	0.16	14.16	8.50	0.236	0.142
121	0.00	71.1	N	1470.27	1469.20	1.50%	14		N			0.00%	0	666.0	6	1.85	15.85	9.51	0.264	0.159
122	0.00	300.0	N	1544.20	1528.60	5.20%	17	5.3	N	1528.60	1528.50	1.89%	0	1896.0	6	5.27	22.31	13.38	0.372	0.223
123	2.63	300.0	N	1544.20	1528.60	5.20%	17	5.3	N	1528.60	1528.50	1.89%	0	2288.0	6	6.36	23.40	14.04	0.390	0.234
124	6.27	238.5	N	1465.41	1449.80	6.55%	14		N			0.00%	0	458.0	6	1.27	15.27	9.16	0.255	0.153
125	4.97	300.0	N	1507.00	1492.40	4.87%	17	600.0	N	1492.40	1468.00	4.07%	3.1	35.0	6	0.10	20.18	12.11	0.336	0.202

RATIONAL METHOD HYDROLOGY

PT. #	AREA (Ac.)	AREA OF ACCUMULATION (Ac.)	TOTAL ACRES	C	CCf (25)	CCf (100)	Tc	I5	I10	I25	I100	Q5	Q10	Q25	Q100
1	3.74	=A1	3.74	0.57	0.63	0.71	16.69	5.10	6.63	7.91	8.99	10.87	14.13	18.55	23.96
2	1.06	=A2	1.06	0.57	0.63	0.71	16.10	5.18	6.84	8.17	9.13	3.13	4.13	5.43	6.90
3	0.00	=A1:A3	4.80	0.57	0.63	0.71	16.69	5.10	6.63	7.91	8.99	13.95	18.14	23.81	30.75
4	4.69	=A4	4.69	0.44	0.48	0.55	19.08	4.80	5.76	6.88	8.41	9.82	11.79	15.49	21.51
5	1.75	=A4+A5	6.44	0.47	0.52	0.59	20.63	4.62	5.36	6.40	8.09	14.06	16.31	21.42	30.77
6	4.62	=A1:A6	15.86	0.54	0.59	0.67	22.18	4.47	5.20	6.20	7.83	38.05	44.26	58.05	83.31
7	3.85	=A1:A7	19.71	0.54	0.60	0.68	23.42	4.36	5.06	6.04	7.63	46.61	54.09	71.03	101.96
8	7.62	=A8	7.62	0.57	0.63	0.71	18.05	4.93	6.14	7.32	8.66	21.41	26.67	34.97	47.02
9	5.11	=A9	5.11	0.57	0.63	0.71	17.84	4.96	6.21	7.41	8.71	14.45	18.09	23.74	31.71
10	0.00	=A8:A10	12.73	0.57	0.63	0.71	18.05	4.93	6.14	7.32	8.66	35.77	44.55	58.43	78.55
11	0.22	=A8:A11	12.95	0.57	0.63	0.71	18.48	4.87	5.98	7.14	8.56	35.95	44.14	57.97	78.98
12	8.86	=A12	8.86	0.57	0.63	0.71	20.49	4.63	5.38	6.42	8.11	23.38	27.17	35.66	51.20
13	0.00	=A1:A13	41.52	0.56	0.62	0.70	23.66	4.34	5.04	6.01	7.59	100.91	117.19	153.71	220.60
14	6.98	=A14	6.98	0.43	0.47	0.54	18.93	4.82	5.82	6.94	8.45	14.46	17.46	22.90	31.68
15	30.72	=A15	30.72	0.41	0.45	0.51	20.83	4.60	5.34	6.37	8.05	57.98	67.31	88.32	126.83
16	0.00	=A14:A16	37.70	0.41	0.46	0.52	20.83	4.60	5.34	6.37	8.05	71.74	83.29	109.28	156.94
17	3.39	=A14:A17	41.09	0.43	0.47	0.53	22.88	4.41	5.12	6.11	7.71	77.32	89.77	117.84	168.98
17A	0.00	=A1:A17A	82.61	0.49	0.54	0.62	24.00	4.30	5.00	5.97	7.53	175.20	203.72	267.56	383.50
18	0.73	=A18	0.73	0.57	0.63	0.71	13.96	5.54	7.28	9.16	9.81	2.31	3.03	4.19	5.10
19	6.18	=A19	6.18	0.57	0.63	0.71	19.75	4.71	5.52	6.59	8.25	16.59	19.44	25.54	36.33
19A	0.00	=A18+A19+A19A	6.91	0.57	0.63	0.71	19.75	4.71	5.52	6.59	8.25	18.55	21.74	28.55	40.62
20	0.00	=A1:A20	89.52	0.50	0.55	0.62	24.33	4.27	4.97	5.93	7.48	190.78	222.06	291.44	417.75
21	4.02	=A21	4.02	0.51	0.57	0.64	21.28	4.56	5.29	6.32	7.98	9.44	10.95	14.38	20.64
22	2.89	=A22	2.89	0.55	0.61	0.69	20.57	4.63	5.37	6.41	8.10	7.36	8.54	11.21	16.10
23	0.00	=A21:A23	6.91	0.53	0.58	0.66	21.28	4.56	5.29	6.32	7.98	16.69	19.36	25.44	36.50
24	6.31	=A24	6.31	0.54	0.60	0.68	21.20	4.57	5.30	6.33	7.99	15.60	18.10	23.77	34.10
25	0.35	=A24+A25	6.66	0.54	0.60	0.68	21.85	4.51	5.23	6.24	7.88	16.30	18.90	24.80	35.60
26	6.00	=A1:A26	109.09	0.51	0.56	0.64	26.09	4.11	4.78	5.70	7.19	227.99	265.16	347.81	498.56
27	2.31	=A27	2.31	0.59	0.65	0.74	15.81	5.22	6.95	8.29	9.21	7.11	9.47	12.43	15.69
28	4.47	=A28	4.47	0.59	0.65	0.74	18.86	4.83	5.84	6.97	8.47	12.74	15.40	20.22	27.92
29	8.00	=A29	8.00	0.59	0.65	0.74	18.45	4.88	5.99	7.15	8.57	23.03	28.27	37.12	50.56
30	6.19	=A30	6.19	0.59	0.65	0.74	20.19	4.66	5.41	6.46	8.16	17.02	19.76	25.95	37.25
31	1.32	=A29+A31	9.32	0.59	0.65	0.74	19.27	4.77	5.69	6.80	8.37	26.23	31.29	41.13	57.53
* 32	5.15	=A1:A28+A30+A32	127.21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	1.25	=A33	1.25	0.57	0.63	0.71	16.56	5.12	6.68	7.97	9.02	3.65	4.76	6.25	8.03
34	0.85	=A34	0.85	0.57	0.63	0.71	15.65	5.24	7.00	8.36	9.24	2.54	3.39	4.46	5.60
35	1.12	=A33+A35	2.37	0.58	0.64	0.73	17.60	4.99	6.30	7.52	8.77	6.86	8.66	11.37	15.07
36	1.30	=A33:A36	4.52	0.58	0.64	0.73	18.74	4.84	5.89	7.03	8.50	12.69	15.44	20.27	27.85
37	2.49	=A33:A37	7.01	0.58	0.64	0.73	22.32	4.46	5.18	6.18	7.81	18.13	21.06	27.64	39.69
38	4.91	=A38	4.91	0.58	0.64	0.73	16.42	5.14	6.73	8.03	9.06	14.64	19.17	25.15	32.25
39	0.00	=A33:A39	11.92	0.58	0.64	0.73	22.32	4.46	5.18	6.18	7.81	30.83	35.81	47.00	67.49
* 40	1.14	=A1:A40	149.59	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	5.41	=A41	5.41	0.58	0.64	0.73	20.08	4.67	5.42	6.47	8.18	14.77	17.14	22.51	32.34
* 42	2.30	=A1:A42	157.30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	9.61	=A43	9.61	0.59	0.65	0.74	20.33	4.65	5.39	6.44	8.14	26.37	30.56	40.17	57.69
44	4.18	=A44	4.18	0.59	0.65	0.74	20.58	4.63	5.37	6.41	8.09	11.42	13.24	17.39	24.94
45	3.13	=A44+A45	7.31	0.59	0.65	0.74	21.74	4.52	5.24	6.26	7.90	19.49	22.60	29.70	42.59
46	3.64	=A46	3.64	0.59	0.65	0.74	16.94	5.07	6.54	7.80	8.93	10.89	14.05	18.43	23.97
47	0.58	=A44:A47	11.53	0.59	0.65	0.74	22.70	4.43	5.14	6.13	7.74	30.14	34.97	45.87	65.82
48	6.02	=A48	6.02	0.59	0.65	0.74	17.88	4.95	6.20	7.40	8.70	17.58	22.02	28.91	38.63
49	0.93	=A49	0.93	0.59	0.65	0.74	14.67	5.39	7.25	8.81	9.53	2.96	3.98	5.32	6.54
50	2.17	=A43:A48+A50	29.33	0.59	0.65	0.74	23.20	4.38	5.09	6.07	7.66	75.79	88.08	115.54	165.69
51	3.34	=A51	3.34	0.59	0.65	0.74	16.84	5.08	6.58	7.85	8.96	10.01	12.97	17.02	22.07
52	1.75	=A52	1.75	0.59	0.65	0.74	18.03	4.93	6.14	7.33	8.67	5.09	6.34	8.33	11.19
* 53	0.00	=A1:A42+A51:A53	162.39	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
54	4.78	=A54	4.78	0.57	0.63	0.71	19.08	4.80	5.76	6.88	8.41	13.08	15.69	20.62	28.64
55	6.18	=A55	6.18	0.57	0.63	0.71	17.87	4.95	6.20	7.40	8.70	17.44	21.84	28.67	38.31
56	1.72	=A55:A56	7.90	0.57	0.63	0.71	19.07	4.80	5.77	6.88	8.42	21.61	25.98	34.08	47.39
57	1.24	=A54+A57	6.02	0.57	0.63	0.71	20.73	4.61	5.35	6.39	8.07	15.82	18.36	24.12	34.61
58	1.19	=A54:A58	15.11	0.57	0.63	0.71	21.35	4.55	5.29	6.31	7.97	39.19	45.56	59.78	85.80
59	9.48	=(CAP)A54	7.20	0.59	0.65	0.74	21.54	4.54	5.27	6.28	7.94	19.29	22.40	29.36	42.18
60	0.00	=A54:A58+(CAP)A59+A60	22.31	0.58	0.64	0.72	21.86	4.51	5.23	6.24	7.88	58.09	67.37	88.42	126.88
61	5.96	=A61	5.96	0.59	0.65	0.74	19.71	4.72	5.54	6.61	8.26	16.60	19.48	25.57	36.31
62	1.07	=A61+A62	7.03	0.59	0.65	0.74	20.83	4.60	5.34	6.37	8.05	19.08	22.15	29.06	41.74
63	0.00	=A54:A58+(CAP)A59+A60:A63	29.34	0.58	0.64	0.73	22.27	4.47	5.19	6.19	7.82	76.10	88.36	115.92	166.42
64	3.41	=A54:A58+(CAP)A59+A60:A64	32.75	0.58	0.64	0.73	23.84	4.32	5.02	5.99	7.56	82.21	95.53	125.39	179.83
65	10.32	=(CO)A59+A65	12.60	0.59	0.65	0.74	21.49	4.54	5.27	6.29	7.94	33.74	39.17	51.42	73.76
66	1.50	=A54:A66	46.85	0.58	0.64	0.73	24.94	4.22	4.90	5.85	7.37	115.34	133.93	175.88	251.80
67	3.88	=A67	3.88	0.59	0.65	0.74	17.18	5.04	6.45	7.70	8.87	11.54	14.77	19.39	25.38
68	4.75	=A68	4.75	0.59	0.65	0.74	22.47	4.45	5.17	6.16	7.78	12.47	14.49	18.99	27.25
69	0.00	=A67:A69	8.63	0.59	0.65	0.74	22.47	4.45	5.17	6.16	7.78	22.66	26.32	34.50	49.52
70	0.17	=A67:A70	8.80	0.59	0.65	0.74	22.88	4.41	5.12	6.11	7.71	22.90	26.58	34.90	50.04
71	0.00	=A54:A71	55.65	0.58	0.64	0.73	24.94	4.22	4.90	5.85	7.37	137.24	159.36	209.28	299.61
72	2.47	=A54:A72	58.12	0.58	0.64	0.73	26.07	4.11	4.78	5.70	7.19	139.67	162.44	213.07	305.42
73	12.98	=A73	12.98	0.59	0.65	0.74	23.03	4.40	5.11	6.09	7.69	33.70	39.13	51.30	73.61
74	0.16	=A73:A74	13.14	0.59	0.65	0.74	23.45	4.36	5.06	6.04	7.62	33.80	39.23	51.51	73.84
75	0.00	=A54:A75	71.26	0.59	0.64	0.73	26.07	4.11	4.78	5.70	7.19	171.54	199.50	261.69	375.11
76	0.73	=A54:A76	71.99	0.59	0.64	0.73	26.81	4.04	4.70	5.61	7.07	170.34	198.17	260.20	372.63
77	1.63	=A77	1.63	0.59	0.65	0.74	13.48	5.64	7.30	9.41	10.01	5.42	7.02	9.95	12.03
78	4.53	=A78	4.53	0.59	0.65	0.74	20.65	4.62	5.36	6.40	8.08	12.35	14.33	18.82	26.99
* 79	1.06	=A1:A42+A51:A79	241.60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
80	3.12	=A80	3.12	0.59	0.65	0.74	20.08	4.67	5.42	6.47	8.18	8.60	9.98	13.10	18.82
81	39.01	=A80:A81	42.13	0.61	0.67	0.76	29.21	3.81	4.44	5.30	6.67	97.91	114.10	149.83	214.27
* 82	8.41	=A1:A82	322.40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
83	3.22	=A83	3.22	0.59	0.65	0.74	15.63	5.24	7.01	8.37	9.25	9.95	13.32	17.49	21.97
84	1.74	=A84	1.74	0.44	0.48	0.55	13.69	5.59	7.29	9.30	9.92	4.28	5.58	7.83	9.49
85	0.82	=A84+A85	2.56	0.44	0.48	0.55	14.33	5.46	7.27	8.98	9.67	6.15	8.19	11.13	13.62
86	5.23	=A86	5.23	0.57	0.63	0.71	15.11	5.31	7.20	8.59	9.37	15.83	21.46	28.17	34.92
87	16.24	=A87	16.24	0.57	0.63	0.71	20.80	4.60	5.34	6.38	8.06	42.58	49.43	64.96	93.26
88	0.81	=A87:A88	17.05	0.57	0.63	0.71	21.38	4.55	5.28	6.30	7.96	44.22	51.31	67.35	96.70
89	4.02	=A89	4.02	0.57	0.63	0.71	19.27	4.77	5.69	6.80	8.37	10.93	13.04	17.14	23.97
90	10.17	=A89+A90	14.19	0.57	0.63	0.71	21.75	4.52	5.24	6.26	7.90	36.56	42.38	55.70	79.87
91	0.69	=A91	0.69	0.57	0.63	0.71	12.38	5.87	7.35	9.96	10.45	2.31	2.89	4.31	5.14
92	2.36	=A92	2.36	0.57	0.63	0.71	18.24	4.91	6.07	7.24	8.62	6.60	8.17	10.71	14.49
93	3.18	=A91:A93	6.23	0.57	0.63	0.71	19.86	4.70	5.48	6.54	8.22	16.69	19.46	25.55	36.49
94	3.76	=A94	3.76	0.59	0.65	0.74	14.36	5.45	7.27	8.96	9.66	12.09	16.13	21.86	26.79
95	3.84	=A95	3.84	0.59	0.65	0.74	14.59	5.41	7.26	8.85	9.56	12.26	16.45	22.06	27.07
96	0.00	=A94:A96	7.60	0.59	0.65	0.74	15.33	5.28	7.12	8.50	9.32	23.68	31.93	41.93	52.24
97	127.92	=A97	127.92												
98	2.78	=A98	2.78												
99	3.12	=A99	3.12	0.59	0.65	0.74	14.32	5.46	7.27	8.98	9.67	10.05	13.38	18.18	22.25
100	2.00	=A100	2.00	0.59	0.65	0.74	12.41	5.86	7.34	9.95	10.44	6.91	8.66	12.92	15.40
100A	0.00	=A99:A100A	5.12	0.59	0.65	0.74	14.48	5.43	7.26	8.90	9.61	16.40	21.93	29.57	36.29
101	1.75	=A101	1.75	0.59	0.65	0.74	11.83	5.98	7.37	10.24	10.67	6.17	7.61	11.63	13.77
102	0.96	=A102	0.96	0.59	0.65	0.74	13.22	5.69	7.31	9.54	10.11	3.22	4.14	5.94	7.16
103	3.23	=A102+A103	4.19	0.59	0.65	0.74	14.46	5.43	7.26	8.91	9.62	13.42	17.95	24.23	29.73
103A	0.00	=A99:A100A+A102:A103A	9.31	0.59	0.65	0.74	15.44	5.26	7.08	8.45	9.29	28.89	38.89	51.06	63.79
103B	6.29	=A103B	6.29	0.59	0.65	0.74	16.88	5.08	6.56	7.83	8.95	18.85	24.34	31.96	41.52
104	5.01	=A103B:A104	11.30	0.59	0.65	0.74	17.36	5.02	6.39	7.62	8.83	33.47	42.60	55.88	73.59
104A	0.00	=A99:A100A+A102:A104A	20.61	0.59	0.65	0.74	17.36	5.02	6.39	7.62	8.83	61.04	77.70	101.92	134.21
105	2.83	=A105	2.83	0.59	0.65	0.74	15.01	5.32	7.24	8.64	9.40	8.88	12.09	15.87	19.62
105A	0.00	=A99:A100+A102:A105A	23.44	0.59	0.65	0.74	17.36	5.02	6.39	7.62	8.83	69.42	88.37	115.92	152.64
106	0.00	=A99:A106	25.19	0.59	0.65	0.74	19.44	4.75	5.63	6.72	8.33	70.59	83.67	109.86	154.75
107	4.90	=A99:A107	30.09	0.59	0.65	0.74	20.49	4.63	5.38	6.42	8.11	82.20	95.51	125.37	179.97
108	2.68	=A108	2.68	0.59	0.65	0.74	17.47	5.00	6.35	7.58	8.80	7.91	10.04	13.18	17.39
109	2.01	=A108:A109	4.69	0.59	0.65	0.74	19.06	4.80	5.77	6.89	8.42	13.28	15.97	20.97	29.12
110	1.97	=A110	1.97	0.59	0.65	0.74	17.49	5.00	6.34	7.57	8.80	5.81	7.37	9.68	12.79
111	1.04	=A108:A109+A111	5.73	0.59	0.65	0.74	19.60	4.73	5.57	6.65	8.29	15.99	18.83	24.73	35.03
112	1.17	=A108:A112	8.87	0.59	0.65	0.74	20.53	4.63	5.37	6.41	8.10	24.23	28.10	36.90	52.99
113	1.02	=A113	1.02	0.59	0.65	0.74	13.89	5.55	7.28	9.20	9.84	3.34	4.38	6.09	7.40
114	2.25	=A114	2.25	0.55	0.61	0.69	16.14	5.17	6.83	8.15	9.12	6.40	8.45	11.09	14.11
115	0.23	=A115	0.23	0.55	0.61	0.69	10.77	6.20	7.41	10.77	11.09	0.78	0.94	1.50	1.75
116	0.00	=A113:A116	3.50	0.55	0.61	0.69	16.14	5.17	6.83	8.15	9.12	9.95	13.15	17.26	21.95
117	2.29	=A117	2.29	0.58	0.64	0.73	16.60	5.12	6.66	7.95	9.01	6.80	8.85	11.62	14.96
118	4.17	=A108:A118	18.83	0.58	0.64	0.73	21.78	4.51	5.24	6.25	7.90	49.26	57.23	75.08	107.85
119	3.09	=A119	3.09	0.59	0.65	0.74	15.85	5.21	6.93	8.27	9.19	9.50	12.63	16.58	20.94
120	0.52	=A120	0.52	0.59	0.65	0.74	14.16	5.49	7.27	9.06	9.74	1.68	2.23	3.06	3.74
121	0.00	=A119:A121	3.61	0.59	0.65	0.74	15.85	5.21	6.93	8.27	9.19	11.10	14.76	19.38	24.47
122	0.00	=A108:A122	22.44	0.58	0.64	0.73	22.31	4.46	5.18	6.18	7.81	58.05	67.42	88.48	127.06
123	2.63	=A108:A123	25.07	0.59	0.65	0.74	23.40	4.36	5.07	6.05	7.63	64.49	74.99	98.44	141.07
124	6.27	=A124	6.27	0.67	0.74	0.84	15.27	5.29	7.14	8.52	9.33	22.22	29.99	39.37	48.99
125	4.97	=A125	4.97	0.44	0.48	0.55	20.18	4.66	5.41	6.46	8.16	10.19	11.83	15.54	22.31

* - 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

SCS Culvert Hydrology With Detention

HEC RAS - ID	Point #	SCS Flows (CFS)					
		Q (2yr)	Q (5yr)	Q (10yr)	Q (25yr)	Q (50yr)	Q (100yr)
XS 4680	32	141.12	217.07	259.40	307.05	352.43	374.85
XS 4545	35	136.47	213.37	255.02	303.17	347.49	371.35
XS 3996	37	128.09	208.44	251.38	298.66	342.69	365.94
XS 3745	48	127.52	208.17	251.03	298.45	342.54	365.65
XS 3027	74	332.58	542.43	659.92	802.28	934.57	1011.37
XS 2454	77	475.51	762.64	933.73	1122.00	1343.05	1463.23

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REGENT PARK
UNIT 7

OVERALL MASTER DRAINAGE & GRADING PLAN

DATE
02/11/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATED UNIT 9 HYDROLOGY
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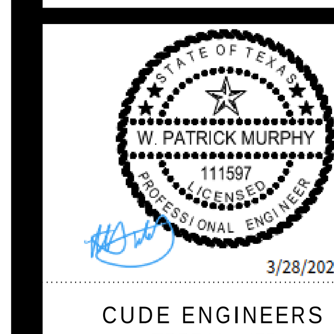


3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C3

P:\02133\230\2-Drawings\07_03 drmp.dwg 2025/02/11 4:09pm wmurphy

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.

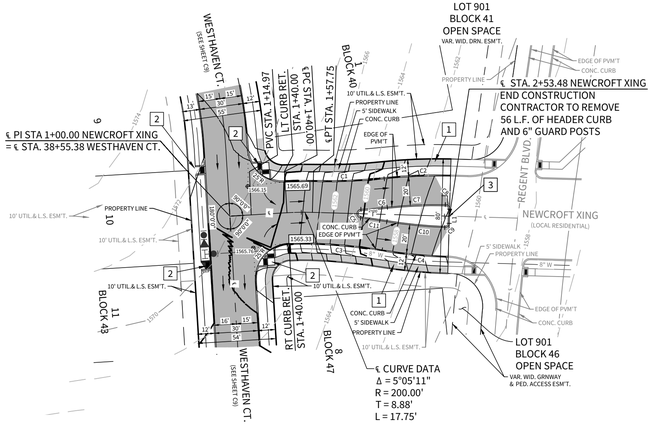
ELEVATIONS:

xxxx.xx PROPOSED TOP OF CONCRETE CURB ELEVATION

xxxx.xx$_a$ PROPOSED ASPHALT PAVEMENT ELEVATION

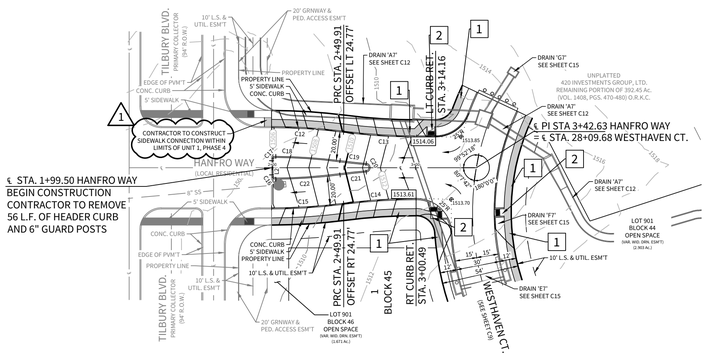
KEYNOTES:

1. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP WITH INFRASTRUCTURE
3. END WASHOUT STA. 2+53.48



CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	49.64'	366.07'	7°46'09"	N9° 09' 00"E	49.60'
C2	46.38'	342.07'	7°46'09"	N9° 09' 00"E	46.35'
C3	49.64'	366.07'	7°46'09"	S16° 55' 09"W	49.60'
C4	46.38'	342.07'	7°46'09"	N16° 55' 09"E	46.35'
C5	8.90'	3.00'	169°56'04"	S76° 57' 55"E	5.98'
C6	18.44'	386.07'	2°44'11"	S6° 38' 01"W	18.44'
C7	40.64'	322.07'	7°13'49"	S8° 52' 51"W	40.62'
C8	4.74'	3.00'	90°32'19"	N57° 45' 55"E	4.26'
C9	4.74'	3.00'	90°32'19"	S31° 41' 45"E	4.26'
C10	40.64'	322.07'	7°13'49"	N17° 11' 19"E	40.62'
C11	18.44'	386.07'	2°44'11"	N19° 26' 08"E	18.44'
C12	50.55'	395.00'	7°19'54"	S82° 05' 05"E	50.51'
C13	51.19'	400.00'	7°19'54"	N82° 05' 05"W	51.15'
C14	50.73'	400.00'	7°15'57"	S89° 26' 58"E	50.69'
C15	50.55'	395.00'	7°19'54"	N89° 24' 59"W	50.51'
C16	4.74'	3.00'	90°27'43"	S40° 58' 54"E	4.26'
C17	4.74'	3.00'	90°27'43"	S49° 28' 50"W	4.26'
C18	44.96'	375.00'	6°52'11"	N81° 51' 13"W	44.93'
C19	18.36'	420.00'	2°30'18"	N79° 40' 17"W	18.36'
C20	8.92'	3.00'	170°20'48"	N4° 14' 58"E	5.98'
C21	18.36'	420.00'	2°30'18"	N88° 10' 13"E	18.36'
C22	44.96'	375.00'	6°52'11"	S89° 38' 51"E	44.93'

LINE TABLE		
LINE	BEARING	LENGTH
L1	S76°57'55"E	9.91'
L2	S04°14'58"W	9.98'



CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, EX. 8" SEWER MAIN, AND 4" GAS MAINS EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

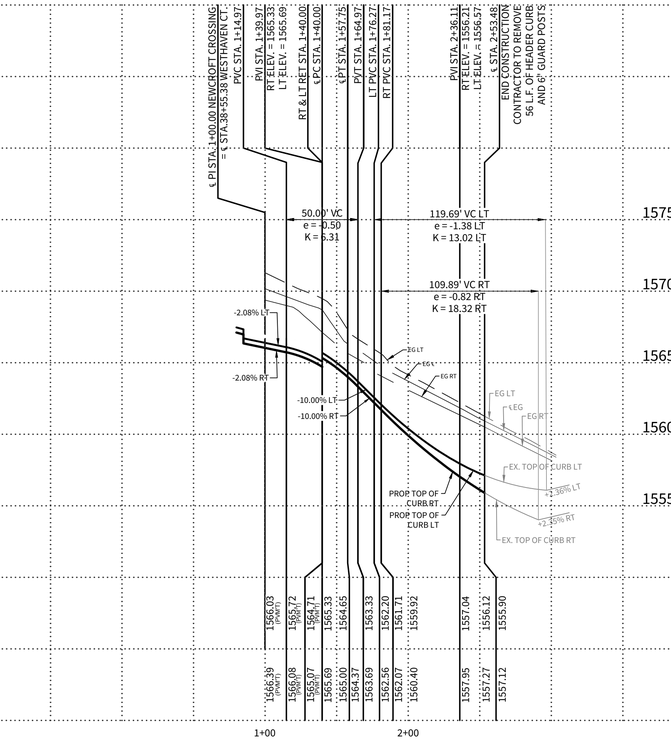
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

- STREET WASHOUT (SEE DETAIL SHEET 9 OF 21)

WHEEL CHAIR RAMPS ARE INDICATED THUS "□■□" UNLESS OTHERWISE NOTED.
(SEE DRAWING 2502-4.1A SHEET 9 OF 21)

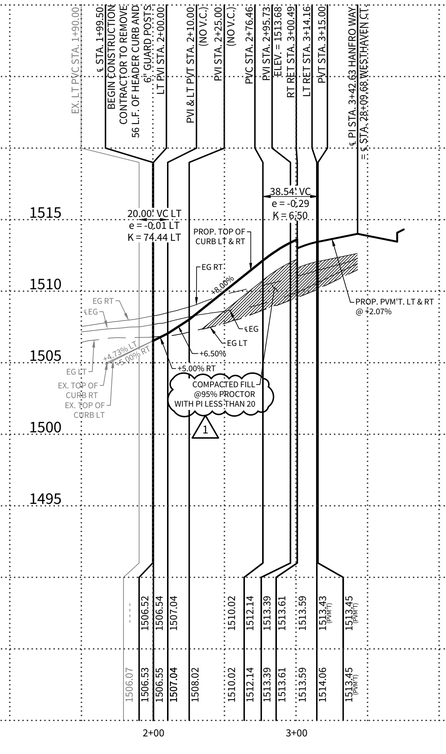
NEWCROFT CROSSING

STA. 1+00.00 TO STA. 2+53.48



HANFRO WAY

STA. 1+99.50 TO STA. 3+42.63



NOTE:
CONTRACTOR TO MEANDER SIDEWALK WITHIN LIMITS TO AVOID HARDWOOD TREES WITH A TRUNK CIRCUMFERENCE OF 8" OR GREATER WHERE PARKWAY WIDTH PERMITS.

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

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REGENT PARK
UNIT 7

STREET PLAN & PROFILE - NEWCROFT CROSSING & HANFRO WAY

DATE
02/11/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATED ADA RAMPS, PI SPECIFICATION, AND UPDATED EX. SIDEWALK
2.
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C4

3 OF 21

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.

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

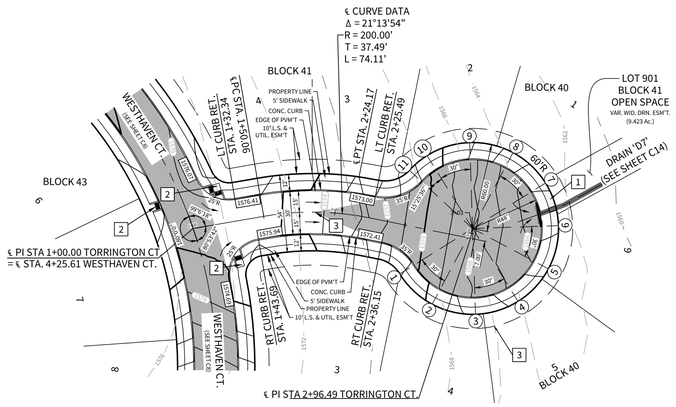
XXXX.XX$_a$ PROPOSED ASPHALT PAVEMENT ELEVATION

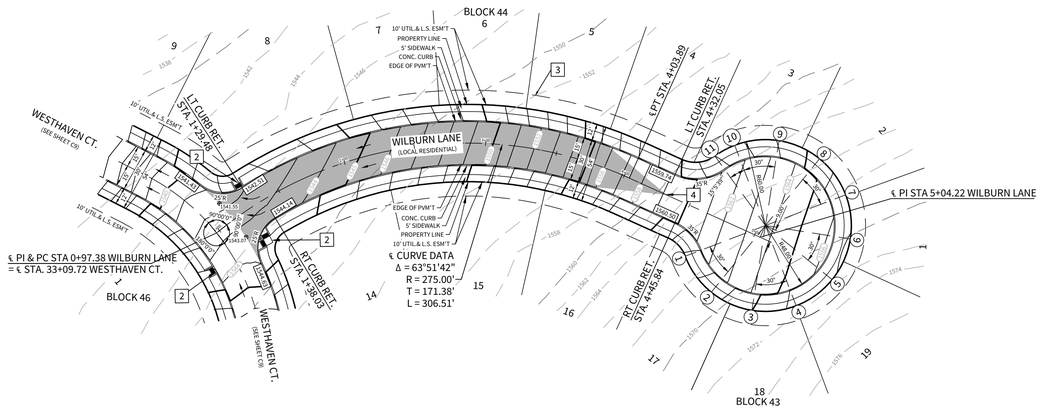
KEYNOTES:

1. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP WITH INFRASTRUCTURE
3. BEGIN WASHOUT STA. 1+86.15
4. END WASHOUT STA. 4+32.05

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, AND 4" GAS MAINS EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.



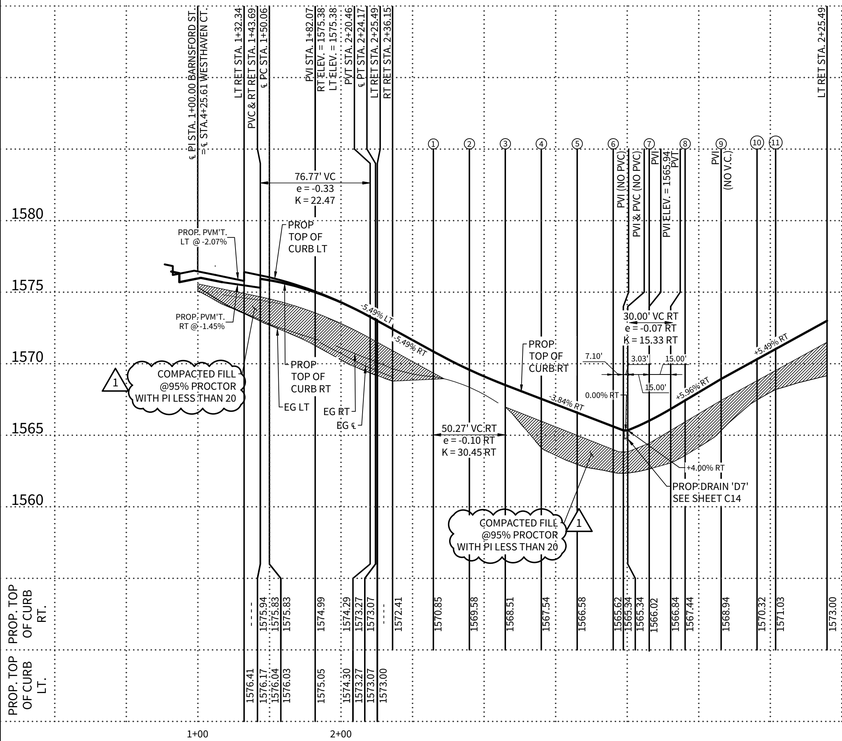


- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEET 9 OF 21)

WHEEL CHAIR RAMPS ARE INDICATED THUS "□■□" UNLESS OTHERWISE NOTED.
(SEE DRAWING 2502-4.1A SHEET 9 OF 21)

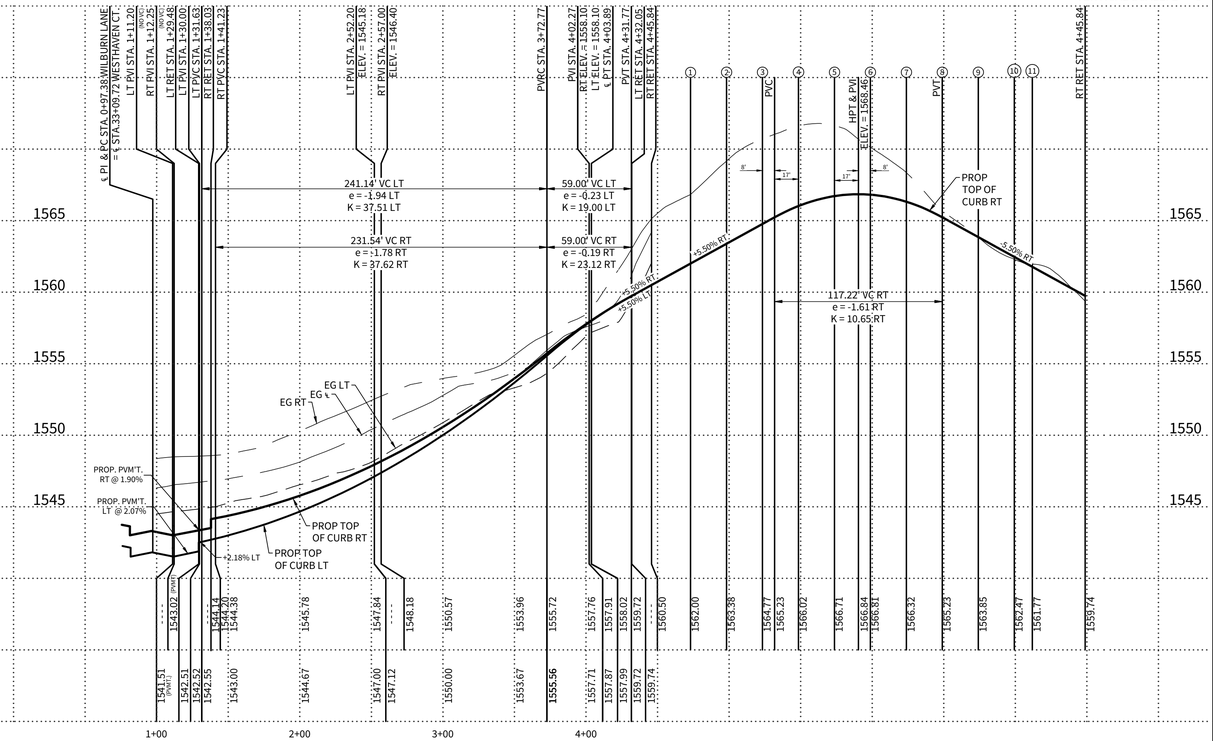
TORRINGTON CT.

STA. 1+00.00 TO STA. 3+03.49



WILBURN LANE

STA. 0+97.38 TO STA. 5+13.22



NOTE:
CONTRACTOR TO MEANDER SIDEWALK WITHIN LIMITS TO AVOID HARDWOOD TREES WITH A TRUNK CIRCUMFERENCE OF 8" OR GREATER WHERE PARKWAY WIDTH PERMITS.

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

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REGENT PARK
UNIT 7

STREET PLAN & PROFILE -
TORRINGTON CT. AND WILBURN LANE

DATE
03/17/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 01/31/2025 - UPDATED ADA RAMPS, STREET NAME UPDATE & PI SPECIFICATION
2.
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C5

4 OF 21

P:\02133.230\2-Drawings\C5 STREET PLAN & PROFILE - TORRINGTON CT. & WILBURN LANE.dwg 2025/03/17 4:32pm mmeza

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.

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

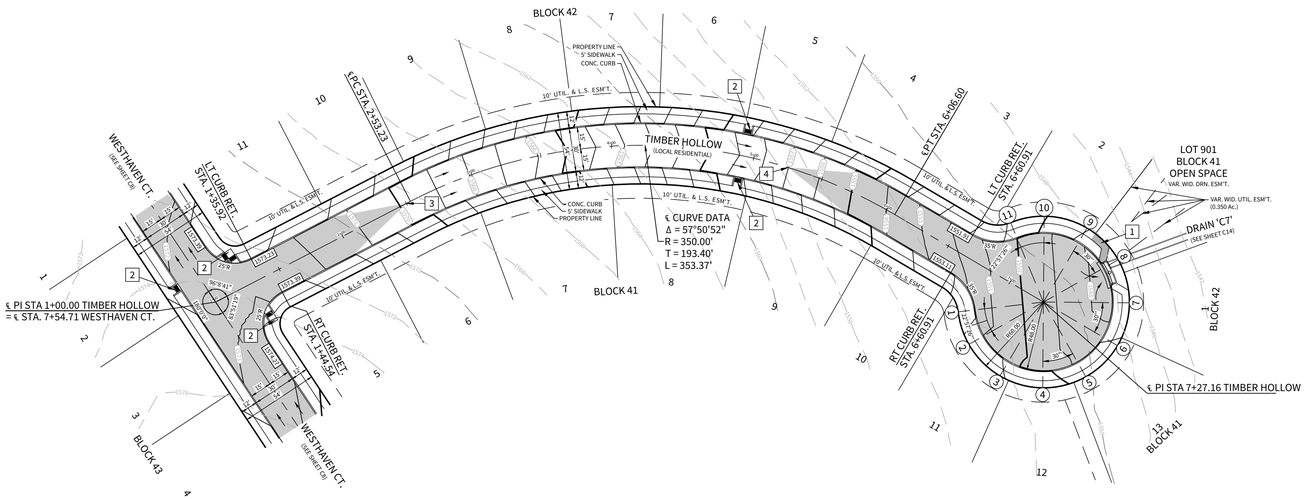
XXXX.XX$_{a}$ PROPOSED ASPHALT PAVEMENT ELEVATION

KEYNOTES:

1. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP WITH INFRASTRUCTURE
3. END WASHOUT STA. 2+50.00
4. BEGIN WASHOUT STA. 5+25.00

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, AND 4" GAS MAINS EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.



- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEET 9 OF 21)

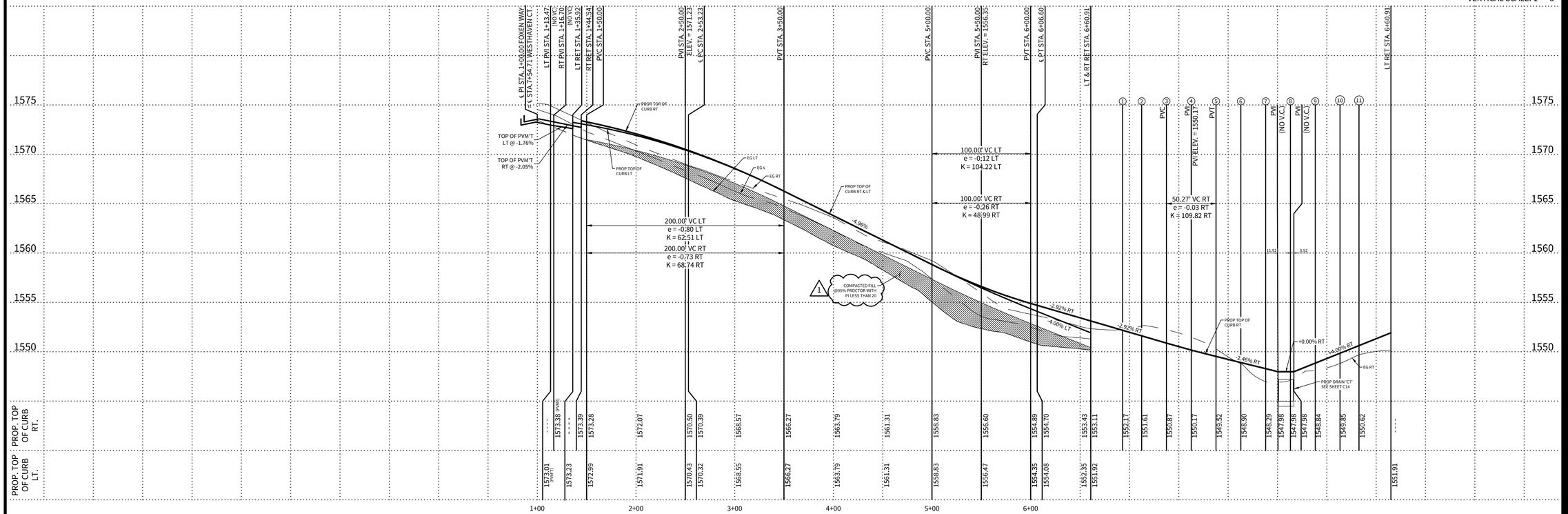
WHEEL CHAIR RAMPS ARE INDICATED THUS "◻◼◻" UNLESS OTHERWISE NOTED. (SEE DRAWING 2502-4.1A SHEET 9 OF 21)

TIMBER HOLLOW

STA. 1+00.00 TO STA. 7+27.16

NOTE:
CONTRACTOR TO MEANDER SIDEWALK WITHIN LIMITS TO AVOID HARDWOOD TREES WITH A TRUNK CIRCUMFERENCE OF 8" OR GREATER WHERE PARKWAY WIDTH PERMITS.

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



CUDEENGINEERS.COM

CUDE ENGINEERS

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

REGENT PARK
UNIT 7

STREET PLAN & PROFILE - TIMBER HOLLOW

DATE
02/12/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 01/31/2025 - UPDATED ADA RAMPS, STREET NAME UPDATE & PI SPECIFICATION
2.
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C6

5 OF 21

P:\02133.230\2-Drawings\CA STREET PLANS & PROFILE - TIMBERHOLLOW LANE.dwg 2/05/2025 2:22pm mmurphy

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.

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

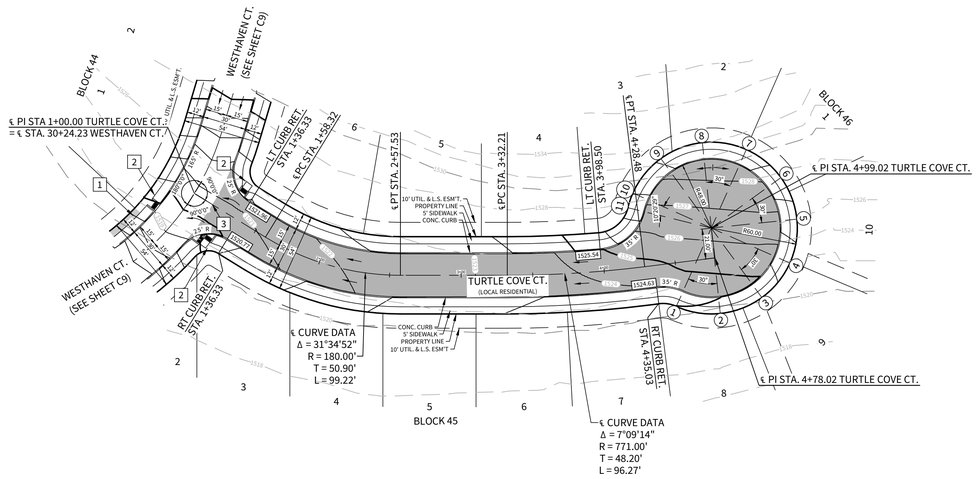
XXXX.XX$_a$ PROPOSED ASPHALT PAVEMENT ELEVATION

KEYNOTES:

1. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP WITH INFRASTRUCTURE
3. BEGIN WASHOUT STA 1+36.33

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, AND 4" GAS MAINS EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.



- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEET 9 OF 21)

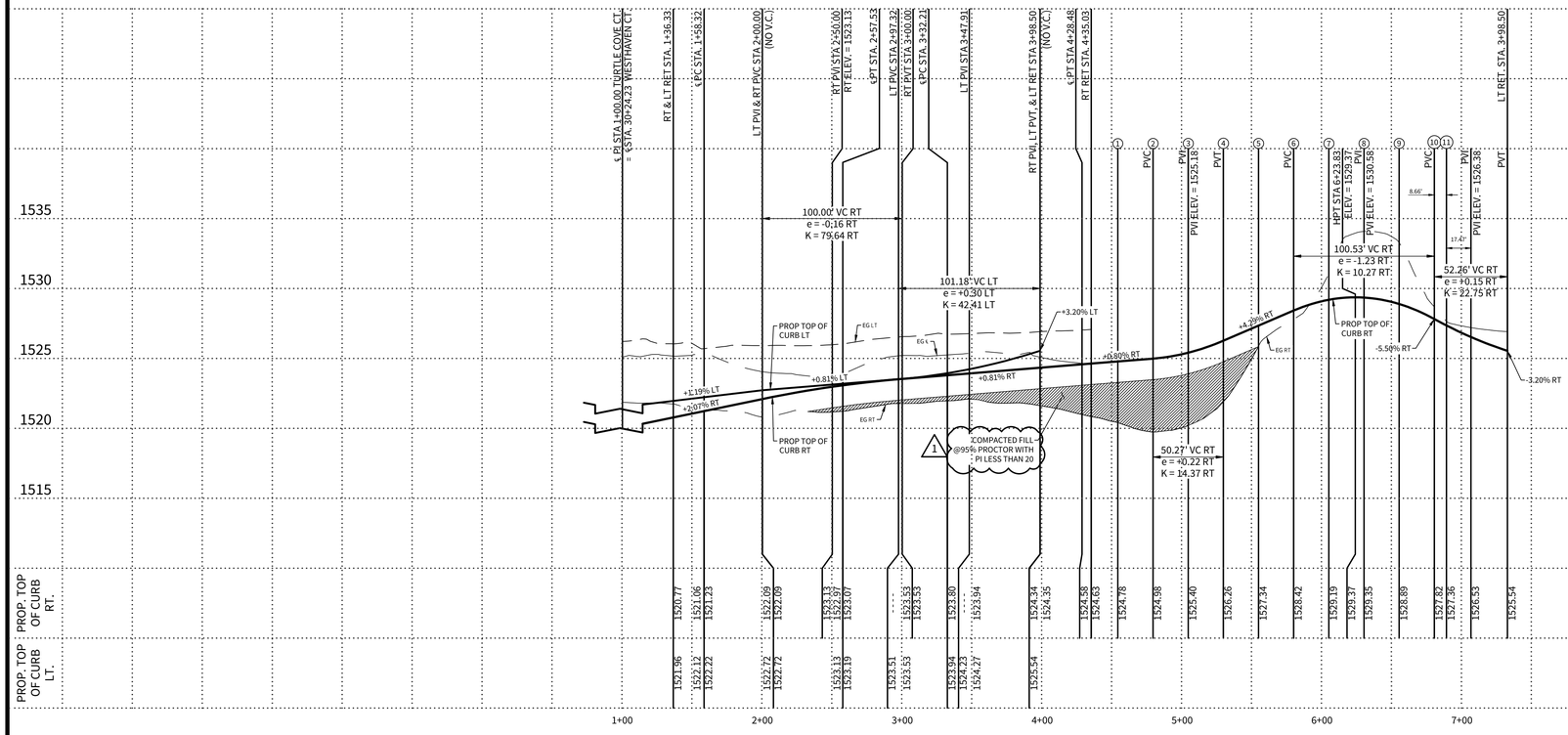
WHEEL CHAIR RAMPS ARE INDICATED THUS "◻◻" UNLESS OTHERWISE NOTED.
(SEE DRAWING 2502-4.1A SHEET 9 OF 21)

TURTLE COVE

STA. 1+00.00 TO STA. 4+99.02

NOTE:
CONTRACTOR TO MEANDER SIDEWALK WITHIN LIMITS TO AVOID HARDWOOD TREES WITH A TRUNK CIRCUMFERENCE OF 8" OR GREATER WHERE PARKWAY WIDTH PERMITS.

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



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P:(210) 681.2951 F: (210) 523.7112

REGENT PARK
UNIT 7

STREET PLAN & PROFILE - TURTLE COVE

DATE
02/12/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATED ADA RAMPS & PI SPECIFICATION
2.
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7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C7

6 OF 21

P:\02133.230\3 Drawings\C7 STREET PLAN & PROFILE - TURTLE COVE_ - 2025_feb\feb02.dwg 2025/02/12 8:56pm wmurphy

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.

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX$_{ASPH}$ PROPOSED ASPHALT PAVEMENT ELEVATION

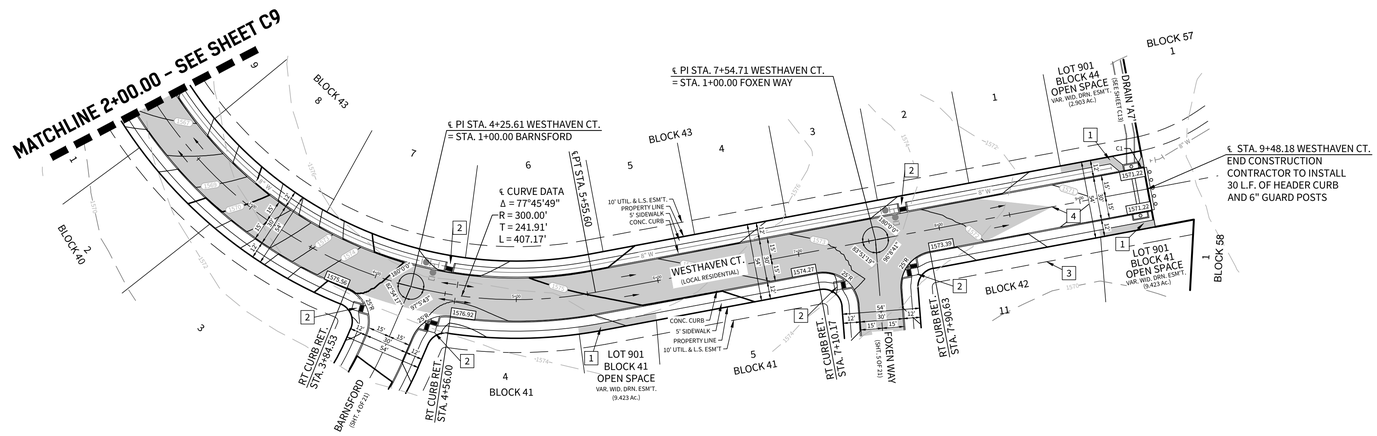
KEYNOTES:

1. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP WITH INFRASTRUCTURE
3. 10' L.S. & UTIL. ESM'T
4. END WASHOUT CROWN TRANSITION STA. 8+80.00

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, AND 4" GAS MAINS EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	3.75'	140.00'	1°32'04"	N19° 25' 03"E	3.75'



- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEET 9 OF 21)

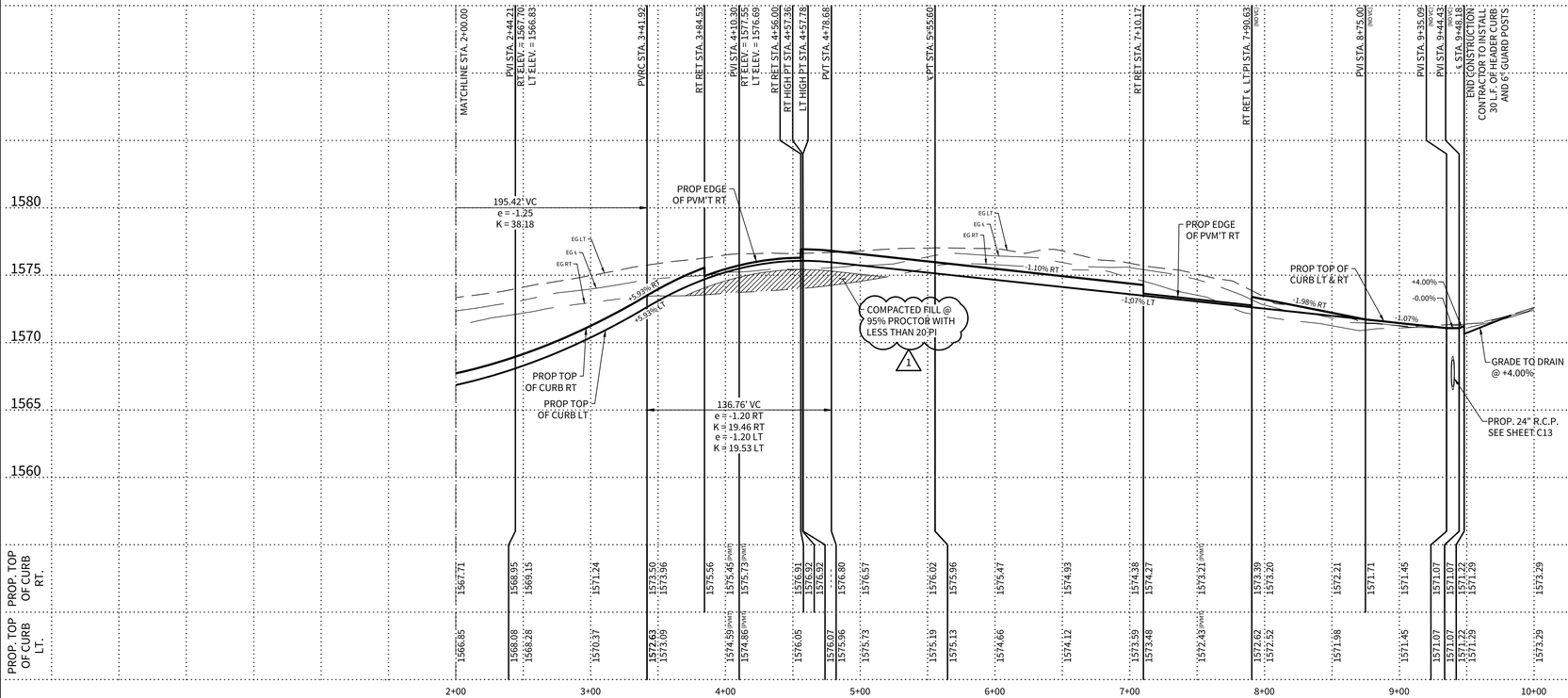
WHEEL CHAIR RAMPS ARE INDICATED THUS "◻◻" UNLESS OTHERWISE NOTED.
(SEE DRAWING 2502-4.1A SHEET 9 OF 21)

WESTHAVEN CT.

STA. 2+00.00 TO STA. 9+48.18

NOTE:
CONTRACTOR TO MEANDER SIDEWALK WITHIN LIMITS TO AVOID HARDWOOD TREES WITH A TRUNK CIRCUMFERENCE OF 8" OR GREATER WHERE PARKWAY WIDTH PERMITS.

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



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

REGENT PARK
UNIT 7

STREET PLAN & PROFILE - WESTHAVEN CT.
SHEET 1 OF 2

DATE
02/12/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATED ADA RAMPS & PI SPECIFICATION
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C8

7 OF 21

P:\02133.230\3 Drawings\CA STREET PLANS & PROFILE - WESTHAVEN CT. SHEET 1 OF 2.dwg 2025/02/13 3:51pm mmurphy

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.

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

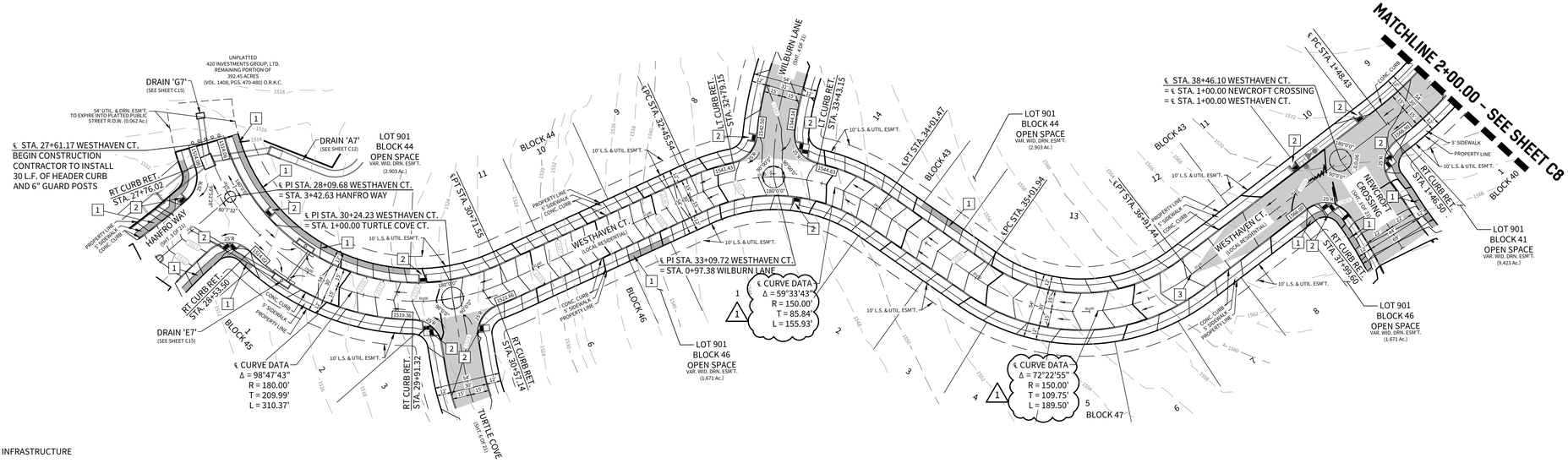
XXXX.XX$_a$ PROPOSED ASPHALT PAVEMENT ELEVATION

KEYNOTES:

1. CONTRACTOR TO INSTALL SIDEWALK WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP WITH INFRASTRUCTURE
3. BEGIN WASHOUT CROWN TRANSITION STA. 37+00.00

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, AND 4" GAS MAINS EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.



- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- STREET WASHOUT (SEE DETAIL SHEET 9 OF 21)

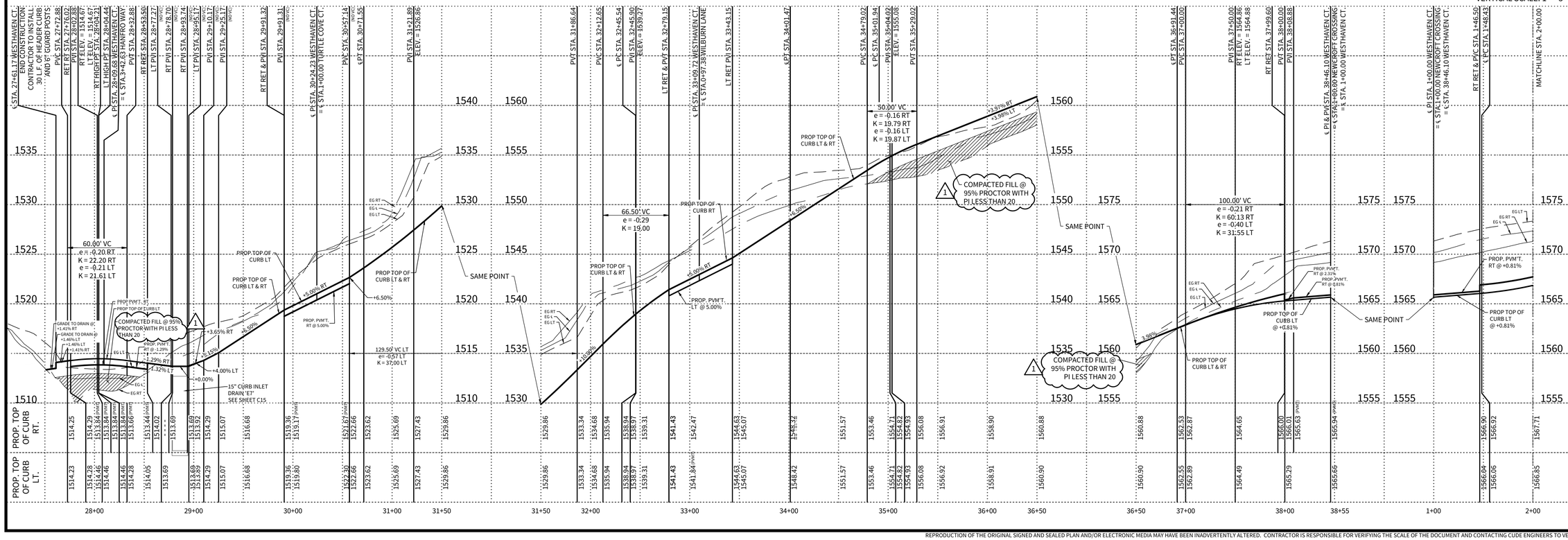
WHEEL CHAIR RAMPS ARE INDICATED THUS "⧈⧈" UNLESS OTHERWISE NOTED.
(SEE DRAWING 2502-4.1A SHEET 9 OF 21)

WESTHAVEN CT.

STA. 27+76.02 TO STA. 38+46.10 & STA. 1+00.00 TO STA. 2+00.00

NOTE:
CONTRACTOR TO MEANDER SIDEWALK WITHIN LIMITS TO AVOID HARDWOOD TREES WITH A TRUNK CIRCUMFERENCE OF 8" OR GREATER WHERE PARKWAY WIDTH PERMITS.

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

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REGENT PARK
UNIT 7

STREET PLAN & PROFILE - WESTHAVEN CT.
SHEET 2 OF 2

DATE
03/18/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 03/18/2025 - REVISED HORIZONTAL CURVE, UPDATED ADA RAMPS AND UPDATE COMPACTED FILL NOTES
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

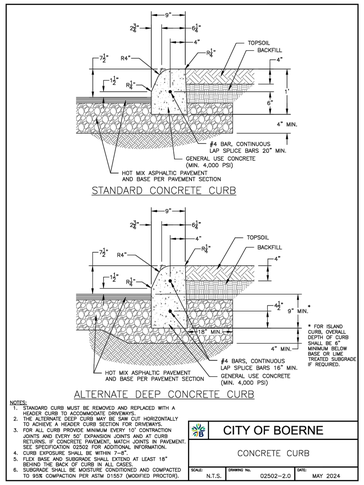
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C9

8 OF 21

P:\02133.230\2-Drawings\C4 STREET PLANS & PROFILE - WESTHAVEN CT. SHEET 2 OF 2.dwg 2025-03-28 8:53am mmena

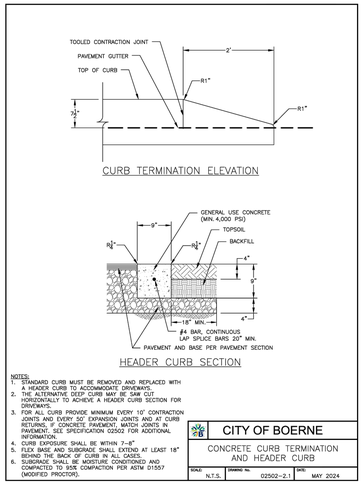


STANDARD CONCRETE CURB

ALTERNATE DEEP CONCRETE CURB

NOTES:
1. STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.
2. ALL CURBS SHALL BE CONSTRUCTED OUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.
3. FOR ALL CURB PROVIDE MINIMUM EVERY 10' CONTRACTION JOINTS AND EVERY 50' EXPANSION JOINTS AND AT CURB RETURNS. IF CONCRETE PAVEMENT, MATCH JOINTS IN PAVEMENT. SEE SPECIFICATION 02502 FOR ADDITIONAL INFORMATION.
4. CURB EXPOSURE SHALL BE WITHIN 7–8".
5. FLEX BASE AND SUBGRADE SHALL EXTEND AT LEAST 18" BEHIND THE BACK OF CURB IN ALL CASES.
6. SUBGRADE SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE
CONCRETE CURB
SCALE: N.T.S. | DRAWING No. 02502–2.0 | DATE: MAY 2024

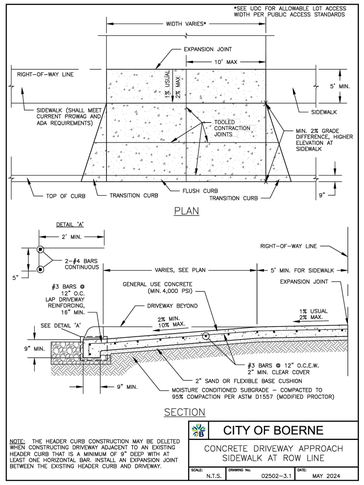


CURB TERMINATION ELEVATION

HEADER CURB SECTION

NOTES:
1. STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.
2. THE ALTERNATIVE DEEP CURB MAY BE SAW CUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.
3. FOR ALL CURB PROVIDE MINIMUM EVERY 10' CONTRACTION JOINTS AND EVERY 50' EXPANSION JOINTS AND AT CURB RETURNS. IF CONCRETE PAVEMENT, MATCH JOINTS IN PAVEMENT. SEE SPECIFICATION 02502 FOR ADDITIONAL INFORMATION.
4. CURB EXPOSURE SHALL BE WITHIN 7–8".
5. FLEX BASE AND SUBGRADE SHALL EXTEND AT LEAST 18" BEHIND THE BACK OF CURB IN ALL CASES.
6. SUBGRADE SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE
CONCRETE CURB TERMINATION AND HEADER CURB
SCALE: N.T.S. | DRAWING No. 02502–2.1 | DATE: MAY 2024

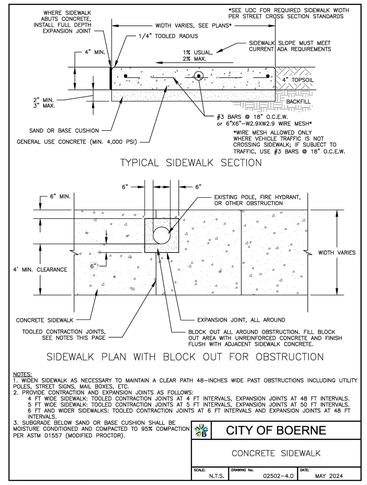


PLAN

SECTION

NOTE: THE HEADER CURB CONSTRUCTION MAY BE DELETED WHEN CONSTRUCTING DRIVEWAY APPROACH TO MATCH EXISTING HEADER CURB THAT IS A MINIMUM OF 30' WIDE WITH AT LEAST ONE HORIZONTAL BAR. INSTALL AN EXPANSION JOINT BETWEEN THE EXISTING HEADER CURB AND DRIVEWAY.

CITY OF BOERNE
CONCRETE DRIVEWAY APPROACH SIDEWALK AT ROW LINE
SCALE: N.T.S. | DRAWING No. 02502–3.1 | DATE: MAY 2024

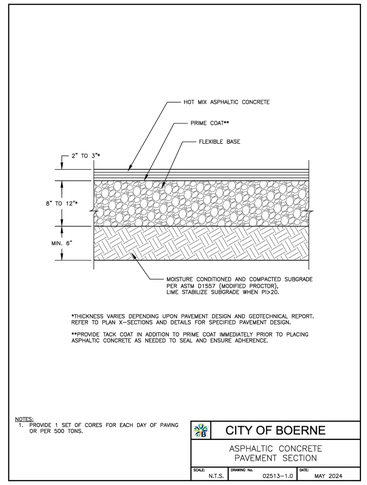


TYPICAL SIDEWALK SECTION

SIDEWALK PLAN WITH BLOCK OUT FOR OBSTRUCTION

NOTES:
1. WIDEN SIDEWALK AS NECESSARY TO MAINTAIN A CLEAR PATH 48–INCHES WIDE PAST OBSTRUCTIONS INCLUDING UTILITY POLES, STREET SIGNS, MAIL BOXES, ETC.
2. PROVIDE CONTRACTION AND EXPANSION JOINTS AS FOLLOWS:
   4 FT WIDE SIDEWALK: TOOLED CONTRACTION JOINTS AT 4 FT INTERVALS, EXPANSION JOINTS AT 48 FT INTERVALS.
   5 FT WIDE SIDEWALK: TOOLED CONTRACTION JOINTS AT 5 FT INTERVALS, EXPANSION JOINTS AT 50 FT INTERVALS.
   6 FT AND WIDER SIDEWALKS: TOOLED CONTRACTION JOINTS AT 6 FT INTERVALS AND EXPANSION JOINTS AT 48 FT INTERVALS.
3. SUBGRADE BELOW SAND OR BASE CUSHION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE
CONCRETE SIDEWALK
SCALE: N.T.S. | DRAWING No. 02502–4.0 | DATE: MAY 2024



*THICKNESS VARIES DEPENDING UPON PAVEMENT DESIGN AND GEOTECHNICAL REPORT. REFER TO PLAN X–SECTIONS AND DETAILS FOR SPECIFIED PAVEMENT DESIGN.

**PROVIDE TACK COAT IN ADDITION TO PRIME COAT IMMEDIATELY PRIOR TO PLACING ASPHALTIC CONCRETE AS NEEDED TO SEAL AND ENSURE ADHERENCE.

NOTES:
1. PROVIDE 1 SET OF CORES FOR EACH DAY OF PAVING OR PER 500 TONS.

CITY OF BOERNE
ASPHALTIC CONCRETE PAVEMENT SECTION
SCALE: N.T.S. | DRAWING No. 02513–1.0 | DATE: MAY 2024

EXPANSION JOINT

NOTE: DL = MINIMUM DEVELOPMENT LENGTH OF REINFORCING, 16 IN MINIMUM.

CONSTRUCTION JOINT

NOTE: USE KEYED JOINTS WITH METAL KEYWAY FORM FOR CONSTRUCTION JOINTS. FOR SIDEWALKS, DRIVEWAYS AND CURBS ONLY; AS AN ALTERNATE TO THE METAL KEYWAY FORM, ROUGHEN CONCRETE OF ADJOINING FIRST POUR AND APPLY AN ADHESIVE BONDING AGENT TO ROUGHENED CONCRETE.

NOTE: DIMENSIONS ARE NOMINAL, ±1/8".

METAL KEYWAY FORM SECTION

SAWED CONTRACTION JOINT

NOTE: SAWED CONTRACTION JOINTS MUST BE USED ON CONCRETE PAVING, ON DRIVEWAYS, SIDEWALKS AND CURB. TOOLED CONTRACTION JOINTS MAY BE USED. THE TOOLED JOINT MUST BE 1/2 INCH DEEP AND 1/2 INCH WIDE WITH A 1/4 INCH RADIUS ALONG THE EDGE.

CITY OF BOERNE
CONCRETE JOINTS
SCALE: N.T.S. | DRAWING No. 02502–1.2 | DATE: MAY 2024

STREET

CURB RAMP IN PERPENDICULAR SIDEWALK

RAMP IN PARALLEL SIDEWALK WITH PERPENDICULAR CURB RAMP

NOTE: LONGITUDINAL SLOPE OF SIDEWALK CANNOT EXCEED 5% WITHOUT A RAMP UNLESS THE SLOPE OF THE CURB AND ROADWAY EXCEEDS 5% AND THE SIDEWALK MATCHES THE CURB AND ROADWAY SLOPE. RAMPS CANNOT EXCEED A LONGITUDINAL SLOPE OF 8.33% AND MUST HAVE A FIVE FOOT SQUARE LANDING AT EACH END AND MEET CURRENT PROWAG AND ADA REQUIREMENTS.

CITY OF BOERNE
SIDEWALK CURB RAMPS SIDEWALK AT ROW LINE
SCALE: N.T.S. | DRAWING No. 02502–4.1 | DATE: MAY 2024

NOTES
1. SIDEWALK TO BE 2% MIN. HIGHER THAN TOP OF CURB.
2. CURB RAMP MUST BE AS WIDE AS SIDEWALK WIDTH.
3. 2" OF SPACE ALLOWED BETWEEN DETECTABLE WARNINGS AND CONCRETE EDGE AS REQUIRED, OR PER CURRENT PROWAG REQUIREMENTS.
4. SUBGRADE BELOW SAND OR BASE CUSHION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).
5. ANY DEVIATION FROM THESE CURB RAMP DETAILS MUST BE APPROVED BY ENGINEERING & MOBILITY DEPARTMENT

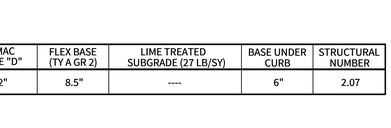
CITY OF BOERNE
SIDEWALK CURB RAMP ON RADIUS SIDEWALK AT ROW LINE
SCALE: N.T.S. | DRAWING No. 02502–4.2 | DATE: MAY 2024

NOTES:
1) DRAWING NOT TO SCALE.
2) FOR PUBLIC STREETS; BACKGROUND COLOR: GREEN
3) FOR PRIVATE STREETS; BACKGROUND COLOR: BROWN

NOTES:
1. NAME SIGN BLADE SHALL BE 9 INCHES TALL AND UP TO 60 INCHES IN WIDTH.
2. SIGN BLANKS SHALL BE 0.080 INCHES THICK AND ONE PIECE SHEET ALUMINUM ALLOY CONFORMING WITH TXDOT SPEC FOR ALUM SIGNS (TYPE a).
3. STREET NAME SHALL BE WHITE LETTERS (TYPE "B" HIGHWAY GOTHIC) MINIMUM 6" LETTER HEIGHT.
4. HISTORIC DISTRICT LOGO ARTWORK WILL BE IN A 9–INCH BY 9–INCH SQUARE.
5. SIGNS SHALL CONFORM TO LATEST EDITION OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. RETRO REFLECTIVE SHEETING ON COLLECTORS/ARTERIAL SHALL BE DIAMOND GRADE CUBED (DG3) OR EQUAL. ALL OTHERS SHALL BE A MINIMUM OF HIGH INTENSITY PRISMATIC (HIP) OR EQUAL.
7. CITY OWNED AND MAINTAINED PUBLIC STREETS WITHIN THE CITY LIMITS SHALL FOLLOW STREET SIGN DETAIL WITH THE CITY LOGO ARTWORK. PRIVATE STREETS SHALL NOT INCLUDE CITY LOGO ARTWORK.

*USE 12" ALUMINUM SIGN HOLDERS FOR SIGNS > 24" IN LENGTH, FOR SHORTER SIGNS USE 5" HOLDERS.

CITY OF BOERNE
STREET SIGN
SCALE: N.T.S. | DRAWING No. 02514–1.0 | DATE: MAY 2024



CITY OF BOERNE
SIGN POST AND FOUNDATION
SCALE: N.T.S. | DRAWING No. 02514–1.1 | DATE: MAY 2024

LOCAL RESIDENTIAL STREET CROSS SECTION (54' R.O.W.)

DEEP CURB
STANDARD CURB
HEADER CURB

CONC. CURB DESIGN DETAIL

STREET TYPE	HMAC TYPE "D"	FLEX BASE (TY A GR 2)	LIME TREATED SUBGRADE (27 LB/SY)	BASE UNDER CURB	STRUCTURAL NUMBER
LOCAL RESIDENTIAL (LIMESTONE)	2"	8.5"	----	6"	2.07

NOTES

1. **PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT (REF. InTEC TESTING REPORT #S131434 – DATED MAY 22, 2014). SEE TABLE FOR STRUCTURAL NUMBER CALCULATION. REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS.**
2. **ANY AREAS OF CLAY ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED DOWN TO THE WEATHERED/FRIABLE MARLSTONE/LIMESTONE AND PROPERLY BACKFILLED WITH MARLSTONE/LIMESTONE MILLINGS HAVING A CBR VALUE EQUAL OR EXCEEDING 6.**
3. **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.**
4. **CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.**
5. **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.**
6. **IF ALTERNATE PAVEMENT SECTION CHOSEN, CITY OF BOERNE SHALL BE PROVIDED WITH REVISED CONSTRUCTION PLANS INDICATING SELECTED PAVEMENT DESIGN PRIOR TO CONSTRUCTION.**
7. **PAVEMENT SECTIONS ARE SUBJECT TO CHANGE DUE TO RETESTING OF SOIL AFTER STREET EXCAVATION HAS BEEN DONE TO TOP OF CURB.**
8. **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.**
9. **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.**

DETAILS ON THIS DRAWING ARE NOT TO SCALE

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, CITY OF BOERNE 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. InTEC TESTING REPORT #S131434)

2. FILL MATERIAL – CONTRACTOR SHALL OVER–EXCAVATE STREET SUBGRADE AREAS CONTAINING SOILS HAVING A PLASTICITY INDEX GREATER THAN 20 AND REPLACE SUBGRADE WITH ON–SITE LIMESTONE MILLINGS THAT HAVE A PLASTICITY INDEX OF LESS THAN 20 OR USE FILL MATERIAL FROM AREAS OF SIMILAR SUBGRADE MATERIAL FOR ROADWAY EMBANKMENTS. GEOTECHNICAL ENGINEER WILL BE PRESENT AT THE TIME OF SUBGRADE PREPARATION TO DETERMINE THE EXTENTS OF APPLICABLE PAVEMENT SECTIONS BASED ON FINAL SUBGRADE.

WASHOUT CROWN TRANSITION DETAIL

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

REGENT PARK UNIT 7

CITY OF BOERNE - STREET STANDARD DETAILS

DATE 03/11/2025
PROJECT NO. 02133.230
DRAWN BY MW/RM/JF
CHECKED BY WPM

REVISIONS
1. 09/27/2024 - UPDATE TO CURRENT CoB DETAILS & REVISED CURB TYPE LIMITS
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

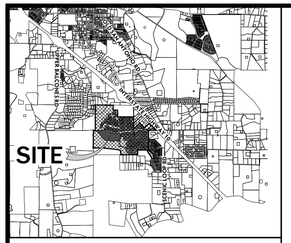
PLAT NO. N/A

C10

9 OF 21

P:\02133\230\2-Drawings\CAD\CITY OF BOERNE - STREET STANDARD DETAILS.dwg, 2025/3/11 10:26:06 AM, wmurphy

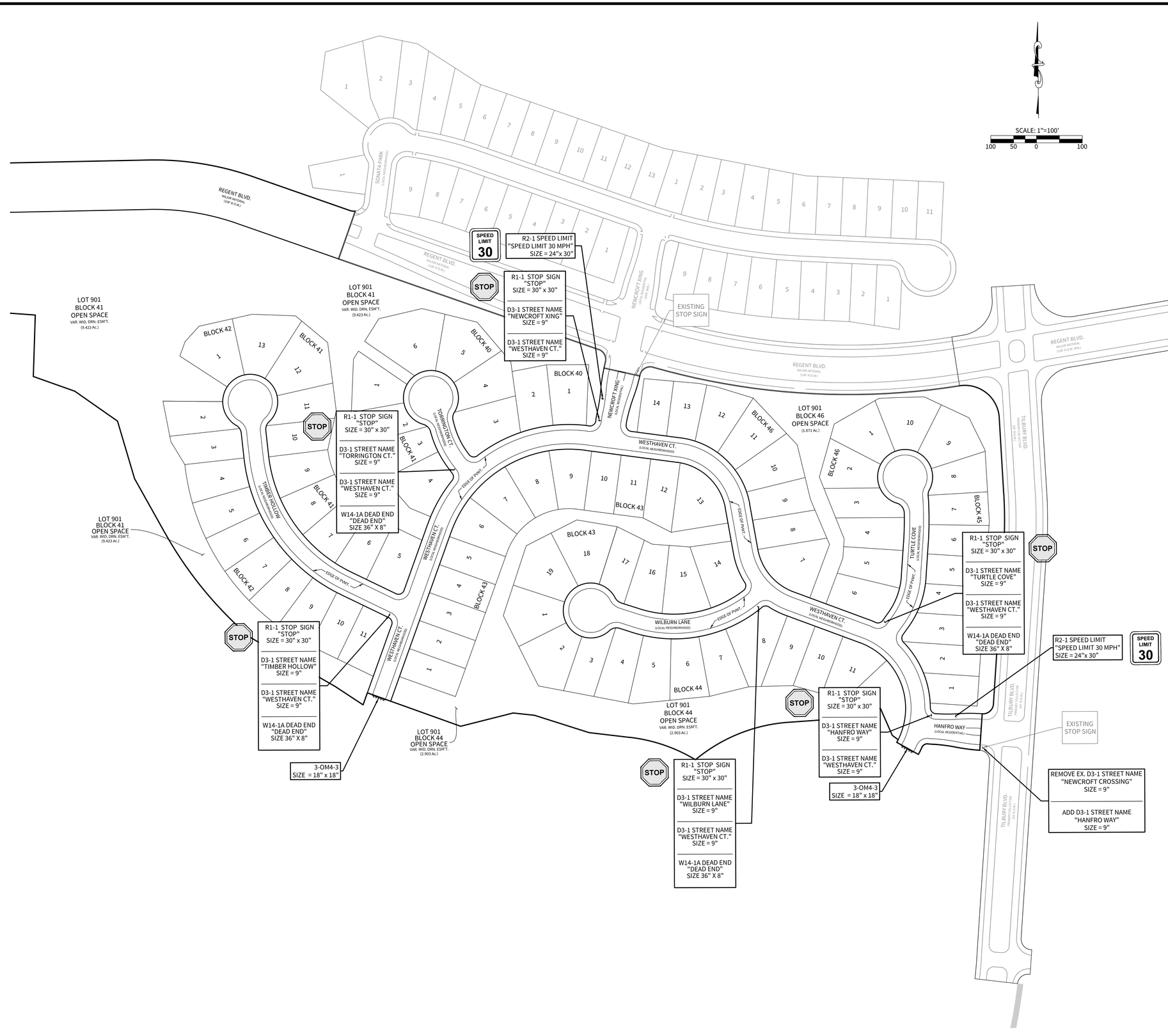
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

NOTES:

1. CONTRACTOR TO COORDINATE SIGN PLACEMENT WITH SIDEWALK/ADA RAMP CONSTRUCTION TO AVOID ANY POSSIBLE CONFLICTS.
2. ALL PAVEMENT MARKINGS SHALL BE HOT-APPLIED THERMOPLASTIC PAVEMENT MARKINGS PER TxDOT ITEM NO. 666.



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

REGENT PARK UNIT 7

TRAFFIC SIGNAGE PLAN

DATE
03/11/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/10/2025 - UPDATED STREET NAMES & UPDATED WESTHAVEN CT. CURVATURE
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111507
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

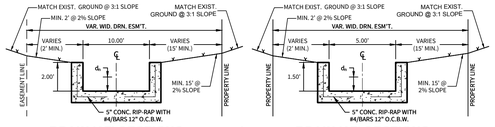
PLAT NO.
N/A

C11

10 OF 21

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:\02133\230\Drawings\C11 TRAFFIC SIGNAGE PLAN.dwg 2025/03/11 11:14:44am wmurphy



DRAIN 'A7' SECTIONS (N.T.S.)

1

'A-1' STA. 1+20.29 – 2+09.40

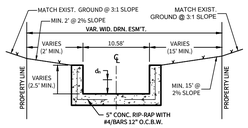
DRAIN 'A7' SECTIONS (N.T.S.)

1

'A-3' STA. 4+25.65 – 6+07.87

'A-4' STA. 6+07.87 – 8+00.00

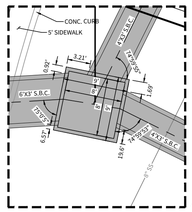
'A-5' STA. 8+00.00 – 9+50.00



DRAIN 'A7' SECTIONS (N.T.S.)

1

'A-2' STA. 2+49.45 – 2+98.96



DETAIL "A" JUNCTION BOX

N.T.S.

1

GENERAL NOTES

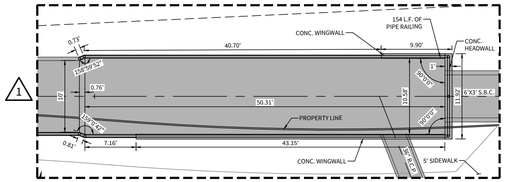
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. SOD LINING IS REQUIRED PER CITY OF BOERNE IN AREAS WITHIN EARTHEN CHANNEL WITH VELOCITIES GREATER THAN 3.00 FT/SEC BUT NO MORE THAN 5.0 FT/SEC.

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.

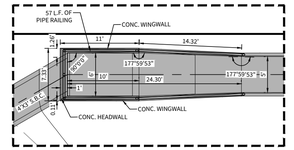
CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, AND 4" GAS MAINS, EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.



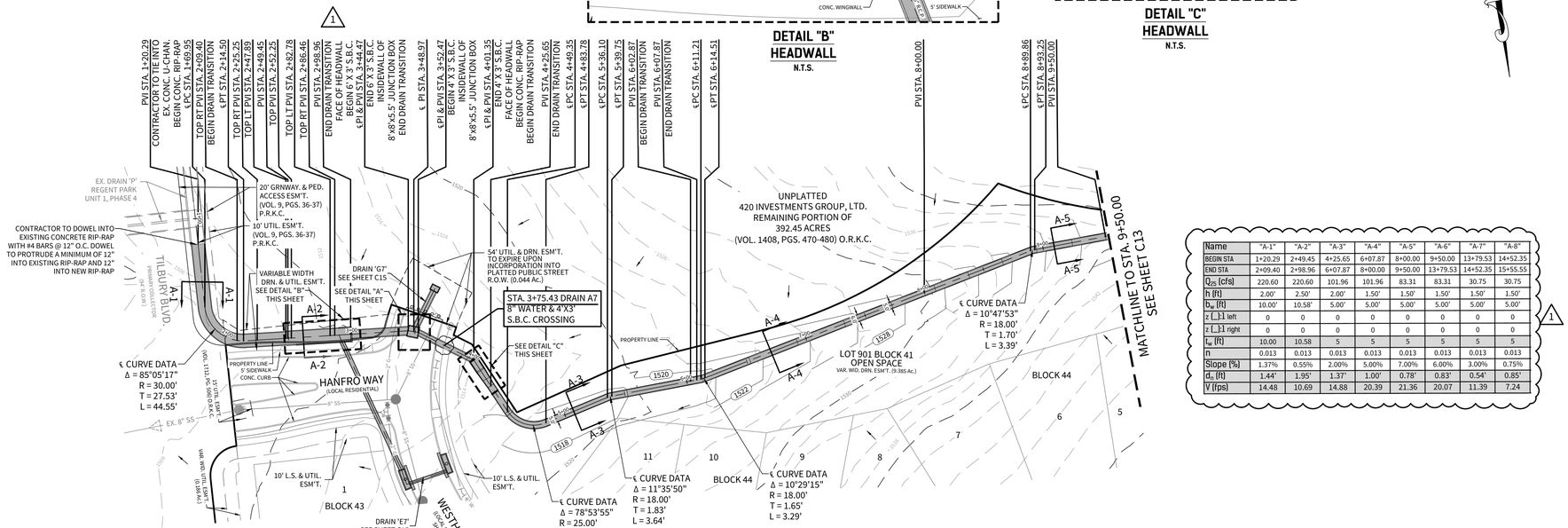
DETAIL "B" HEADWALL

N.T.S.



DETAIL "C" HEADWALL

N.T.S.



Name	"A-1"	"A-2"	"A-3"	"A-4"	"A-5"	"A-6"	"A-7"	"A-8"
BEGIN STA	1+20.29	2+49.45	4+25.65	6+07.87	8+00.00	9+50.00	13+79.53	14+52.35
END STA	2+09.40	2+98.96	6+07.87	8+00.00	9+50.00	13+79.53	14+52.35	15+55.55
Q_{100} (cfs)	220.66	220.60	101.96	101.96	83.31	83.31	30.75	30.75
h (ft)	2.00'	2.50'	2.00'	1.50'	1.50'	1.50'	1.50'	1.50'
b_w (ft)	10.00'	10.58'	5.00'	5.00'	5.00'	5.00'	5.00'	5.00'
z [_]:1 left	0	0	0	0	0	0	0	0
z [_]:1 right	0	0	0	0	0	0	0	0
t_w (ft)	10.00	10.58	5	5	5	5	5	5
n	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Slope (%)	1.37%	0.55%	2.00%	5.00%	7.00%	6.00%	3.00%	0.75%
d_n (ft)	1.44'	1.95'	1.37'	1.00'	0.78'	0.83'	0.54'	0.85'
V (fps)	14.48	10.69	14.88	20.39	21.36	20.07	11.39	7.24

DRAIN 'A7'

STA. 1+20.29 TO STA. 9+50.00

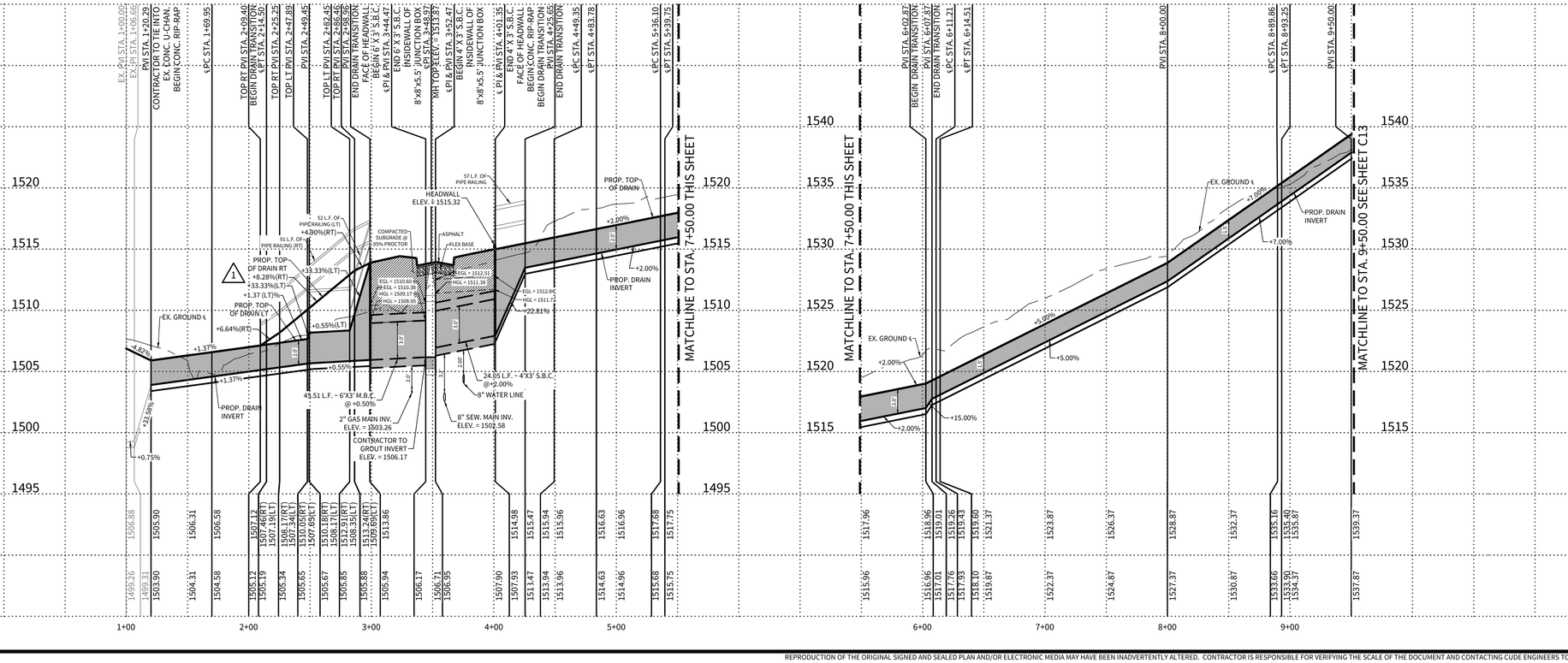
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'

6'X3' S.B.C. DRAIN "A7"
STA. 3+00.00 TO 3+44.51

- PIPE SLOPE = 0.50 %
- Q_{100} = 172.35 c.f.s.
- DEPTH OF FLOW = 2.95 ft
- FLOW AREA = 17.70 ft²
- % FULL = 98.33%
- VELOCITY$_{100}$ = 9.58 ft/s
- n = 0.013

4'X3' S.B.C. DRAIN "A7"
STA. 3+53.51 TO 4+01.35

- PIPE SLOPE = 2.00 %
- Q_{100} = 101.96 c.f.s.
- DEPTH OF FLOW = 2.72 ft
- FLOW AREA = 10.88 ft²
- % FULL = 90.67%
- VELOCITY$_{100}$ = 8.50 ft/s
- n = 0.013



CUDEENGINEERS.COM

CUDE ENGINEERS

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

REGENT PARK UNIT 7

DRAINAGE PLAN & PROFILE - DRAIN "A7"

DATE
03/28/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 03/27/2025 - UPDATE DRAIN DESIGN
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

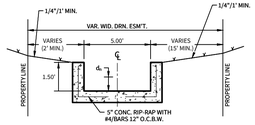
PLAT NO.
N/A

C12

11 OF 21

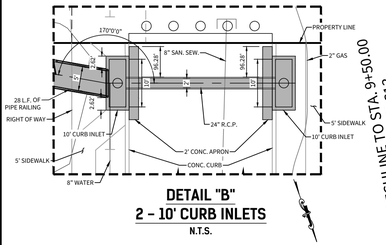
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\02133.230\3-Drawings\11-DRAINAGE PLAN & PROFILE - DRAIN "A7".dwg, 2025/3/28 2:33pm mmota



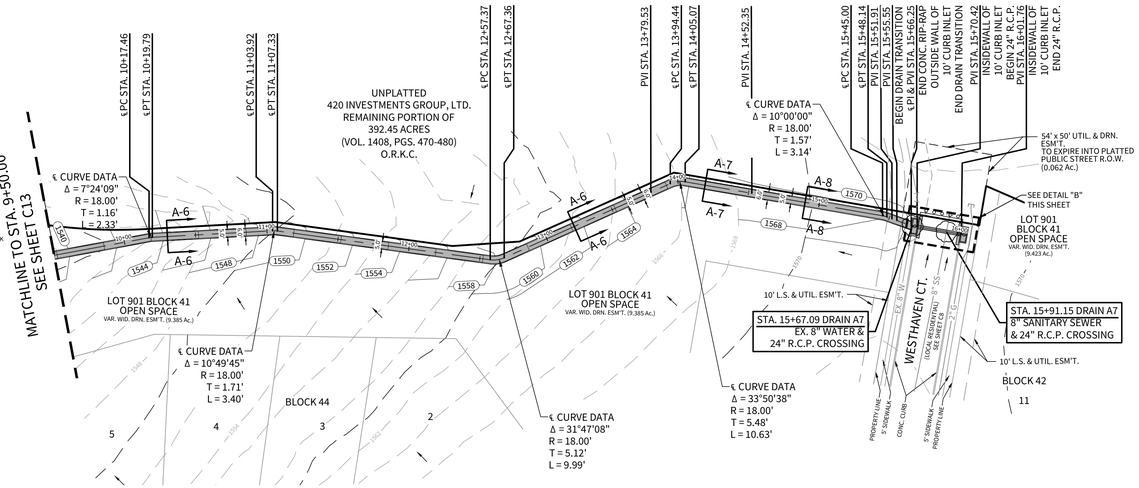
DRAIN 'A7' SECTIONS (N.T.S.)

'A-6' STA. 9+50.00 – 13+79.53
'A-7' STA. 13+79.53 – 14+52.35
'A-8' STA. 14+52.35 – 15+55.55



DETAIL "B" 2 – 10' CURB INLETS

N.T.S.



KEYNOTES:

1. CONCRETE COLLARS SHALL BE INSTALLED FOR PRECAST CURB INLETS FOR EVERY PIPE CONNECTION

GENERAL NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI IN 28 DAYS.
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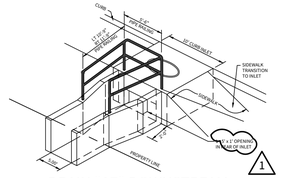
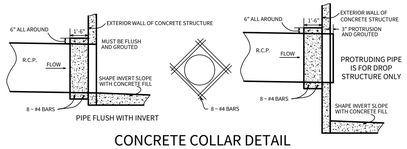
Name	"A-1"	"A-2"	"A-3"	"A-4"	"A-5"	"A-6"	"A-7"	"A-8"
BEGIN STA	1+20.29	2+49.45	4+25.65	6+07.87	8+00.00	9+50.00	13+79.53	14+52.35
END STA	2+09.40	2+98.96	6+07.87	8+00.00	9+50.00	13+79.53	14+52.35	15+55.55
Q_{100} [cfs]	220.60	220.60	101.96	101.96	83.31	83.31	30.75	30.75
h [ft]	2.00'	2.50'	2.00'	1.50'	1.50'	1.50'	1.50'	1.50'
b_w [ft]	10.00'	10.58'	5.00'	5.00'	5.00'	5.00'	5.00'	5.00'
z [_]:1 left	0	0	0	0	0	0	0	0
z [_]:1 right	0	0	0	0	0	0	0	0
t_w [ft]	10.00	10.58	5	5	5	5	5	5
n	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Slope [%]	1.37%	0.55%	2.00%	5.00%	7.00%	6.00%	3.00%	0.75%
d_c [ft]	1.44'	1.95'	1.37'	1.00'	0.78'	0.83'	0.54'	0.85'
V [fps]	14.48	10.69	14.88	20.39	21.36	20.07	11.39	7.24



DRAIN "A7" DOWNSTREAM CURB INLET & CONC. DRAIN DETAIL

NOTE: CONTRACTOR TO DOWEL CONC. DRAIN TO REAR OF INLET WITH #3 DOWELS @ 12" O.C.



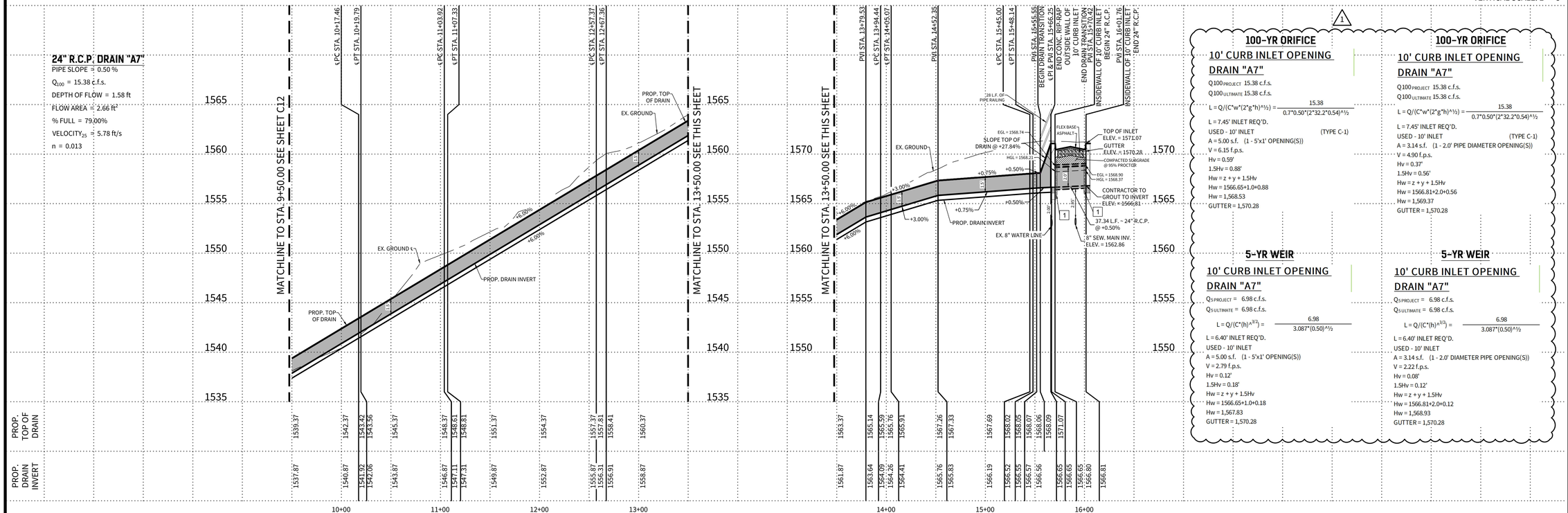
CONCRETE COLLAR DETAIL

N.T.S.

DRAIN 'A7'

STA. 9+50.00 TO STA. 16+01.76

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



100-YR ORIFICE

10' CURB INLET OPENING DRAIN "A7"

$Q_{100\,PROJECT}$ 15.38 c.f.s.
$Q_{100\,ULTIMATE}$ 15.38 c.f.s.

$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{15.38}{0.7*0.50*(2*32.2*0.54)^{1/2}}$

L = 7.45' INLET REQ'D.
USED - 10' INLET (TYPE C-1)
A = 5.00 s.f. (1 - 5'x1' OPENING(S))
V = 6.15 f.p.s.
Hv = 0.59'
1.5Hv = 0.88'
Hw = z + y + 1.5Hv
Hw = 1566.65+1.0+0.88
Hw = 1,568.53
GUTTER = 1,570.28

100-YR ORIFICE

10' CURB INLET OPENING DRAIN "A7"

$Q_{100\,PROJECT}$ 15.38 c.f.s.
$Q_{100\,ULTIMATE}$ 15.38 c.f.s.

$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{15.38}{0.7*0.50*(2*32.2*0.54)^{1/2}}$

L = 7.45' INLET REQ'D.
USED - 10' INLET (TYPE C-1)
A = 3.14 s.f. (1 - 2.0' PIPE DIAMETER OPENING(S))
V = 4.90 f.p.s.
Hv = 0.37'
1.5Hv = 0.56'
Hw = z + y + 1.5Hv
Hw = 1566.81+2.0+0.56
Hw = 1,569.37
GUTTER = 1,570.28

5-YR WEIR

10' CURB INLET OPENING DRAIN "A7"

$Q_{5\,PROJECT}$ = 6.98 c.f.s.
$Q_{5\,ULTIMATE}$ = 6.98 c.f.s.

$L = Q/(C*(h)^{X^{3/2}}) = \frac{6.98}{3.087*(0.50)^{1/2}}$

L = 6.40' INLET REQ'D.
USED - 10' INLET
A = 5.00 s.f. (1 - 5'x1' OPENING(S))
V = 2.79 f.p.s.
Hv = 0.12'
1.5Hv = 0.18'
Hw = z + y + 1.5Hv
Hw = 1566.65+1.0+0.18
Hw = 1,567.83
GUTTER = 1,570.28

5-YR WEIR

10' CURB INLET OPENING DRAIN "A7"

$Q_{5\,PROJECT}$ = 6.98 c.f.s.
$Q_{5\,ULTIMATE}$ = 6.98 c.f.s.

$L = Q/(C*(h)^{X^{3/2}}) = \frac{6.98}{3.087*(0.50)^{1/2}}$

L = 6.40' INLET REQ'D.
USED - 10' INLET
A = 3.14 s.f. (1 - 2.0' DIAMETER PIPE OPENING(S))
V = 2.22 f.p.s.
Hv = 0.08'
1.5Hv = 0.12'
Hw = z + y + 1.5Hv
Hw = 1566.81+2.0+0.12
Hw = 1,568.93
GUTTER = 1,570.28

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

REGENT PARK UNIT 7

DRAINAGE PLAN & PROFILE - DRAIN "A7"

DATE 03/28/2025

PROJECT NO. 02133.230

DRAWN BY MW/RM/JF

CHECKED BY WPM

REVISIONS

1. 02/10/2025 - UPDATE INLET CALCS & REAR OPENING DIMENSION
2. 03/27/2025 - UPDATE DRAIN DESIGN
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO. N/A

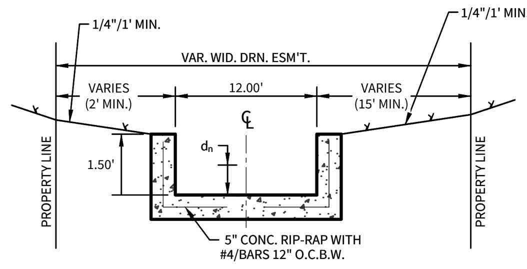
C13

12 OF 21

C:\CAD\Regent\Active\6_164\C13\DRAINAGE PLAN & PROFILE - DRAIN "A7".dwg 3/28/2025 3:05pm mmiles

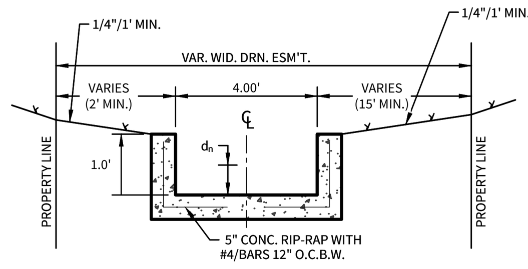
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

Name	"C-1"	"C-2"
BEGIN STA	3+17.27	3+47.03
END STA	3+31.27	4+09.29
Q_{100} (cfs)	23.97	23.97
h (ft)	1.50'	1.00'
b_w (ft)	12.00'	4.00'
t_w (ft)	12	4
n	0.013	0.013
Slope (%)	0.50%	11.00%
d_n (ft)	0.44'	0.35'
V (fps)	4.50	17.00
Channel Type	Channel	Channel



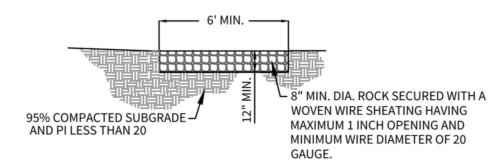
DRAIN 'C-1' SECTIONS (N.T.S.)

'C-1' STA. 3+17.27 TO STA. 3+31.27



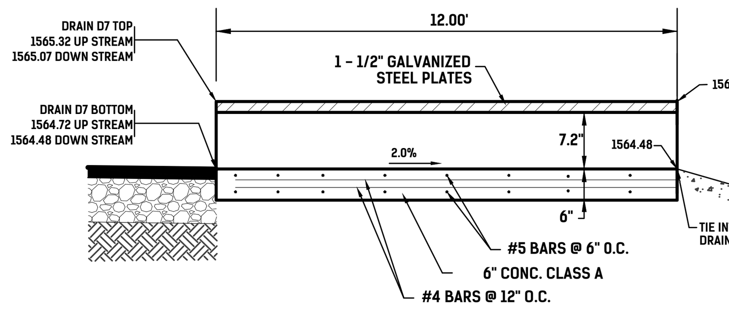
DRAIN 'C-2' SECTIONS (N.T.S.)

'C-2' STA. 3+47.03 TO STA. 4+09.29



GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

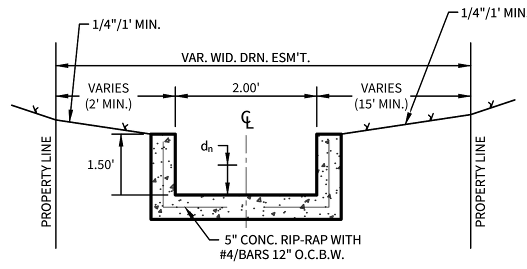
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



DRAIN "D7" INLET SECTION

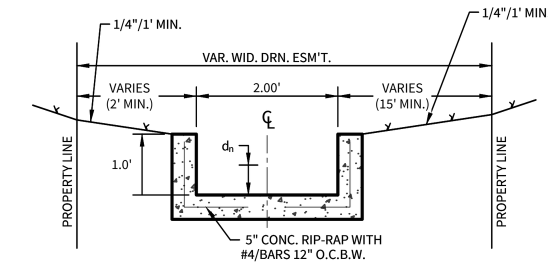
(N.T.S)

Name	"D-1"	"D-2"
BEGIN STA	1+81.00	2+12.98
END STA	2+04.65	2+94.91
Q_{100} (cfs)	5.14	5.14
h (ft)	1.50'	1.00'
b_w (ft)	2.00'	2.00'
t_w (ft)	2	2
n	0.013	0.013
Slope (%)	0.50%	6.50%
d_n (ft)	0.61'	0.26'
V (fps)	4.23	10.07
Channel Type	Channel	Channel



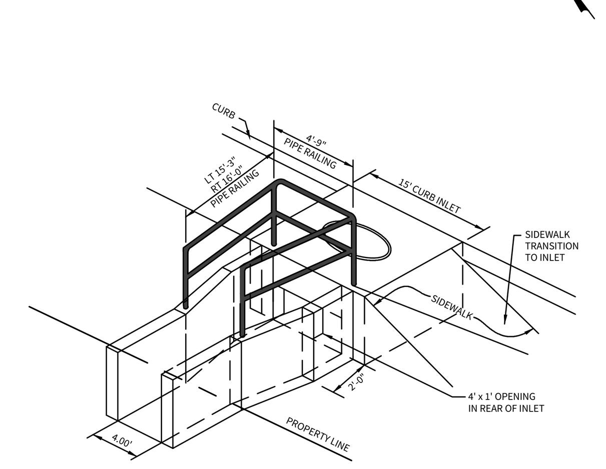
DRAIN 'D-1' SECTIONS (N.T.S.)

'D-1' STA. 1+85.57 TO STA. 2+04.65



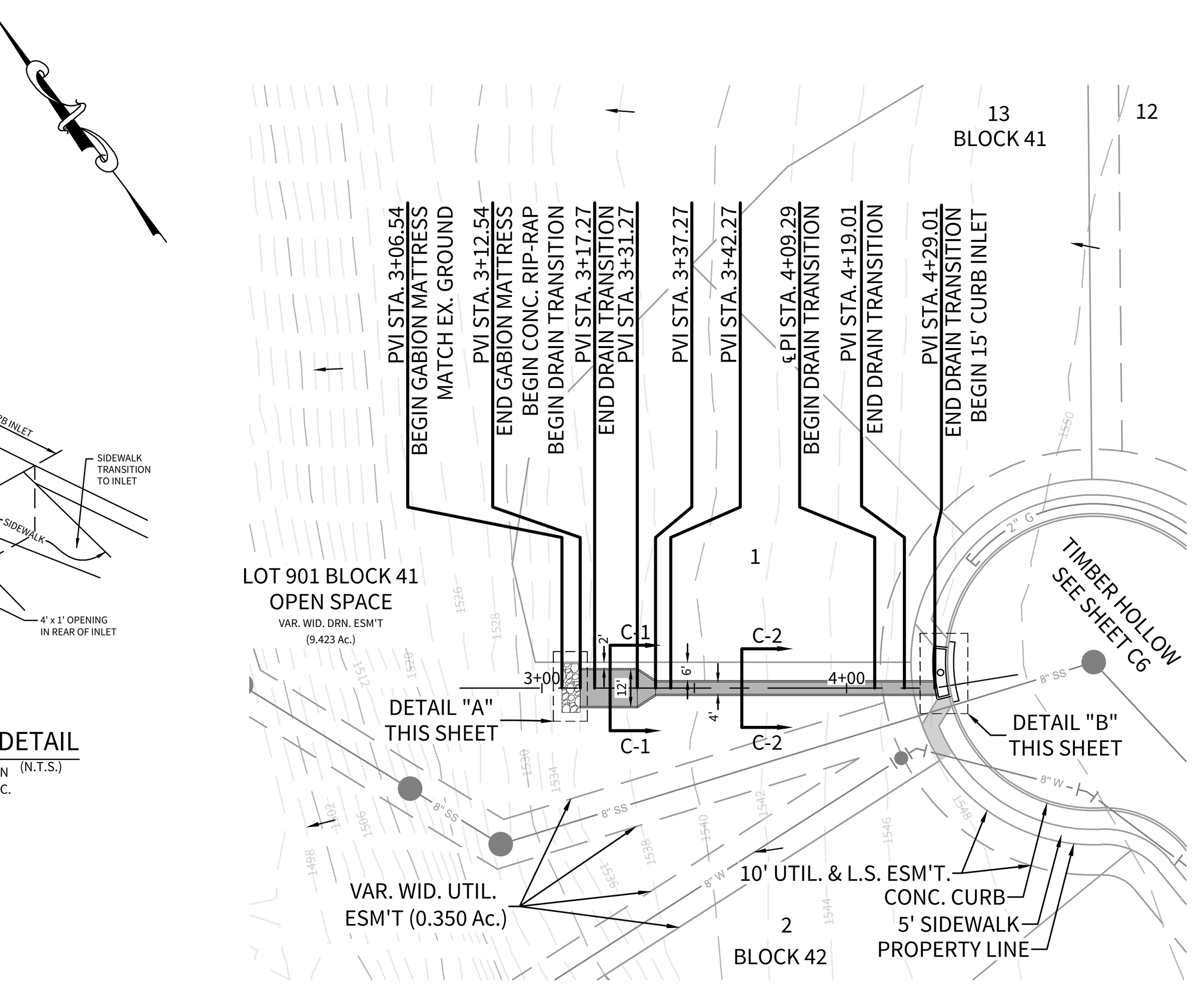
DRAIN 'D-2' SECTIONS (N.T.S.)

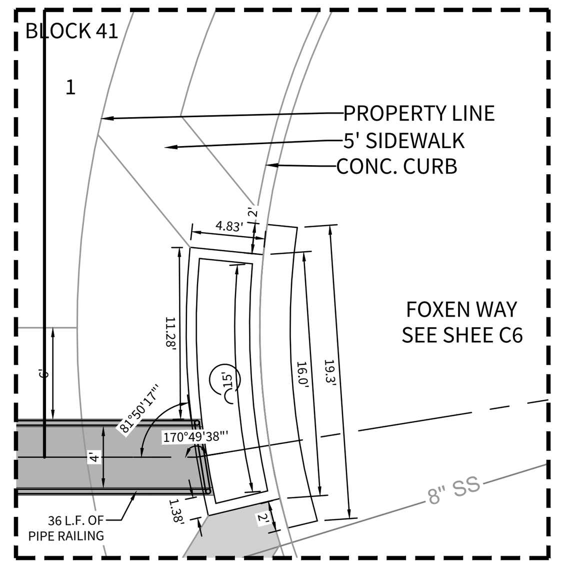
'D-2' STA. 2+12.98 TO STA. 2+94.91



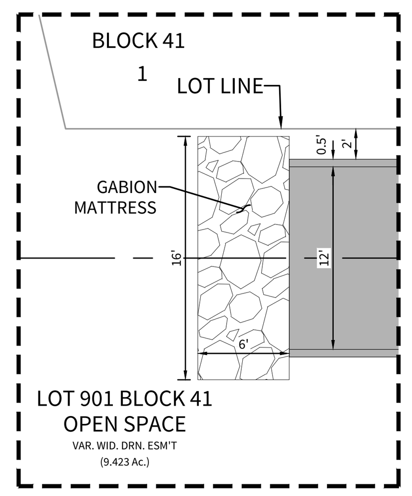
DRAIN "C7"
CURB INLET & CONC. DRAIN DETAIL (N.T.S.)

NOTE: CONTRACTOR TO DOWEL CONC. DRAIN TO REAR OF INLET WITH #3 DOWELS @ 12" O.C.

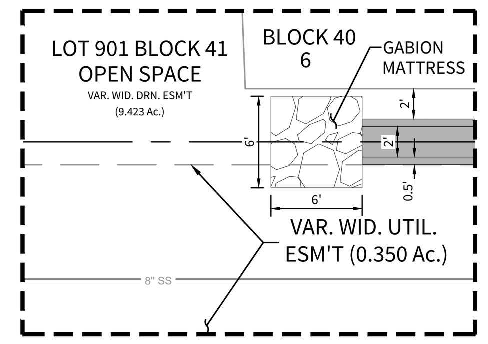




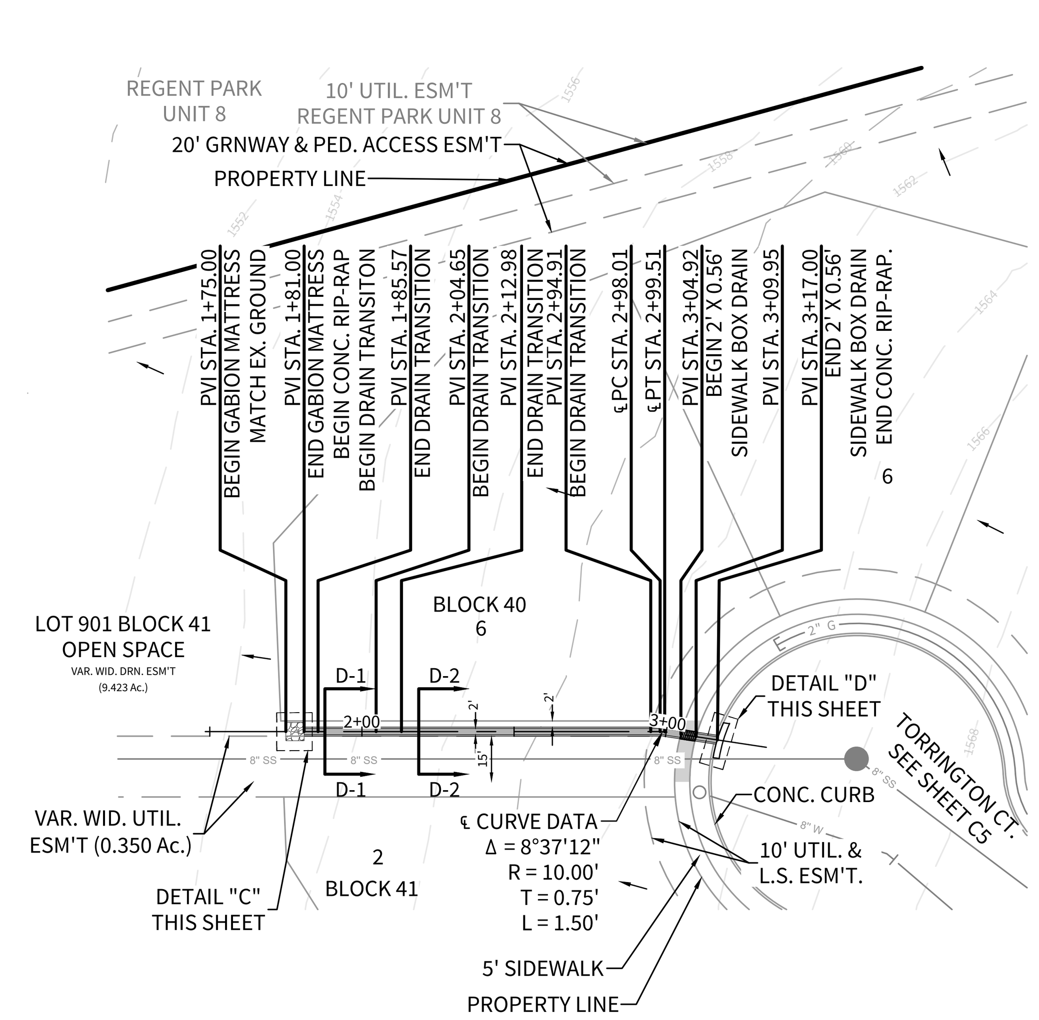
DETAIL "B"
(SCALE 1"=10')

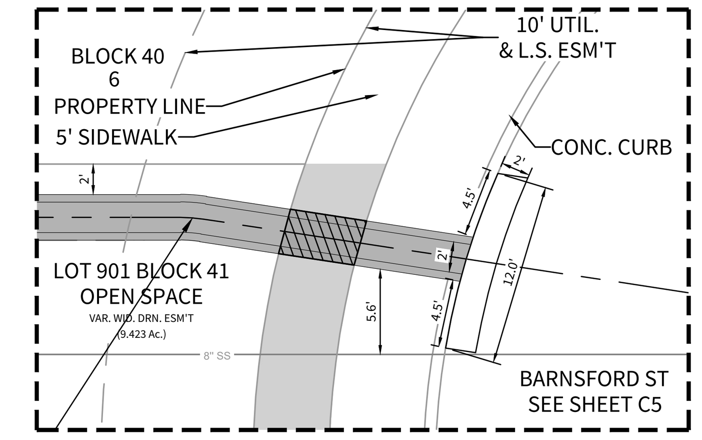


DETAIL "A"
(SCALE 1"=10')



DETAIL "C"
(SCALE 1"=10')





DETAIL "D"
(SCALE 1"=10')

GENERAL NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE PERIOD NEEDED TO ACHIEVE 85% VEGETATION.

DRAIN 'C7'

STA. 3+06.54 TO STA. 4+29.74

100-YR ORIFICE

15' CURB INLET OPENING

DRAIN "C7"

$Q_{100\ PROJECT}$ = 23.97 c.f.s.
$Q_{100\ ULTIMATE}$: 23.97 c.f.s.

$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{23.97}{0.7*0.50*(2*32.2*0.54)^{1/2}}$

L = 11.61' INLET REQ'D.
USED - 15' INLET (TYPE C-1)
A = 4.00 s.f. (1 - 4'x1' OPENING(S))
V = 5.99 f.p.s.
Hv = 0.56'
1.5Hv = 0.84'
Hw = z + y + 1.5Hv
Hw = 1545.08+1.0+0.84
Hw = 1,546.92
GUTTER = 1,547.29

5-YR WEIR

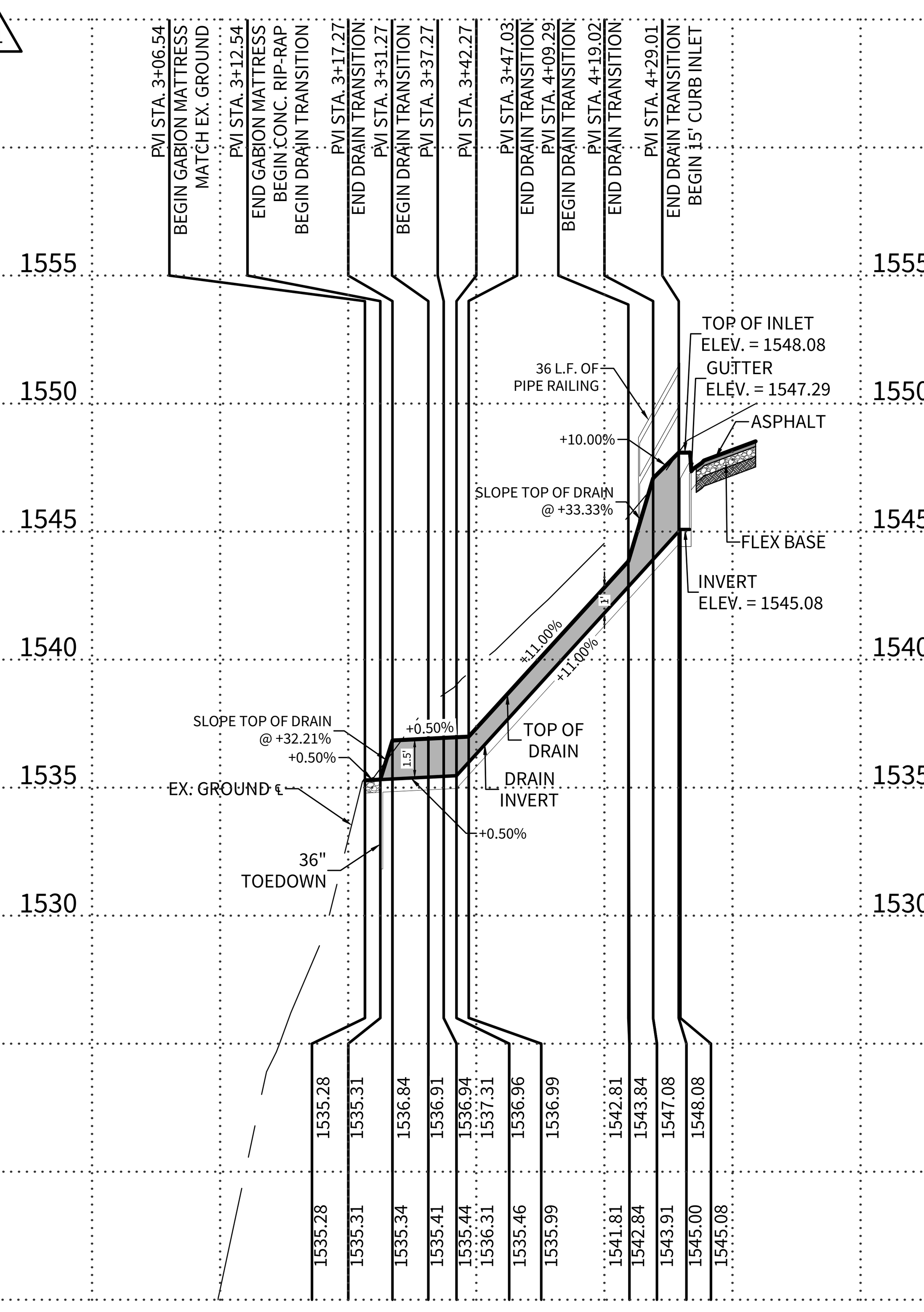
15' CURB INLET OPENING

DRAIN "C7"

$Q_{5\ PROJECT}$ = 10.93 c.f.s.
$Q_{5\ ULTIMATE}$ = 10.93 c.f.s.

$L = Q/(C*(h)^{3/2}) = \frac{10.93}{3.087*(0.50)^{1/2}}$

L = 10.01' INLET REQ'D.
USED - 15' INLET
A = 4.00 s.f. (1 - 4'x1' OPENING(S))
V = 2.73 f.p.s.
Hv = 0.12'
1.5Hv = 0.17'
Hw = z + y + 1.5Hv
Hw = 1545.08+1.0+0.17
Hw = 1,546.25
GUTTER = 1,547.29



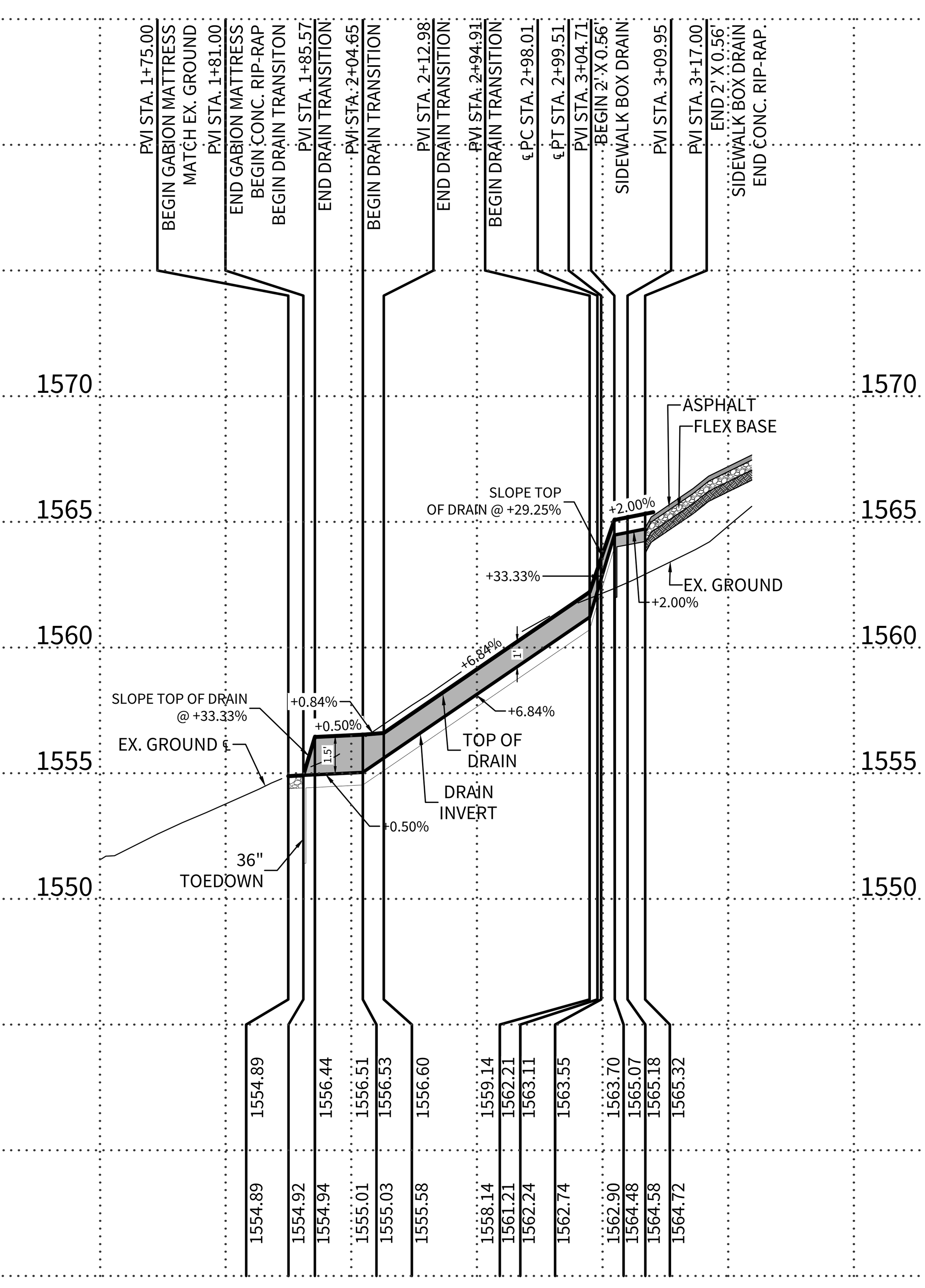
DRAIN 'D7'

STA. 1+75+00 TO STA. 3+17.00

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

STA. 3+04.71 TO STA. 3+17.00
1 - 2' X 0.56'-D7 CURB INLET

ALLOWABLE HW. = 1565.27
COMPUTED HW = 1565.10
SLOPE = 2.0%
n = 0.013
Q_{100} = 5.14 c.f.s.
$VELOCITY_{100}$ = 6.76 ft/s



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

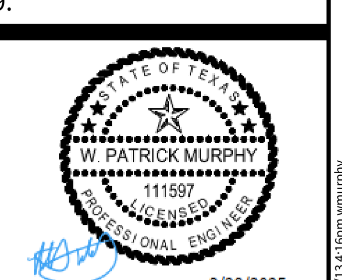
REGENT PARK UNIT 7

DRAINAGE PLAN & PROFILE - DRAIN "C7" & "D7"

DATE	03/13/2025
PROJECT NO.	02133.230
DRAWN BY	MW/RM/JF
CHECKED BY	WPM

REVISIONS

1. 02/10/2025 - UPDATE INLET CALCS, FIX TYPO & EXPAND GABION MATTRESS
2.
3.
4.
5.
6.
7.
8.
9.



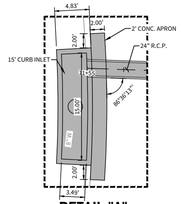
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

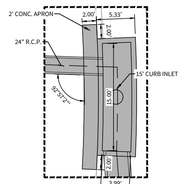
C14

P:\02133\230\2-Drawings\C14 DRAINAGE PLAN & PROFILE - DRAIN "C7" & "D7".dwg 2025/03/13 4:16pm wmurphy

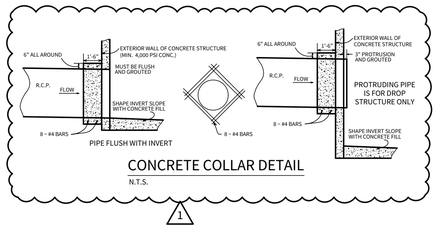
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

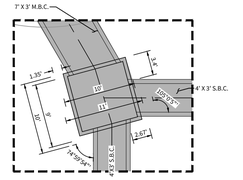


DETAIL "A"
15' CURB INLET
(SCALE: 1" = 10')

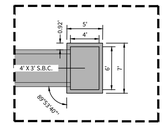


DETAIL "C"
15' CURB INLET
(SCALE: 1" = 10')





DETAIL "D"
JUNCTION BOX
(SCALE: 1" = 15')



DETAIL "E"
JUNCTION BOX
(SCALE: 1" = 15')

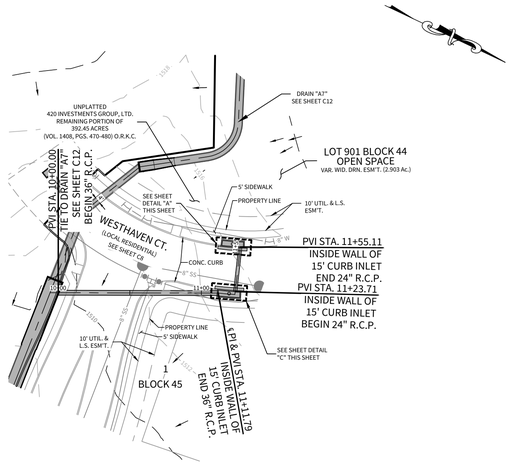
GENERAL NOTES
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. SOD LINING IS REQUIRED PER CITY OF BOERNE IN AREAS WITHIN EARTHEN CHANNEL WITH VELOCITIES GREATER THAN 3.00 FT/SEC BUT NO MORE THAN 5.0 FT/SEC.

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.

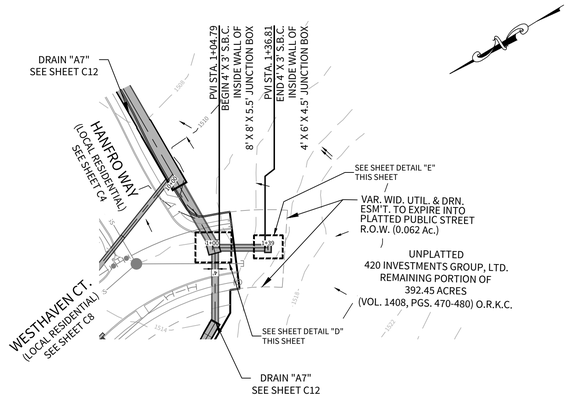
CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND ELECTRIC LINES, 8"/10" WATER MAINS, AND 4" GAS MAINS, EXIST WITHIN THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.



DRAIN 'E7'

STA. 10+00.00 TO STA. 11+55.11



DRAIN 'G7'

STA. 1+04.79 TO STA. 1+36.81

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

100-YR ORIFICE

15' CURB INLET OPENING
DRAIN "E7"

$Q_{100\ PROJECT}$ 25.60 c.f.s.
$Q_{100\ ULTIMATE}$ 25.60 c.f.s.

$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{25.6}{0.7*0.50*(2*32.2*0.54)^{1/2}}$

L = 12.40' INLET REQ'D.
USED - 15' INLET (TYPE C-1)
A = 7.07 s.f. (1 - 3.0' PIPE DIAMETER OPENING(S))
V = 7.25 f.p.s.
Hv = 0.82'
1.5Hv = 1.22'
Hw = z + y + 1.5Hv
Hw = 1506.84+3.0+1.22
Hw = 1,511.06
GUTTER = 1,512.90

100-YR ORIFICE

15' CURB INLET OPENING
DRAIN "E7"

$Q_{100\ PROJECT}$ 25.60 c.f.s.
$Q_{100\ ULTIMATE}$ 25.60 c.f.s.

$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{25.6}{0.7*0.50*(2*32.2*0.54)^{1/2}}$

L = 12.40' INLET REQ'D.
USED - 15' INLET (TYPE C-1)
A = 3.14 s.f. (1 - 2.0' PIPE DIAMETER OPENING(S))
V = 8.15 f.p.s.
Hv = 1.03'
1.5Hv = 1.55'
Hw = z + y + 1.5Hv
Hw = 1507.99+2.0+1.55
Hw = 1,511.54
GUTTER = 1,512.90

5-YR WEIR

15' CURB INLET OPENING
DRAIN "E7"

$Q_{5\ PROJECT}$ = 11.69 c.f.s.
$Q_{5\ ULTIMATE}$ = 11.69 c.f.s.

$L = Q/(C*(h)^{3/2}) = \frac{11.69}{3.087*(0.50)^{1/2}}$

L = 10.71' INLET REQ'D.
USED - 15' INLET
A = 7.07 s.f. (1 - 3.0' DIAMETER OPENING(S))
V = 3.31 f.p.s.
Hv = 0.17'
1.5Hv = 0.26'
Hw = z + y + 1.5Hv
Hw = 1506.84+3.0+0.26
Hw = 1,510.10
GUTTER = 1,512.90

5-YR WEIR

15' CURB INLET OPENING
DRAIN "E7"

$Q_{5\ PROJECT}$ = 11.69 c.f.s.
$Q_{5\ ULTIMATE}$ = 11.69 c.f.s.

$L = Q/(C*(h)^{3/2}) = \frac{11.69}{3.087*(0.50)^{1/2}}$

L = 10.71' INLET REQ'D.
USED - 15' INLET
A = 3.14 s.f. (1 - 2.0' DIAMETER PIPE OPENING(S))
V = 3.72 f.p.s.
Hv = 0.22'
1.5Hv = 0.32'
Hw = z + y + 1.5Hv
Hw = 1507.99+2.0+0.32
Hw = 1,510.31
GUTTER = 1,512.90

1

36" R.C.P. DRAIN "E7"
STA. 10+00.00 TO 11+11.79

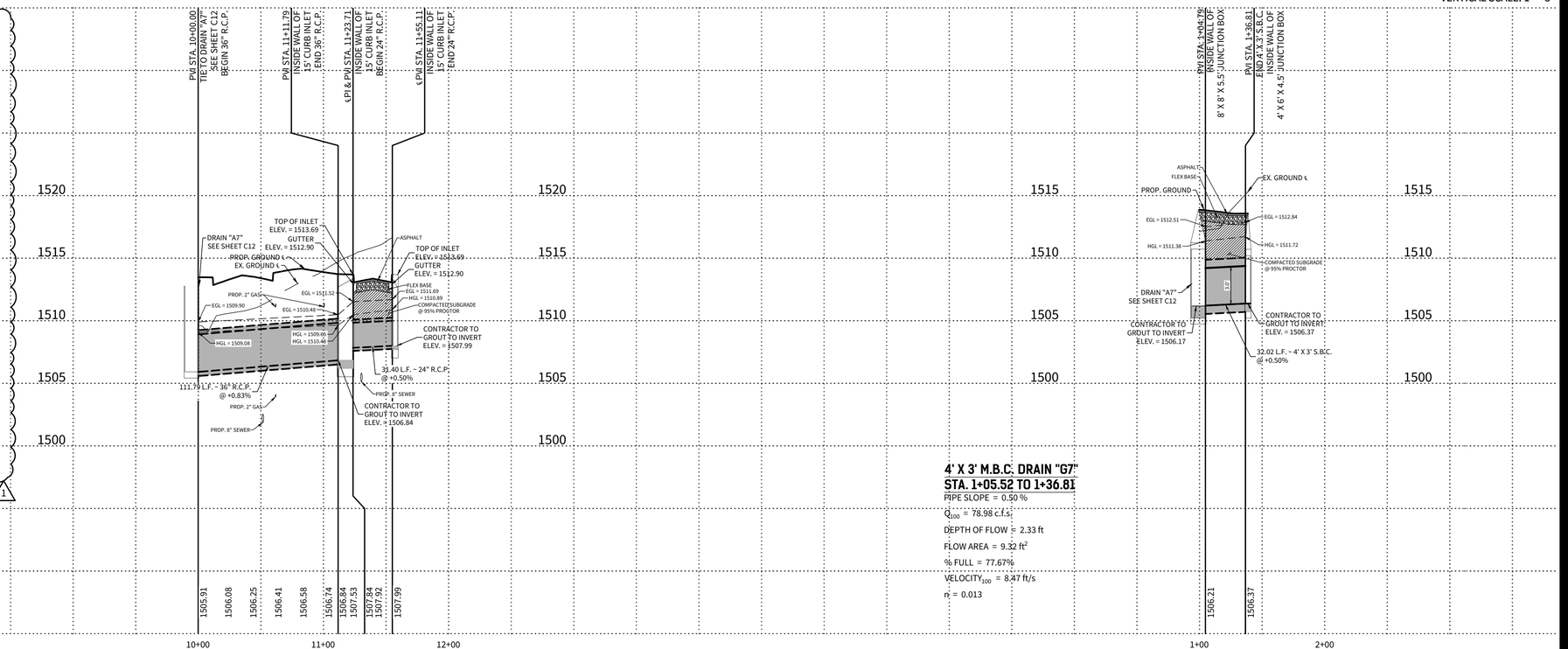
PIPE SLOPE = 0.83 %
Q_{100} = 51.20 c.f.s.
DEPTH OF FLOW = 2.11 ft
FLOW AREA = 5.31 ft²
% FULL = 78.41%
$VELOCITY_{100}$ = 9.63 ft/s
n = 0.013

24" R.C.P. DRAIN "E7"
STA. 11+23.71 TO 11+55.11

PIPE SLOPE = 0.5 %
Q_{100} = 25.60 c.f.s.
DEPTH OF FLOW = 2.00 ft
FLOW AREA = 3.14 ft²
% FULL = 100.00%
$VELOCITY_{100}$ = 8.15 ft/s
n = 0.013

4' X 3' M.B.C. DRAIN "G7"
STA. 1+05.52 TO 1+36.81

PIPE SLOPE = 0.50 %
Q_{100} = 78.98 c.f.s.
DEPTH OF FLOW = 2.33 ft
FLOW AREA = 9.32 ft²
% FULL = 77.67%
$VELOCITY_{100}$ = 8.47 ft/s
n = 0.013



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REGENT PARK
UNIT 7

DRAINAGE PLAN & PROFILE - DRAIN "E7" & "G7"

DATE
03/19/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/10/2025 - UPDATE INLET CALCS & COMPRESSIVE STRENGTH NOTE, REVISED WATER/GAS LAYOUT & UPDATE G7 J-BOX SIZE
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111507
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

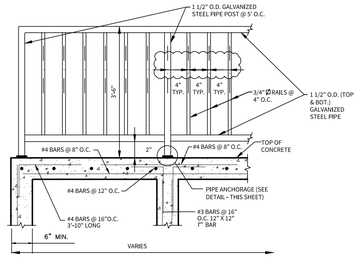
PLAT NO.
N/A

C15

14 OF 21

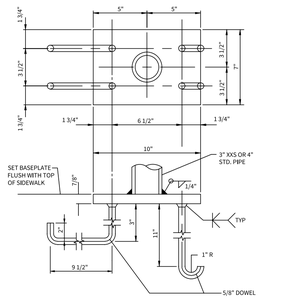
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\02133.230\3.Drawings\07_C15DRP1DRAINAGE PLAN & PROFILE - DRAIN "E7" & "G7".dwg 2025/03/19 3:11pm mmurphy



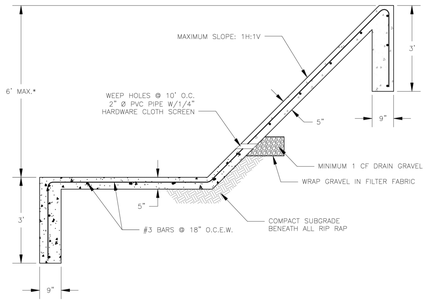
TYPICAL SIDEWALK BRIDGE SECTION AND SIDEWALK PIPE RAILING

(N.T.S.)



PIPE ANCHORAGE DETAILS

(N.T.S.)

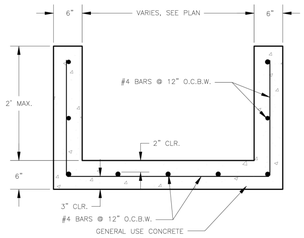


*MAXIMUM HEIGHT MAY BE EXCEEDED IF DESIGN MODIFIED BASED UPON GEOTECHNICAL SLOPE STABILITY ANALYSIS AND APPROPRIATE STRUCTURAL DESIGN.

CITY OF BOERNE

CONCRETE RIP RAP TYPICAL SECTION

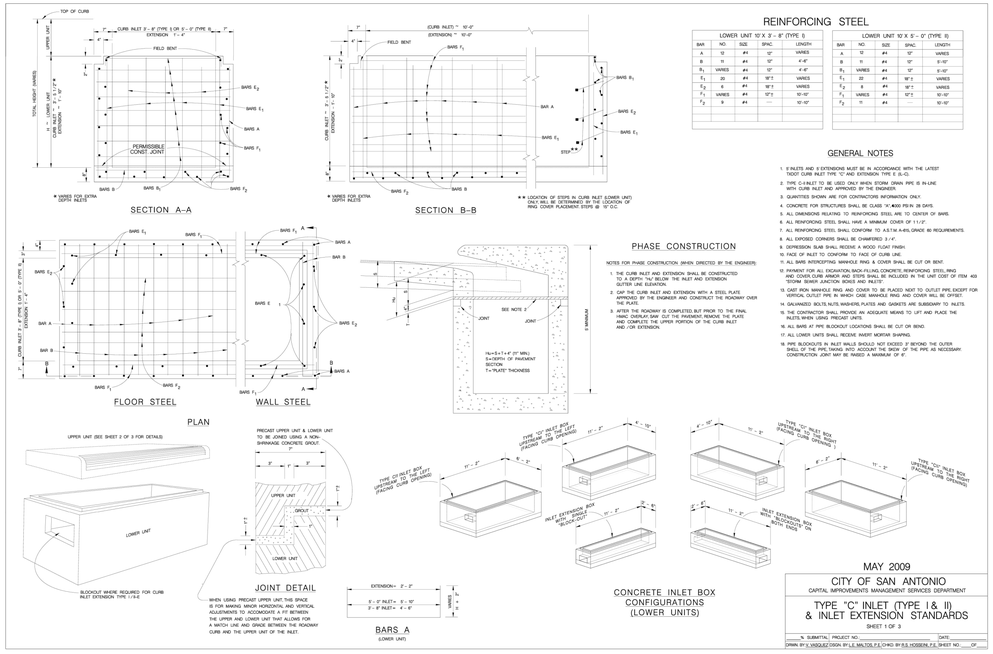
SCALE: N.T.S.	DRAWING NO.: 02423-1.1	DATE: JULY 2015



CITY OF BOERNE

CONCRETE FLUME

SCALE: N.T.S.	DRAWING NO.: 02423-1.0	DATE: JULY 2015


TOP OF CURB
UPPER UNIT
TOTAL HEIGHT (VARIES)
H = LOWER UNIT EXTENSION + 1'-10"
CURB INLET 3' - 8" (TYPE I) OR 5' - 0" (TYPE II)
EXTENSION = 1'-4"
FIELD BENT
PERMISSIBLE CONST. JOINT
BARS E_2
BARS E_1
BARS A
BARS F_1
BARS B
BARS B_1
BARS F_2
* VARIES FOR EXTRA DEPTH INLETS
SECTION A-A
CURB INLET = 3' - 0" / 5' - 0"
EXTENSION = 1'-4"
BARS B_1
BARS E_2
BARS E_1
BARS F_2
SECTION B-B
** LOCATION OF STEPS IN CURB INLET (LOWER UNIT) SHALL BE COORDINATED WITH LOCATION OF RING. COVER PLACEMENT STEPS @ 16" O.C.
REINFORCING STEEL
LOWER UNIT 10' X 3' - 8" (TYPE I)
BAR | NO. | SIZE | SPAC. | LENGTH
A | 12 | #4 | 12" | VARIES
B | 11 | #4 | 12" | 4'-4"
B_1 | VARIES | #4 | 12" | 1'-4"
F_1 | 20 | #4 | 18" ± | VARIES
F_2 | 6 | #4 | 18" ± | VARIES
F_3 | VARIES | #4 | 12" ± | 10'-10"
F_2 | 9 | #4 | --- | 10'-10"
LOWER UNIT 10' X 5' - 0" (TYPE II)
BAR | NO. | SIZE | SPAC. | LENGTH
A | 12 | #4 | 12" | VARIES
B | 11 | #4 | 12" | 5'-10"
B_1 | VARIES | #4 | 12" | 1'-10"
F_1 | 22 | #4 | 18" ± | VARIES
F_2 | 8 | #4 | 18" ± | VARIES
F_3 | VARIES | #4 | 12" ± | 10'-10"
F_2 | 11 | #4 | --- | 10'-10"
GENERAL NOTES
1. E INLETS AND X EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E SLAB.
2. TYPE C-I-INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A" 4000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 / 4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK-FILLING, CONCRETE, REINFORCING STEEL, RING AND CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 432 "STORM SEWER JUNCTION, BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS SHALL WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SPEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".
FLOOR STEEL
WALL STEEL
PLAN
PHASE CONSTRUCTION
NOTES FOR PHASE CONSTRUCTION: (WHEN DIRECTED BY THE ENGINEER):
1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "HU" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION, WITH A STEEL PLATE, APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND / OR EXTENSION.
JOINT
SEE NOTE 2
Hu=5+1+4" (1" MIN.) 5=DEPTH OF PAVEMENT SECTION T=THLATE" THICKNESS
T MINIMUM
PLAN
UPPER UNIT (SEE SHEET 2 OF 3 FOR DETAILS)
LOWER UNIT
BLOCKOUT WHERE REQUIRED FOR CURB INLET EXTENSION TYPE I / II-E
PRECAST UPPER UNIT & LOWER UNIT TO BE JOINED USING A NON-SHRINKAGE CONCRETE GROUT.
UPPER UNIT
GROUT
LOWER UNIT
JOINT DETAIL
WHEN USING PRECAST UPPER UNIT, THIS SPACE IS FOR MAKING MINOR HORIZONTAL AND VERTICAL ADJUSTMENTS TO ACCOMODATE A FIT BETWEEN THE UPPER AND LOWER UNIT THAT ALLOWS FOR A MATCH LINE AND GRADE BETWEEN THE ROADWAY CURB AND THE UPPER UNIT OF THE INLET.
EXTENSION= 2' - 0"
5' - 0" INLET= 5' - 10"
3' - 0" INLET= 4' - 8"
BARS A (LOWER UNIT)
TYPE "D" INLET BOX UPSTREAM OF THE LAST INLET FROM CURB OPENING
TYPE "C" INLET BOX UPSTREAM OF THE LAST INLET FROM CURB OPENING
TYPE "C" INLET BOX LOCATION IN CURB RETURN
TYPE "C" INLET BOX DOWNSTREAM FROM CURB OPENING
INLET EXTENSION BOX WITH CURB OPENING
INLET EXTENSION BOX WITH CURB OPENING
INLET EXTENSION BOX WITH CURB END
CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)
MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 1 OF 3
SUBMITTAL PROJECT NO.: DATE:
DRAWN BY: V. VASQUEZ DESIGN BY: L.E. MILTOS, P.E. CHKD BY: R.S. HOSSEIN, P.E. SHEET NO. OF

CITY OF BOERNE

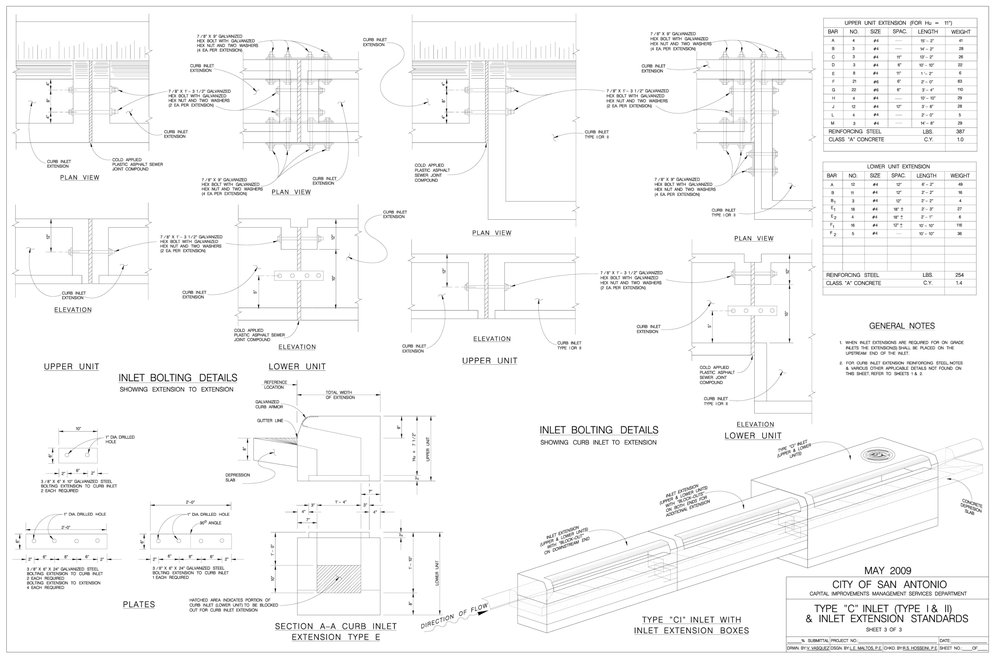
CONCRETE RIP RAP TYPICAL SECTION

SCALE: N.T.S.	DRAWING NO.: 02423-1.1	DATE: JULY 2015

CITY OF BOERNE

CONCRETE FLUME

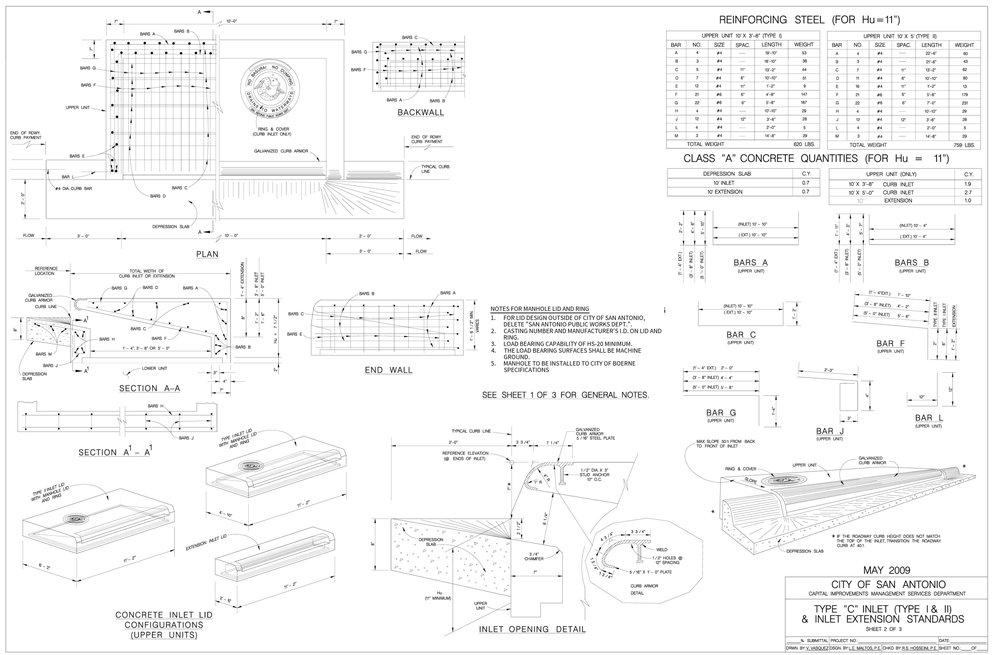
SCALE: N.T.S.	DRAWING NO.: 02423-1.0	DATE: JULY 2015



CITY OF BOERNE

CONCRETE FLUME

SCALE: N.T.S.	DRAWING NO.: 02423-1.0	DATE: JULY 2015


BARS G
BARS F
UPPER UNIT
BARS E
BAR L
#4 DIA. CURB BAR
BARS C
BARS D
DEPRESSION SLAB
FLOW
3' - 0"
10' - 0"
2' - 0"
PLAN
RING & COVER (CURB INLET ONLY)
GALVANIZED CURB ARMOR
BACKWALL
END OF ROW/ CURB PAYMENT
TYPICAL CURB LINE
REINFORCING STEEL (FOR Hu = 11")
UPPER UNIT 10' X 3'-8" (TYPE I)
BAR | NO. | SIZE | SPAC. | LENGTH | WEIGHT
A | 4 | #4 | --- | 19'-10" | 53
B | 3 | #4 | --- | 18'-10" | 38
C | 3 | #4 | 11" | 13'-2" | 44
D | 7 | #4 | 6" | 10'-10" | 51
E | 12 | #4 | 11" | 1'-2" | 9
F | 21 | #6 | 6" | 4'-8" | 147
G | 23 | #6 | 6" | 5'-8" | 197
H | 4 | #4 | --- | 10'-10" | 29
J | 12 | #4 | 12" | 3'-8" | 28
L | 4 | #4 | --- | 2'-0" | 5
M | 4 | #4 | --- | 14'-8" | 29
TOTAL WEIGHT | | | | | 620 LBS.
UPPER UNIT 10' X 5'-0" (TYPE II)
BAR | NO. | SIZE | SPAC. | LENGTH | WEIGHT
A | 4 | #4 | --- | 22'-6" | 60
B | 3 | #4 | --- | 21'-6" | 43
C | 7 | #4 | 11" | 13'-2" | 62
D | 11 | #4 | 6" | 10'-10" | 80
E | 16 | #4 | 11" | 1'-2" | 12
F | 21 | #6 | 6" | 5'-8" | 179
G | 23 | #6 | 6" | 7'-8" | 229
H | 4 | #4 | --- | 10'-10" | 29
J | 12 | #4 | 12" | 3'-8" | 28
L | 4 | #4 | --- | 2'-0" | 5
M | 4 | #4 | --- | 14'-8" | 29
TOTAL WEIGHT | | | | | 759 LBS.
CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")
DEPRESSION SLAB | C.Y.
10' INLET | 0.7
10' EXTENSION | 0.7
UPPER UNIT (ONLY) | C.Y.
10' X 3'-8" CURB INLET | 1.9
10' X 5'-0" CURB INLET EXTENSION | 2.7
1.0
BARS A
BARS B
BAR C
BAR F
BAR G
BAR J
BAR L
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. MANHOLE TO BE INSTALLED TO CITY OF BOERNE SPECIFICATIONS
END WALL
SEE SHEET 1 OF 3 FOR GENERAL NOTES.
SECTION A-A
SECTION A1 - A1
TYP. 2 INLET LID WITH 1 LIFT AND HAND
EXTENSION INLET LID
CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)
TYPICAL CURB LINE
REFERENCE ELEVATION (@ ENDS OF INLET)
GALVANIZED CURB ARMOR
1/2" DIA X 5" STUD ANCHOR @ 16" O.C.
DEPRESSION SLAB
3/4" CHAMFER
WELD 1-1/2" HOLES @ 12" SPACING
5/16" X 1' - 0" PLATE
CURB ARMOR DETAIL
INLET OPENING DETAIL
RING & COVER
UPPER UNIT
GALVANIZED CURB ARMOR
* @ THE ROADWAY CURB HEIGHT DOES NOT MATCH THE TOP OF THE INLET, TRANSITION THE ROADWAY CURB AT 40:1.
MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 2 OF 3
SUBMITTAL PROJECT NO.: DATE:
DRAWN BY: V. VASQUEZ DESIGN BY: L.E. MILTOS, P.E. CHKD BY: R.S. HOSSEIN, P.E. SHEET NO. OF

CUDEENGINEERS.COM

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

REGENT PARK UNIT 7

CITY OF BOERNE - - DRAINAGE STANDARD DETAILS

DATE
03/21/2024

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/22/2024

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C16

15 OF 21

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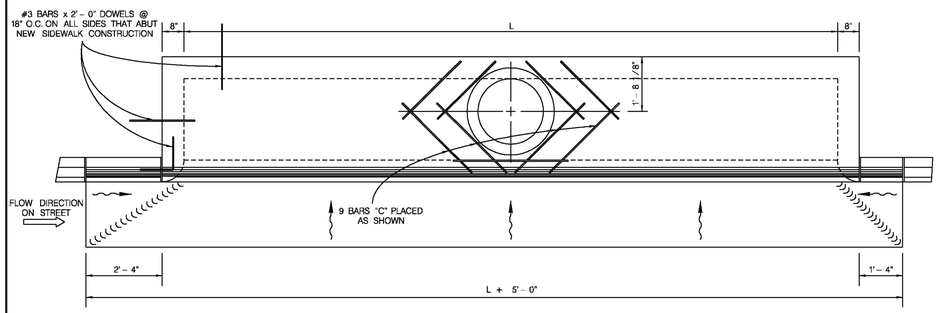
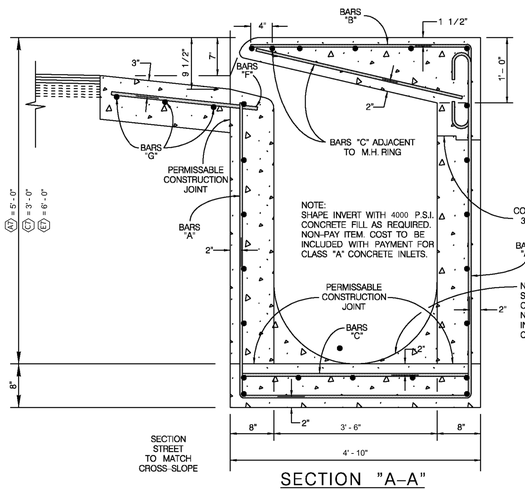
P:\02133.230\Admin\dgn\C16 CITY OF BOERNE - DRAINAGE STANDARD DETAILS.dwg 2024/03/22 3:58pm rmurphy



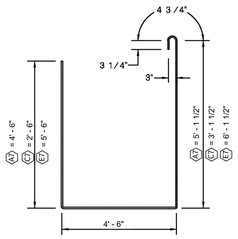
PLAN VIEW

SCALE : 1" = 2'

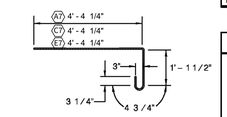


SECTION "A-A"

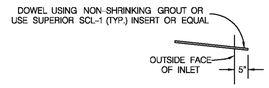
SCALE : 1" = 1'



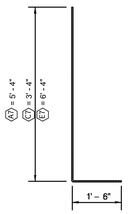
BAR "A"



BAR "B"



BAR "F"



BAR "E"

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "A7" L= 10' DEPTH= 5'	A	27	4	5' o.c.	14' 9 1/2"	266.78
	B	27	4	5"	6' 1 3/4"	110.85
	C	37	4	9"	4' 6"	111.22
	D	24	4	10"	11' 1"	177.69
	E	12	4	10 1/2"	6' 10"	54.78
	F	12	5	12"	2' 3"	28.16
	G	3	4	12"	15'8"	31.40
	H	6	5	12"	1' 8"	10.43

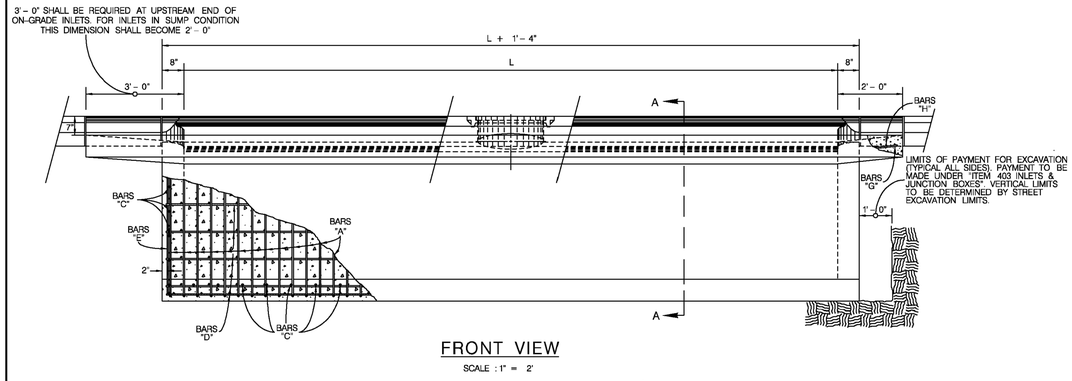
*Concrete Total = 6.25 C.Y. Manhole Casting = 260 lbs. Steel Total = 791.30 lbs.

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "C7" L= 15' DEPTH= 3'	A	39	4	5' o.c.	10' 9 1/2"	281.14
	B	39	4	5"	6' 1 3/4"	160.11
	C	39	4	9"	4' 6"	117.23
	D	20	4	10"	16' 1"	214.87
	E	12	4	10 1/2"	4' 10"	38.74
	F	17	5	12"	2' 3"	39.89
	G	3	4	12"	20'8"	41.42
	H	6	5	12"	1' 8"	10.43

*Concrete Total = 6.74 C.Y. Manhole Casting = 260 lbs. Steel Total = 903.85 lbs.

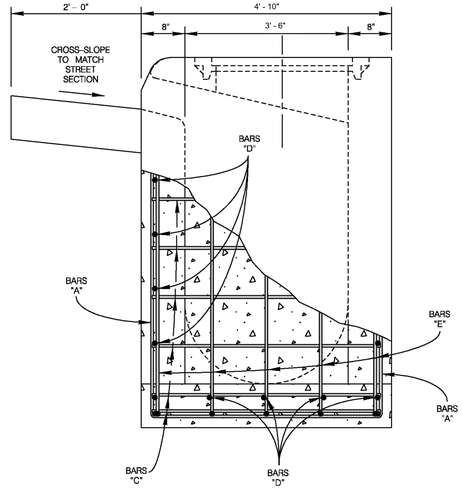
INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "E7" L= 15' DEPTH= 6'	A	39	4	5' o.c.	16' 9 1/2"	437.46
	B	39	4	5"	6' 1 3/4"	160.11
	C	45	4	9"	4' 6"	135.27
	D	26	4	10"	16' 1"	279.34
	E	12	4	10 1/2"	7' 10"	62.79
	F	17	5	12"	2' 3"	39.89
	G	3	4	12"	20'8"	41.42
	H	6	5	12"	1' 8"	10.43

*Concrete Total = 9.68 C.Y. Manhole Casting = 260 lbs. Steel Total = 1166.71 lbs.



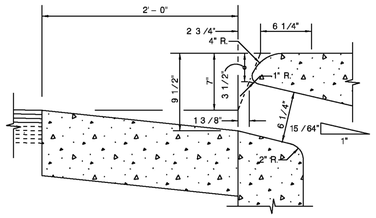
FRONT VIEW

SCALE : 1" = 2'



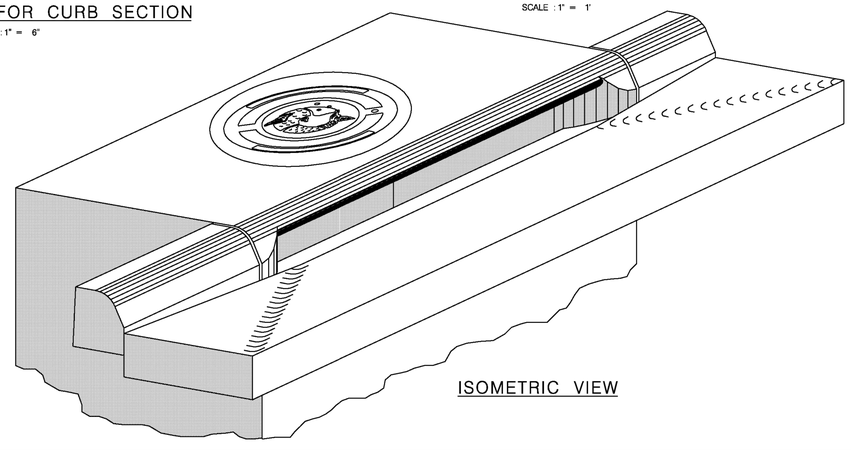
SIDE VIEW

SCALE : 1" = 1'



OPENING DETAIL FOR CURB SECTION

SCALE : 1" = 6"



ISOMETRIC VIEW

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 4000 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 JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

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. MANHOLE TO BE INSTALLED TO CITY OF BOERNE SPECIFICATIONS

JANUARY 2005

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

TYPE "C" INLET DETAILS

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

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

REGENT PARK
UNIT 7

CURB INLET DETAILS - TYPE 'C'

DATE
03/21/2024

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/22/2024

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C17

16 OF 21

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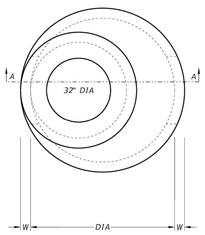
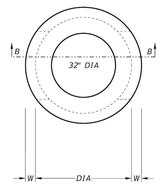
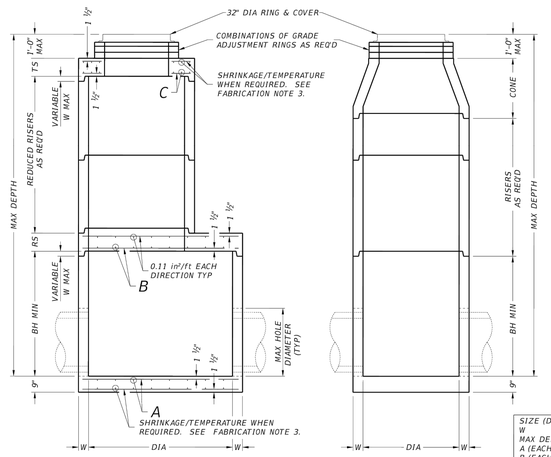
DATE:
FILE:



PLAN VIEW "A"



PLAN VIEW "B"



SECTION A-A

ROUND REDUCED RISER OPTION
SHOWING FLAT SLAB TOP

SECTION B-B

ROUND RISER OPTION
SHOWING CONE

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR. Provide circumferential reinforcing steel in vertical walls of base, riser and cone in accordance with ASTM C478.
3. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
4. Manufacture base and risers to nearest 3" increment.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.

INSTALLATION NOTES:

1. Cones may be concentric or eccentric. Reduction cones are acceptable. See Manufacturer for cone dimensions.
2. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to this item.
3. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
4. Do not grout rubber gasket joints without Manufacturer's recommendation.
5. Number and height of adjustment rings is limited to 1'-0" Max as shown.
6. Grade adjustment rings may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments may be made up to the Max depth shown. Structure must be evaluated if Max depth will be exceeded.

GENERAL NOTES:

1. Designed according to ASTM C478.
2. Payment for manhole is per Item 465, "Junction Boxes, Manholes, and Inlets" by type and size.
3. Pipe OD + placement tolerance must be equal or less than Max hole diameter. For rigid pipe, placement tolerance is 4" Max, 2" Min. For flexible pipe, consult boot/seal manufacturer's specification for placement tolerance.

Cover dimensions are clear dimensions, unless noted otherwise.

SIZE (DIA)	48 in	60 in	72 in
W	5 in	6 in	7 in
MAX DEPTH	25 ft	25 ft	25 ft
A (EACH WAY)	0.22 in²/ft	0.30 in²/ft	0.45 in²/ft
B (EACH WAY)	N/A	0.37 in²/ft	0.62 in²/ft
C (EACH WAY)	0.24 in²/ft	0.46 in²/ft	0.46 in²/ft
BH MIN	12 in	36 in	36 in
TS	9 in	9 in	9 in
RS	N/A	9 in	12 in
REDUCED RISER DIA	N/A	48 in	48/60 in
MAX HOLE DIA	32 in	40 in	54 in

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

PRECAST ROUND MANHOLE

PRM

File: CD-PRM-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
3/2023 – Corrected TS and RS callout	DIST	COUNTY		SHEET NO.

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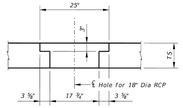
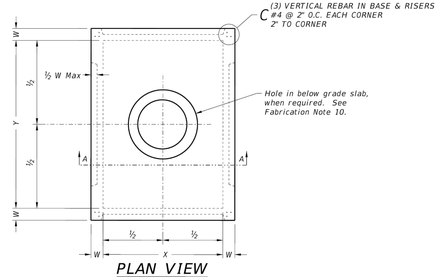
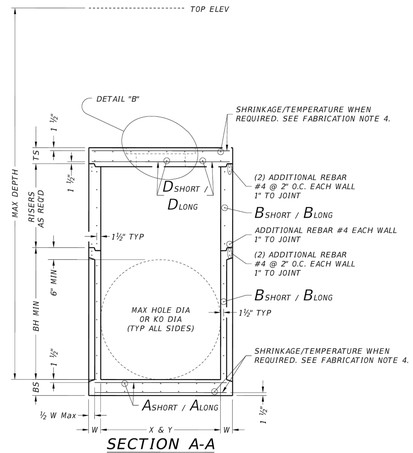
DATE:
FILE:



DETAIL "B"

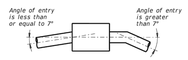


PLAN VIEW



SECTION A-A

Cover dimensions are clear dimensions, unless noted otherwise.



PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.
10. Provide hole in below grade slab only when PJB is installed with inlet type PDD.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

PRECAST JUNCTION BOX

PJB

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

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	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Fabrication Note 3)	Min HOLE DIA (See Fabrication Note 2)	Min KO DIA (See Fabrication Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Axial Steel Area	Long Span Axial Steel Area	Thickness	Short Span Axial Steel Area	Long Span Axial Steel Area	Thickness	Reduced Riser Size	Short Span Axial Steel Area	Long Span Axial Steel Area	Thickness	Short Span Axial Steel Area	Long Span Axial Steel Area	Thickness	Short Span Axial Steel Area	Long Span Axial Steel Area	Thickness	Reduced Riser Size	Short Span Axial Steel Area	Long Span Axial Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in²/ft	in²/ft	in.	in²/ft	in²/ft	in.	ft. **	in²/ft	in²/ft	in.	in²/ft	in²/ft	in.	in²/ft	in²/ft	in.	ft. **	in²/ft	in²/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:

1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

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CUDEENGINEERS.COM

CUDE ENGINEERS (EST. 1980)

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

REGENT PARK
UNIT 7

JUNCTION BOX PRE-CAST DETAILS

DATE
03/11/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

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

3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C18

17 OF 21

P:\02133\230\2-Drawings\C18 PRECAST JUNCTION BOX DETAILS.dwg 2025/03/11 9:53am mmurphy

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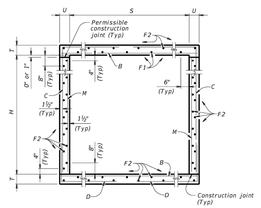
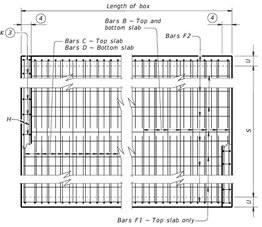
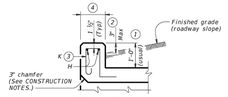


TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

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

(2) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

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

(4) 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

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

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

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

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

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (fc = 4,000 psi) for culvert barrel and curb, with the following exceptions:provide Class S concrete (f'c = 4,000 psi) for top slabs of:
- culverts with 0" fill or less,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

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

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL
SCC-3 & 4

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BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

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

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

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL
SCC-3 & 4

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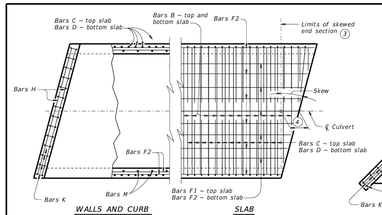
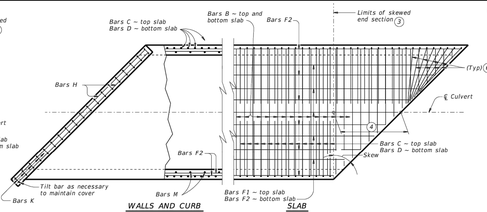
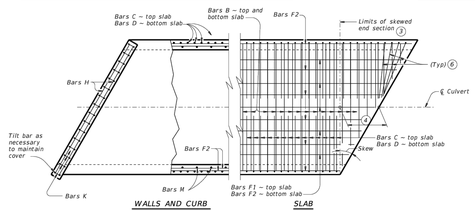


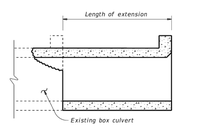
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



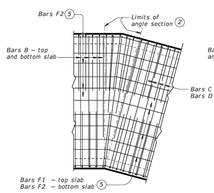
PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



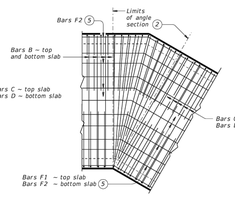
PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



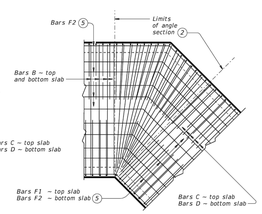
LENGTHENING DETAIL (1)



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

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

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

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

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

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

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

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

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

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

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

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

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SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS
SCC-MD

File: CD-SCC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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DATE:
FILE:

CUDEENGINEERS.COM

CUDE ENGINEERS

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

REGENT PARK
UNIT 7

SINGLE BOX CULVERTS CAST-IN-PLACE
DETAILS

DATE
03/11/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATE CONC. COMPRESSIVE STRENGTH
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C19

18 OF 21

P:\02133.230\2-Drawings\C19 SBC DETAILS.dwg 2025/03/13 8:57am mmurphy

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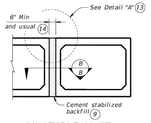
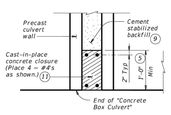
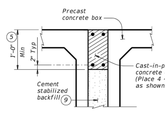


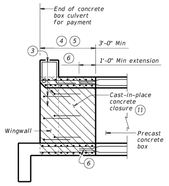
MULTIPLE UNIT PLACEMENT



SECTION B-B

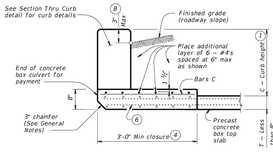


DETAIL "A" (13)

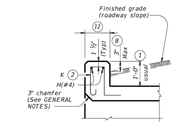


WINGWALL CONNECTION

(Also applies to safety end treatment.)



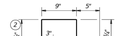
SECTION THRU TOP SLABS LESS THAN 8"



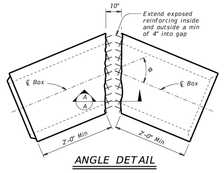
SECTION THRU CURB

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

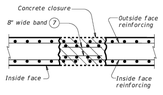
BARS C (#4)
(Spa = 1'-0" Max)



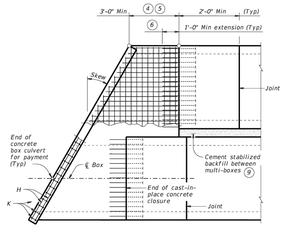
BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi-box placement.)

1. 0" Min to 3'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs that taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'-0" Min cast-in-place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior wall's as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box." No payment will be made for any additional material in the gap between adjacent boxes.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'_c = 4,000 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

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

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

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Texas Department of Transportation | Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

FILE: CD-SCP-MD-20.dgn	DN: GAF	CK: LRW	DW: BWH/TxDOT	CK: GAF
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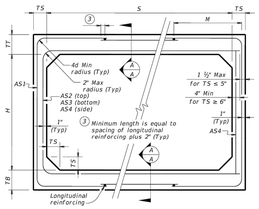
BOX DATA

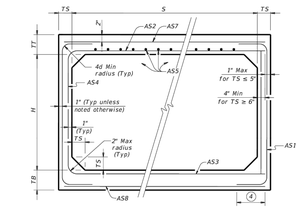
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)						(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
4	2	7.5	6	5	< 2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	-	-	-	3.6
4	2	5	5	5	3 - 5	38	0.13	0.13	0.13	0.12	-	-	-	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	-	-	-	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	-	-	-	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	-	-	-	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	-	-	-	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	-	-	-	3.6
4	3	7.5	6	5	< 2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	-	-	-	4.1
4	3	5	5	5	3 - 5	38	0.12	0.16	0.16	0.12	-	-	-	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	-	-	-	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	-	-	-	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	-	-	-	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	-	-	-	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	-	-	-	4.1
4	4	7.5	6	5	< 2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	-	-	-	4.6
4	4	5	5	5	3 - 5	38	0.12	0.18	0.18	0.12	-	-	-	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	-	-	-	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	-	-	-	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	-	-	-	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	-	-	-	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	-	-	-	4.6

(1) For box length = 8'-0"
(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

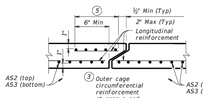
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

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

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

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Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 4'-0" SPAN

SCP-4

FILE: CD-SCP04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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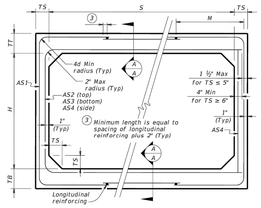
BOX DATA

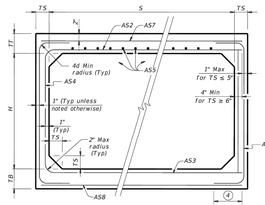
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)						(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS8	(tons)
6	2	8	7	7	< 2	-	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	-	-	-	6.8
6	2	7	7	7	3 - 5	43	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	-	-	-	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	-	-	-	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	-	-	-	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	-	-	-	6.8
6	3	8	7	7	< 2	-	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	-	-	-	7.5
6	3	7	7	7	3 - 5	39	0.17	0.18	0.17	0.17	-	-	-	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	-	-	-	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	-	-	-	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	-	-	-	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	-	-	-	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	-	-	-	7.5
6	4	8	7	7	< 2	-	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	-	-	-	8.2
6	4	7	7	7	3 - 5	39	0.17	0.21	0.19	0.17	-	-	-	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	-	-	-	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	-	-	-	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	-	-	-	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	-	-	-	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	-	-	-	8.2
6	5	8	7	7	< 2	-	0.19	0.37	0.28	0.17	0.19	0.19	0.17	9.3
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	-	-	-	8.9
6	5	7	7	7	3 - 5	43	0.17	0.23	0.21	0.17	-	-	-	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	-	-	-	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	-	-	-	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	-	-	-	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	-	-	-	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	-	-	-	8.9
6	6	8	7	7	< 2	-	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	-	-	-	9.6
6	6	7	7	7	3 - 5	52	0.17	0.24	0.22	0.17	-	-	-	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	-	-	-	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	-	-	-	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	-	-	-	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	-	-	-	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	-	-	-	9.6

(1) For box length = 8'-0"
(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

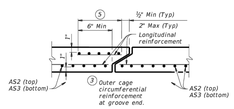
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

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

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

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 6'-0" SPAN

SCP-6

FILE: CD-SCP06-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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REGENT PARK UNIT 7

SINGLE BOX CULVERTS PRE-CAST DETAILS

DATE
03/28/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATE CONC. COMPRESSIVE STRENGTH, REPLACE 7" SPAN W/ 6' SPAN
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C20

19 OF 21

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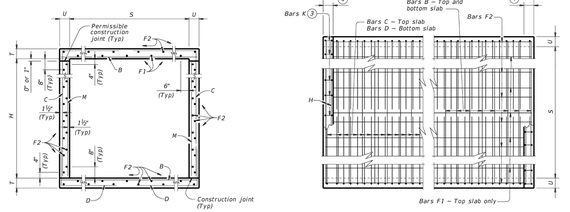
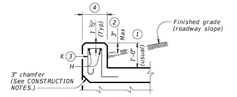
DATE
FILE



TYPICAL SECTION

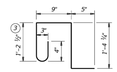
PLAN OF REINF STEEL



SECTION THRU CURB

BARS C

BARS D



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

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

(2) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

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

(4) 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

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

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

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

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

Provide bar laps, where required, as follows:
- Uncoated or galvanized – #4 – 1'-8" Min
- Uncoated or galvanized – #5 – 2'-1" Min
- Uncoated or galvanized – #6 – 2'-6" Min

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

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

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

SCC-5 & 6

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REVISIONS				
04/2021 Update K values.	DIST	COUNTY		SHEET NO.

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DATE
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SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																QUANTITIES							
					Bars B				Bars C					Bars D					Bars M – #4			Bars F1 – #4 at 18" Spa			Bars F2 – #4 at 18" Spa			Bars H #4 – #4		Bars K	Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	No.	Length	Weight	No.	Length	Wt.	No.	Length	Wt.	No.	Wt.	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
5'-0"	2'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	6'-3"	704	2'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	2'-0"	144	4	3'-9"	106	22	3'-9"	584	5'-11"	16	14	39	0.391	80.5	0.5	55	16.1	3,276
5'-0"	2'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	6'-4"	713	2'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	2'-0"	144	4	3'-9"	106	22	3'-9"	584	5'-11"	16	14	39	0.429	81.0	0.5	55	17.6	3,294
5'-0"	3'-0"	8"	7"	26	108	#6	9"	5'-11"	960	108	#5	9"	7'-3"	817	3'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	3'-0"	216	4	3'-9"	106	26	3'-9"	690	5'-11"	16	14	39	0.434	87.8	0.5	55	17.8	3,567
5'-0"	3'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	7'-4"	826	3'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	3'-0"	216	4	3'-9"	106	26	3'-9"	690	5'-11"	16	14	39	0.472	88.3	0.5	55	19.3	3,585
5'-0"	4'-0"	8"	7"	26	108	#6	9"	5'-11"	960	108	#5	9"	8'-3"	929	4'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	4'-0"	289	4	3'-9"	106	26	3'-9"	690	5'-11"	16	14	39	0.477	92.4	0.5	55	19.5	3,752
5'-0"	4'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	8'-4"	939	4'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	4'-0"	289	4	3'-9"	106	26	3'-9"	690	5'-11"	16	14	39	0.515	92.9	0.5	55	21.1	3,771
5'-0"	5'-0"	8"	7"	26	108	#6	9"	5'-11"	960	108	#5	9"	9'-3"	1,042	5'-6"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	5'-0"	361	4	3'-9"	106	30	3'-9"	797	5'-11"	16	14	39	0.521	99.7	0.5	55	21.3	4,044
5'-0"	5'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	9'-4"	1,051	5'-7"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	5'-0"	361	4	3'-9"	106	30	3'-9"	797	5'-11"	16	14	39	0.559	100.2	0.5	55	22.8	4,062
6'-0"	2'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	6'-7"	742	2'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	2'-0"	144	5	3'-9"	133	25	3'-9"	664	6'-11"	18	16	45	0.440	89.1	0.5	63	18.1	3,628
6'-0"	2'-0"	9"	7"	20	108	#6	9"	6'-11"	1,122	162	#5	6"	6'-8"	1,126	2'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	2'-0"	144	5	3'-9"	133	25	3'-9"	664	6'-11"	18	16	45	0.485	108.6	0.5	63	19.9	4,407
6'-0"	2'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	6'-10"	1,155	2'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	2'-0"	110	5	3'-9"	133	25	3'-9"	664	7'-1"	19	18	50	0.551	109.9	0.5	69	22.6	4,463
6'-0"	3'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	7'-7"	854	3'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	3'-0"	216	5	3'-9"	133	29	3'-9"	770	6'-11"	18	16	45	0.484	96.4	0.5	63	19.9	3,918
6'-0"	3'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	7'-8"	1,295	3'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	3'-0"	216	5	3'-9"	133	29	3'-9"	770	6'-11"	18	16	45	0.528	117.3	0.5	63	21.6	4,754
6'-0"	3'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	7'-10"	1,324	3'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	3'-0"	164	5	3'-9"	133	29	3'-9"	770	7'-1"	19	18	50	0.601	118.1	0.5	69	24.6	4,792
6'-0"	4'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	8'-2"	967	4'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	4'-0"	289	5	3'-9"	133	29	3'-9"	770	6'-11"	18	16	45	0.527	101.0	0.5	63	21.6	4,104
6'-0"	4'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	8'-8"	1,464	4'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	4'-0"	289	5	3'-9"	133	29	3'-9"	770	6'-11"	18	16	45	0.571	123.3	0.5	63	23.4	4,996
6'-0"	4'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	8'-10"	1,493	4'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	4'-0"	219	5	3'-9"	133	29	3'-9"	770	7'-1"	19	18	50	0.650	123.7	0.5	69	26.5	5,016
6'-0"	5'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	9'-2"	1,080	5'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	5'-0"	361	5	3'-9"	133	33	3'-9"	876	6'-11"	18	16	45	0.570	108.3	0.5	63	23.3	4,395
6'-0"	5'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	9'-8"	1,633	5'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	5'-0"	361	5	3'-9"	133	33	3'-9"	876	6'-11"	18	16	45	0.614	132.0	0.5	63	25.1	5,343
6'-0"	5'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	9'-10"	1,661	5'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	5'-0"	274	5	3'-9"	133	33	3'-9"	876	7'-1"	19	18	50	0.700	131.9	0.5	69	28.5	5,343
6'-0"	6'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	10'-7"	1,192	6'-6"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	6'-0"	433	5	3'-9"	133	37	3'-9"	982	6'-11"	18	16	45	0.613	115.6	0.5	63	25.0	4,685
6'-0"	6'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	10'-8"	1,802	6'-7"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	6'-0"	433	5	3'-9"	133	37	3'-9"	982	6'-11"	18	16	45	0.657	140.7	0.5	63	26.8	5,690
6'-0"	6'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	10'-10"	1,830	6'-8"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	6'-0"	329	5	3'-9"	133	37	3'-9"	982	7'-1"	19	18	50	0.749	140.2	0.5	69	30.5	5,675

(5) For direct tra c culverts (il height ≤ 7f.t), identify the required box size and select the option with the minimum il height.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

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

SCC-5 & 6

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REVISIONS				
04/2021 Update K values.	DIST	COUNTY		SHEET NO.

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CUDE ENGINEERS

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REGENT PARK UNIT 7

C21 - CAST-IN-PLACE DETAILS FOR 6' SPAN CULVERTS

DATE
03/28/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATE CONC. COMPRESSIVE STRENGTH, UPDATE TO 6' SPAN
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
115917
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

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

Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing: Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities (3) per ft of wing length (2-wings): Reinf Lb/Ft	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2-wings)

Bar	Size	No.	Spa
D	#5	–	1'-0"
E	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	4	–
H	#4	4	–
P	#4	–	1'-0"
R	#5	6	–
V	#4	–	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	–	1'-6"
Q	#4	1	–
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C – 0.250'
Lw = (Hw – 0.333') (SL)

For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) + (N – 1) (0.5')

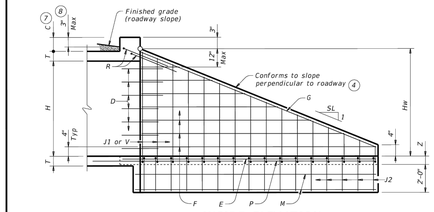
Total Wingwall Area (two wings – SF) = (Hw + 0.333') (Lw)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

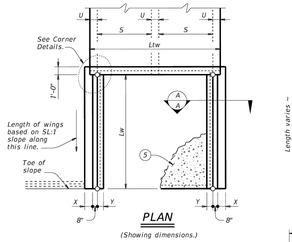
See applicable box culvert standard sheet for H, S, T, and U values.

1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1/2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

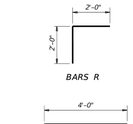
   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

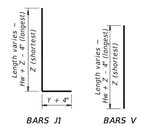


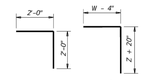
INSIDE ELEVATION
(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



PLAN
(Showing dimensions.)



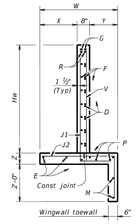




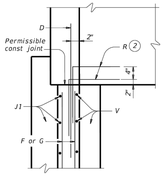
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

MATERIAL NOTES:
Provide Class C concrete (f'c=4,000 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

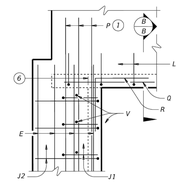
GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.



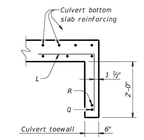
SECTION A-A



WINGWALL



FOOTING AND TOEWALL



SECTION B-B (5)

CORNER DETAILS

Texas Department of Transportation — Bridge Division Standard

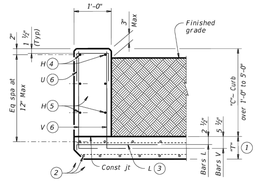
CONCRETE WINGWALLS WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-0

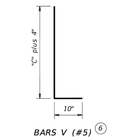
File: CD-SW0-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

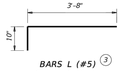
DISCLAIMER:
The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the incorrect use or reuse of this standard and makes no representations as to its suitability.

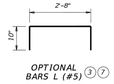
DATE:
FILE:



TYPICAL SECTION
Used for curbs over 1'-0" to 5'-0"







1. "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.
2. Adjust normal culvert slab bars as necessary to clear obstructions.
3. Place bars L as shown. Tilt hook as necessary to maintain cover.
4. Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
5. Additional bars H(#4) as required to maintain 12" Max spacing.
6. Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
7. Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
8. Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 ½" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class "C" concrete (f'c = 4,000 psi) minimum for curbs.
Provide bar laps, where required, as follows:
- Uncoated or galvanized – #4 = 1'-8" Min

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

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

Texas Department of Transportation — Bridge Division Standard

EXTENDED CURB DETAILS FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

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

CUDEENGINEERS.COM

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

REGENT PARK UNIT 7

CONCRETE WINGWALL DETAILS

DATE
03/10/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 01/31/2025 - UPDATE CONC. COMPRESSIVE STRENGTH
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C22

21 OF 21

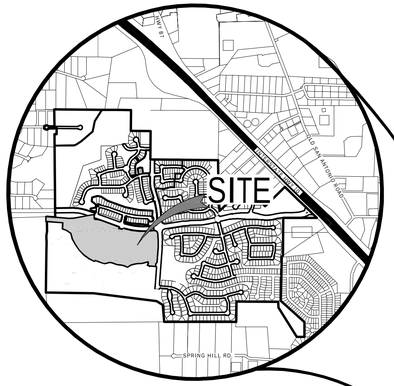
P:\02133\230\3-Drawings\C22 HEADWALLS\HEADWALLS.dwg 2025/03/10 8:56pm mmurphy

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.

SANITARY SEWER CONSTRUCTION PLANS

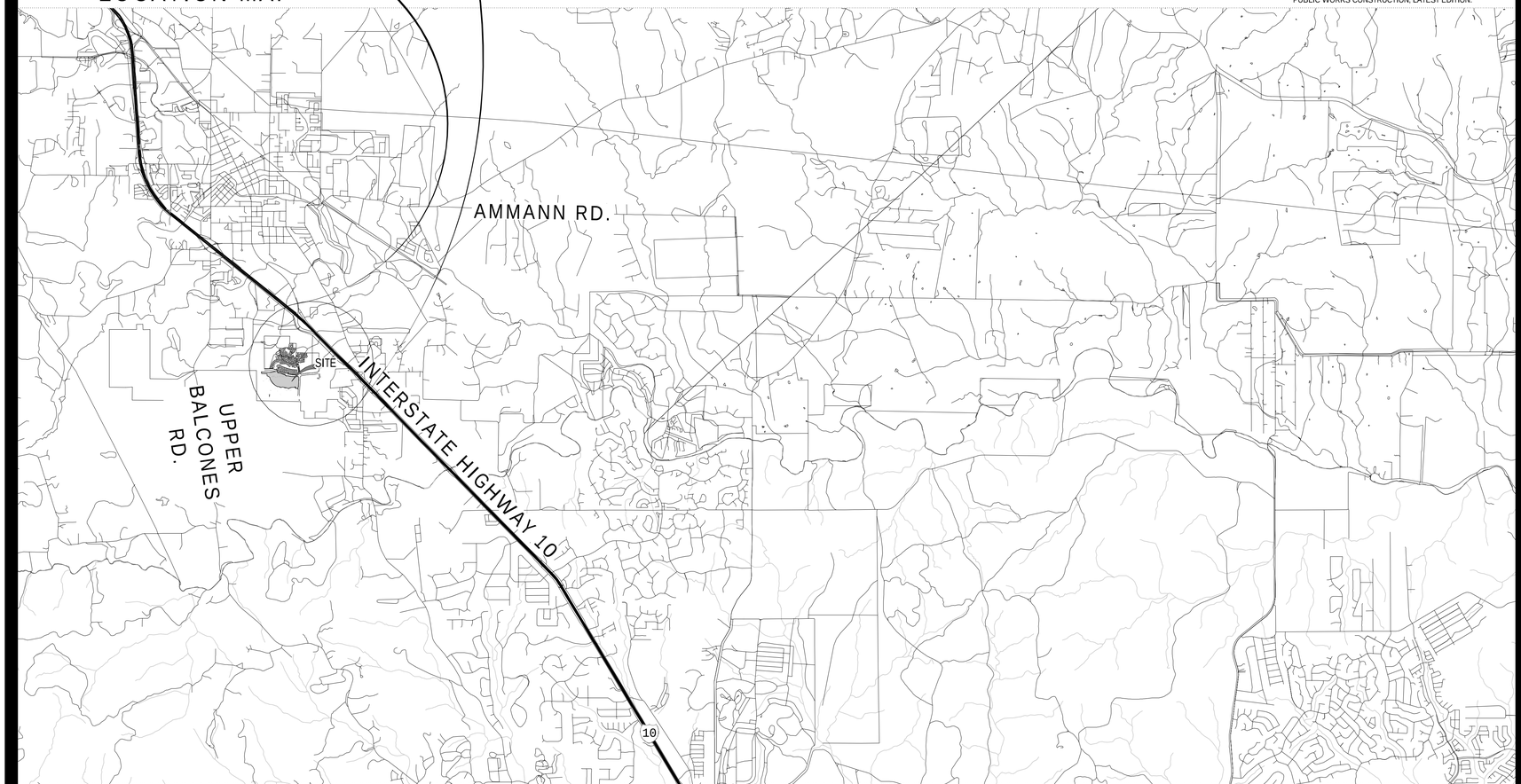
- C23 - OVERALL SANITARY SEWER PLANS
- C24 - SANITARY SEWER PLAN & PROFILE - LINE 'II'
- C25 - SANITARY SEWER PLAN & PROFILE - LINE 'II'
- C26 - SANITARY SEWER PLAN & PROFILE - LINE 'QQ'
- C27 - SANITARY SEWER PLAN & PROFILE - LINE 'RR' & LINE 'SS'
- C28 - SANITARY SEWER PLAN & PROFILE - LINE 'UU' & LINE 'VV'
- C29 - SANITARY SEWER PLAN & PROFILE - LINE 'P'
- C30 - SANITARY SEWER PLAN & PROFILE - LINE 'P' & LINE 'WW'
- C31 - CITY OF BOERNE - SANITARY SEWER GENERAL NOTES
- C32 - CITY OF BOERNE - SANITARY SEWER STANDARD DETAILS *

* DENOTES STANDARD DETAILS ADOPTED FOR USE ON THIS PROJECT.



LOCATION MAP

CONSTRUCTION OF ALL FACILITIES TO BE DEDICATED TO THE PUBLIC SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.



VICINITY MAP

REGENT PARK
UNIT 7

SANITARY SEWER CONSTRUCTION PLANS

DEVELOPER:

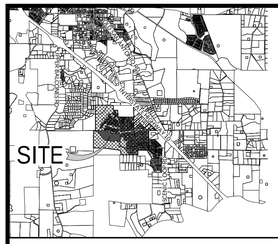
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 N.W. MILITARY, SUITE 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

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

DRAWN BY	DATE
AD/RM/MW/MS	03/22/2024
CHECKED BY	PROJECT NO.
W. PATRICK MURPHY, P.E.	02133.230

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500



LOCATION MAP N.T.S.

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

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.

CAUTION!!
EXISTING UTILITIES ARE 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.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT

MANHOLE OPENING INCREASED TO 30" AS PER TAC CHAPTER 217.55

ALL SEWER PIPE LATERALS SHALL BE SDR26 (CLASSS 160) PVC PIPE

BENCHMARK BM-1

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

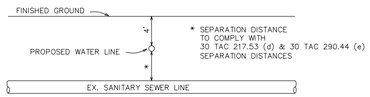
TOTAL PIPE FOOTAGE

8" SAN SEWER PIPE ~ 4,905.49 L.F.

SEWER/WATER LINE CROSSINGS	
LINE	STATION
'UU'	1+38.80
'WW'	1+21.28
'P'	21+15.99
'P'	24+03.10
'P'	32+18.55
'II'	37+51.34

LEGEND

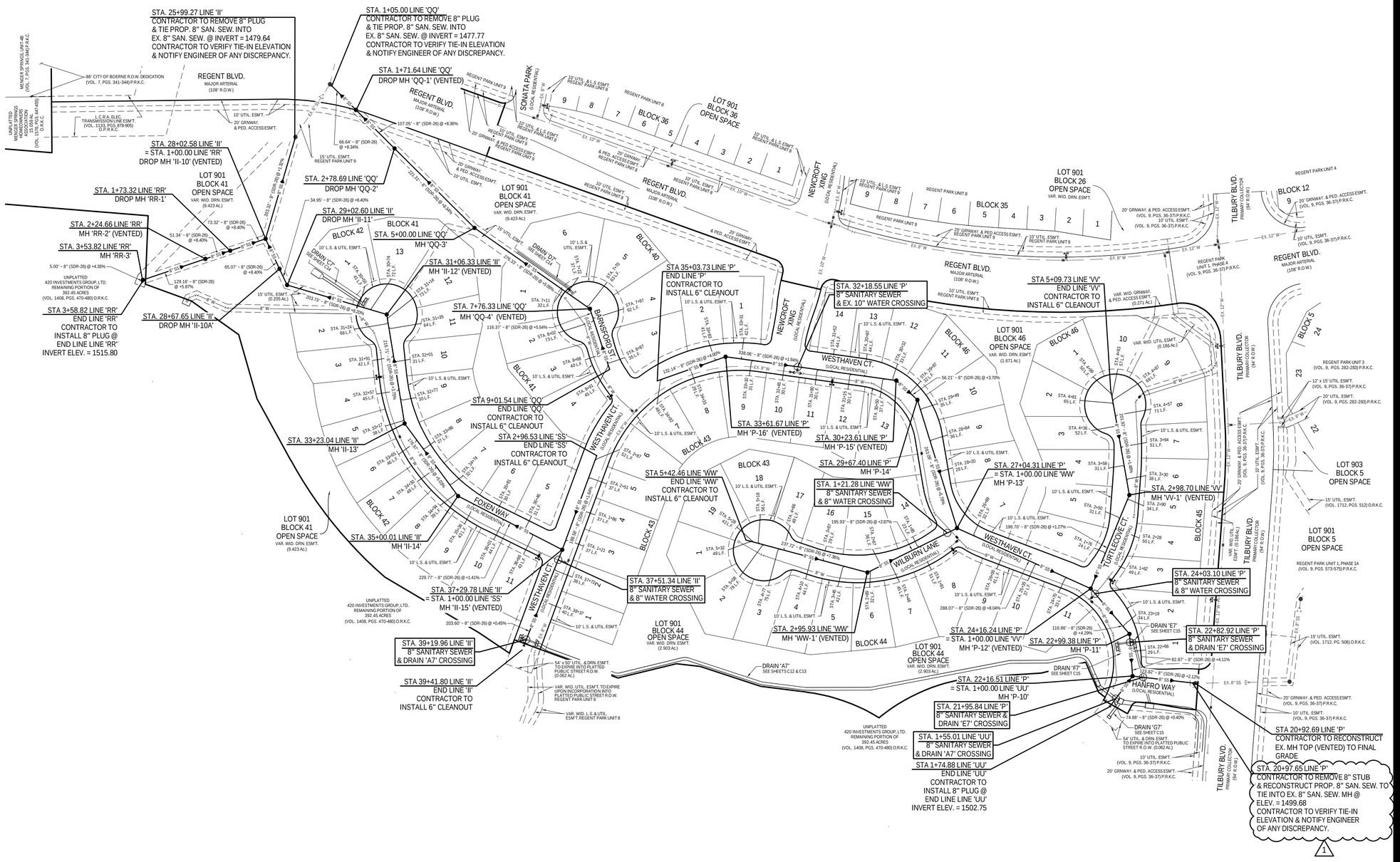
EXISTING SANITARY SEWER — EX.8"SS —
PROPOSED SANITARY SEWER — 8"SS —
DIRECTION OF FLOW ►
SANITARY SEWER MANHOLE ●



DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

SEWER/DRAIN LINE CROSSINGS	
LINE	STATION
'UU'	1+55.01
'P'	21+95.84
'P'	22+82.92
'II'	39+19.96



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San Antonio, Texas 78231
P.(210) 681.2951 F: (210) 523.7112

REGENT PARK UNIT 7

OVERALL SANITARY SEWER PLAN

DATE
03/10/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/10/2025 - SPECIFY SDR-26 & SHOW DROP MANHOLE CONNECTIONS
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111587
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

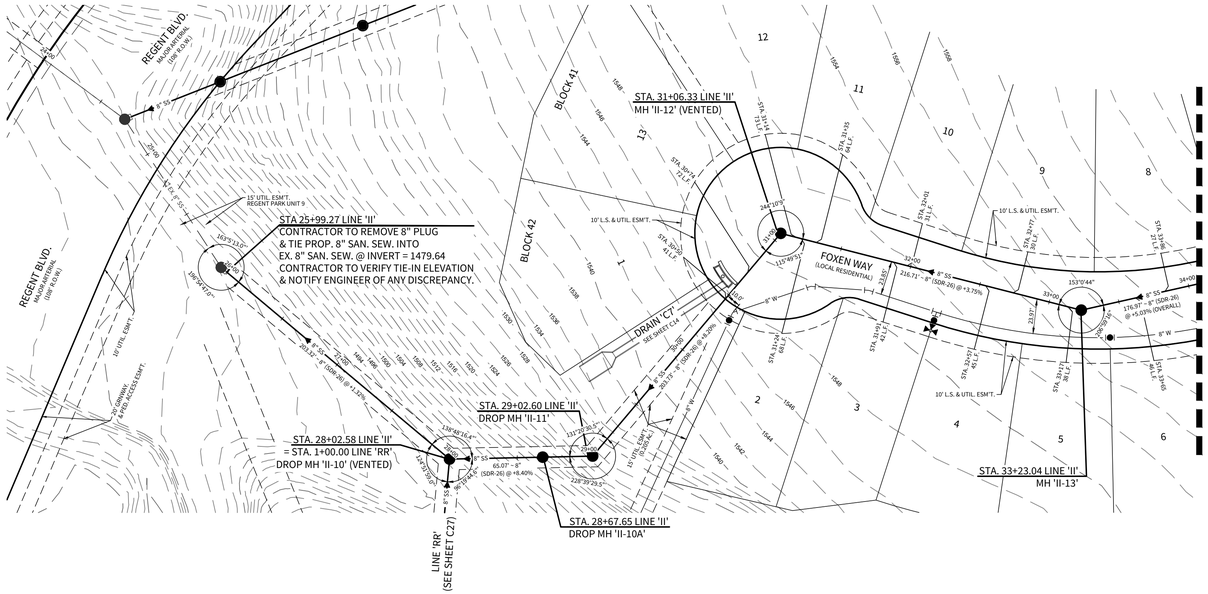
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C23

1 OF 10

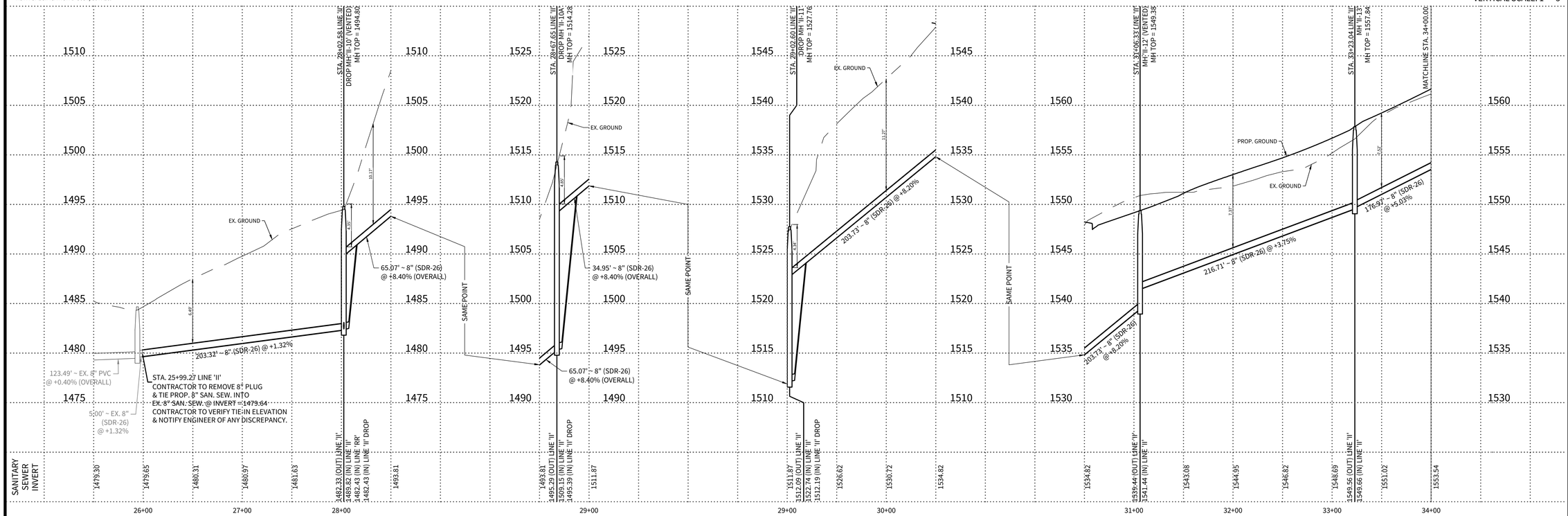
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LINE 'II'

STA. 25+99.27 TO STA. 34+00.00

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



NOTE:

CONTRACTOR TO INSTALL 2" X 4" WOODEN LATERAL MARKERS FOR ALL SANITARY SEWER LATERALS. LATERAL MARKERS SHALL EXTEND FROM THE LATERAL STUB OUT TO ONE (1) FOOT ABOVE PROPOSED GRADE.

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.

NOTE: ALL LATERALS TO BE INSTALLED @ MIN. 2.0% SLOPE. UNLESS OTHERWISE NOTED, ALL SANITARY SEWER PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECIFICATION D-3034, SDR-26.

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

REGENT PARK
UNIT 7

SANITARY SEWER PLAN & PROFILE - LINE 'II'

DATE
03/10/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 02/10/2025 - SPECIFY SDR-26 & SHOW DROP MANHOLE CONNECTIONS
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

3/28/2025

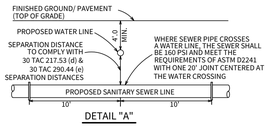
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C24

2 OF 10

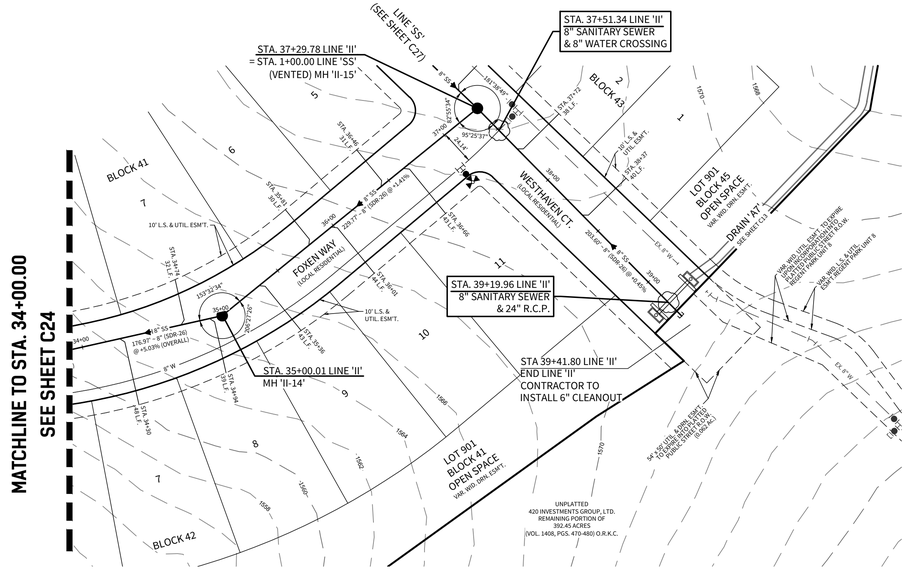
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



NOTE:

CONTRACTOR TO INSTALL 2" X 4" WOODEN LATERAL MARKERS FOR ALL SANITARY SEWER LATERALS. LATERAL MARKERS SHALL EXTEND FROM THE LATERAL STUB OUT TO ONE (1) FOOT ABOVE PROPOSED GRADE.

TRENCH EXCAVATION SAFETY PROTECTION

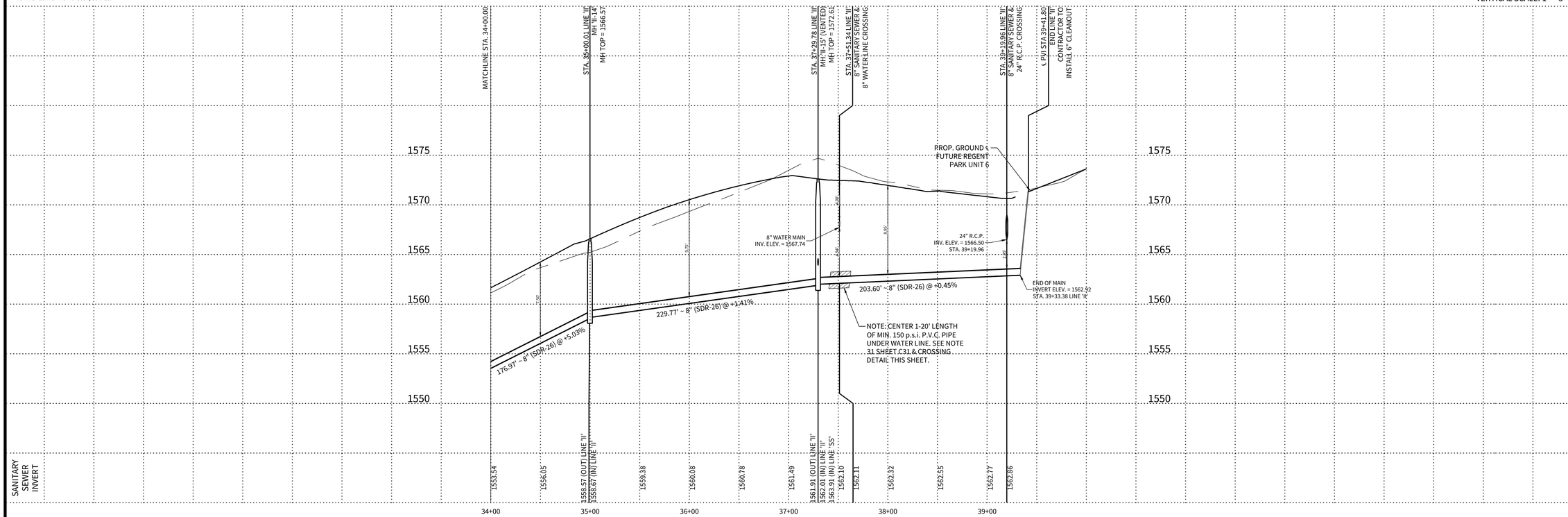
Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical information and the anticipated installation site(s) within the project work area in order to implement Contractor's 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.

NOTE: ALL LATERALS TO BE INSTALLED @ MIN. 2.0% SLOPE. UNLESS OTHERWISE NOTED, ALL SANITARY SEWER PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECIFICATION D-3034, SDR-26.

LINE 'II'

STA. 34+00.00 TO STA. 39+33.38

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



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CUDE ENGINEERS

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

REGENT PARK UNIT 7

SANITARY SEWER PLAN & PROFILE - LINE 'II'

DATE
03/07/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 02/10/2025 - SPECIFY SDR-26 & CORRECT MATCHLINE REFERENCE
2.
3.
4.
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7.
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

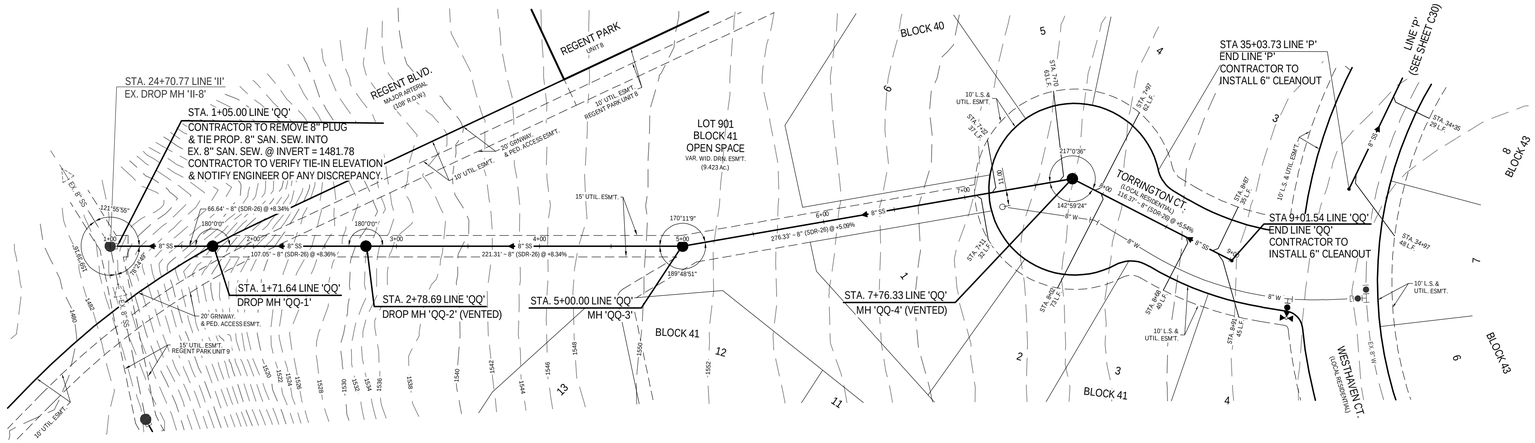
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C25

3 OF 10

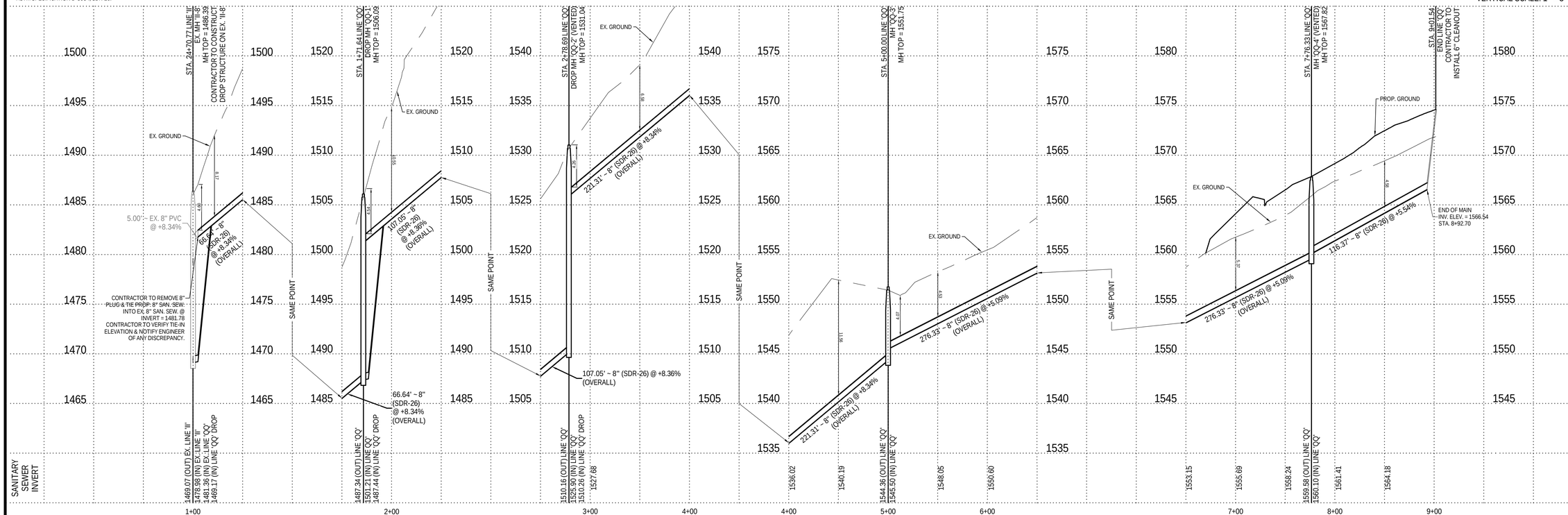
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LINE 'QQ'

STA. 1+05.00 TO STA. 9+01.54

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



NOTE:

CONTRACTOR TO INSTALL 2" X 4" WOODEN LATERAL MARKERS FOR ALL SANITARY SEWER LATERALS. LATERAL MARKERS SHALL EXTEND FROM THE LATERAL STUB OUT TO ONE (1) FOOT ABOVE PROPOSED GRADE.

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.

NOTE: ALL LATERALS TO BE INSTALLED @ MIN. 2.0% SLOPE. UNLESS OTHERWISE NOTED, ALL SANITARY SEWER PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECIFICATION D-3034, SDR-26.

CUDEENGINEERS.COM

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REGENT PARK
UNIT 7

SANITARY SEWER PLAN & PROFILE - LINE 'QQ'

DATE
03/07/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 02/10/2025 - SPECIFY SDR-26, SHOW DROP STRUCTURES, & ADD DIMENSIONS
2.
3.
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER

3/28/2025

CUDE ENGINEERS
TBPE No. 455

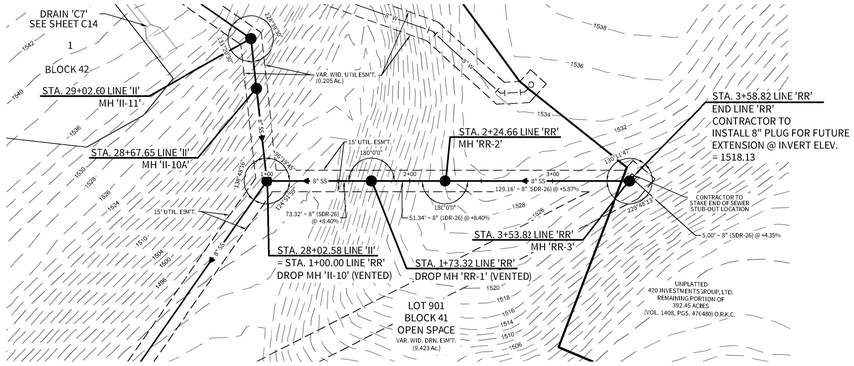
PLAT NO.
N/A

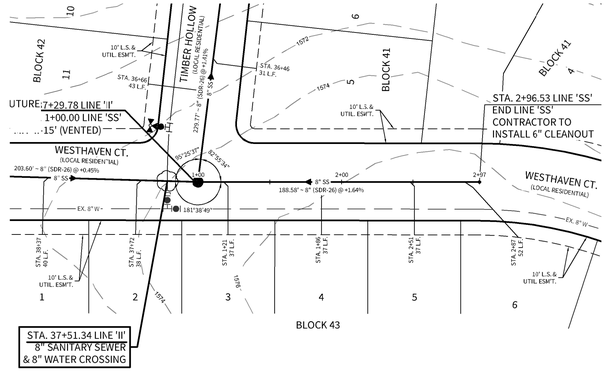
C26

4 OF 10

P:\02133\230\2-Drawings\07_21.59\Reg230x500\07.22pgm\murphy

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.





NOTE:

CONTRACTOR TJ INSTALL 2" X 4" WOODEI LATERAL MARKERS FOR A LL SANITARY SEWCR LATERALS. LATERAL MARKERS SHALL EXTEND FROM THE LATERAL STUB OUT TO ONE (1) FOOT ABOVE PROPOSED GRADE.

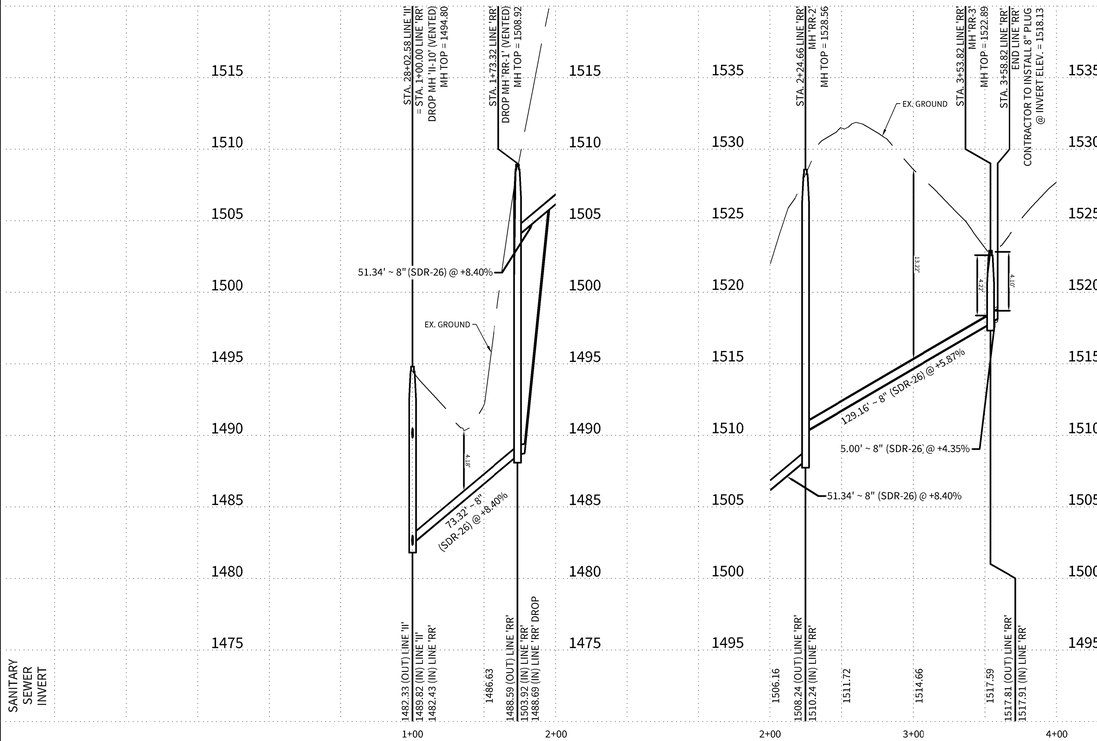
TRENCH EXCAVATION SAFETY PROTECTION

Contractor and/c Contractor's independently stained employee or structural I design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical inf ormation and the anticipated installation site(s) within the pro- ject work area in order to implement Contractor's trench excavaion safety protection systems, programs and/or procedures for th project described in the c ontract documents. The Contractor's implementation of these systems, programs ad/or procedures shall provide f or adequate trench excavatio safety protection that comp! with as a minimum, OSHA standards for trench excavations. Specifically, Contractor and/or Cntractor's independently retain ted employee or safety consultantshall implement a trench safey program in accordance with OSHA standards governing the presence and activities of individuals working in and around men nch excavation.

NOTE: ALL LATERALS TO BE INSTALLED @ MIN. 2.0% SLOPE. UNLESS OTHERWISE NOTED, ALL SANITARY SEWER PIPE SHALL BE P.V.C. THAT MEETS ASTM SPECIFICATION D-3034, SDR-26.

LINE 'RR'

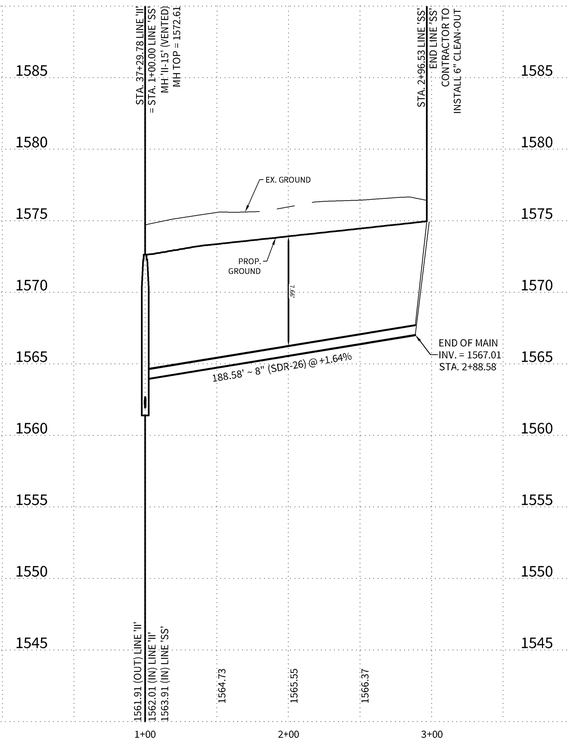
STA. 1+00.00 TO STA. 3+58.82



LINE 'SS'

STA. 1+00.00 TO STA. 2+96.53

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



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REGENT PARK
UNIT 7

SANITARY SEWER PLAN & PROFILE - LINE 'RR' & LINE 'SS'

DATE
03/06/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 02/10/2025 - SPECIFY SDR-26, SHOW DROP STRUCTURE, ADD DIMENSIONS, ADD STUB-OUT VERBIAGE
2.
3.
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

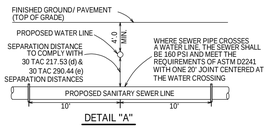
PLAT NO.
N/A

C27

5 OF 10

P:\02133\230-2 Drawings\07-22 SSP Regent Park 2025\SSUtil\02\pmmurphy

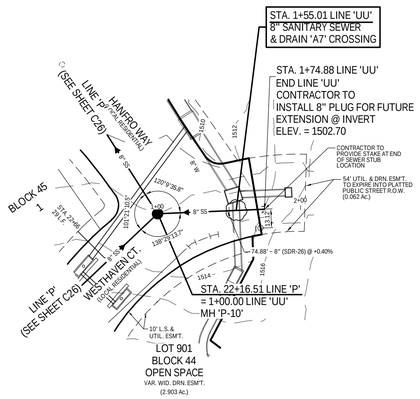
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR'S RESPONSIBLE FOR VERIFYING THE SCALE OF "THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



NOTE:

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TRENCH EXCAVATION SAFETY PROTECTION

Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and 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.

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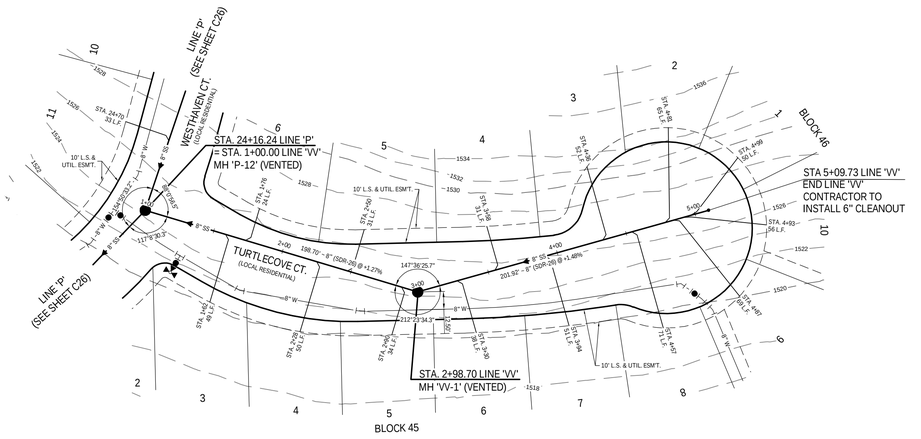


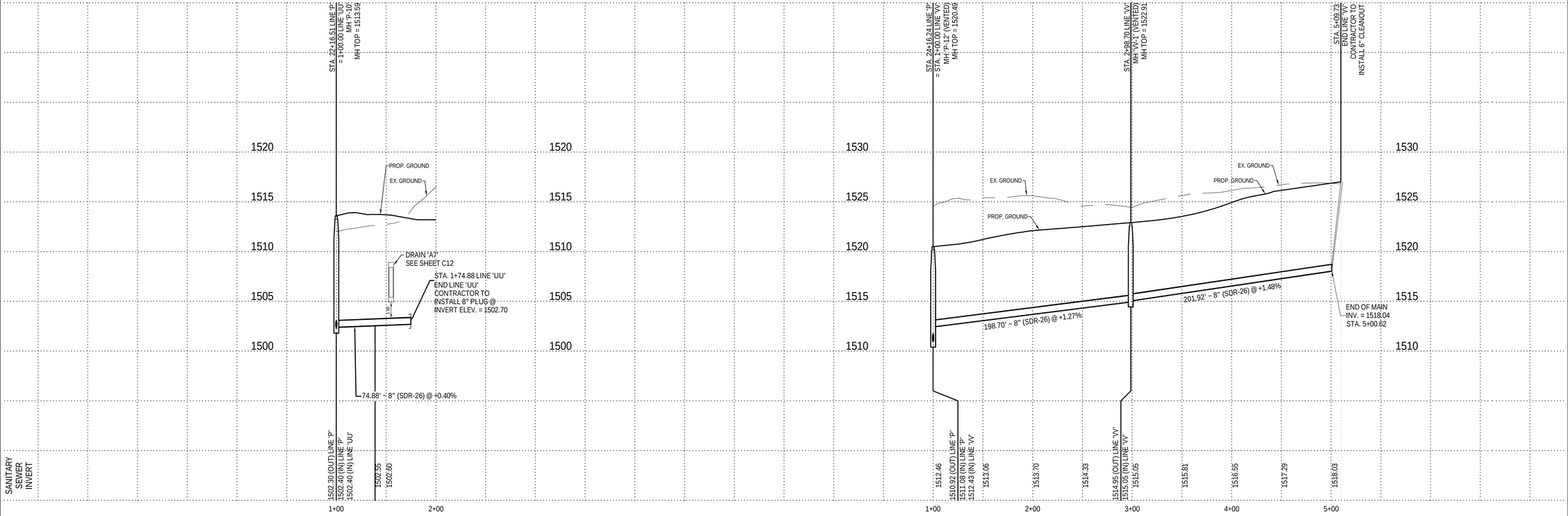
LINE 'UU'

STA. 1+00.00 TO STA. 1+74.88

LINE 'VV'

STA. 1+00.00 TO STA. 5+09.73

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



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San Antonio, Texas 78231
P.(210) 681.2951 F: (210) 523.7112

REGENT PARK
UNIT 7

SANITARY SEWER PLAN & PROFILE - LINE 'UU' & LINE 'VV'

DATE
03/06/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 02/10/2025 - SPECIFY SDR-26, REVISED WATER LAYOUT, ADD SEP. DISTANCES & CLEANOUT LABEL
2.
3.
4.
5.
6.
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8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/28/2025

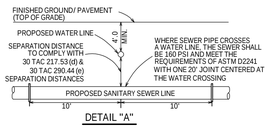
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C28

6 OF 10

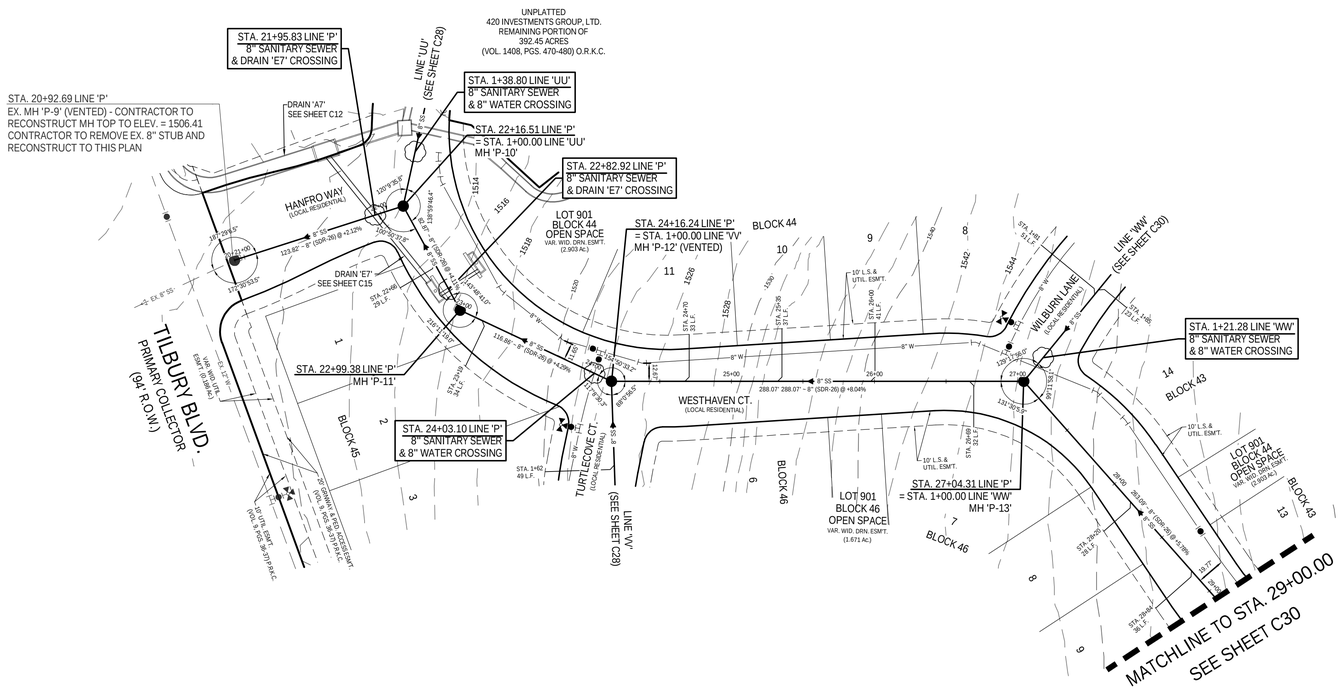
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



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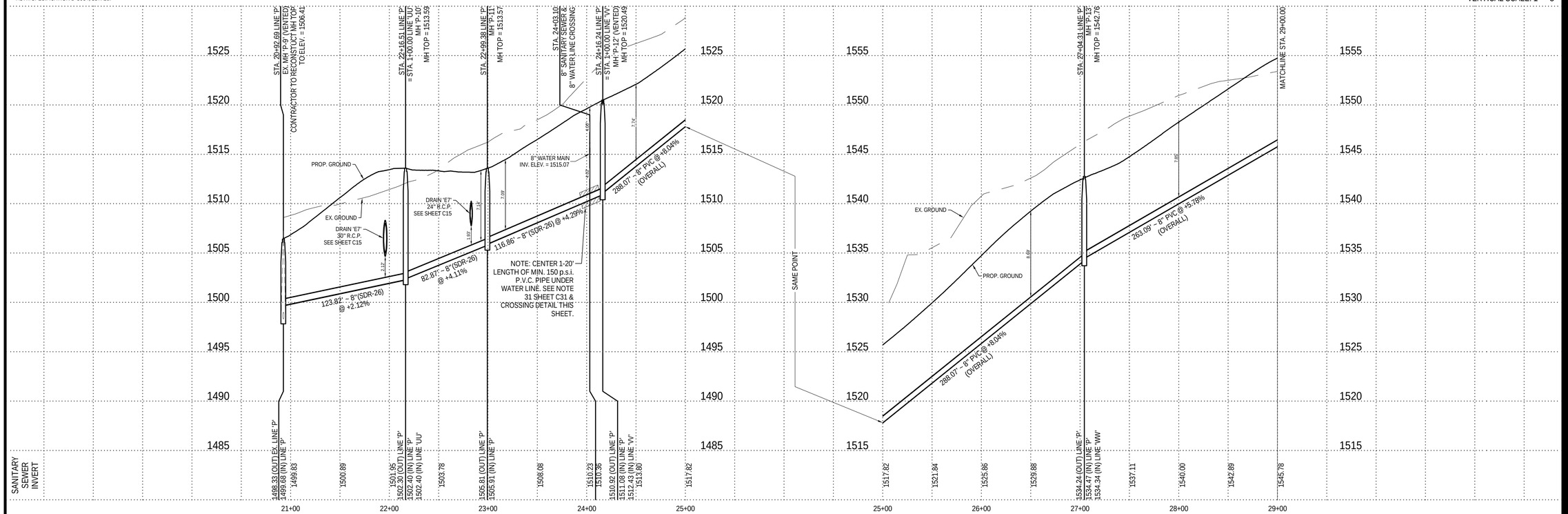
LINE 'P'

STA. 20+92.69 TO STA. 29+00.00

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



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REGENT PARK
UNIT 7

SANITARY SEWER PLAN & PROFILE - LINE 'P'

DATE
03/06/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 02/10/2025 - SPECIFY SDR-26, REVISED WATER LAYOUT, ADD SEPARATION DISTANCES
2.
3.
4.
5.
6.
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9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

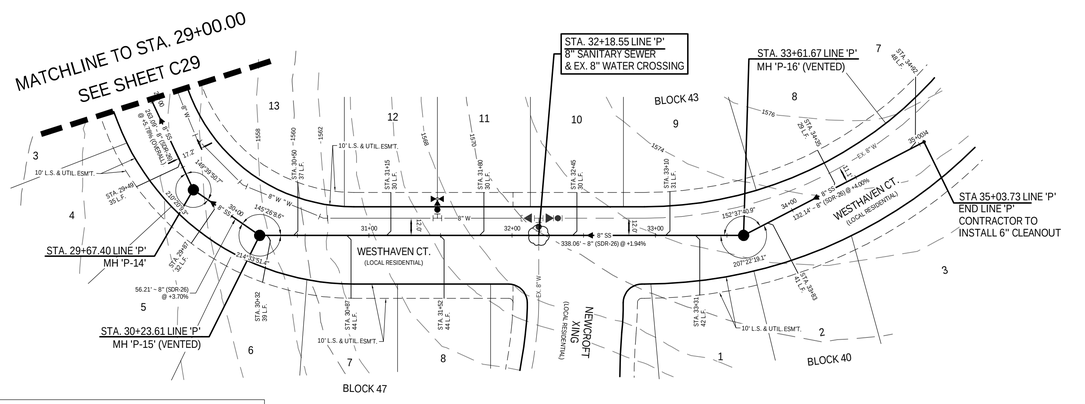
PLAT NO.
N/A

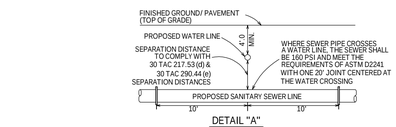
C29

7 OF 10

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.

G:\02133\230\Drawings\07_As Staff Files\230SS05B.dgn\mmurphy

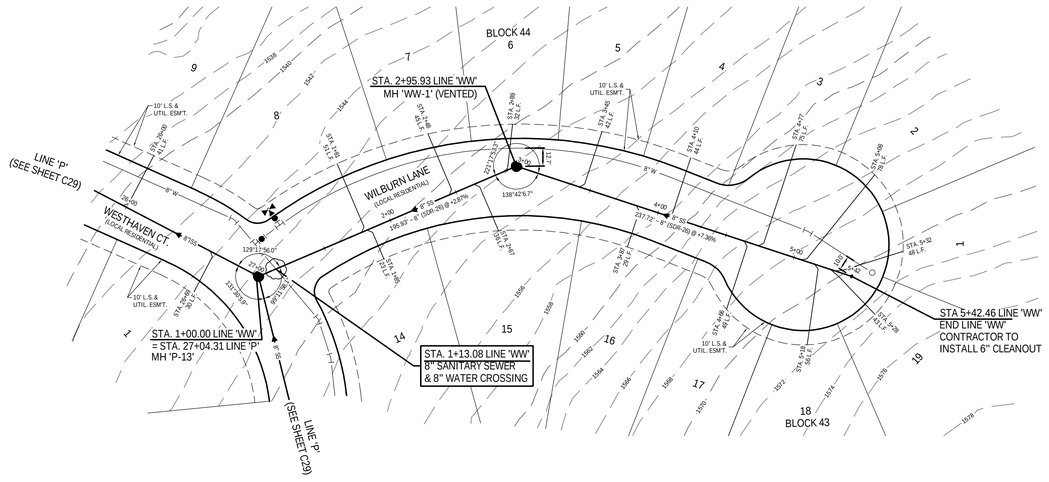




DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



CAUTION!!!
CONTRACTOR SHALL BE AWARE THAT A 8" WATER MAIN EXISTS WITHIN THE LIMITS OF THIS PROJECT ON NEWCROFT XING. AND WESTHAVEN CT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

NOTE:

CONTRACTOR TO INSTALL 2" X 4" WOODEN LATERAL MARKERS FOR ALL SANITARY SEWER LATERALS. LATERAL MARKERS SHALL EXTEND FROM THE LATERAL STUB OUT TO ONE (1) FOOT ABOVE PROPOSED GRADE.

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.

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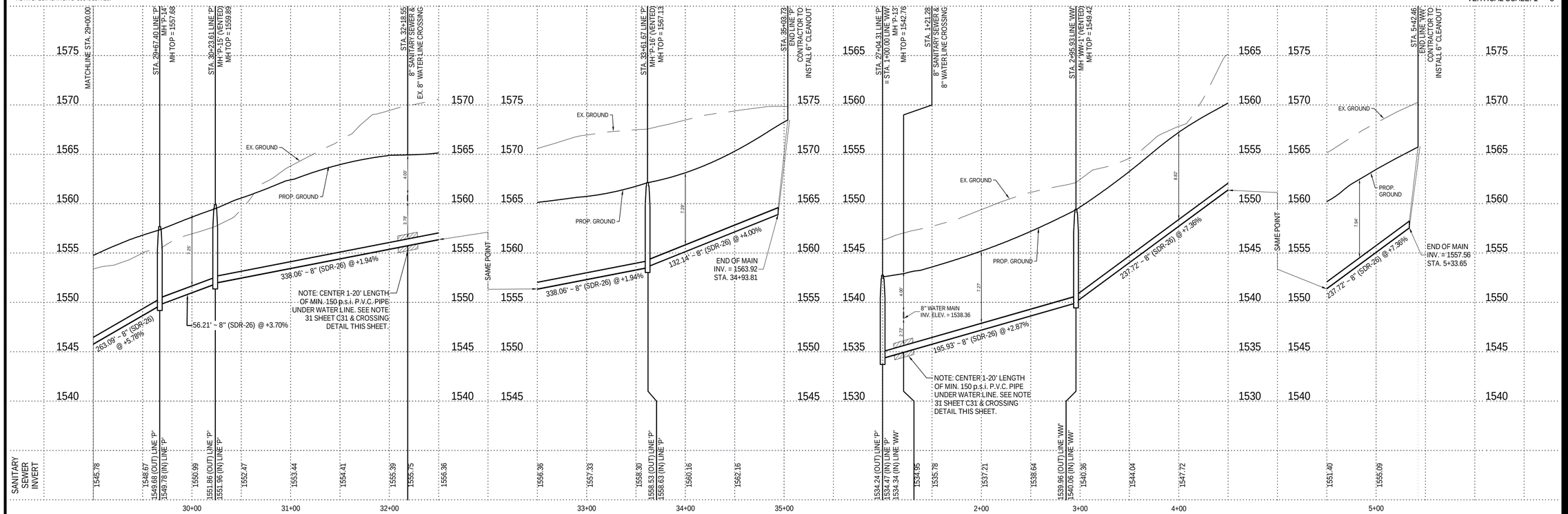
LINE 'P'

STA. 29+00.00 TO STA. 35+03.73

LINE 'WW'

STA. 1+00.00 TO STA. 5+42.46

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



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San Antonio, Texas 78231
P.(210) 681.2951 F: (210) 523.7112

REGENT PARK
UNIT 7

SANITARY SEWER PLAN & PROFILE - LINE 'P' & LINE 'WW'

DATE
03/10/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS

1. 02/10/2025 - UPDATE SEWER PROFILE LABELS TO SPECIFY SDR-26
2.
3.
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C30

8 OF 10

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.

CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS

I. WHERE A SEWER MAIN CROSSES OVER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE (9) FEET, ALL PORTIONS OF THE SEWER MAIN WITHIN NINE (9) FEET OF THE WATER LINE SHALL BE CONSTRUCTED USING 150 PSI PRESSURE RATED PIPE AT LEAST EIGHTEEN (18) FEET IN LENGTH MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS (NO SEPARATE PAY ITEM).

II. WHERE SEMI-RIGID OR RIGID SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET BUT GREATER THAN TWO FEET, THE INITIAL BACKFILL SHALL BE CEMENT STABILIZED SAND (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR ALL SECTIONS OF THE SEWER WITHIN NINE FEET OF THE WATER MAIN.

III. WHERE A SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN TWO FEET, THE SEWER MAIN SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI WITHIN NINE FEET OF THE WATER MAIN, SHALL BE PLACED NO CLOSER THAN SIX (6") INCHES BETWEEN OUTER DIAMETERS, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVISES OR A CAST IRON OR DUCTILE IRON MATERIAL. A SECTION OF PSI PRESSURE RATE PIPE OF A LENGTH GREATER THAN EIGHTEEN (18) FEET MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS (NO SEPARATE PAY ITEM).

IV. WHERE A SEWER MAIN PARALLELS A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET, THE SEWER MAIN SHALL BE BELOW THE WATER MAIN, SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI FOR BOTH PIPE AND JOINTS FOR A DISTANCE OF NINE FEET BEYOND THE POINT OF CONFLICT, SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE BETWEEN OUTER DIAMETERS OF TWO FEET VERTICALLY AND FOUR FEET HORIZONTALLY, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OF DUCTILE IRON MATERIALS.

V. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED ANY CLOSER THAN NINE FEET TO WATER MAINS.

VI. PLAN AND PROFILE MUST SHOW TYPE OF CROSSING AND MATERIAL TO USE.

NON-EDWARDS AQUIFER RECHARGE ZONE SANITARY SEWER SYSTEM GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL BE APPROVED BY THE CITY OF BOERNE AND COMPLY WITH:
   A. CURRENT "CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (AUGUST, 2015)
   B. TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S DESIGN CRITERIA FOR SEWERAGE SYSTEMS [30 TAC 217]
2. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE CITY OF BOERNE PUBLIC WORKS DEPARTMENT AT 1-830-248-8511, 48 HOURS PRIOR TO EXCAVATION.
3. CONTRACTOR TO CONTACT 1-800-344-8377, 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND UTILITIES.
4. THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION.
5. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION AND KENDALL COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT.
6. ALL WORK IN PUBLIC STREETS SHALL BE COORDINATED WITH AND APPROVED BY CITY OF BOERNE PUBLIC WORKS DEPARTMENT AND SHALL BE DONE IN ACCORDANCE WITH CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, THE CITY OF BOERNE MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREAS.
8. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION OF THE SANITARY SEWER LINES.

   THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO:
   1. PULL MANDREL.
   2. PERFORM AIR TEST.
   3. PULL WIPER (AFTER STREET HAS BEEN ASPHALTED IN NEW SUBDIVISIONS).

MANHOLES:

9. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT TOP OF THE RING IS AT LEAST FOUR (4) INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN TXDOT R.O.W. IN TXDOT ROW AREAS, THE MANHOLE RING SHALL BE FLUSH WITH NATURAL GROUND.
10. ALL MANHOLES IN THE STREET AND 100 YEAR FLOODPLAIN AREAS SHALL HAVE WATERTIGHT RINGS AND COVERS IN ACCORDANCE WITH THE MOST CURRENT CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
11. ON ANY MANHOLES TO BE ABANDONED, THE RINGS AND COVER SHALL BE SALVAGED IN ACCORDANCE WITH THE MOST CURRENT CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION: PREPARATION OF RIGHT-OF-WAY. THE HOLE SHOULD BE BACKFILL TO THE SATISFACTION OF THE INSPECTOR. ALL PUBLIC MANHOLES WILL BE VACUUM TESTED AS PER 02515 3.2.

PIPING:

12. THE KIND AND DESCRIPTION OF THE PIPE CONDUIT IS SHOWN ON THE PLANS, (IF PVC, "SOR" AND ASTW/ANSI DESIGNATIONS, CLASS).
13. THE USE OF ASBESTOS CEMENT PIPE WILL BE PROHIBITED UNDER THIS CONTRACT. ALL DUCTILE IRON PIPE USED IN THIS SYSTEM SHALL BE CORROSION PROTECTED ON BOTH THE INTERIOR AND EXTERIOR SURFACES. ALL CORROSION PROTECTION SHALL BE APPLIED AND INSTALLED IN SUCH A MANNER AS TO MAINTAIN A CONTINUOUSLY PROTECTED SURFACE AFTER FINAL PIPE INSTALLATION.
14. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH, SDR 26 MINIMUM PIPE STIFFNESS OF 115 PSI.
15. ALL SEWER PIPES SHALL BE GOVERNED BY THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION (AUGUST, 2015).
16. SEWER PIPE CONNECTIONS TO PRE-CAST MANHOLES WILL BE COMPRESSION JOINTS AS APPROVED BY CITY OF BOERNE, MECHANICAL JOINT "BOOT TYPE" CONNECTIONS ALONE WILL NOT BE ALLOWED. "BOOT TYPE" JOINTS MAY BE USED IN CONJUNCTION WITH COMPRESSION JOINTS AS APPROVED BY CITY OF BOERNE. SEWER PIPE CONNECTIONS TO MONOLITHIC MANHOLES SHALL BE REVIEWED AND APPROVED BY CITY OF BOERNE. CITY OF BOERNE MUST APPROVE ANY CHANGES FROM THESE METHODS.
17. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE ASTM/ANSI SPECIFICATIONS (REFERENCE 30 TAC 217.54; ASTM C12, (ANSI A106.2) OR ASTM D-2321 (ANSI K65.171).
18. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN EARLIER PROVIDED, THE CONNECTION MUST BE MADE WITH AN APPROVED SERVICE SADDLE AS PER CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
19. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE EXTENDED TO AT LEAST THE PROPERTY LINE, CAPPED AND SEALED.
20. WHERE REQUIRED, CONCRETE ENCASEMENT SHALL BE PLACED FOR FULL WIDTH OF THE TRENCH TO A PLANE 8" ABOVE THE TOP OF THE PIPE, WITH PAY LIMITS AS SHOWN ON THE STANDARD DETAIL SHEET.
21. A MINIMUM OF 3 FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT SUBGRADE, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.

BLASTING:

22. NO BLASTING WILL BE ALLOWED.

TESTING:

23. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH THE FOLLOWING:

A. 30 TAC 217.54 (b)(1) OR THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION 3.09 & 3.10 OF SECTION 025.30: DEFLECTION TEST FOR FLEXIBLE AND SEMI-RIGID PIPE CONDUCTED AFTER FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
B. 30 TAC 217.57 (a)(1) & 217.57 (a)(2) OR THE CITY OF BOERNE STANDARD SPECIFICATIONS INFILTRATION AND/OR EXFILTRATION AND/OR LOW-PRESSURE AIR TEST.
C. 30 TAC 217.58 OR THE CITY OF BOERNE STANDARD SPECIFICATIONS. ALL MANHOLES AND WET WELLS MUST BE TESTED SEPARATELY AND INDEPENDENTLY OF THE COLLECTION LINES.

24. SEWER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE.
25. SANITARY SEWER MAIN CONNECTIONS MADE DIRECTLY TO EXISTING MANHOLES WILL REQUIRE SUCCESSFUL TESTING OF THE MANHOLE IN ACCORDANCE WITH THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
26. AFTER CONSTRUCTION, TESTING WILL BE DONE BY TV CAMERA BY THE CITY OF BOERNE AND OBSERVED BY INSPECTOR, WASTEWATER ENGINEERING PERSONNEL, AND CONTRACTOR AS CAMERA IS RUN THROUGH THE LINES. ANY ABNORMALITIES, SUCH AS BROKEN PIPE OR MISALIGNED JOINTS, MUST BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
27. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO THE CITY OF BOERNE PUBLIC WORKS DEPARTMENT.
28. 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 THESE 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.
29. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YER FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT. WASTE MATERIALS SHALL BE REMOVED FROM TXDOT ROW DAILY.
30. WATER JETTING THE BACKFILL WILL NOT BE PERMITTED. SANITARY SEWER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
31. WHERE THE MINIMUM 9-FOOT SEPARATION DISTANCE BETWEEN SEWER LINE AND WATER LINE/MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S RULES (30 TAC 217.53 (d) & 30 TAC 290.44 (e)).
32. THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY AND ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF SEWER COLLECTION SYSTEMS. DEVELOPER OR AUTHORIZED REPRESENTATIVE SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NOTES ON THE PROJECTS PLAN AND PROFILE SHEETS.
33. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AFTER FINAL ACCEPTANCE OF THE PROJECT BY THE CITY OF BOERNE PUBLIC WORKS AND TXDOT.
34. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON 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.
35. THE DEVELOPER DEDICATES THE SANITARY SEWER MAINS UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE CITY OF BOERNE. THE CITY OF BOERNE WILL OWN AND MAINTAIN SAID WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF THE CITY OF BOERNE CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
36. OWNER PAYS DIRECTLY FOR ALL INITIAL (PASSING) DENSITY TESTS.

SEWER GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN STRICT CONFORMANCE WITH CITY OF BOERNE REQUIREMENTS.
2. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH SPECIFICATIONS SECTION 30 TAC 217.54.
3. MANHOLE RINGS AND COVERS SHALL BE NEENAH FOUNDRY, DEETER FOUNDRY, ALAMO IRON WORKS, EAST JORDAN IRON WORKS, OR EQUAL. WHEN WATER TIGHT MANHOLE RINGS AND COVERS ARE SPECIFIED, THEY SHALL PROVIDE A-77 O.R. WATER TIGHT OR EQUAL AND MEET THE REQUIREMENTS OF SECTION 02515 1.2 OR THE CITY OF BOERNE STANDARD SPECIFICATIONS.
4. ALL MANHOLES SHALL BE PRECAST, INCLUDING BASES, "CHARLOTTES CONCRETE" OR APPROVED EQUAL WITH GASKETS ACCORDING TO ASTM C891.
5. MATERIAL FOR SANITARY SEWER PIPE MUST BE THE SAME FROM MANHOLE TO MANHOLE. CHANGES IN TYPE OF PIPE MAY BE MADE ONLY AT MANHOLES OR SPECIAL STRUCTURES, EXCEPT AS DIRECTED BY THE ENGINEER AND WHERE APPLICABLE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
6. ALL SEWER PIPE WITH LESS THAN THREE FEET (3) OF COVER SHALL BE CONCRETE ENCASED.
7. CONES, RISERS AND BASE MUST CONFORM TO ASTM C-478.
8. JOINTS BETWEEN MANHOLE SECTIONS MUST HAVE RUBBER GASKETS PER ASTM C-443.
9. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 150 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
10. SEE SHEET 1 OF 10 FOR BENCHMARK INFORMATION.
11. PIPE TYPE DESIGNATIONS ARE SDR 26 AND SHALL BE FROM THE FOLLOWING MANUFACTURERS OR APPROVED EQUALS: J-M MANUFACTURING, CERTAINTEED CORPORATION, NORTH AMERICAN PIPE CORPORATION, I PEX INC., DIAMOND PLASTIC CORPORATION, FREEDOM PLASTICS, NATURAL PIPE AND PLASTICS, OR NORTHERN PIPE PRODUCTS. GASKET JOINTS AND ELECTROMETRIC SEALS SHALL CONFORM TO ASTM D3034 AND ASTM F477, RESPECTIVELY.
12. CONTRACTOR TO NOTIFY TXDOT INSPECTOR FOR THIS AREA 48 HOURS PRIOR TO STARTING CONSTRUCTION. (TXDOT BOERNE MAINTENANCE OFFICE 830-816-2430).
13. USE BEDDING AND INITIAL BACKFILL MATERIALS AS APPROVED BY THE CITY OF BOERNE AND CONFORM TO ASTM C33 GRADING AS SHOWN IN SECTION 02221 2.1C OF THE CITY OF BOERNE STANDARD SPECIFICATIONS.
14. COMPACT SECONDARY BACKFILL TO 98% MAX DRY DENSITY. CONTRACTOR TO PERFORM DENSITY TESTING AT INTERVALS OF 500' PER 6" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN TXDOT ROW (TXDOT REQUIREMENT) AND PER 8" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN ALL OTHER AREAS (CITY OF BOERNE REQUIREMENT). REPORTS TO BE PROVIDED TO CITY OF BOERNE PUBLIC WORKS DEPARTMENT. REPORTS OF TEST RESULTS TO BE PROVIDED TO TXDOT FOR WORK WITHIN TXDOT ROW.
15. CONTRACTOR TO CONTACT 1-800-344-8377 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND CONDUITS.

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REGENT PARK UNIT 7

CITY OF BOERNE - SANITARY SEWER GENERAL NOTES

DATE
03/21/2024

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

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

3/22/2024

CUDE ENGINEERS
TBPE No. 455

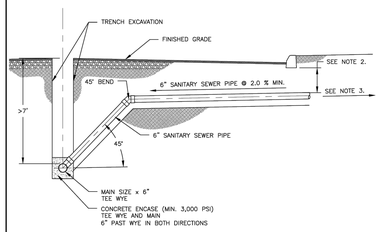
PLAT NO.
N/A

C31

9 OF 10

P:\02133\230\Drawings\C25 - CITY OF BOERNE - SANITARY SEWER GENERAL NOTES.dwg 2024/03/21 3:13pm mwyle

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.

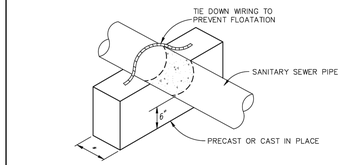


NOTES:
1. USE DEEP SANITARY SEWER SERVICE LATERAL WHEN THE MAIN DEPTH IS GREATER THAN 7' BELOW FINISHED GRADE.
2. INSTALL SERVICE LATERAL 2' MINIMUM BELOW CURB, OR 3' MINIMUM BELOW FINISHED GRADE WHEN NOT IN STREET. INSTALL SERVICE DEEPER WHEN LOT BEING SERVED SLOPES AWAY FROM SEWER MAIN. LATERAL DEPTH AT CURB OR PROPERTY LINE SHOULD NOT EXCEED 7'.
3. COMPLETE DEEP SANITARY SEWER SERVICE LATERAL AS PER CITY STANDARD SANITARY SEWER SERVICE LATERAL DETAIL 02530-1.0.
4. NO ADDITIONAL BENDS ALLOWED BEYOND THE SINGLE 45-DEGREE BEND AFTER CONNECTION TO SEWER MAIN FOR SEWER SERVICE WITHIN ROW.

CITY OF BOERNE

DEEP SANITARY SEWER SERVICE LATERAL

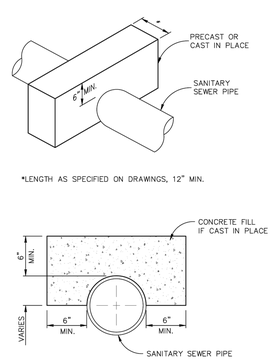
SCALE:	DRAWING No.	DATE:
N.T.S.	02530-1.1	MAY 2024



CITY OF BOERNE

SANITARY SEWER CONCRETE CRADLE

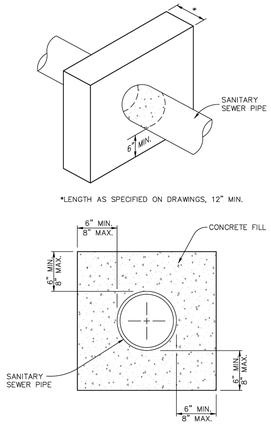
SCALE:	DRAWING No.	DATE:
N.T.S.	02530-4.1	MAY 2024



CITY OF BOERNE

SANITARY SEWER CONCRETE SADDLE

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-4.2	MAY 2024

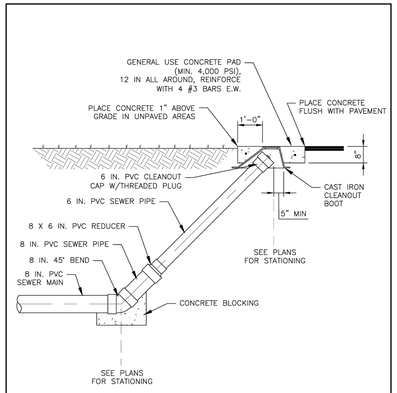


CITY OF BOERNE

SANITARY SEWER CONCRETE ENCASEMENT

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-4.0	MAY 2024

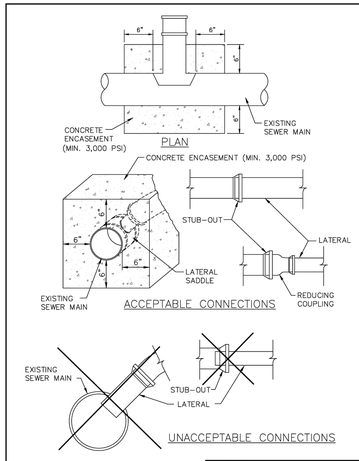
NOTE:
FOR VENTED MANHOLE RING AND COVER REQUIREMENTS SEE SPECIFICATION 02530 2.7J.



CITY OF BOERNE

END OF SEWER CLEANOUT

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-3.0	MAY 2024

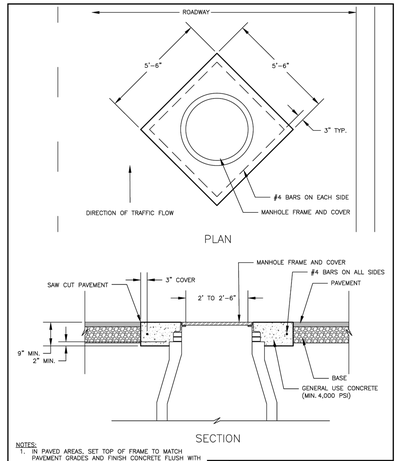


NOTE:
CONNECT THE SADDLE TO THE EXISTING MAIN PERMANENTLY USING CLAMPS AS RECOMMENDED BY THE MANUFACTURER.

CITY OF BOERNE

SANITARY SEWER SERVICE SADDLE CONNECTION

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-1.2	MAY 2024

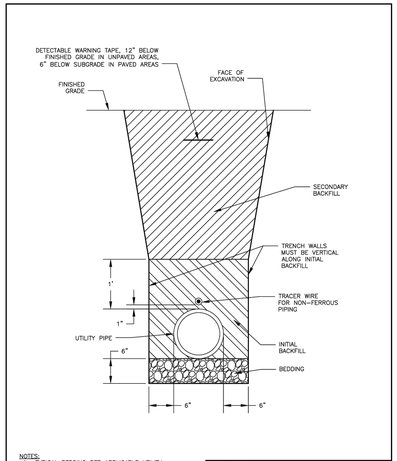


NOTES:
1. IN PAVED AREAS, SET TOP OF FRAME TO MATCH PAVEMENT GRADES AND FINISH CONCRETE FLUSH WITH TOP OF FRAME.
2. IN UNPAVED AREAS, SET TOP OF FRAME 1" TO 2" ABOVE FINISHED GRADE AND FINISH CONCRETE FLUSH WITH FINISHED GRADE.
3. CONSTRUCT CONCRETE RING ENCASEMENT ON ALL MANHOLES.
4. IF MANHOLE IS LOCATED OFF-SITE, ENSURE MANHOLE IS AT LEAST 6" EXPOSED ABOVE GRADE.

CITY OF BOERNE

MANHOLE RING ENCASEMENT

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-2.2	MAY 2024

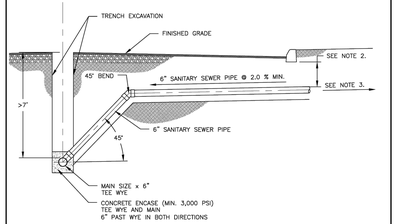


NOTES:
1. TYPICAL BEDDING PER APPLICABLE UTILITY BACKFILL STANDARD SPECIFICATIONS.
2. SECONDARY BACKFILL TO BE COMPACTED IN LIFTS PER ASTM D1557 (MODIFIED PROCTOR) AND SPECIFICATION 02221.

CITY OF BOERNE

UTILITY PIPE TRENCH

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

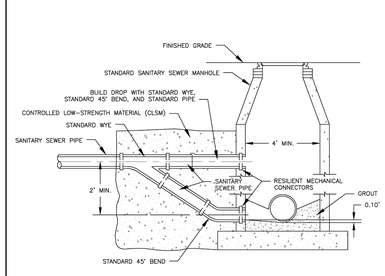


NOTES:
1. USE DEEP SANITARY SEWER SERVICE LATERAL WHEN THE MAIN DEPTH IS GREATER THAN 7' BELOW FINISHED GRADE.
2. INSTALL SERVICE LATERAL 2' MINIMUM BELOW CURB, OR 3' MINIMUM BELOW FINISHED GRADE WHEN NOT IN STREET. INSTALL SERVICE DEEPER WHEN LOT BEING SERVED SLOPES AWAY FROM SEWER MAIN. LATERAL DEPTH AT CURB OR PROPERTY LINE SHOULD NOT EXCEED 7'.
3. COMPLETE DEEP SANITARY SEWER SERVICE LATERAL AS PER CITY STANDARD SANITARY SEWER SERVICE LATERAL DETAIL 02530-1.0.
4. NO ADDITIONAL BENDS ALLOWED BEYOND THE SINGLE 45-DEGREE BEND AFTER CONNECTION TO SEWER MAIN FOR SEWER SERVICE WITHIN ROW.

CITY OF BOERNE

DEEP SANITARY SEWER SERVICE LATERAL

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-1.1	MAY 2024

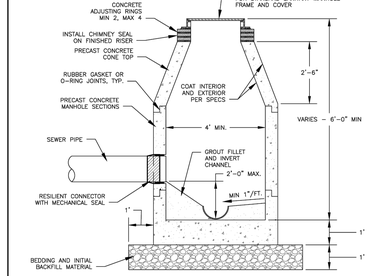


NOTES:
1. CONTROLLED LOW-STRENGTH MATERIAL (CLSM) STRENGTH SHALL BE BETWEEN 75 PSI AND 750 PSI AT 7 DAYS AND SHALL BE TESTED PER SPECIFICATION 02221.
2. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE

SANITARY SEWER DROP MANHOLE

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-2.1	MAY 2024

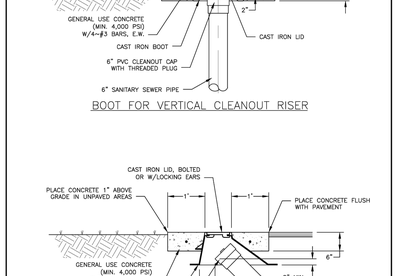


NOTES:
1. IF WATERTIGHT MANHOLE IS USED, COVER MUST BE VENTED PER THE TCEQ REQUIREMENTS.
2. SANITARY SEWER MANHOLE MUST PASS VACUUM TESTING PER SPECIFICATION 02530.
3. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE

STANDARD SANITARY SEWER MANHOLE

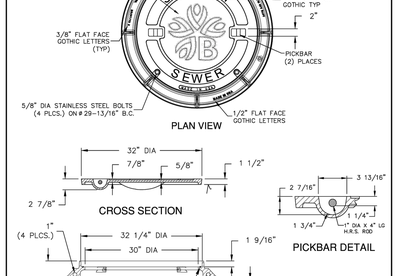
SCALE:	DRAWING No.	DATE:
N.T.S.	02530-2.0	MAY 2024



CITY OF BOERNE

CAST IRON CLEANOUT BOOT

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-3.1	MAY 2024



NOTES:
1. ALL FRAME AND COVERS MUST BE HEAVY DUTY VEHICLE LOAD RATING.
2. IF WATERTIGHT MANHOLE IS USED, COVER MUST BE VENTED PER THE TCEQ REQUIREMENTS.
3. USE OF FRAME AND COVERS WITH CITY OF BOERNE NAME AND LOGO ONLY FOR PUBLIC INFRASTRUCTURE OWNED AND MAINTAINED BY THE CITY OF BOERNE.
4. FRAME AND COVER AS MANUFACTURED BY EAST JORDAN IRON WORKS OR APPROVED EQUAL.

CITY OF BOERNE

PRESSURE TIGHT SANITARY MANHOLE FRAME AND COVER

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-2.30	MAY 2024

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REGENT PARK UNIT 7

CITY OF BOERNE - SANITARY SEWER STANDARD DETAILS

DATE
02/17/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 09/27/2024 - UPDATE TO CURRENT CoB DETAILS
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STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C32

10 OF 10

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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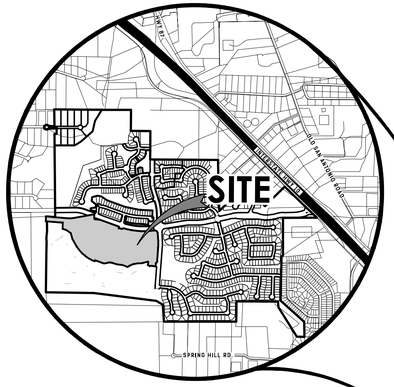
WATER DISTRIBUTION CONSTRUCTION PLANS

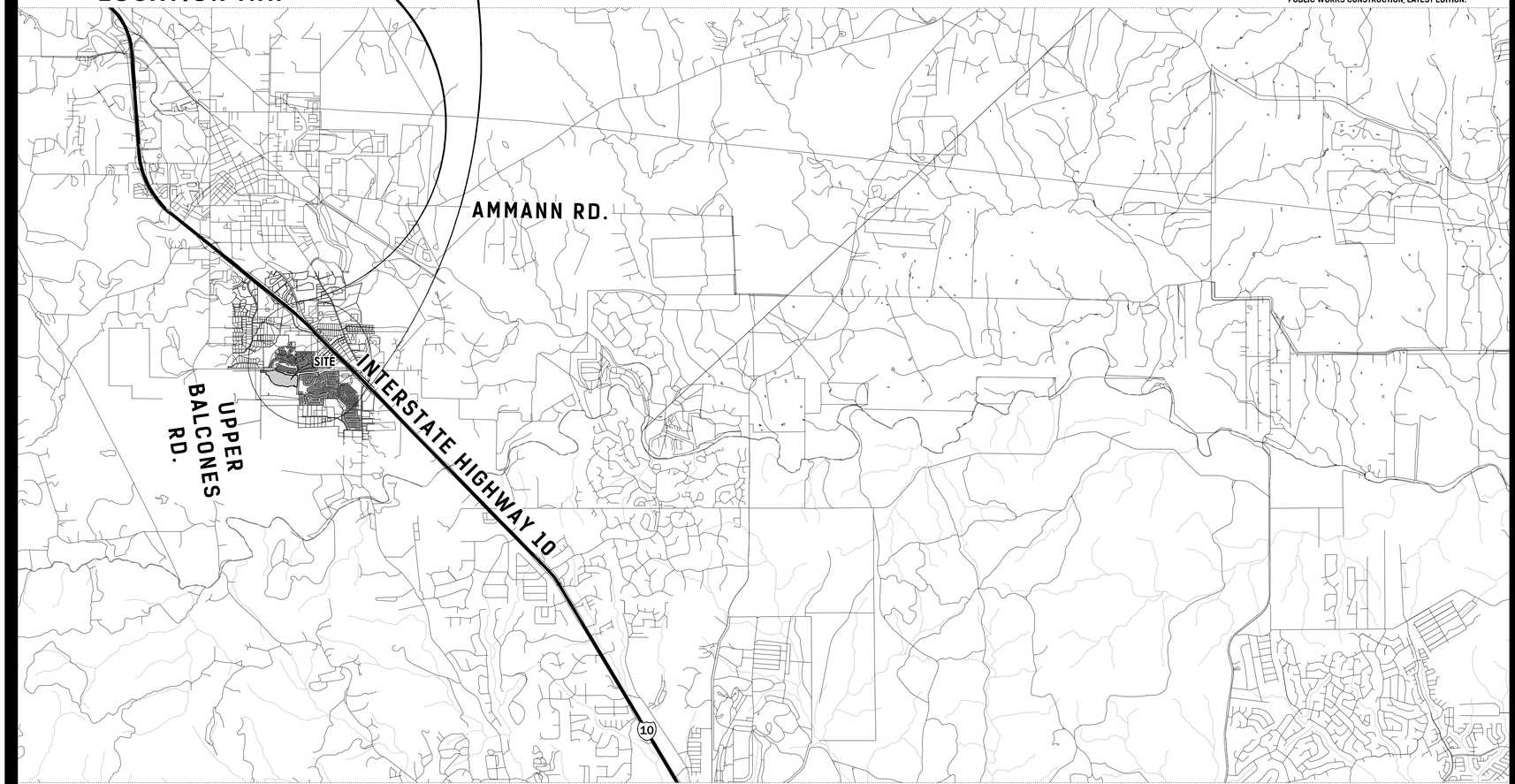
- C33 - WATER DISTRIBUTION PLAN
- C34 - WATER DISTRIBUTION PLAN
- C35 - WATER DISTRIBUTION PLAN
- C36 - CITY OF BOERNE - WATER DISTRIBUTION STANDARD DETAILS *

* DENOTES STANDARD DETAILS ADOPTED FOR USE ON THIS PROJECT.



LOCATION MAP

CONSTRUCTION OF ALL FACILITIES TO BE DEDICATED TO THE PUBLIC SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.



VICINITY MAP

REGENT PARK UNIT 7

WATER DISTRIBUTION CONSTRUCTION PLANS

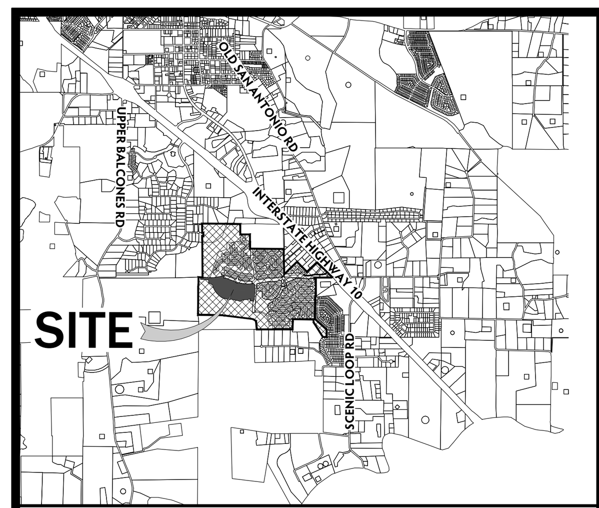
DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 N.W. MILITARY, SUITE 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

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

DRAWN BY	DATE
AD/RM/MW/MS	03/21/2024
CHECKED BY	PROJECT NO.
W. PATRICK MURPHY, P.E.	02133.230

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/22/2024

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500



LOCATION MAP N.T.S.

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.

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.

BOERNE WATER GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL CONFORM TO APPLICABLE CITY OF BOERNE CONSTRUCTION SPECIFICATIONS.
2. MACHINE CHLORINATION BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE UNLESS OTHERWISE INDICATED.
3. ALL PIPE SHALL BE P.V.C. C-900, DR14 CLASS 200. UNLESS OTHERWISE NOTED.
4. ALL MAINS SHALL BE HYDROSTATICALLY TESTED BY THE CONTRACTOR, AS PROVIDED FOR IN THE C.O.B. SPECS. FOR P/W CONSTRUCTION.
5. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS.
6. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CALL 1-800-DIG-TESS FOR LOCATES.
7. CONTRACTOR SHALL NOTIFY AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION:
   A) CITY OF BOERNE PUBLIC WORKS (1-830-249-9511)
8. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED AND THE CITY OF BOERNE RELEASES THE MAIN FOR TIE-IN AND USE.
10. WHEN SEWER LINES ARE INSTALLED IN THE VICINITY OF PROPOSED & FUTURE WATER MAINS, SUCH INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS" (1988 OR ANY REVISIONS THERETO).
11. ALL THRUST BLOCKING MUST BLOCK AGAINST NATURAL GROUND NOT TRENCH BACKFILL.
12. MAINTAIN 2' HORIZONTAL SEPARATION BETWEEN EXIST. POWER POLE AND TRENCH.
13. ALL FIRE HYDRANTS TO BE MUELLER A-423 OR APPROVED EQUAL.
14. COMPACT SECONDARY BACKFILL TO 98% MAX DRY DENSITY. CONTRACTOR TO PERFORM DENSITY TESTING AT INTERVALS OF 500' PER 6" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN TxDOT ROW (TxDOT REQUIREMENT), AND PER 8" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN ALL OTHER AREAS (CITY OF BOERNE REQUIREMENT). REPORTS TO BE PROVIDED TO TxDOT FOR WORK WITHIN TxDOT ROW.
15. CONTRACTOR TO CONTACT 1-800-DIG-TESS 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND CONDUITS.
16. ALL AREAS WHICH WHERE TRAVERSED BY CONSTRUCTION EQUIPMENT WILL BE DISKED PRIOR TO COMMENCING REVEGETATION.
17. CONTRACTOR TO INSTALL UNDERGROUND HAZARD WARNING TAPE TWELVE (12) INCHES BELOW FINISHED GRADE IN UNPAVED AREAS AND SIX (6) INCHES BELOW SUBGRADE IN PAVED AREAS. REFERENCE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND DETAILS.
18. ALL BURIED STAND PIPE SHALL BE C900 OR APPROVED EQUAL.
19. IRRIGATION METER AND PIPE SIZE TO BE ISSUED AT LATER DATE.

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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.
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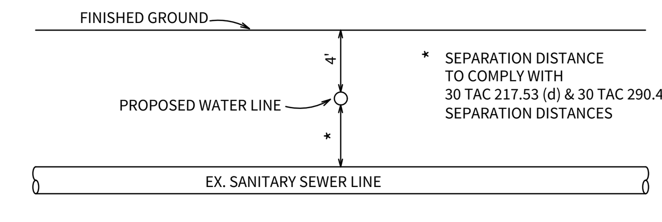
5. THE DEVELOPER DEDICATES THE WATER MAIN UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE CITY OF BOERNE. THE CITY OF BOERNE WILL OWN AND MAINTAIN SAID WATER MAINS WHICH ARE LOCATED WITHIN THIS PARTICULAR SUBDIVISION (AS APPLICABLE).
6. THE CONTRACTOR WILL KEEP THE AREA ON TOP OF AND AROUND THE 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 JOIN RESTRAINT LENGTH AND DIRECTION
9. CONTRACTOR SHALL SET ALL OFFSITE WATER MAIN APPURTENANCES TO FINAL PROPOSED GRADE.



DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

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 SHOW. 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

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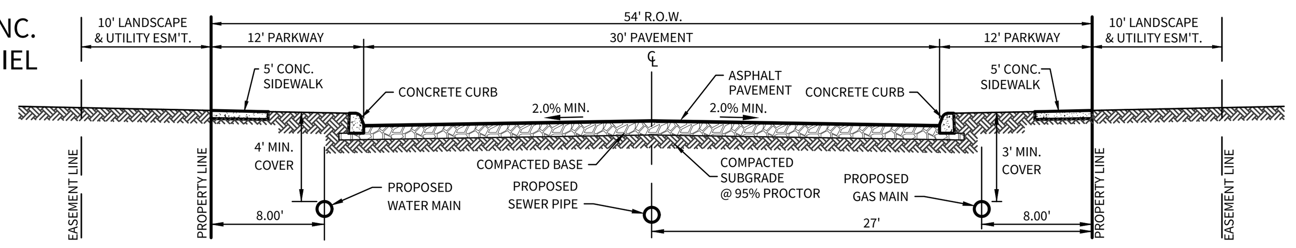

LOCAL RESIDENTIAL STREET CROSS SECTION (54' R.O.W.)

N.T.S.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT

CAUTION!!
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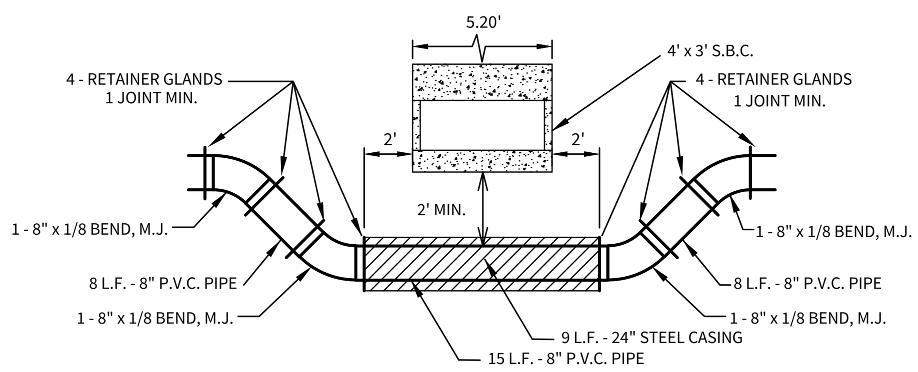
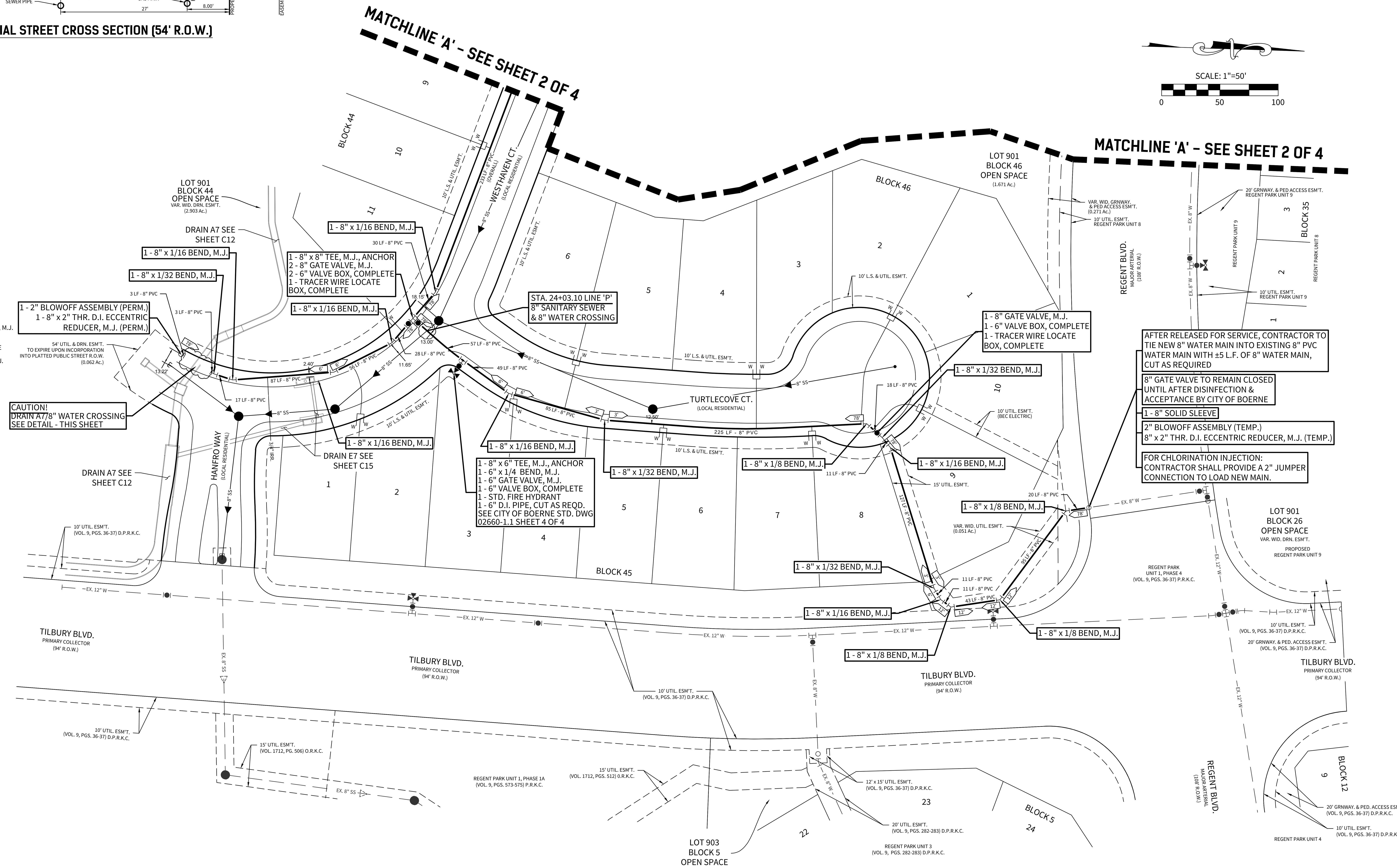


ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

DRAIN "A7" / WATER CROSSING

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



CUDEENGINEERS.COM
CUDE ENGINEERS EST. 1980
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San Antonio, Texas 78231
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REGENT PARK UNIT 7

WATER DISTRIBUTION PLAN

DATE	03/28/2025
PROJECT NO.	02133.230
DRAWN BY	MW/RM/JF
CHECKED BY	WPM

REVISIONS
1. 02/10/2025 - UPDATED WATER LAYOUT, UPDATED STORM DRAIN CROSSING, & SEPARATION DIMS
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS W. PATRICK MURPHY 111597 LICENSED PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C33

P:\02133\230\2-Drawings\07_25 WDMP.dwg 2025/03/28 2:17pm wmurphy
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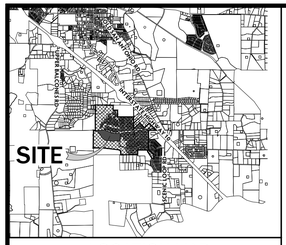

LOCATION MAP N.T.S.

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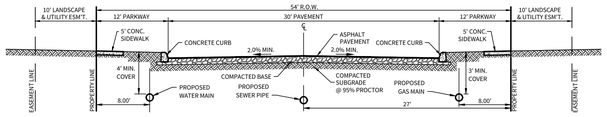

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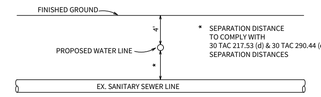
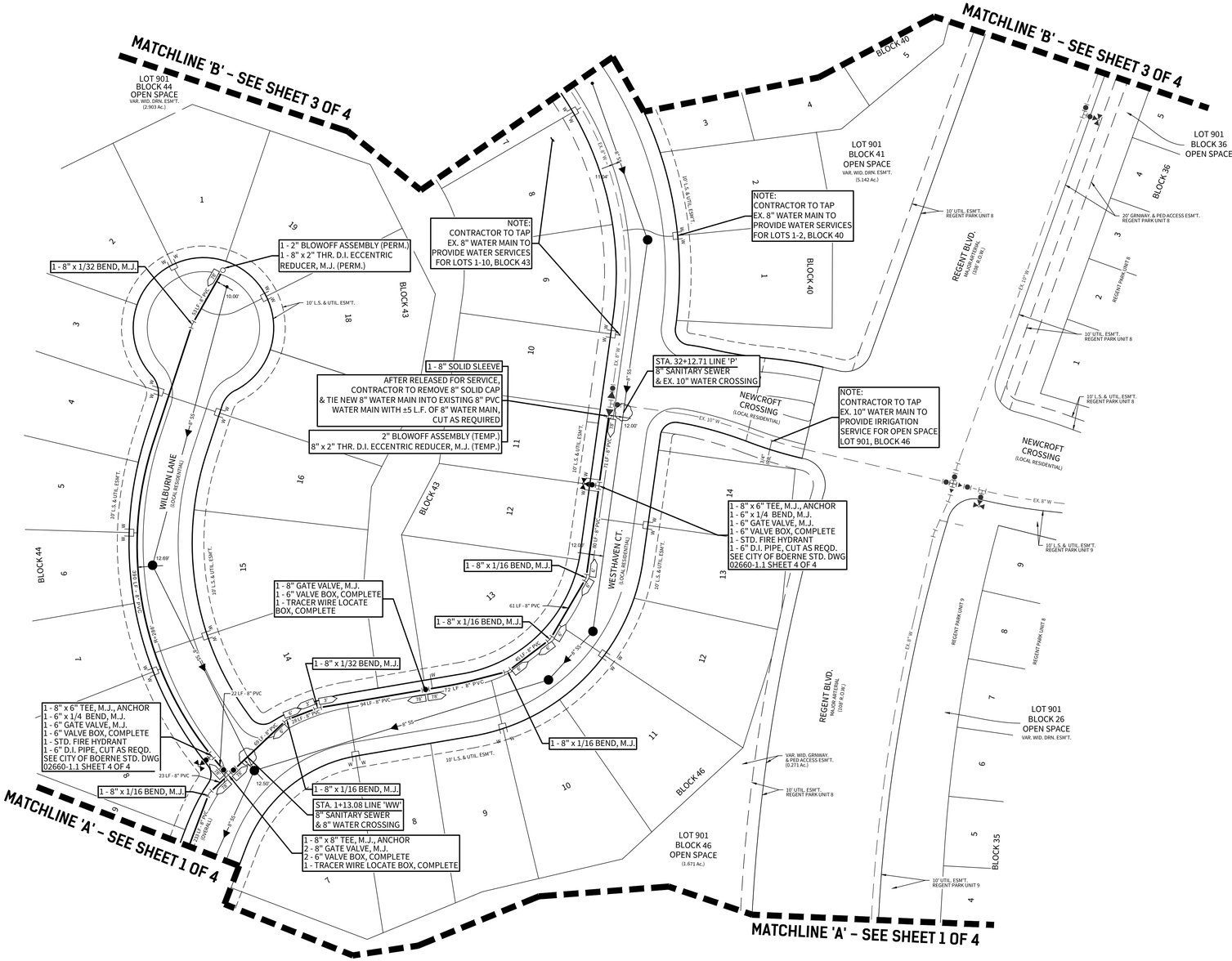


DETAIL "A"

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

SCALE: 1"=50'
0 50 100



CUDEENGINEERS.COM

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REGENT PARK UNIT 7

WATER DISTRIBUTION PLAN

DATE
03/28/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/10/2025 - UPDATED WATER LAYOUT & SEPARATION DIMS
2. 03/13/2025 - WATER LINE EXTENSION ALONG REGENT BLVD
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C34

2 OF 4

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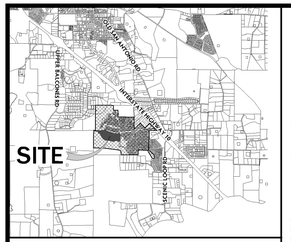

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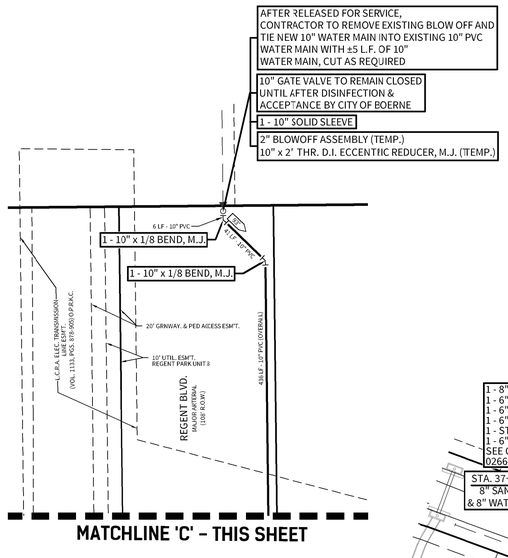
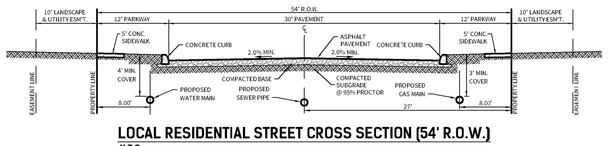
5. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS.
6. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CALL 1-800-DIG-TESS FOR LOCATES.
7. CONTRACTOR SHALL NOTIFY AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION:
   A) CITY OF BOERNE PUBLIC WORKS (1-830-249-9511)
8. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED AND THE CITY OF BOERNE RELEASES THE MAIN FOR TIE-IN AND USE.
10. WHEN SEWER LINES ARE INSTALLED IN THE VICINITY OF PROPOSED & FUTURE WATER MAINS, SUCH INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS" (1988 OR ANY REVISIONS THERETO).
11. ALL THRUST BLOCKING MUST BLOCK AGAINST NATURAL GROUND NOT TRENCH BACKFILL.
12. MAINTAIN 2' HORIZONTAL SEPARATION BETWEEN EXIST. POWER POLE AND TRENCH.
13. ALL FIRE HYDRANTS TO BE TUELLER A-423 OR APPROVED EQUAL.
14. COMPACT SECONDARY BACKFILL TO 98% MAX DRY DENSITY. CONTRACTOR TO PERFORM DENSITY TESTING AT INTERVALS OF 500' PER 6' LIFT OF SECONDARY BACKFILL FOR UTILITIES IN TxDOT ROW (TxDOT REQUIREMENT), AND PER 8' LIFT OF SECONDARY BACKFILL FOR UTILITIES IN ALL OTHER AREAS (CITY OF BOERNE REQUIREMENT). REPORTS TO BE PROVIDED TO TxDOT FOR WORK WITHIN TxDOT ROW.
15. CONTRACTOR TO CONTACT 1-800-DIG-TESS 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND CONDUITS.
16. ALL AREAS WHICH WHERE "RAVERSED BY CONSTRUCTION EQUIPMENT WILL BE DISKED PRIOR TO COMMENCING REVEGETATION.
17. CONTRACTOR TO INSTALL UNDERGROUND HAZARD WARNING TAPE TWELVE (12) INCHES BELOW FINISHED GRADE IN UNPAVED AREAS AND SIX (6) INCHES BELOW SUBGRADE IN PAVED AREAS. REFERENCE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND DETAILS.
18. ALL BURIED STAND PIPE SHALL BE C900 OR APPROVED EQUAL.
19. IRRIGATION METER AND PIP SIZE TO BE ISSUED AT LATE R DATE.

JOINT RESTRAINT NOTE:

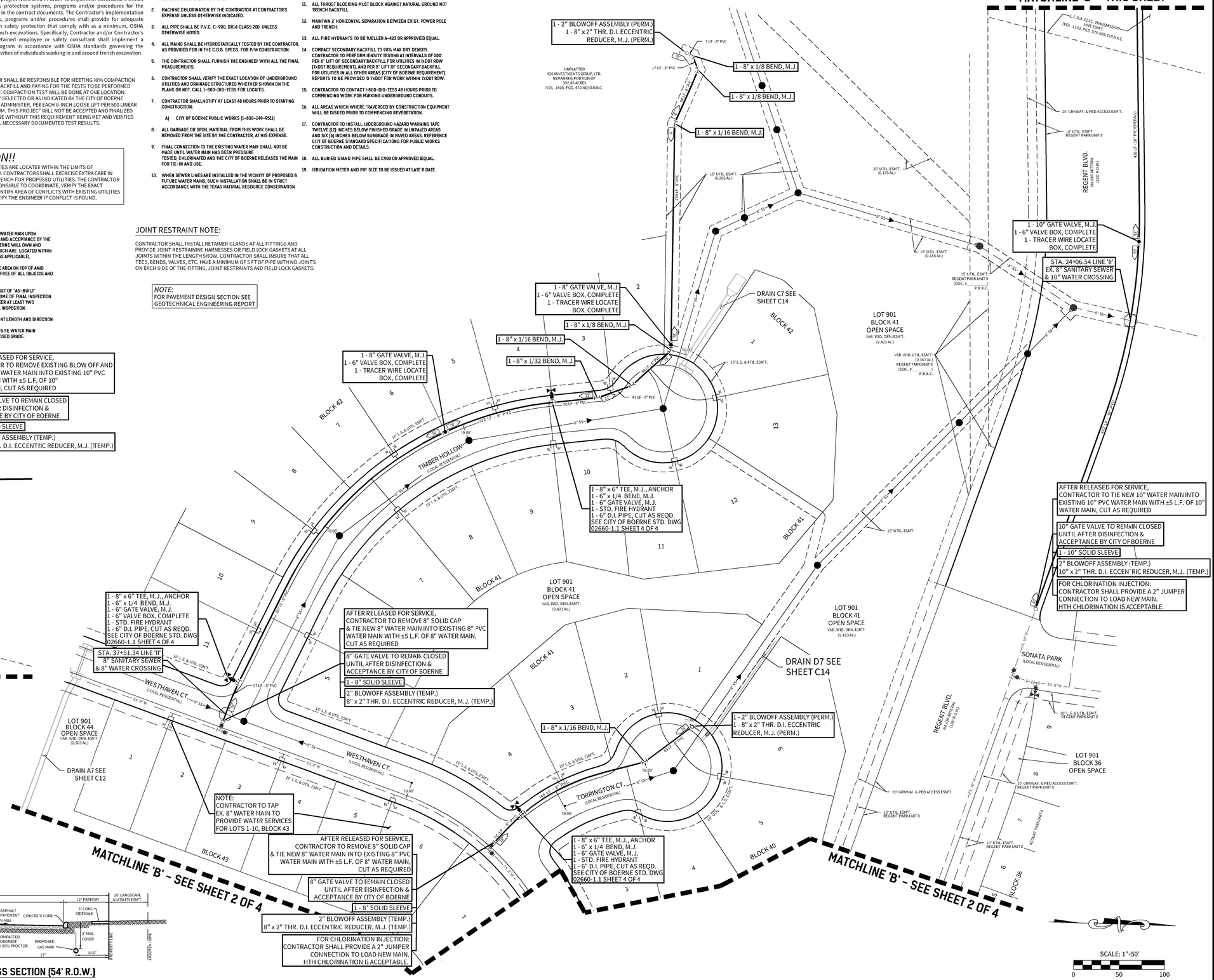
CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESSES OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOW. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING, JOINT RESTRAINTS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

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT





LOCAL RESIDENTIAL STREET CROSS SECTION (54' R.O.W.)
N.T.S.



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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

REGENT PARK UNIT 7

WATER DISTRIBUTION PLAN

DATE
03/28/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 03/13/2025 - CORRECT "LOAD MAN" TYPO, STREET NAME CHANGE AND WATER LINE EXTENSION ALONG REGENT BLVD
2.
3.
4.
5.
6.
7.
8.
9.

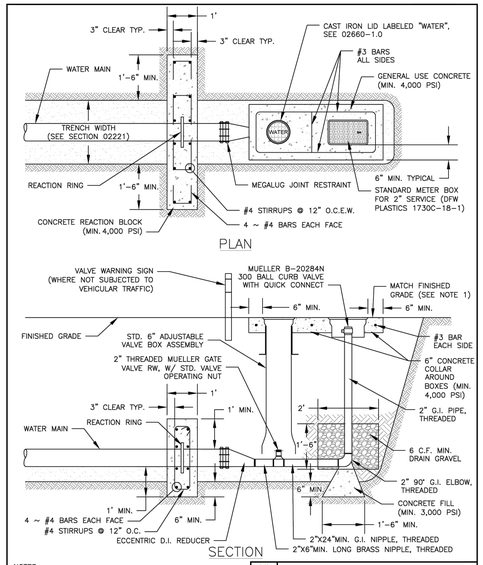
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/28/2025
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C35

3 OF 4

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.

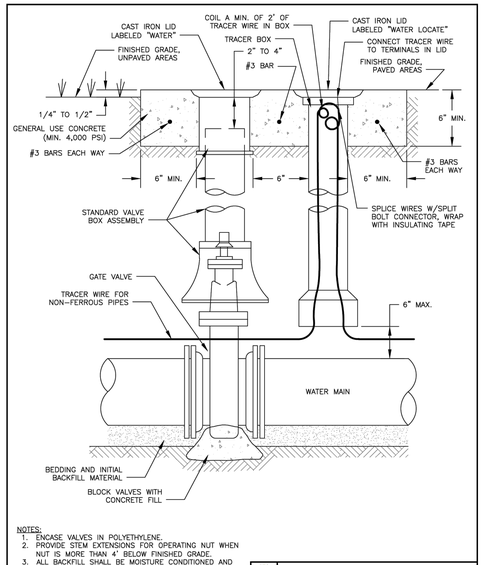


NOTES:
1. MATCH FLUSH IN PAVED AREAS. SET BOX AND CONCRETE 1" ±1/2" ABOVE FINISHED GRADE IN UNPAVED AREAS.
2. PROVIDE RESTRAINED LENGTHS AS SHOWN BY DESIGN ENGINEER IN THE APPROVED DRAWINGS.
3. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE

PERMANENT END OF WATER MAIN BLOW-OFF ASSEMBLY

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

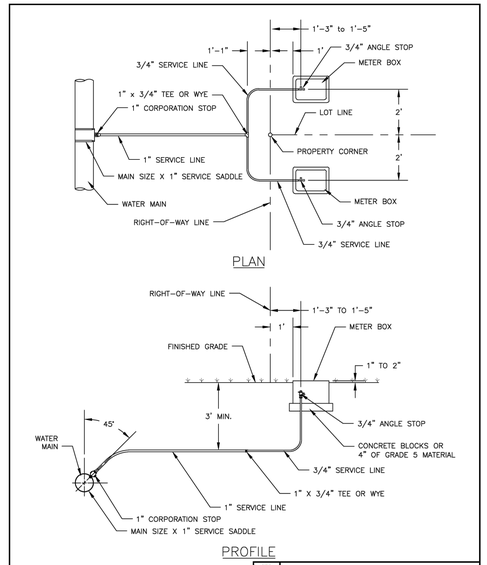


NOTES:
1. ENCASE VALVES IN POLYETHYLENE.
2. PROVIDE STEM EXTENSIONS FOR OPERATING NUT WHEN NUT IS MORE THAN 4' BELOW FINISHED GRADE.
3. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).
4. WHERE MULTIPLE VALVES ARE PROPOSED WITHIN 10-FEET OF 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

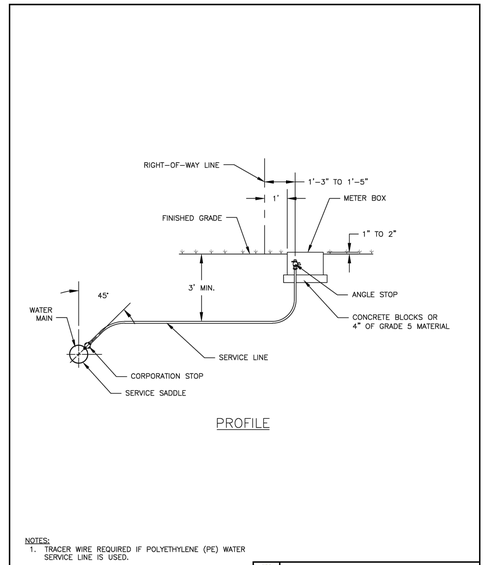


NOTES:
1. TRACER WIRE REQUIRED IF POLYETHYLENE (PE) WATER SERVICE LINE IS USED.

CITY OF BOERNE

DUAL 3/4 IN WATER SERVICES

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

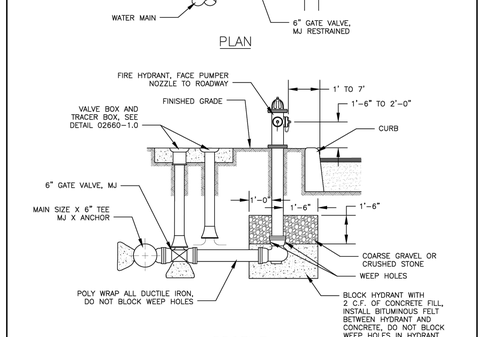


NOTES:
1. TRACER WIRE REQUIRED IF POLYETHYLENE (PE) WATER SERVICE LINE IS USED.

CITY OF BOERNE

3/4 TO 2 IN SINGLE WATER SERVICE

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

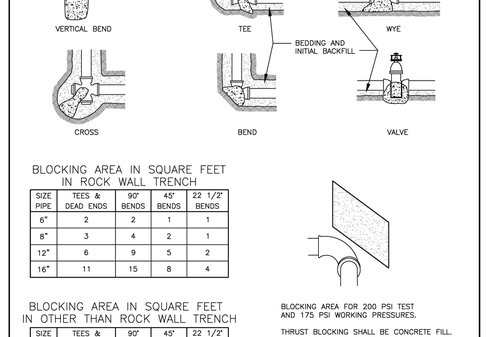


NOTES:
1. POLY WRAP ALL DUCTILE IRON BELOW GRADE.
2. RESTRAIN ALL JOINTS.

CITY OF BOERNE

FIRE HYDRANT ASSEMBLY

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



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.

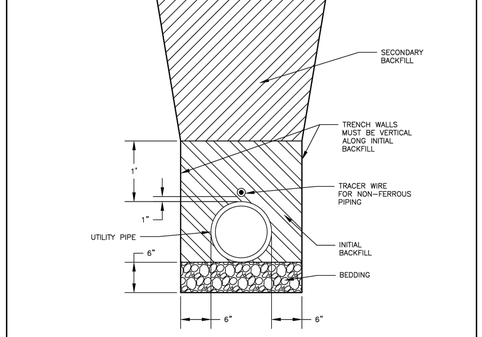
THRUST BLOCKING SHALL BE CONCRETE FILL. MIN. 3,000 PSI

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



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.

CITY OF BOERNE

UTILITY PIPE TRENCH

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

BOERNE WATER GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL CONFORM TO APPLICABLE CITY OF BOERNE CONSTRUCTION SPECIFICATIONS.
2. MACHINE CHLORINATION BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE UNLESS OTHERWISE INDICATED.
3. ALL PIPE SHALL BE P.V.C. C-900, DR14 CLASS 200. UNLESS OTHERWISE NOTED.
4. ALL MAINS SHALL BE HYDROSTATICALLY TESTED BY THE CONTRACTOR, AS PROVIDED FOR IN THE C.O.B. SPECS. FOR P/W CONSTRUCTION.
5. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS.
6. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CALL 1-800-DIG-TESS FOR LOCATES.
7. CONTRACTOR SHALL NOTIFY AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION:
   A) CITY OF BOERNE PUBLIC WORKS (1-830-249-9511)
8. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED AND THE CITY OF BOERNE RELEASES THE MAIN FOR TIE-IN AND USE.
10. WHEN SEWER LINES ARE INSTALLED IN THE VICINITY OF PROPOSED & FUTURE WATER MAINS, SUCH INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS" (1988 OR ANY REVISIONS THERETO).
11. ALL THRUST BLOCKING MUST BLOCK AGAINST NATURAL GROUND NOT TRENCH BACKFILL.
12. MAINTAIN 2' HORIZONTAL SEPARATION BETWEEN EXIST. POWER POLE AND TRENCH.
13. ALL FIRE HYDRANTS TO BE MUELLER A-423 OR APPROVED EQUAL.
14. COMPACT SECONDARY BACKFILL TO 98% MAX DRY DENSITY. CONTRACTOR TO PERFORM DENSITY TESTING AT INTERVALS OF 500' PER 6" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN TxDOT ROW (TxDOT REQUIREMENT), AND PER 8" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN ALL OTHER AREAS (CITY OF BOERNE REQUIREMENT). REPORTS TO BE PROVIDED TO TxDOT FOR WORK WITHIN TxDOT ROW.
15. CONTRACTOR TO CONTACT 1-800-DIG-TESS 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND CONDUITS.
16. ALL AREAS WHICH WHERE TRAVERSED BY CONSTRUCTION EQUIPMENT WILL BE DISKED PRIOR TO COMMENCING REVEGETATION.
17. CONTRACTOR TO INSTALL UNDERGROUND HAZARD WARNING TAPE TWELVE (12) INCHES BELOW FINISHED GRADE IN UNPAVED AREAS AND SIX (6) INCHES BELOW SUBGRADE IN PAVED AREAS. REFERENCE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND DETAILS.
18. ALL BURIED STAND PIPE SHALL BE C900 OR APPROVED EQUAL.

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. <K> – DENOTES JOIN RESTRAINT LENGTH AND DIRECTION

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

REGENT PARK UNIT 7

CITY OF BOERNE - WATER DISTRIBUTION STANDARD DETAILS

DATE 02/17/2025

PROJECT NO. 02133.230

DRAWN BY MW/RM/JF

CHECKED BY WPM

REVISIONS
1. 09/27/2024 - UPDATE TO CURRENT CoB DETAILS
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

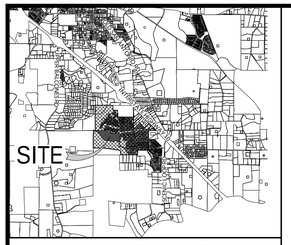
CUDE ENGINEERS
TBPE No. 455

PLAT NO. N/A

C36

4 OF 4

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:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

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.

CITY OF BOERNE PUBLIC WORKS	(1-830-249-9511)
BOERNE MAINT. OFFICE, TxDOT	(1-830-816-2430)
TEXAS STATE WIDE ONE CALL LOCATOR	(1-800-545-6005)
GVTC	"
CHARTER COMMUNICATIONS	"

GVTC AND CHARTER COMMUNICATIONS
CABLE LINES TO GO IN JOINT TRENCH WITH BANDERA 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.

CASING FOR FUTURE WATER MAIN PER COB STANDARD SPECIFICATION 02224.

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 BANDERA ELECTRIC CO-OP UTILITY LINE INSTALLATION.

2.) INSTALLATION IS AUTHORIZED BY THE DEVELOPER.

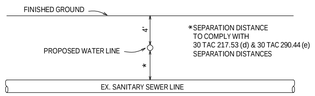
TRENCH EXCAVATION SAFETY PROTECTION
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA 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.

CAUTION!!!

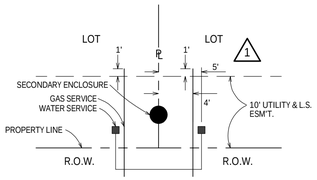
THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC AND UNDERGROUND WATER, SEWER, AND GAS MAINS EXIST WITHIN THE LIMITS OF THE PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

LEGEND

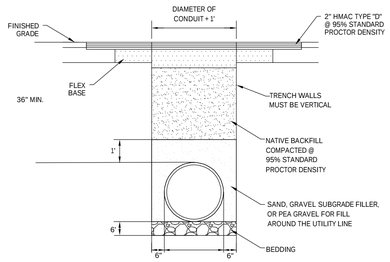
- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED SANITARY SEWER — 8"SS
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING WATER MAIN — EX.8"W
- PROPOSED WATER MAIN — 8"W
- EXISTING STANDARD FIRE HYDRANT
- PROPOSED STANDARD FIRE HYDRANT
- EXISTING STANDARD GATE VALVE
- PROPOSED STANDARD GATE VALVE
- EXISTING PERMANENT BLOWOFF
- PROPOSED PERMANENT BLOWOFF
- EXISTING OVERHEAD ELECTRIC — EX.OE
- PROPOSED OVERHEAD ELECTRIC — OE
- EXISTING GAS MAIN — EX.2"G
- PROPOSED GAS MAIN — 2"G
- EXISTING UNDERGROUND ELECTRIC — EX. UGE
- PROPOSED UNDERGROUND ELECTRIC — UGE
- EXISTING POWER POLE
- PROPOSED POWER POLE
- EXISTING POWER POLE & RISER POLE
- PROPOSED POWER POLE & RISER POLE
- PROPOSED LIGHT POLE
- EXISTING TRANSFORMER
- PROPOSED TRANSFORMER
- PROPOSED SECONDARY ENCLOSURE
- PROPOSED PULL BOX
- U.S. POSTAL COLLECTION BOX
- GAS VALVE
- UTILITY CONDUIT CROSSING — UTIL
- IRRIGATION CONDUIT CROSSING — IRR



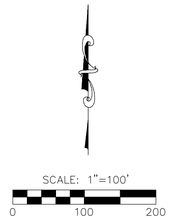
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

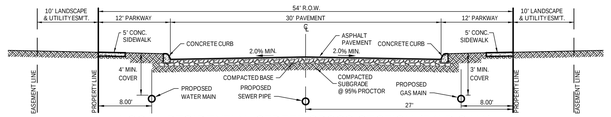


TYPICAL WATER/GAS SERVICE PLACEMENT WITH SECONDARY ENCLOSURE CONFLICT DETAIL
N.T.S.

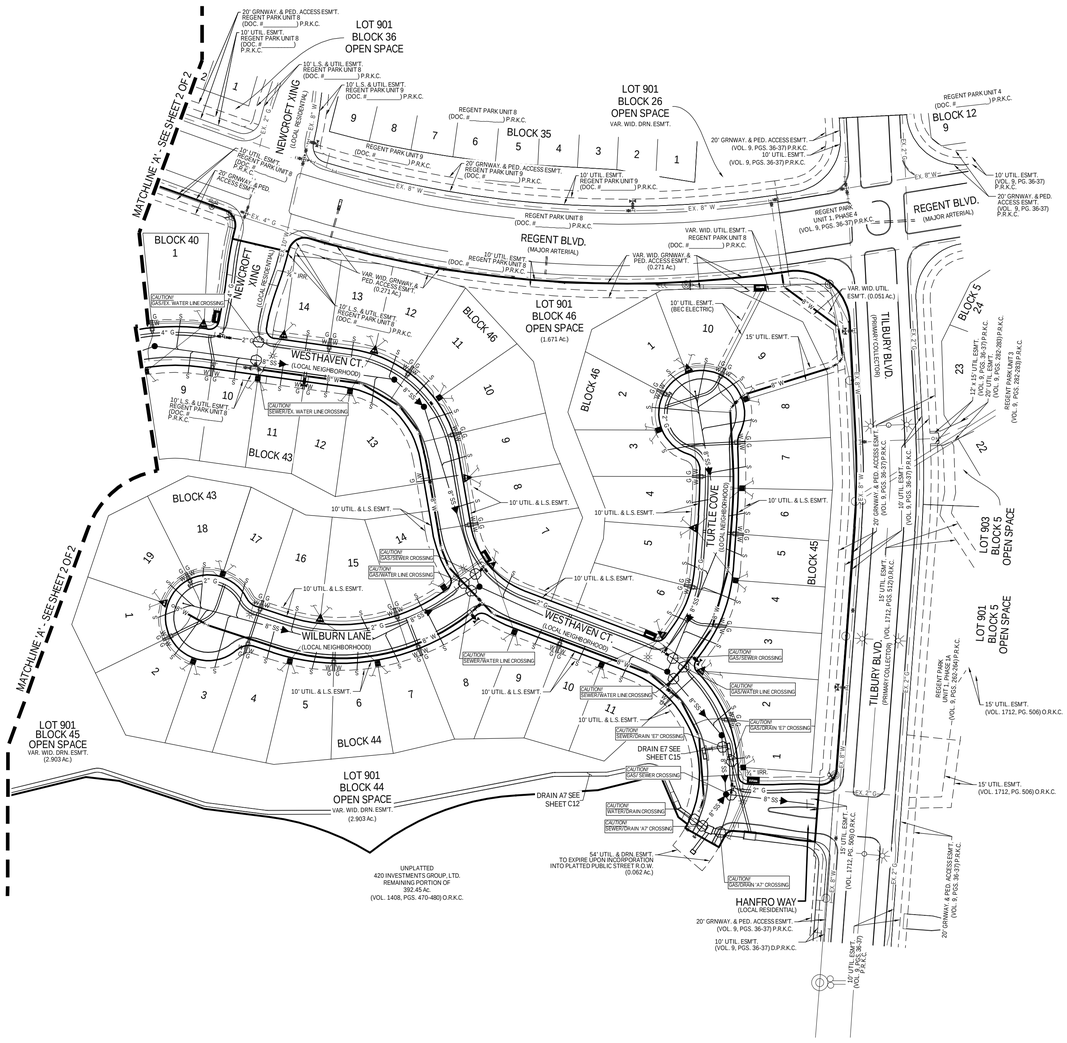


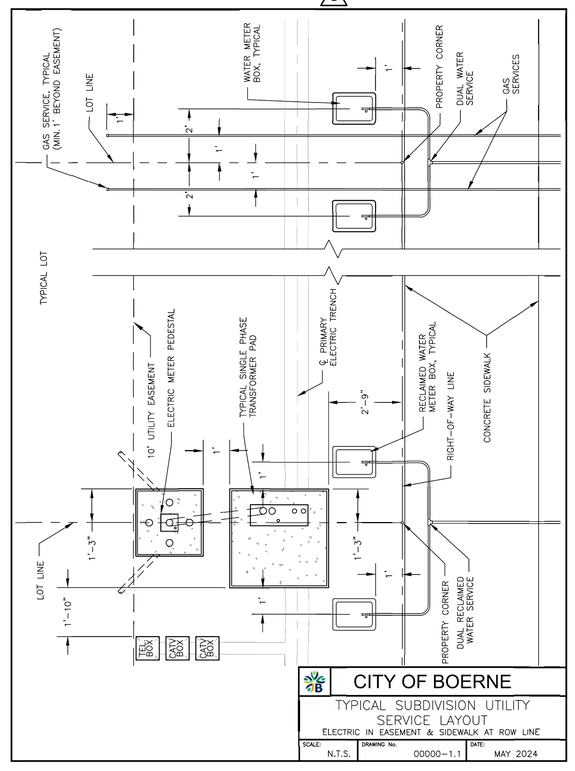
CONDUIT CROSSING TRENCH DETAIL - 3" SLEEVE
N.T.S.





LOCAL RESIDENTIAL STREET CROSS SECTION (54' R.O.W.)
N.T.S.





CITY OF BOERNE
TYPICAL SUBDIVISION UTILITY SERVICE LAYOUT
ELECTRIC IN EASEMENT & SIDEWALK AT ROW LINE

SCALE:	DRAWING No.	DATE:
N.T.S.	00000-1.1	MAY 2024

CUDEENGINEERS.COM

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

REGENT PARK
UNIT 7

UTILITY LAYOUT PLAN

DATE
03/12/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/10/2024 - UPDATE TO CURRENT CoB DETAILS, UPDATED STREET NAMES, UPDATED WAT./ELEC. LAYOUT
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

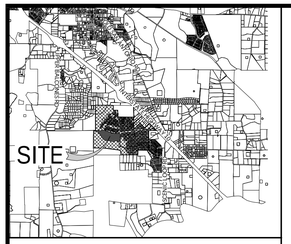
PLAT NO.
N/A

C37

1 OF 2

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.

02133\230\Drawings\07_ZLP\Utility Layout\02133230-UTILITY LAYOUT.dwg, 3/28/2025 9:12:26 AM, wmurphy



LOCATION MAP N.T.S.

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

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.

CITY OF BOERNE PUBLIC WORKS	(1-830-249-9511)
BOERNE MAINT. OFFICE, TxDOT	(1-830-816-2430)
TEXAS STATE WIDE ONE CALL LOCATOR	(1-800-545-6005)
GVTC	"
CHARTER COMMUNICATIONS	"

GVTC AND CHARTER COMMUNICATIONS
CABLE LINES TO GO IN JOINT TRENCH WITH BANDERA 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.

CASING FOR FUTURE WATER MAIN PER COB STANDARD SPECIFICATION 02224.

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 BANDERA ELECTRIC CO-OP UTILITY LINE INSTALLATION.

2.) INSTALLATION IS AUTHORIZED BY THE DEVELOPER.

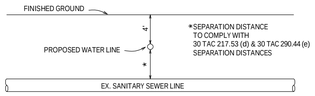
TRENCH EXCAVATION SAFETY PROTECTION
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA 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.

CAUTION!!!

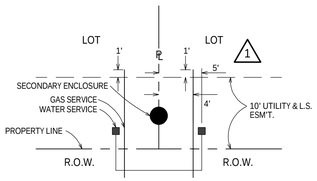
THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC AND UNDERGROUND WATER, SEWER, AND GAS MAINS EXIST WITHIN THE LIMITS OF THE PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

LEGEND

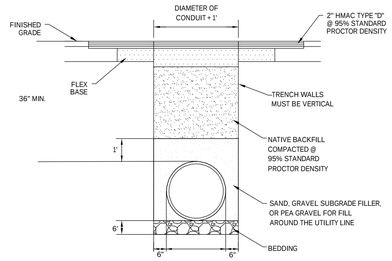
EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	EX.8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
EXISTING STANDARD GATE VALVE	
PROPOSED STANDARD GATE VALVE	
EXISTING PERMANENT BLOWOFF	
PROPOSED PERMANENT BLOWOFF	
EXISTING OVERHEAD ELECTRIC	EX.OE
PROPOSED OVERHEAD ELECTRIC	OE
EXISTING GAS MAIN	EX.2"G
PROPOSED GAS MAIN	2"G
EXISTING UNDERGROUND ELECTRIC	EX. UGE
PROPOSED UNDERGROUND ELECTRIC	UGE
EXISTING POWER POLE	
PROPOSED POWER POLE	
EXISTING POWER POLE & RISER POLE	
PROPOSED POWER POLE & RISER POLE	
PROPOSED LIGHT POLE	
EXISTING TRANSFORMER	
PROPOSED TRANSFORMER	
PROPOSED SECONDARY ENCLOSURE	
PROPOSED PULL BOX	PB
U.S. POSTAL COLLECTION BOX	
GAS VALVE	
UTILITY CONDUIT CROSSING	UTIL
IRRIGATION CONDUIT CROSSING	IRR



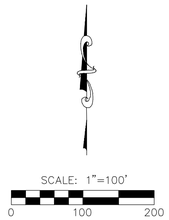
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

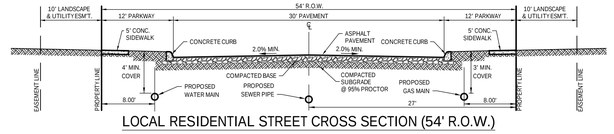


TYPICAL WATER/GAS SERVICE PLACEMENT
WITH SECONDARY ENCLOSURE CONFLICT DETAIL
N.T.S.

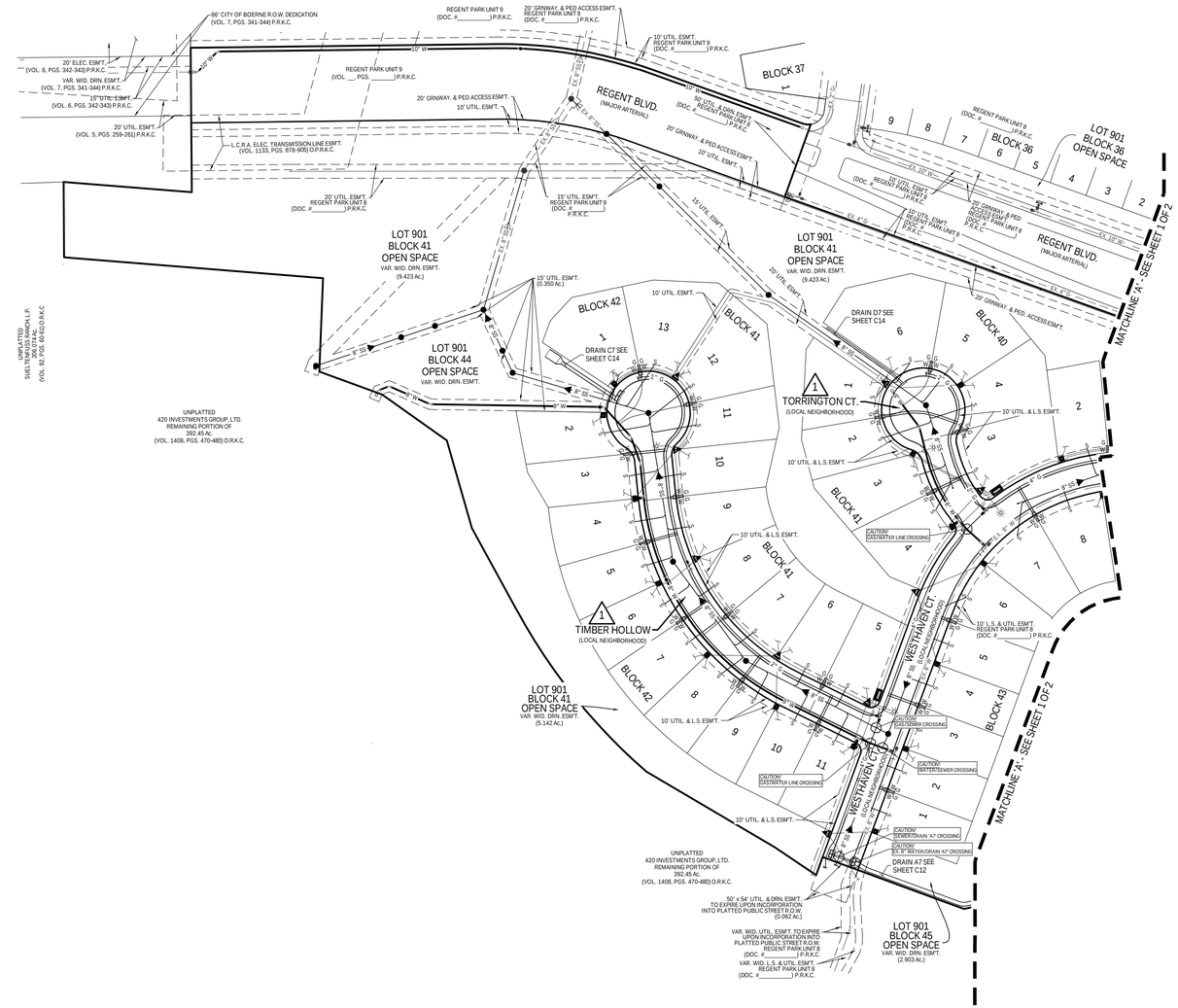


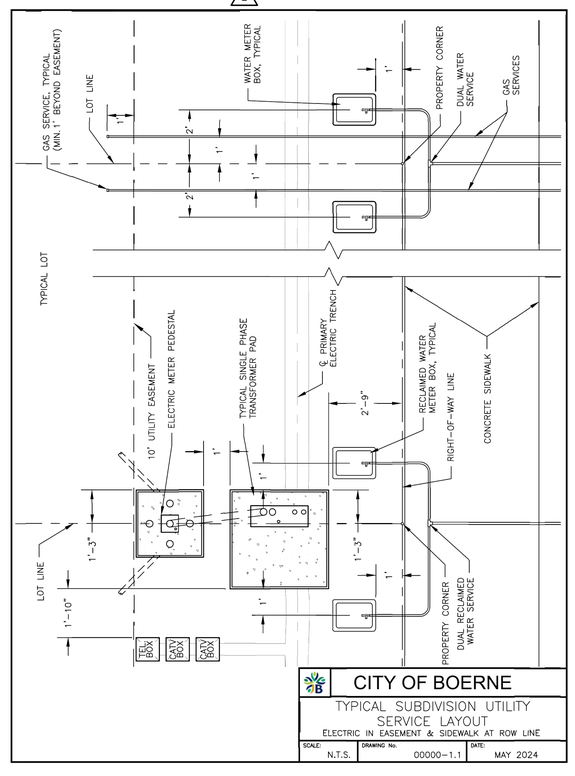
CONDUIT CROSSING TRENCH DETAIL - 3" SLEEVE
N.T.S.





LOCAL RESIDENTIAL STREET CROSS SECTION (54' R.O.W.)
N.T.S.





CITY OF BOERNE
TYPICAL SUBDIVISION UTILITY SERVICE LAYOUT
ELECTRIC IN EASEMENT & SIDEWALK AT ROW LINE

SCALE:	DRAWING No.	DATE:
N.T.S.	00000-1.1	MAY 2024

CUDEENGINEERS.COM

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

REGENT PARK UNIT 7

UTILITY LAYOUT PLAN

DATE
03/12/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/10/2024 - UPDATE TO CURRENT COB DETAILS, UPDATED STREET NAMES, UPDATED WAT./ELEC. LAYOUT
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C38

2 OF 2

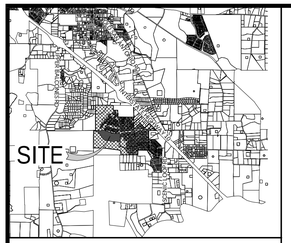
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

REGENT PARK UNIT 7 - GAS DISTRIBUTION

ESTIMATED QUANTITY TAKE-OFF

(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

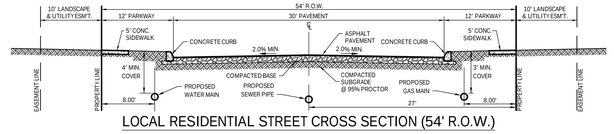
Item No.	Description	Quantity	Units	Installation Responsibility
1	2" Poly Gas Main - Open Cut	2,870	LF	Contractor
2	4" Poly Gas Main - Open Cut	1000	LF	Contractor
3	1" Gas Service, see Gas Service Detail (Long)	46	EA	Contractor
4	1" Gas Service, see Gas Service Detail (Short)	38	EA	Contractor
5	2" Gas Valve & Valve Box	11	EA	Contractor
6	4" Gas Valve & Valve Box	3	EA	Contractor
7	4" x 4" Poly Tee	3	EA	Contractor
8	2" X 2" Poly Tee	3	EA	Contractor
9	4" Poly Cap	1	EA	Contractor
10	4" x 2" Reducer	1	EA	Contractor
11	2" Poly Cap	5	EA	Contractor
12	Tracer Wire Locate Box	8	EA	Contractor
13	4" x 2" Tee	2	EA	Contractor
14	2" Connection To Existing Main To Be Completed By City Of Boerne	1	LS	City of Boerne
15	4" Connection To Existing Main To Be Completed By City Of Boerne	1	LS	City of Boerne
16	Testing As Required By City Of Boerne	1	LS	Contractor



LOCATION MAP N.T.S.

LEGEND

UNIT BOUNDARY	
PROPOSED GAS MAIN	2"G
EXISTING GAS MAIN	EX. 2"G
PROPOSED GAS SERVICE	
EXISTING SANITARY SEWER	EX. 8"SS
PROPOSED SANITARY SEWER	8"SS
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	EX. 8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
EXISTING UTILITY & LANDSCAPING EASEMENT	EX. 10' UTILITY & L.S.
PROPOSED UTILITY & LANDSCAPING EASEMENT	10' UTILITY & L.S.



LOCAL RESIDENTIAL STREET CROSS SECTION (54' R.O.W.)
N.T.S.

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

UTILITY GENERAL NOTES

1.) ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL CONFORM TO ALL APPLICABLE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THE PROJECT.

2.) ALL GAS DISTRIBUTION LINES SHALL BE YELLOW DR-11 POLYETHYLENE PIPE MEETING ASTM D3350, BY PERFORMANCE PIPE, DRISCOPLEX 6500 WITH NO SUBSTITUTIONS.

3.) ALL MAINS SHALL BE CLEAR OF ALL FOREIGN MATERIAL BLOWN WITH DRY COMPRESSED AIR AND PRESSURED TESTED AS PER THE CITY OF BOERNE'S STANDARD SPECIFICATIONS.

4.) FOR PURPOSES OF RECORD DRAWINGS FOR THE CITY OF BOERNE, THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS, TAPS, AND LENGTH OF SERVICE CONNECTIONS.

5.) THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.

6.) ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT THEIR EXPENSE.

7.) FINAL CONNECTION TO THE EXISTING GAS MAIN SHALL NOT BE MADE UNTIL THE MAIN HAS BEEN PRESSURE TESTED AND APPROVED FOR CONNECTION BY THE CITY OF BOERNE.

8.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.

9.) ALL ITEMS NOT SPECIFICALLY CALLED FOR ON THE PLANS, OR IN THE SPECIFICATIONS, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITY OR IMPROVEMENT, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS WILL BE MADE FOR THESE ITEMS.

10.) DEPTH OF BURY FOR ALL GAS PIPING SHALL BE A MINIMUM OF 3' UNLESS OTHERWISE NOTED OR APPROVED BY THE CITY OF BOERNE.

11.) CONTRACTOR TO GRADE SITE TO WITHIN +/- 0.10' BEFORE THE INSTALLATION OF UTILITIES TO ENSURE PROPER COVER IS ACHIEVED.

12.) CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT.

13.) THE CONTRACTOR SHALL NOTIFY THE GOVERNMENTAL, AND/OR UTILITY COMPANIES REGARDING THE LOCATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION.

14.) THE CONTRACTOR SHALL EXCAVATE AROUND EXISTING UTILITIES WHICH INTERSECT THE PROPOSED ALIGNMENT OF THE SERVICES AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS PRIOR TO ANY CONSTRUCTION IN THE AREA.

15.) ALL DISTURBED AREAS WITHIN EASEMENTS AND TxDOT RIGHT-OF-WAY SHALL BE HYDRO-MULCHED IN ACCORDANCE WITH THE CITY OF BOERNE'S SUBDIVISION ORDINANCE AND TxDOT SPECIFICATIONS.

16.) UTILITY TRENCH COMPACTION: ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET RIGHT-OF-WAY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED EIGHT INCHES (8") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR ASTM 1557 AS SPECIFIED AND DESCRIBED IN ACCORDANCE WITH THE CITY OF BOERNE'S PROJECT SPECIFICATION - SECTION 02221.

17.) ALL TRAFFIC CONTROL REQUIRED FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH TxDOT REQUIREMENTS AND MEET THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. (M.U.T.C.D.)

18.) CONTRACTOR SHALL COORDINATE WITH TxDOT FOR ANY STREET CLOSURES OR TRAFFIC CONTROL MEASURES FOR INTERSTATE HIGHWAY 10, IF NECESSARY.

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.

CAUTION!!
EXISTING UTILITIES ARE 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.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT

Notes
1. Estimated conduit quantities shown are linear footage with no adder.
2. It is the responsibility of the Contractor to verify all quantities shown hereon and to notify the Engineer of any discrepancies prior to bid submission.
3. Excess flow valves shall be installed by the City of Boerne.
4. The City of Boerne requires the following be provided with gas plan of record drawings - Printline data and Pipe testing information as follows:
   - ~Date of final test (date of start/date of finish)
   - ~Specified Air Pressure
   - ~Actual Air Pressure @ start of test
   - ~Actual Air Pressure @ end of test
   - ~Temperature @ start of test
   - ~Temperature @ end of test
   - ~Elapsed Time

1

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

REGENT PARK UNIT 7
NATURAL GAS DISTRIBUTION PLAN

DATE
03/11/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/10/2025 - ADD EXCESS FLOW VALVE NOTE/AS-BUILT NOTES & STREET NAME CHANGE
2.
3.
4.
5.
6.
7.
8.
9.

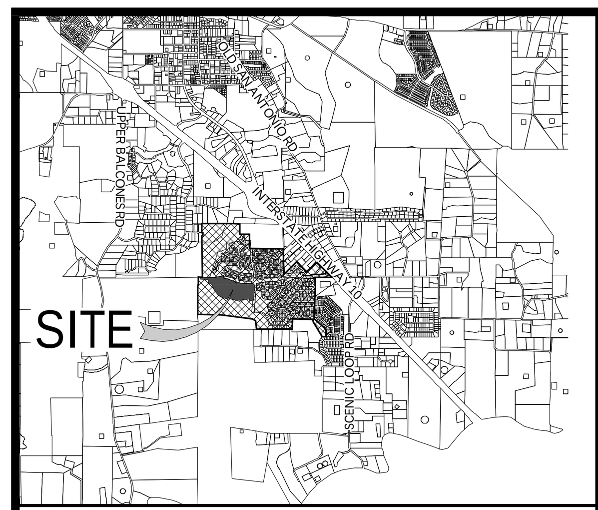
STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/28/2025
CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C39

1 OF 3

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.

LEGEND

UNIT BOUNDARY	
PROPOSED GAS MAIN	2"G
EXISTING GAS MAIN	EX. 2"G
PROPOSED GAS SERVICE	G
EXISTING SANITARY SEWER	EX. 8"SS
PROPOSED SANITARY SEWER	8"SS
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	EX. 8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
EXISTING UTILITY & LANDSCAPING EASEMENT	EX. 10' UTILITY & L.S.
PROPOSED UTILITY & LANDSCAPING EASEMENT	10' UTILITY & L.S.

Notes
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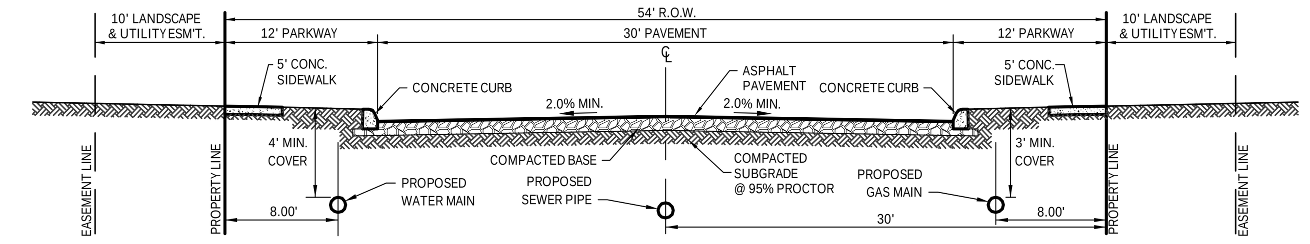
   - ~Temperature @ start of test
   - ~Temperature @ end of test
   - ~Elapsed Time

1

SCALE: 1"=100'
0 100 200



LOCAL RESIDENTIAL STREET CROSS SECTION (54' R.O.W.)
N.T.S.

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
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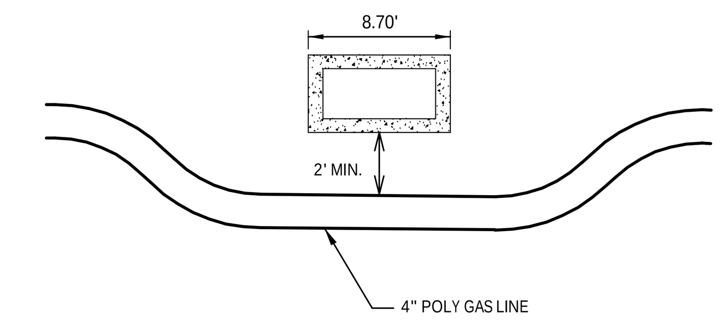
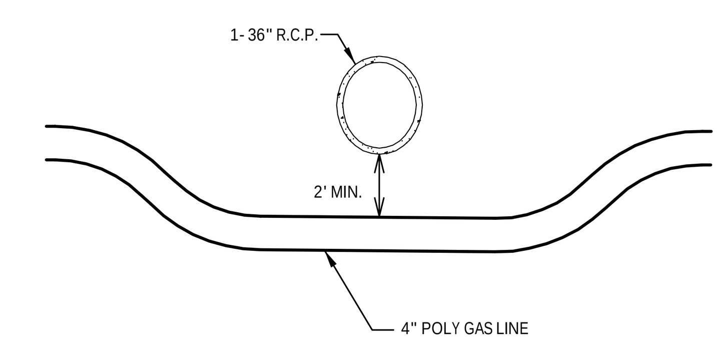


DRAIN 'A7' / GAS CROSSING ~ DETAIL 2
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)



DRAIN 'E7' / GAS CROSSING ~ DETAIL 3
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

UTILITY GENERAL NOTES

1.) ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL CONFORM TO ALL APPLICABLE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THE PROJECT.

2.) ALL GAS DISTRIBUTION LINES SHALL BE YELLOW DR-11 POLYETHYLENE PIPE MEETING ASTM D3350, BY PERFORMANCE PIPE, DRISCOPLEX 6500 WITH NO SUBSTITUTIONS.

3.) ALL MAINS SHALL BE CLEAR OF ALL FOREIGN MATERIAL BLOWN WITH DRY COMPRESSED AIR AND PRESSURED TESTED AS PER THE CITY OF BOERNE'S STANDARD SPECIFICATIONS.

4.) FOR PURPOSES OF RECORD DRAWINGS FOR THE CITY OF BOERNE, THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS, TAPS, AND LENGTH OF SERVICE CONNECTIONS.

5.) THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.

6.) ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT THEIR EXPENSE.

7.) FINAL CONNECTION TO THE EXISTING GAS MAIN SHALL NOT BE MADE UNTIL THE MAIN HAS BEEN PRESSURE TESTED AND APPROVED FOR CONNECTION BY THE CITY OF BOERNE.

8.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.

9.) ALL ITEMS NOT SPECIFICALLY CALLED FOR ON THE PLANS, OR IN THE SPECIFICATIONS, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITY OR IMPROVEMENT, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS WILL BE MADE FOR THESE ITEMS.

10.) DEPTH OF BURY FOR ALL GAS PIPING SHALL BE A MINIMUM OF 3' UNLESS OTHERWISE NOTED OR APPROVED BY THE CITY OF BOERNE.

11.) CONTRACTOR TO GRADE SITE TO WITHIN +/- 0.10' BEFORE THE INSTALLATION OF UTILITIES TO ENSURE PROPER COVER IS ACHIEVED.

12.) CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT.

13.) THE CONTRACTOR SHALL NOTIFY THE GOVERNMENTAL, AND/OR UTILITY COMPANIES REGARDING THE LOCATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION.

14.) THE CONTRACTOR SHALL EXCAVATE AROUND EXISTING UTILITIES WHICH INTERSECT THE PROPOSED ALIGNMENT OF THE SERVICES AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS PRIOR TO ANY CONSTRUCTION IN THE AREA.

15.) ALL DISTURBED AREAS WITHIN EASEMENTS AND TxDOT RIGHT-OF-WAY SHALL BE HYDRO-MULCHED IN ACCORDANCE WITH THE CITY OF BOERNE'S SUBDIVISION ORDINANCE AND TxDOT SPECIFICATIONS.

16.) UTILITY TRENCH COMPACTION: ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET RIGHT-OF-WAY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED EIGHT INCHES (8") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR ASTM 1557 AS SPECIFIED AND DESCRIBED IN ACCORDANCE WITH THE CITY OF BOERNE'S PROJECT SPECIFICATION - SECTION 02221.

17.) ALL TRAFFIC CONTROL REQUIRED FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH TxDOT REQUIREMENTS AND MEET THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. (M.U.T.C.D.)

18.) CONTRACTOR SHALL COORDINATE WITH TxDOT FOR ANY STREET CLOSURES OR TRAFFIC CONTROL MEASURES FOR INTERSTATE HIGHWAY 10, IF NECESSARY.

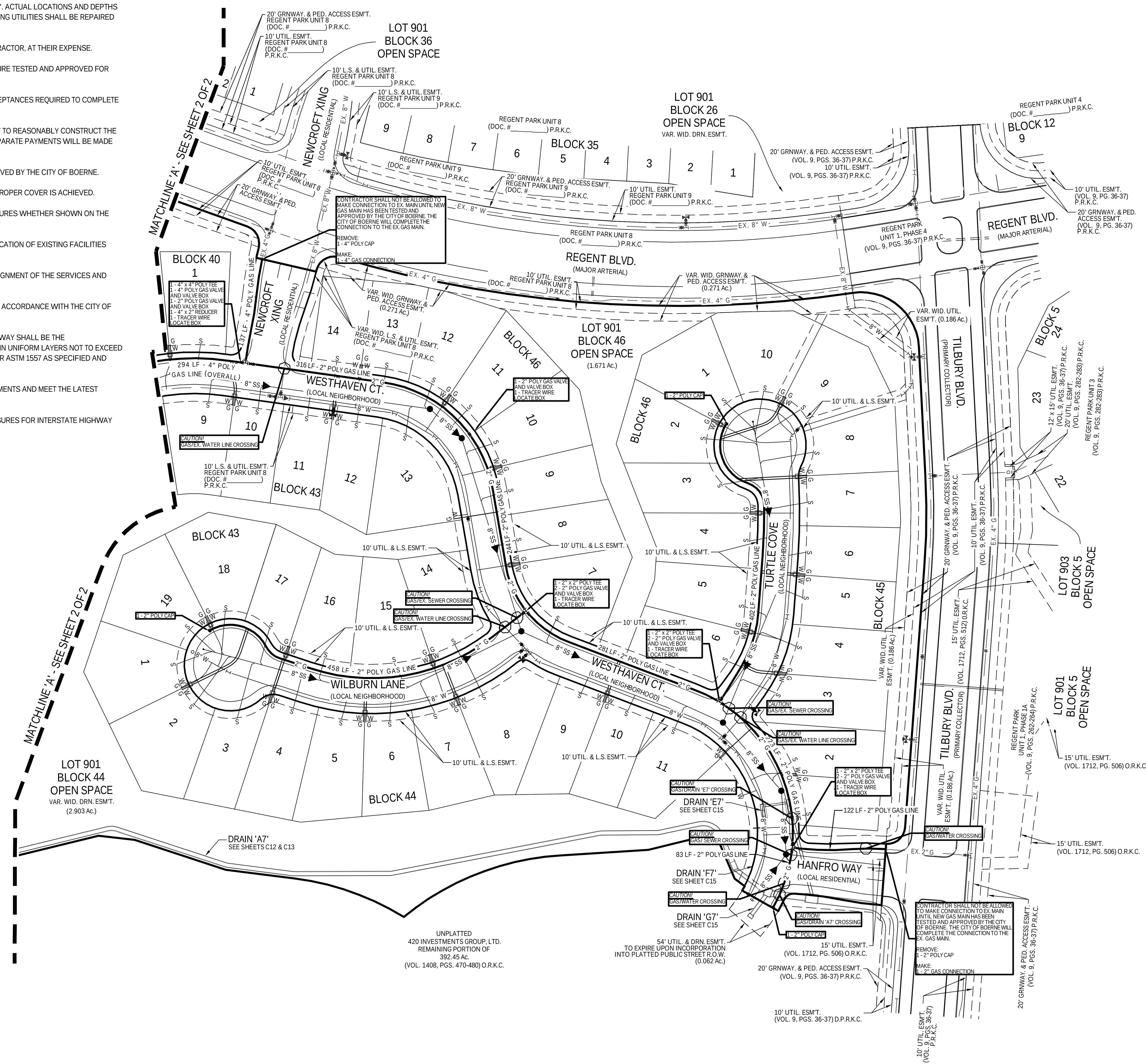
TRENCH EXCAVATION SAFETY PROTECTION

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.

CAUTION!!

EXISTING UTILITIES ARE 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.

NOTE:
FOR PAVEMENT DESIGN SECTION SEE GEOTECHNICAL ENGINEERING REPORT



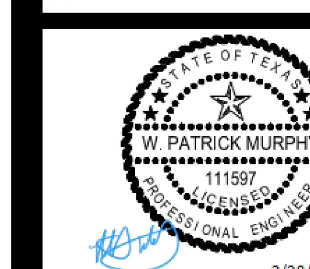
CUDEENGINEERS.COM

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

REGENT PARK UNIT 7
NATURAL GAS DISTRIBUTION PLAN

DATE	02/24/2025
PROJECT NO.	02133.230
DRAWN BY	MW/RM/JF
CHECKED BY	WPM

REVISIONS
1. 02/10/2025 - ADD EXCESS FLOW VALVE/AS-BUILT NOTES - REVISED WESTHAVEN CT. ALIGNMENT
2.
3.
4.
5.
6.
7.
8.
9.



3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C40

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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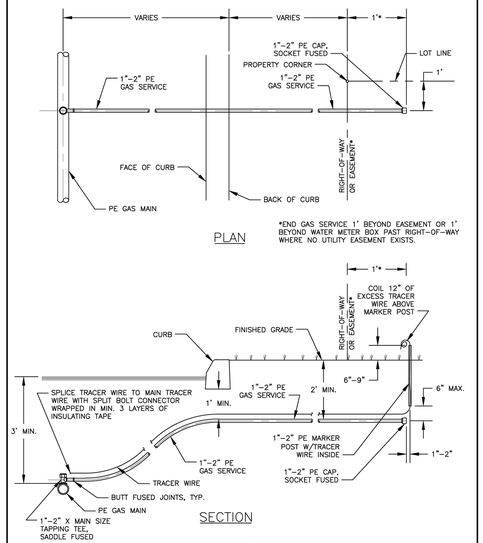

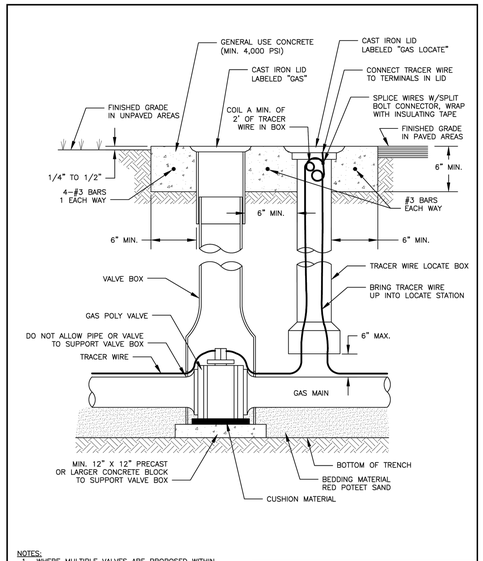

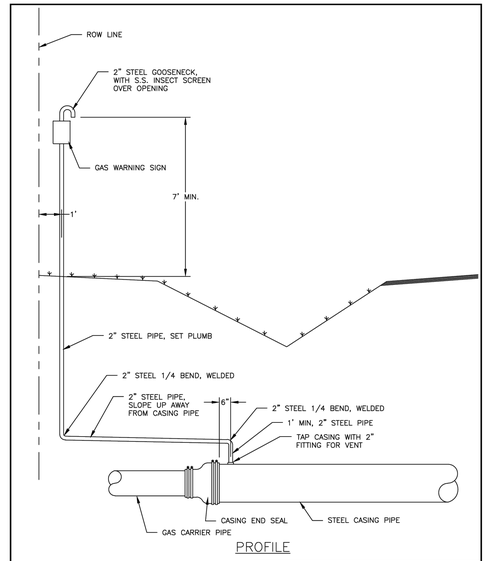

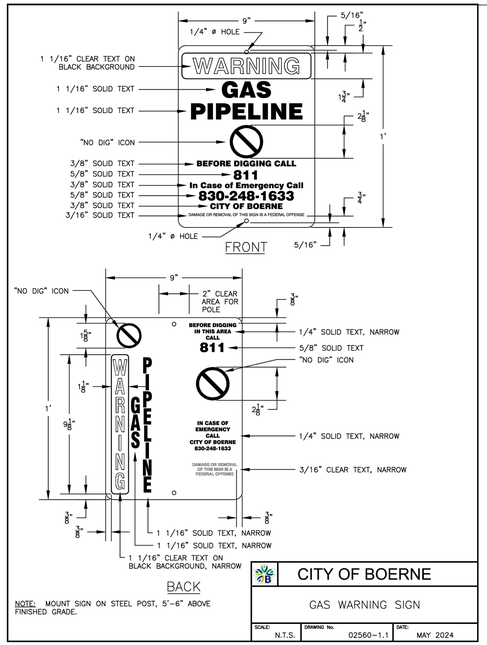

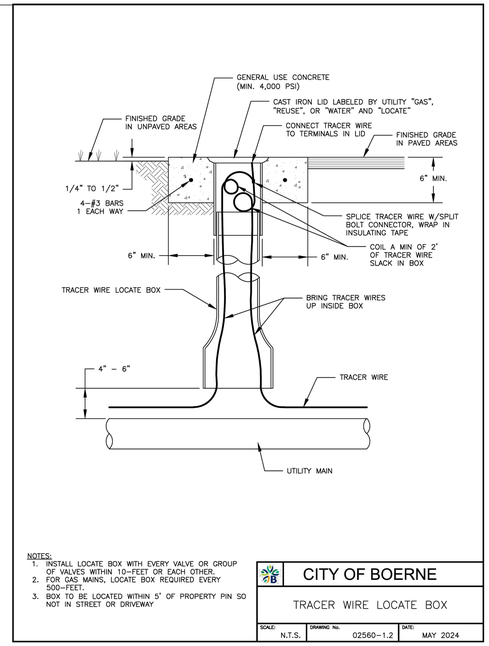

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REGENT PARK UNIT 7

CITY OF BOERNE - NATURAL GAS DISRIBUTION DETAILS

DATE
02/17/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 09/27/2024 - UPDATE TO CURRENT CoB DETAILS
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C41

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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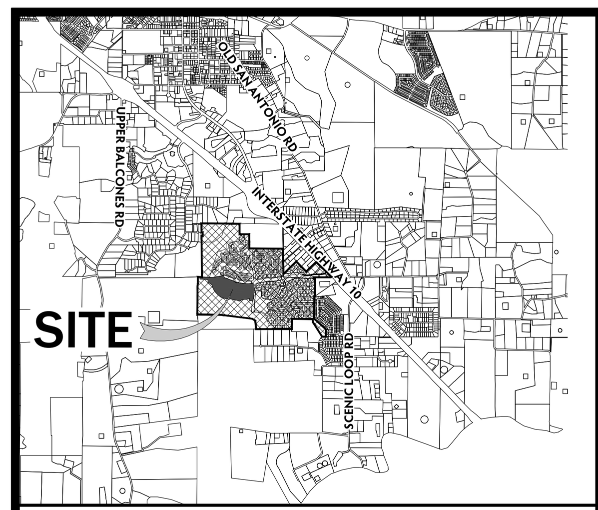


LOCATION MAP N.T.S.

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

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 NO STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.

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

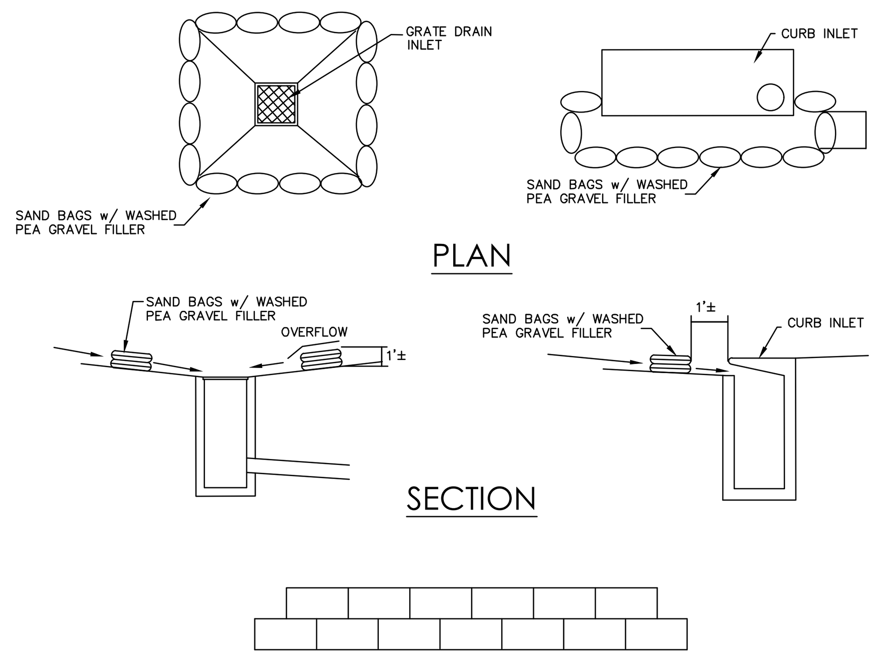
6. THE CITY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

7. STORMWATER MANAGEMENT & DETENTION FACILITIES SHALL BE PROVIDED PRIOR TO SITE CONSTRUCTION OR CLEARING.

8. ALL SWPPP FACILITIES SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL 85% REVEGETATION IS OBTAINED.

9. 85% REVEGETATION MUST BE ESTABLISHED FOR SOIL DISTURBANCES WITHIN RIGHT-OF-WAY AND EASEMENTS PRIOR TO FINAL ACCEPTANCE BY THE CITY OF BOERNE.

△1



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 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.

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

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION.
2. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.
3. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.
4. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE. ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

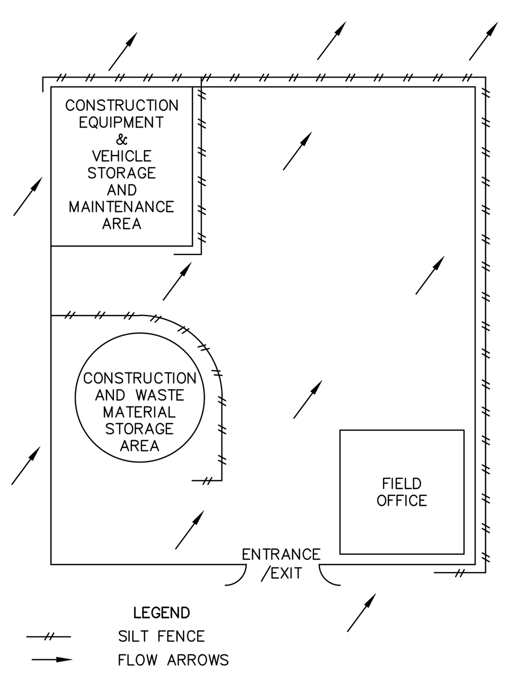
DESIGNATED AND QUALIFIED PERSON(S) SHALL INSPECT POLLUTION CONTROL MEASURES EVERY SEVEN DAYS AND WITHIN 24 HOURS AFTER A STORM EVENT GREATER THAN 0.5 INCHES OF RAINFALL. AN INSPECTION REPORT THAT SUMMARIZES THE SCOPE OF THE INSPECTION, NAMES AND QUALIFICATIONS OF PERSONNEL CONDUCTING THE INSPECTION, DATE OF THE INSPECTION, MAJOR OBSERVATIONS, AND ACTIONS TAKEN AS A RESULT OF THE INSPECTION SHALL BE RECORDED AND MAINTAINED AS PART OF STORM WATER TPDES DATA FOR A PERIOD OF THREE YEARS AFTER THE DATE O THE INSPECTION. A COPY OF THE INSPECTION REPORT FORM IS PROVIDED IN THIS STORM WATER POLLUTION PREVENTION PLAN.

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS, SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP), (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

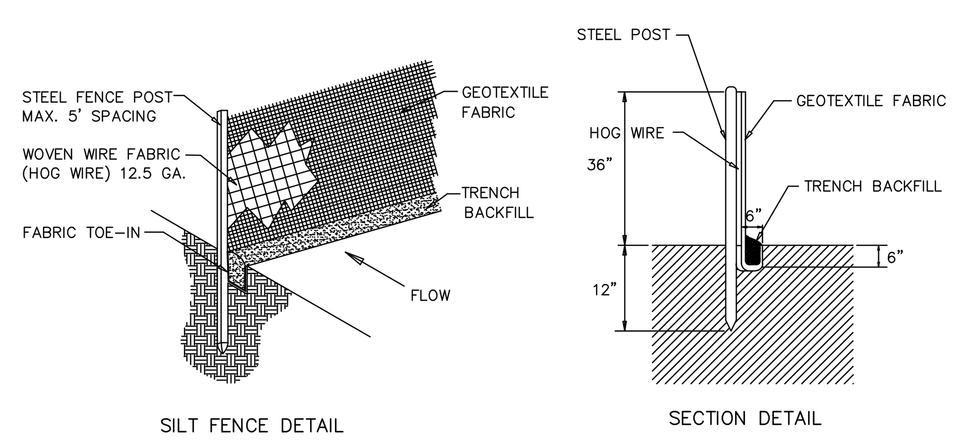
LEGEND

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

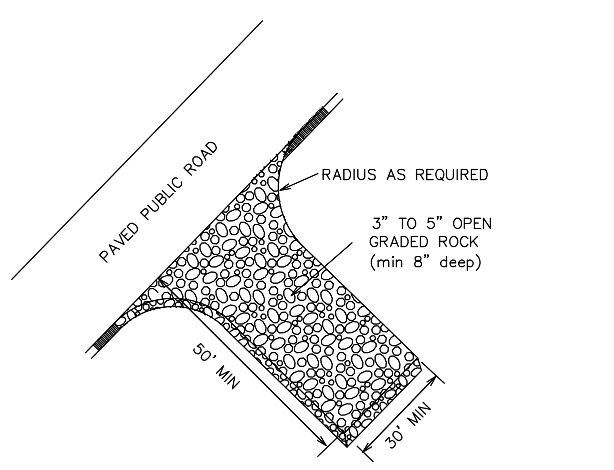
SCALE: 1"=100'
0 100 200



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

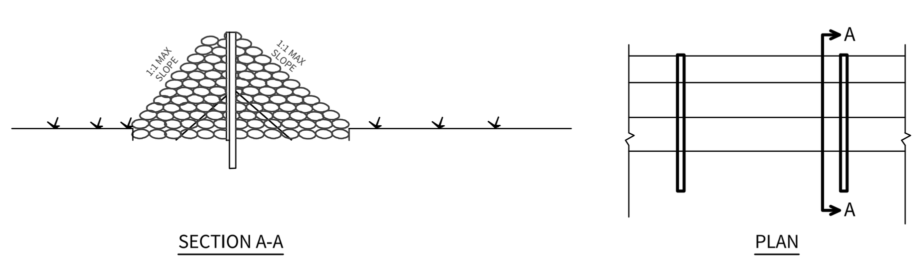


4 STANDARD SILT FENCE
N.T.S.



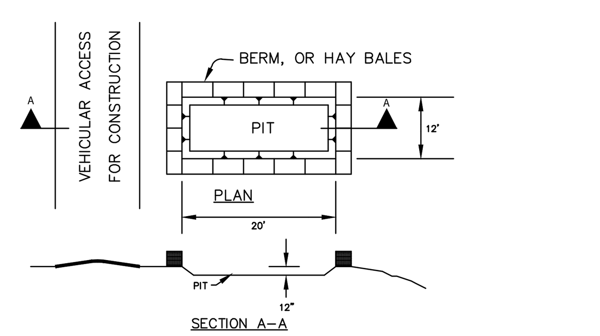
STABILIZED CONSTRUCTION EXIT NOTES:
1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL 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.



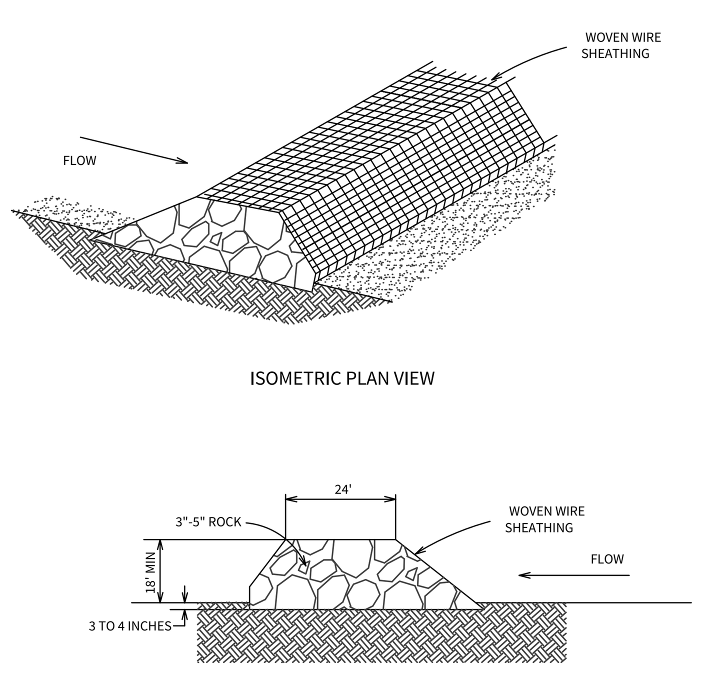
General Notes
1. The rock berm shall be inspected weekly or after each rain and the stone shall be replaced when the structure ceases to function as intended due to silt accumulation, washout, etc.
2. When silt reaches a depth of 12", the silt shall be removed and disposed of at an approved site.

ROCK BERM W/ SILT FENCE DETAIL
N.T.S.

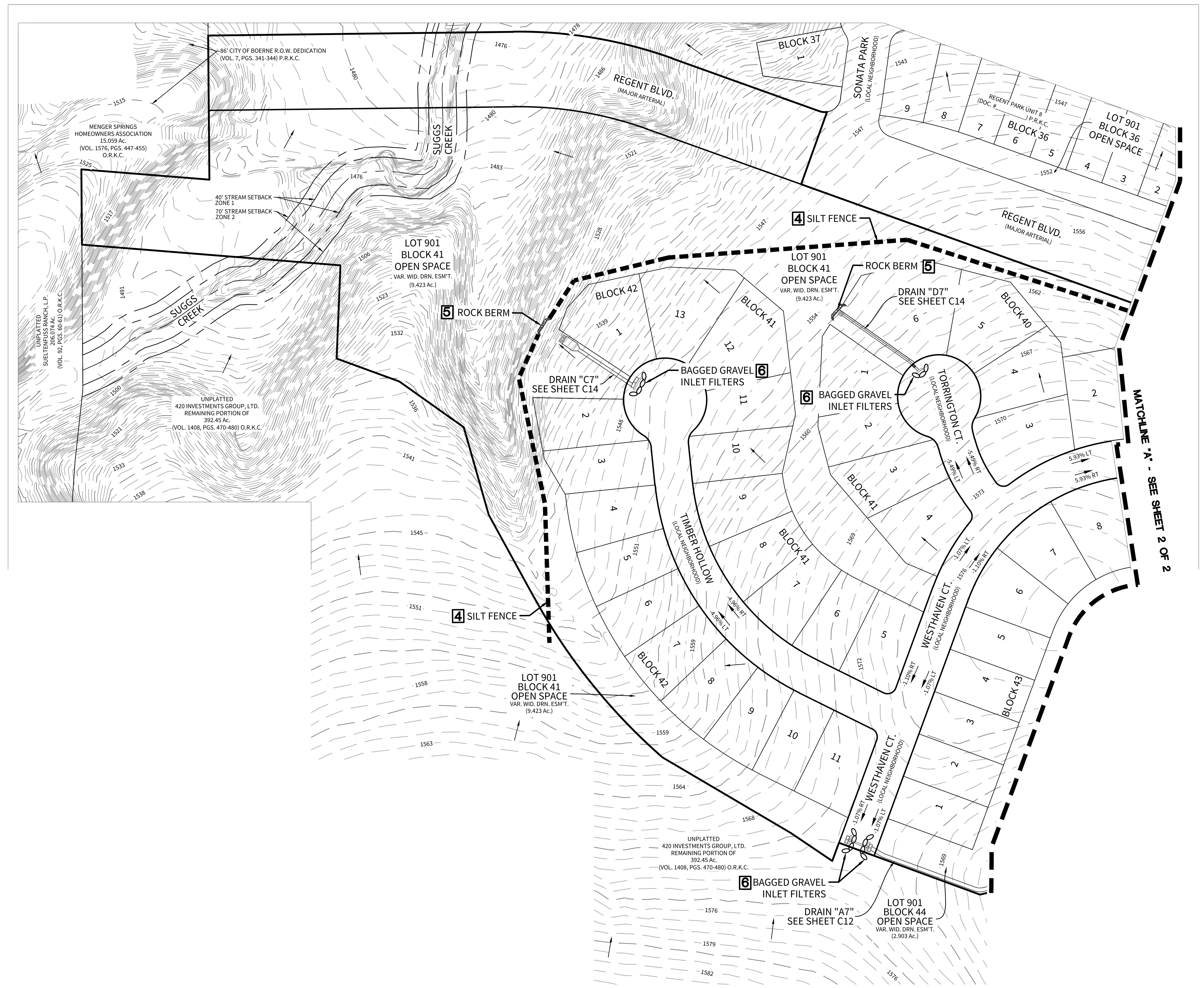


GENERAL NOTES:
- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.
- Washout pit shall be located in an area easily accessible to construction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

3 CONCRETE TRUCK WASHOUT PIT
N.T.S.



5 ROCK BERM
N.T.S.



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REGENT PARK UNIT 7

STORM WATER POLLUTION PREVENTION PLAN

DATE
03/05/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/13/2025 - ADD REVEGETATION NOTES
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C42

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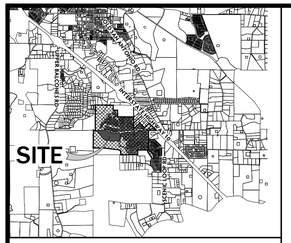


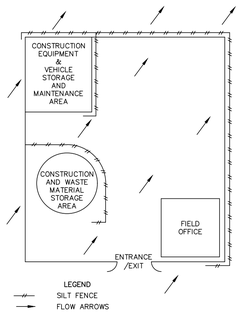
LOCATION MAP N.T.S.

DEVELOPER:
TENOTEX DEVELOPMENT CO., INC.
CONTACT PERSON: ISRAEL FOGIEL
10003 NW MILITARY, STE. 2201
SAN ANTONIO, TX 78231
TEL: (210) 344-9200
FAX: (210) 344-3137

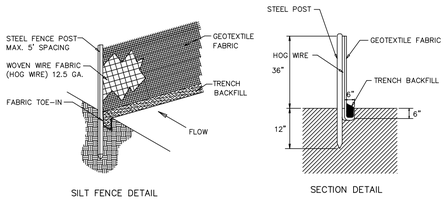
NOTE:

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 NO STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.
5. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
6. THE CITY 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. STORMWATER MANAGEMENT & DETENTION FACILITIES SHALL BE PROVIDED PRIOR TO SITE CONSTRUCTION OR CLEARING.
8. ALL SWPPP FACILITIES SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL 85% REVEGETATION IS OBTAINED.
9. 85% REVEGETATION MUST BE ESTABLISHED FOR SOIL DISTURBANCES WITHIN RIGHT-OF-WAY AND EASEMENTS PRIOR TO FINAL ACCEPTANCE BY THE CITY OF BOERNE.

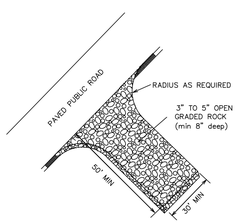
1



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



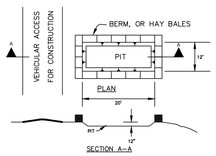
4 STANDARD SILT FENCE
N.T.S.



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.

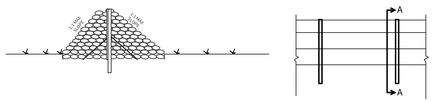
2 TEMPORARY CONSTRUCTION ENTRANCE/EXIT
N.T.S.



GENERAL NOTES:

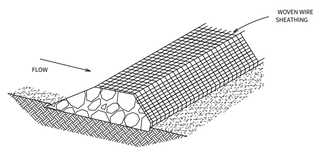
- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.
- Washout pit shall be located in an area easily accessible to construction traffic.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

3 CONCRETE TRUCK WASHOUT PIT
N.T.S.

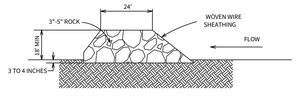


General Notes
1. The rock berm shall be inspected weekly or after each rain and the stone shall be replaced when the structure ceases to function as intended due to silt accumulation, shall be removed, and disposed of at an approved site.
2. When silt reaches a depth of 12", the silt shall be removed and disposed of at an approved site.

ROCK BERM W/ SILT FENCE DETAIL
N.T.S.

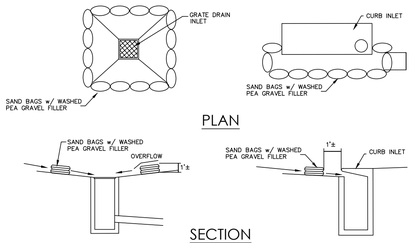


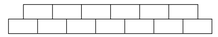
ISOMETRIC PLAN VIEW



SECTION DETAIL

5 ROCK BERM
N.T.S.





ELEVATION

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 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.

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

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION.
2. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.
3. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.
4. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE. ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

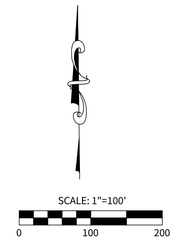
DESIGNATED AND QUALIFIED PERSON(S) SHALL INSPECT POLLUTION CONTROL MEASURES EVERY SEVEN DAYS AND WITHIN 24 HOURS AFTER A STORM EVENT GREATER THAN 0.5 INCHES OF RAINFALL. AN INSPECTION REPORT THAT SUMMARIZES THE SCOPE OF THE INSPECTION, NAMES AND QUALIFICATIONS OF PERSONNEL CONDUCTING THE INSPECTION, DATE OF THE INSPECTION, MAJOR OBSERVATIONS, AND ACTIONS TAKEN AS A RESULT OF THE INSPECTION SHALL BE RECORDED AND MAINTAINED AS PART OF STORM WATER TPDES DATA FOR A PERIOD OF THREE YEARS AFTER THE DATE O THE INSPECTION. A COPY OF THE INSPECTION REPORT FORM IS PROVIDED IN THIS STORM WATER POLLUTION PREVENTION PLAN.

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS, SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP), (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

85% REVEGETATION MUST BE ESTABLISHED FOR SOIL DISTURBANCES WITHIN RIGHT-OF-WAY AND EASEMENTS PRIOR TO FINAL ACCEPTANCE BY THE CITY OF BOERNE.

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



CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

REGENT PARK UNIT 7

STORM WATER POLLUTION PREVENTION PLAN

DATE
02/24/2025

PROJECT NO.
02133.230

DRAWN BY
MW/RM/JF

CHECKED BY
WPM

REVISIONS
1. 02/13/2025 - ADD REVEGETATION NOTES
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
W. PATRICK MURPHY
111597
LICENSED
PROFESSIONAL ENGINEER
3/28/2025

CUDE ENGINEERS
TBPE No. 455

PLAT NO.
N/A

C43

2 OF 2

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.

© CUDE ENGINEERS 2025 | 02133.230 | C:\Drawings\02133.230 SWPPP.dwg | 02/24/2025 8:30am | mwurphy

BANDERA ELECTRIC COOPERATIVE, INC.

REGENT PARK UNIT 7 DEVELOPMENT

BEC

GENERAL DRAWINGS

	E0	PROJECT COVER SHEET & DRAWING LIST
	E1	UNDERGROUND ELECTRICAL LAYOUT (SHEET 1 OF 2)
	E2	UNDERGROUND ELECTRICAL LAYOUT (SHEET 2 OF 2)
1	E3	SECONDARY PEDESTAL DETAILS
	E4	TRENCH DETAILS
	E5	CONDUIT CONFIGURATION DETAILS
	E6	THREE PHASE SECTIONALIZING CABINET DETAILS (TYPE 1)
	E7	SINGLE PHASE SECTIONALIZING CABINET DETAILS
	E8	SINGLE PHASE TRANSFORMER DETAILS
	E9	TYPICAL EQUIPMENT ORIENTATION AND SINGLE PHASE RISER DETAILS
	E10	THREE PHASE RISER DETAILS

REV LIST:

1 REVISION 1: E0, E1, E2, E10

2 REVISION 2: E0, E1, E2, E3

THIS DRAWING IS CERTIFIED TO BE CORRECT FOR THE NEW FACILITIES SHOWN ONLY. INFORMATION CONCERNING EXISTING FACILITIES PROVIDED BY OTHERS HAS NOT BEEN VERIFIED.

ISSUED: 03-13-24
FOR CONSTRUCTION

STATE OF TEXAS
CHRISTOPHER T. HARPER
106036
LICENSED
PROFESSIONAL ENGINEER

NO	DATE	REVISION	BY	CHK	APPD	NO	DATE	REVISION	BY	CHK	APPD
2	03-10-24	REVISION 2	PS	CTH	CTH						
1	05-01-24	REVISION 1	GLS	CTH	CTH						

	DATE	BY
DRWN	02-24-22	GLS
CHK	03-13-24	CTH
APPD	03-13-24	CTH

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TEXAS REGISTRATION NUMBER F-1594

SCHNEIDER ENGINEERING

BANDERA ELECTRIC COOPERATIVE

REGENT PARK UNIT 7 DEVELOPMENT

PROJECT COVER SHEET AND DRAWING LIST

SCALE FOR 34 x 22 DWG: N.T.S.

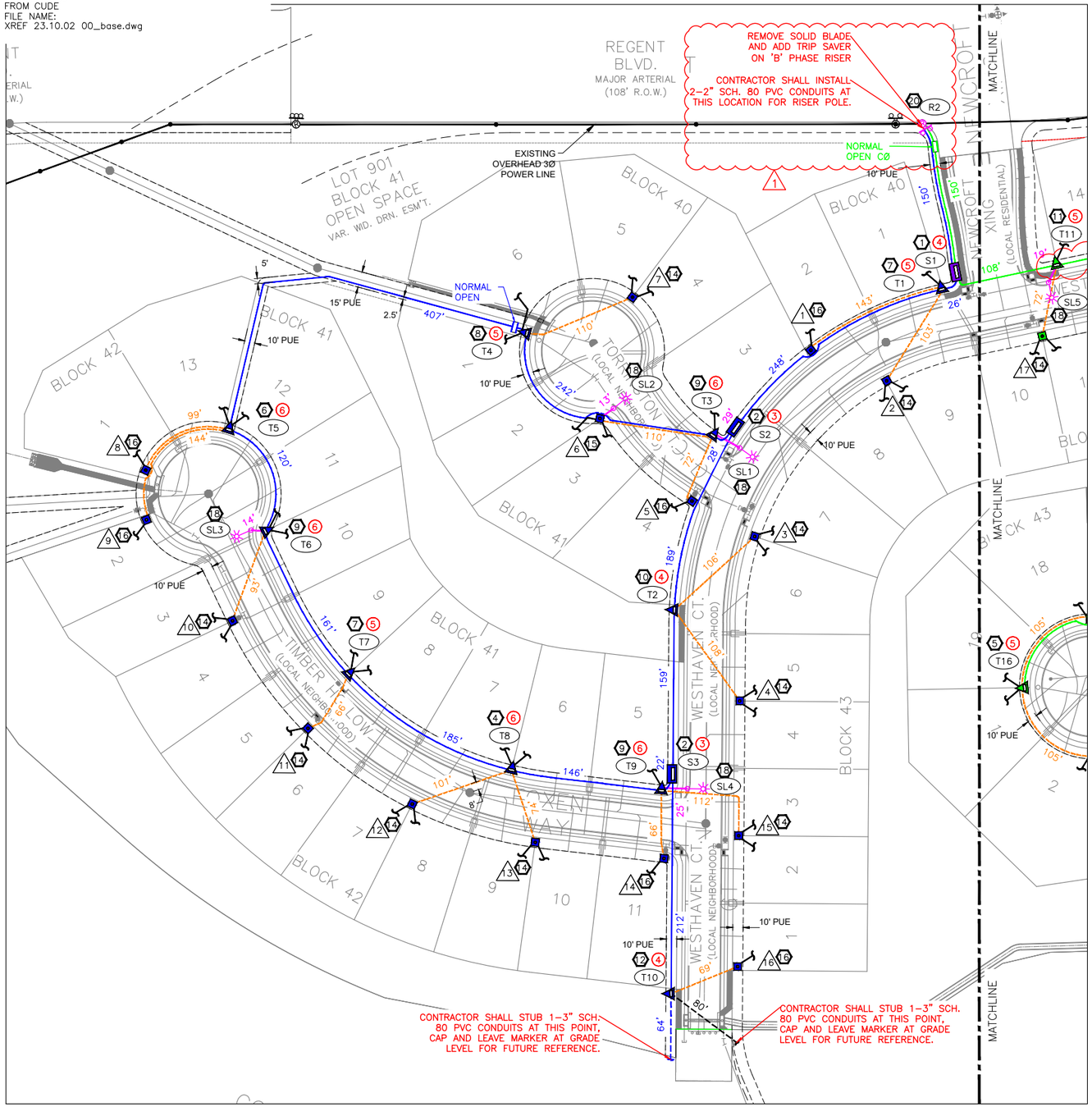
DRAWING NO. E0

21BEC3207

SYSTEM VOLTAGE: 7.2 / 12.47 kV

03/13/2024 9:44 AM * psalinas * N:\BEC\21BEC3207 Regent Park Unit 7 UG, WO 474026\Drawings\Plan View\E0-Cover.dwg

REFERENCED INFORMATION IN DRAWING WAS RECEIVED ON 10-02-2023
FROM CUDE
FILE NAME:
XREF 23.10.02 00_base.dwg



GENERAL NOTES:

1. ALL SECONDARY CONDUIT SHALL BE SCHEDULE 80 3" PVC.
2. ALL PRIMARY CONDUIT SHALL BE SCHEDULE 80 2" PVC.
3. CONSTRUCTION SHALL TAG AND CODE CABLE IN THE FIELD TO IDENTIFY PHASES.
4. CONTRACTOR TO STUB UP SPARE TEL. AND CATV NEXT TO METER PEDS AS REQUIRED BY RESPECTIVE UTILITIES.
5. ALL PRIMARY CABLE SHALL BE #1/0 AL, 25 kV OR EQUAL.
6. ALL PAD-MOUNTED ENCLOSURES INCLUDING TRANSFORMERS, SHALL BE GROUNDED IN SUCH A MANNER THAT TWO SEPARATE CONNECTIONS EXIST BETWEEN THE ENCLOSURE AND THE GROUND ROD(S). IF METER PEDESTALS, TRANSFORMERS, AND SECTIONALIZING BOXES ARE WITHIN 10 FEET OF EACH OTHER A #2 CU. SOLID BARE WIRE SHALL TIE ALL GROUND RODS TOGETHER.
7. SECTIONALIZING BOXES, TRANSFORMERS, EASEMENTS, CABLE, AND WIRE ARE NOT SHOWN TO SCALE IN THIS DRAWING.
8. EASEMENTS TO BE DEDICATED BY DEVELOPER TO COVER ALL ELECTRIC FACILITIES.
9. ALL ELECTRIC STREET CROSSINGS AND SERVICE EXTENSION TRENCHES TO INCLUDE TEL. & CATV.
10. IF ANY ELECTRIC FACILITIES ARE SUSCEPTIBLE TO DAMAGE FROM VEHICULAR TRAFFIC, BOLLARDS SHALL BE PLACED AROUND THE EQUIPMENT TO PREVENT DAMAGE.
11. FOR ANY PAD LOCATED IN DRAINAGE EASEMENT OR EROSION PRONE AREAS, CONTRACTOR SHALL BUILD UP PAD SITE AND REINFORCE WITH CONCRETE TO PREVENT EROSION.
12. TRANSFORMER AND SECONDARY SERVICE SIZE EVALUATION SHOULD BE PERFORMED AT THE TIME OF EACH SERVICE REQUEST.
13. 3" SECONDARY CONDUIT STUBBED OUT OF SECONDARY EQUIPMENT, TOWARDS THE LOTS, SHALL BE 5' INTO EACH INDIVIDUAL LOT, CAPPED, AND MARKED AT GRADE LEVEL FOR FUTURE SERVICE.
14. CONTRACTOR NOT TO EXCEED 360 DEGREES IN BENDS PER CONDUIT SEGMENT.
15. ELECTRICAL FACILITIES SHALL BE INSTALLED A MINIMUM OF 4 FEET FROM FIRE HYDRANTS.

1 ADD: S1
1-3ø SECTIONALIZING CABINET W/ PAD (UM4-200, UM1-2J)
2-3 POINT JUNCTIONS (UM6-21)
4-L.B. ELBOWS (1/0) (UM6-1/0)
2-INSULATED CAPS (UM6-10)
2-FAULT INDICATORS (UM6-4)
4-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-3ø GROUNDING ASSEMBLY (UM48-2)

2 ADD: S2, S3, S4, S5
1-1ø SECTIONALIZING CABINET W/ PAD (UM3-14, UM1-5J)
1-4 POINT JUNCTION (UM6-22)
3-L.B. ELBOWS (1/0) (UM6-1/0)
1-INSULATED CAP (UM6-10)
2-FAULT INDICATORS (UM6-4)
3-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-1ø GROUNDING ASSEMBLY (UM48-1)

3 ADD: S6
1-3ø SECTIONALIZING CABINET W/ PAD (UM4-200, UM1-2J)
3-3 POINT JUNCTIONS (UM6-21)
4-L.B. ELBOWS (1/0) (UM6-1/0)
2-L.A. ELBOWS (UM6-34) (Aø, Bø)
3-INSULATED CAPS (UM6-10)
1-FAULT INDICATOR (UM6-4)
7-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-3ø GROUNDING ASSEMBLY (UM48-2)

4 ADD: T8, T15, T18, T19
1-1ø TRANSFORMER 100 KVA W/ PAD (UG7-100, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
4-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

5 ADD: T16
1-1ø TRANSFORMER 100 KVA W/ PAD (UG7-100, UM1-5C)
1-L.B. ELBOW (1/0) (UM6-1/0)
1-L.A. ELBOW (UM6-34)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2)
4-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

6 ADD: T5
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
4-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

7 ADD: T1, T7, T12, T13, T14
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

8 ADD: T4 (NORMAL OPEN)
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-L.A. ELBOW (UM6-34)
1-PARKING STAND ARRESTER (UM6-37)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

9 ADD: T3, T6, T9
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

2 ADD: S7
1-1ø SECTIONALIZING CABINET W/ PAD (UM3-14, UM1-5J)
1-4 POINT JUNCTION (UM6-21)
2-L.B. ELBOWS (1/0) (UM6-1/0)
2-INSULATED CAPS (UM6-10)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-1ø GROUNDING ASSEMBLY (UM48-1)

10 ADD: T2
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

11 ADD: T11, T17
1-1ø TRANSFORMER 50 KVA W/ PAD (UG7-50, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

12 ADD: T10
1-1ø TRANSFORMER 37.5 KVA W/ PAD (UG7-37.5, UM1-5C)
1-L.B. ELBOW (1/0) (UM6-1/0)
1-L.A. ELBOW (UM6-34)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

13 ADD: T20
1-1ø TRANSFORMER 50 KVA W/ PAD (UG7-50, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

14 ADD: 2, 3, 4, 7, 10, 11, 12, 13, 15, 17, 18, 19, 20, 22, 23, 24, 26, 28, 30, 31
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)

15 ADD: 6, 25, 29
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")

16 ADD: 1, 5, 8, 9, 14, 16
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)

17 ADD: 21, 27
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")

18 ADD: SL1, SL2, SL3, SL4, SL5, SL6, SL7, SL8, SL9, SL10
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")
1-ST. LT. STANDARD
1-ST. LT. LAMP
1-ST. LT. BALLAST

19 ADD: R1 (PHASE C) (NORMAL OPEN)
1-UA1
1-200A SOLID BLADE DISCONNECT SWITCH

20 ADD: R2 (PHASES B & C)
2-UA1
1-200A SOLID BLADE DISCONNECT SWITCHES
1-TRIP SAVER (B PHASE)

21 ADD: R3 (PHASES ABC)
1-UC1 (w/ TRIP SAVERS)

22 ADD: VFI (OMIT)
1-3ø VACUUM FAULT INTERRUPTER W/PAD (G&W PVI20-286-12-4F)
6-L.B. ELBOWS (UM6-1/0)
6-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-3ø GROUNDING ASSEMBLY (UM48-2)

VFI SETTINGS:
VFI HAS 200 AMP BUSHINGS AND IS NON-GANG OPERATED, THE RECOMMENDED SETTINGS FOR THE G&W VFI, ASSUMING A 500:1 CT WILL BE USED, ARE AS FOLLOWS: MINIMUM TRIP - 175 AMP USING THE CO-11 RELAY #1 CURVE WHICH IS ILLUSTRATED BELOW.

UNIT 7 PHASE COUNTS

SERVICE PHASING	LOTS
AØ SERVICE	–
BØ SERVICE	39
CØ SERVICE	45
TOTAL	84

LEGEND

AØ BØ CØ	PRIMARY: 1/0 AL W/ FULL CONCENTRIC JACKETED NEUTRAL, 25 kV, XLPE, 260 MIL INSUL. IN 2" MIN. PVC SCH. 80, ELECT. CONDUIT
3Ø 200 AMP	PRIMARY: 1/0 AL W/ FULL CONCENTRIC JACKETED NEUTRAL, 25 kV, XLPE, 260 MIL INSUL. IN 2" MIN. PVC SCH. 80, ELECT. CONDUIT
100' – 3Ø CONDUIT POINT TO POINT DISTANCE 100' – 1Ø, PHASE A CONDUIT POINT TO POINT DISTANCE 100' – 1Ø, PHASE B CONDUIT POINT TO POINT DISTANCE 100' – 1Ø, PHASE C CONDUIT POINT TO POINT DISTANCE	
EXISTING 3Ø OVERHEAD LINE	
VACANT AØ(EMPTY) 2" CONDUIT OR AS SPECIFIED VACANT BØ(EMPTY) 2" CONDUIT OR AS SPECIFIED VACANT CØ(EMPTY) 2" CONDUIT OR AS SPECIFIED EXISTING VACANT (EMPTY) 3" CONDUIT OR AS SPECIFIED	
ELECTRICAL UTILITY EASEMENT	
350 MCM AL, 600V, TRIPLEX IN 3" MIN. PVC SCH 80, ELECT. CONDUIT	
STREET LIGHT CABLE, 600V, #2 COPPER (2EA.) AND #10 CU EQUIP. GRD, INSTALLED IN 1" PVC SCH 80 ELECT. CONDUIT OR AS SPECIFIED	

SYMBOLS

	POLE	RISER	TRANSFORMER
PROPOSED	●	Ⓡ	
EXISTING	●	Ⓡ	
REMOVAL	●	○	

NEW 200A 1Ø SECTIONALIZING BOX — A PHASE | B PHASE | C PHASE
NEW 200A 3Ø SECTIONALIZING BOX
NEW 1Ø TRANSFORMER — A PHASE | B PHASE | C PHASE
EXISTING 1Ø TRANSFORMER — A PHASE | B PHASE | C PHASE
SECONDARY PEDESTAL — A PHASE | B PHASE | C PHASE
STREET LIGHT

LABELS

S#	SECTIONALIZING BOX NO.
T#	TRANSFORMER NO.
R#	RISER NO.
SL#	STREETLIGHT NO.
X	SECONDARY PEDESTAL NO.

THIS DRAWING IS CERTIFIED TO BE CORRECT FOR THE NEW FACILITIES SHOWN ONLY. INFORMATION CONCERNING EXISTING FACILITIES PROVIDED BY OTHERS HAS NOT BEEN VERIFIED.

ISSUED: 03-13-24
FOR CONSTRUCTION

STATE OF TEXAS — CHRISTOPHER T. HARPER — 106036 — LICENSED PROFESSIONAL ENGINEER

NO	DATE	REVISION	BY	CHK	APPD
2	03-10-25	UPDATED EQUIPMENT AND KEYNOTES	PS	CTH	CTH
1	05-01-24	UPDATED EQUIPMENT AND NOTES	GLS	CTH	CTH

	DATE	BY
DRWN	02-24-22	GLS
CHK	03-13-24	CTH
APPD	03-13-24	CTH

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TEXAS REGISTRATION NUMBER F-1594

SCHNEIDER ENGINEERING

BANDERA ELECTRIC COOPERATIVE
REGENT PARK UNIT 7 DEVELOPMENT
UNDERGROUND ELECTRICAL LAYOUT (SHEET 1 OF 2)

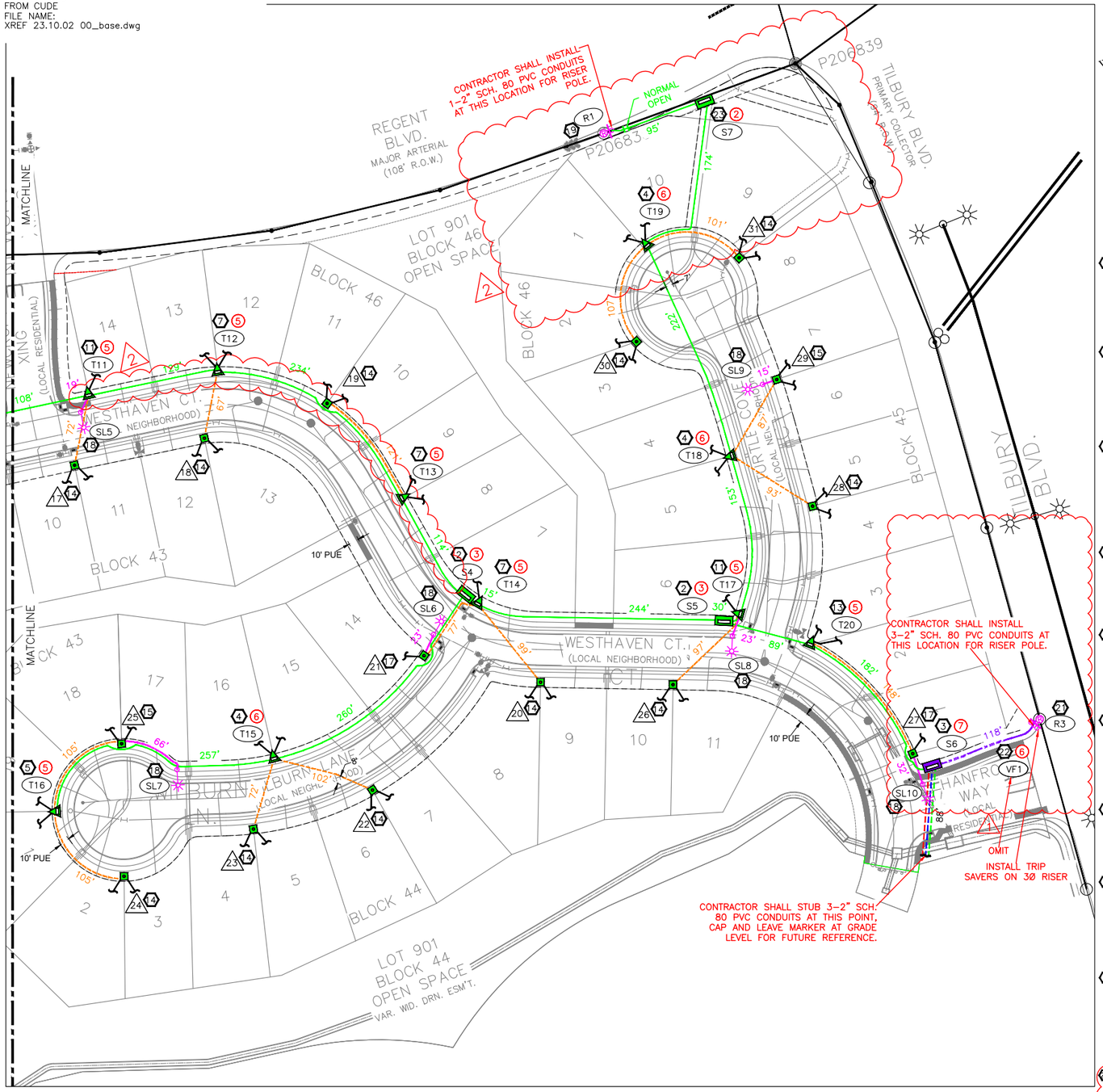
SCALE FOR 34 x 22 DWG 1" = 60'
DRAWING NO. E1

21BEC3207

SYSTEM VOLTAGE: 7.2 / 12.47 kV

03/13/2024 9:44 AM * psalinas * N:\BEC\21BEC3207 Regent Park Unit 7 UG, WO 474026\Drawings\Plan View\E1-E2 - Electrical Plan Unit 7.dwg

REFERENCED INFORMATION IN DRAWING WAS RECEIVED ON 10-02-2023
FROM CUDE
FILE NAME:
XREF 23.10.02 00_base.dwg



GENERAL NOTES:

1. ALL SECONDARY CONDUIT SHALL BE SCHEDULE 80 3" PVC.
2. ALL PRIMARY CONDUIT SHALL BE SCHEDULE 80 2" PVC.
3. CONSTRUCTION SHALL TAG AND CODE CABLE IN THE FIELD TO IDENTIFY PHASES.
4. CONTRACTOR TO STUB UP SPARE TEL. AND CATV NEXT TO METER PEDS AS REQUIRED BY RESPECTIVE UTILITIES.
5. ALL PRIMARY CABLE SHALL BE #1/0 AL, 25 kV OR EQUAL.
6. ALL PAD-MOUNTED ENCLOSURES INCLUDING TRANSFORMERS, SHALL BE GROUNDED IN SUCH A MANNER THAT TWO SEPARATE CONNECTIONS EXIST BETWEEN THE ENCLOSURE AND THE GROUND ROD(S). IF METER PEDESTALS, TRANSFORMERS, AND SECTIONALIZING BOXES ARE WITHIN 10 FEET OF EACH OTHER A #2 CU. SOLID BARE WIRE SHALL TIE ALL GROUND RODS TOGETHER.
7. SECTIONALIZING BOXES, TRANSFORMERS, EASEMENTS, CABLE, AND WIRE ARE NOT SHOWN TO SCALE IN THIS DRAWING.
8. EASEMENTS TO BE DEDICATED BY DEVELOPER TO COVER ALL ELECTRIC FACILITIES.
9. ALL ELECTRIC STREET CROSSINGS AND SERVICE EXTENSION TRENCHES TO INCLUDE TEL. & CATV.
10. IF ANY ELECTRIC FACILITIES ARE SUSCEPTIBLE TO DAMAGE FROM VEHICULAR TRAFFIC, BOLLARDS SHALL BE PLACED AROUND THE EQUIPMENT TO PREVENT DAMAGE.
11. FOR ANY PAD LOCATED IN DRAINAGE EASEMENT OR EROSION PRONE AREAS, CONTRACTOR SHALL BUILD UP PAD SITE AND REINFORCE WITH CONCRETE TO PREVENT EROSION.
12. TRANSFORMER AND SECONDARY SERVICE SIZE EVALUATION SHOULD BE PERFORMED AT THE TIME OF EACH SERVICE REQUEST.
13. 3" SECONDARY CONDUIT STUBBED OUT OF SECONDARY EQUIPMENT, TOWARDS THE LOTS, SHALL BE 5' INTO EACH INDIVIDUAL LOT, CAPPED, AND MARKED AT GRADE LEVEL FOR FUTURE SERVICE.
14. CONTRACTOR NOT TO EXCEED 360 DEGREES IN BENDS PER CONDUIT SEGMENT.
15. ELECTRICAL FACILITIES SHALL BE INSTALLED A MINIMUM OF 4 FEET FROM FIRE HYDRANTS.

(1) ADD: S1
1-3ø SECTIONALIZING CABINET W/ PAD (UM4-200, UM1-2J)
2-3 POINT JUNCTIONS (UM6-21)
4-L.B. ELBOWS (1/0) (UM6-1/0)
2-INSULATED CAPS (UM6-10)
2-FAULT INDICATORS (UM6-4)
6-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-3ø GROUNDING ASSEMBLY (UM48-2)

(2) ADD: S2, S3, S4, S5
1-1ø SECTIONALIZING CABINET W/ PAD (UM3-14, UM1-5J)
1-4 POINT JUNCTION (UM6-22)
3-L.B. ELBOWS (1/0) (UM6-1/0)
1-INSULATED CAP (UM6-10)
2-FAULT INDICATORS (UM6-4)
3-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(3) ADD: S6
1-3ø SECTIONALIZING CABINET W/ PAD (UM4-200, UM1-2J)
3-3 POINT JUNCTIONS (UM6-21)
4-L.B. ELBOWS (1/0) (UM6-1/0)
2-L.A. ELBOWS (UM6-34) (Aø, Bø)
3-INSULATED CAPS (UM6-10)
1-FAULT INDICATOR (UM6-4)
7-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-3ø GROUNDING ASSEMBLY (UM48-2)

(4) ADD: T8, T15, T18, T19
1-1ø TRANSFORMER 100 KVA W/ PAD (UG7-100, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
4-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(5) ADD: T16
1-1ø TRANSFORMER 100 KVA W/ PAD (UG7-100, UM1-5C)
1-L.B. ELBOW (1/0) (UM6-1/0)
1-L.A. ELBOW (UM6-34)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2)
4-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(6) ADD: T5
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
4-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(7) ADD: T1, T7, T12, T13, T14
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(8) ADD: T4 (NORMAL OPEN)
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-L.A. ELBOW (UM6-34)
1-PARKING STAND ARRESTER (UM6-37)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(9) ADD: T3, T6, T9
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(10) ADD: T2
1-1ø TRANSFORMER 75 KVA W/ PAD (UG7-75, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(11) ADD: T11, T17
1-1ø TRANSFORMER 50 KVA W/ PAD (UG7-50, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(12) ADD: T10
1-1ø TRANSFORMER 37.5 KVA W/ PAD (UG7-37.5, UM1-5C)
1-L.B. ELBOW (1/0) (UM6-1/0)
1-L.A. ELBOW (UM6-34)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(13) ADD: T20
1-1ø TRANSFORMER 50 KVA W/ PAD (UG7-50, UM1-5C)
2-L.B. ELBOWS (1/0) (UM6-1/0)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-1ø GROUNDING ASSEMBLY (UM48-1)

(14) ADD: 2, 3, 4, 7, 10, 11, 12, 13, 15, 17, 18, 19, 20, 22, 23, 24, 26, 28, 30, 31
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)

(15) ADD: 6, 25, 29
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
3-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")

(16) ADD: 1, 5, 8, 9, 14, 16
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)

(17) ADD: 21, 27
1-SECONDARY PEDESTAL (UK5)
3-SECONDARY CONNECTOR BLOCKS (UJ1)
2-3" 90° SWEEPS SCH 80 PVC (UM50-SW-3)
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")

(18) ADD: SL1, SL2, SL3, SL4, SL5, SL6, SL7, SL8, SL9, SL10
1-2" 90° SWEEP SCH 80 PVC (UM50-SW-2-24")
1-ST. LT. STANDARD
1-ST. LT. LAMP
1-ST. LT. BALLAST

(19) ADD: R1 (PHASE C) (NORMAL OPEN)
1-UA1
1-200A SOLID BLADE DISCONNECT SWITCH

(20) ADD: R2 (PHASES B & C)
2-UA1
1-200A SOLID BLADE DISCONNECT SWITCHES
1-TRIP SAVER (B PHASE)

(21) ADD: R3 (PHASES ABC)
1-UC1 (w/ TRIP SAVERS)

(22) ADD: VFI (OMIT)
1-3ø VACUUM FAULT INTERRUPTER W/PAD (G&W PVI20-286-12-4F)
6-L.B. ELBOWS (UM6-1/0)
6-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-3ø GROUNDING ASSEMBLY (UM48-2)

VFI SETTINGS:
VFI HAS 200 AMP BUSHINGS AND IS NON-GANG OPERATED, THE RECOMMENDED SETTINGS FOR THE G&W VFI, ASSUMING A 500:1 CT WILL BE USED, ARE AS FOLLOWS: MINIMUM TRIP - 175 AMP USING THE CO-11 RELAY #1 CURVE WHICH IS ILLUSTRATED BELOW.

(23) ADD: S7
1-1ø SECTIONALIZING CABINET W/ PAD (UM3-14, UM1-5J)
1-4 POINT JUNCTION (UM6-21)
2-L.B. ELBOWS (1/0) (UM6-1/0)
2-INSULATED CAPS (UM6-10)
1-FAULT INDICATOR (UM6-4)
2-2" 90° SWEEPS SCH 80 PVC (UM50-SW-2)
1-1ø GROUNDING ASSEMBLY (UM48-1)

UNIT 7 PHASE COUNTS

SERVICE PHASING	LOTS
AØ SERVICE	–
BØ SERVICE	39
CØ SERVICE	45
TOTAL	84

LEGEND

- AØ / BØ / CØ — PRIMARY: 1/0 AL W/ FULL CONCENTRIC JACKETED NEUTRAL, 25 kV, XLPE, 260 MIL INSUL. IN 2" MIN. PVC SCH. 80, ELECT. CONDUIT
- 3Ø 200 AMP — PRIMARY: 1/0 AL W/ FULL CONCENTRIC JACKETED NEUTRAL, 25 kV, XLPE, 260 MIL INSUL. IN 2" MIN. PVC SCH. 80, ELECT. CONDUIT
- 100' – 3Ø CONDUIT POINT TO POINT DISTANCE
- 100' – 1Ø, PHASE A CONDUIT POINT TO POINT DISTANCE
- 100' – 1Ø, PHASE B CONDUIT POINT TO POINT DISTANCE
- 100' – 1Ø, PHASE C CONDUIT POINT TO POINT DISTANCE
- EXISTING 3Ø OVERHEAD LINE
- VACANT AØ(EMPTY) 2" CONDUIT OR AS SPECIFIED
- VACANT BØ(EMPTY) 2" CONDUIT OR AS SPECIFIED
- VACANT CØ(EMPTY) 2" CONDUIT OR AS SPECIFIED
- EXISTING VACANT (EMPTY) 3" CONDUIT OR AS SPECIFIED
- ELECTRICAL UTILITY EASEMENT
- 350 MCM AL, 600V, TRIPLEX IN 3" MIN. PVC SCH 80, ELECT. CONDUIT
- STREET LIGHT CABLE, 600V, #2 COPPER (2EA.) AND #10 CU EQUIP GRD, INSTALLED IN 1" PVC SCH 80 ELECT. CONDUIT OR AS SPECIFIED

SYMBOLS

	POLE	RISER	TRANSFORMER
PROPOSED	●	Ⓡ	⋈
EXISTING	●	Ⓡ	⋈
REMOVAL	●	○	⋈

- NEW 200A 1Ø SECTIONALIZING BOX — A PHASE / B PHASE / C PHASE
- NEW 200A 3Ø SECTIONALIZING BOX
- NEW 1Ø TRANSFORMER — A PHASE / B PHASE / C PHASE
- EXISTING 1Ø TRANSFORMER — A PHASE / B PHASE / C PHASE
- SECONDARY PEDESTAL — A PHASE / B PHASE / C PHASE
- STREET LIGHT

LABELS

- S# — SECTIONALIZING BOX NO.
- T# — TRANSFORMER NO.
- R# — RISER NO.
- SL# — STREETLIGHT NO.
- X — SECONDARY PEDESTAL NO.

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STATE OF TEXAS — CHRISTOPHER T. HARPER — 106036 — LICENSED PROFESSIONAL ENGINEER

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2	03-10-25	UPDATED EQUIPMENT AND KEYNOTES	PS	CTH	CTH
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DRWN	02-24-22	GLS
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APPD	03-13-24	CTH

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SCHNEIDER ENGINEERING

BANDERA ELECTRIC COOPERATIVE

REGENT PARK UNIT 7 DEVELOPMENT

UNDERGROUND ELECTRICAL LAYOUT
(SHEET 2 OF 2)

SCALE FOR 34 x 22 DWG: 1" = 60'
DRAWING NO. E2

SYSTEM VOLTAGE: 7.2 / 12.47 kV

21BEC3207

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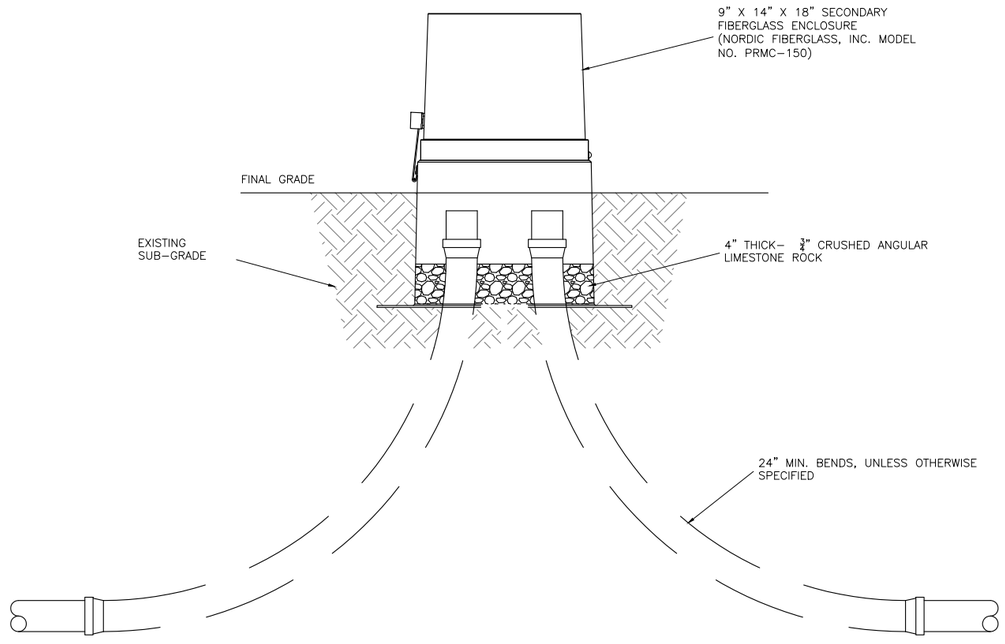
MATERIAL LIST (EST.)

QTY.	DESCRIPTION	BEC UNIT
84	LOTS SERVED	
7,015'	PRIMARY AND SECONDARY TRENCHING	
AS REQ'D	CONCRETE	
AS REQ'D	ROADBASE/AGGREGATE	
AS REQ'D	GRASS SEED	
AS REQ'D	6" WIDE CAUTION TAPE	
AS REQ'D	MULE TAPE (1,000 LB TEST MIN.)	
5,935'	2" SCH 80 PVC CONDUIT	
58	2" 90° SWEEPS SCH 80 PVC (3" MIN RADIUS)	
10	2" 90° SWEEPS SCH 80 PVC (STREETLIGHTS)	
3	2" SCH 80 RIGID PVC CAPS	
4910'	3" SCH 80 PVC CONDUIT	
147	3" 90° SWEEPS SCH 80 PVC (2" MIN RADIUS)	
86	3" SCH 80 RIGID PVC CAPS	
5,790'	1/0 AL, 25KV, 260 MIL (PRIMARY CABLE)	
3650	350 MCM, AL TRIPLEX (SECONDARY CABLE)	
5	3-POINT JUNCTIONS (200 AMP)	UM6-21
5	4-POINT JUNCTIONS (200 AMP)	UM6-22
31	SECONDARY PEDESTALS	UK3
93	SECONDARY CONNECTOR BLOCKS	UJ1

QTY.	DESCRIPTION	BEC UNIT
1	3ø VACUUM FAULT INTERRUPTER W/PAD	
20	1ø PHASE TRANSFORMER PADS	UM1-5C
1	1ø TRANSFORMERS, 37.5 KVA (240/120V)	UG7-37.5
3	1ø TRANSFORMERS, 50 KVA (240/120V)	UG7-50
11	1ø TRANSFORMERS, 75 KVA (240/120V)	UG7-75
5	1ø TRANSFORMERS, 100 KVA (240/120V)	UG7-100
5	1ø SECTIONALIZING BOX PADS	UM1-5J
5	1ø SECTIONALIZING BOXES	UM3-14
2	3ø SECTIONALIZING BOX PADS (200 AMP)	UM1-2J
2	3ø SECTIONALIZING BOXES (200 AMP)	UM4-200
10	STREETLIGHT KITS	
60	200 AMP L.B. ELBOWS (1/0 AL)	UM6-1/0
6	200 AMP L.A. ELBOWS	UVM6-34
1	PARKING STAND ARRESTER	UVM6-37
11	INSULATED CAPS (200A)	UM6-10
30	FAULT INDICATORS	UM6-4
6	1ø GROUNDING ASSEMBLIES	UM48-1
3	3ø GROUNDING ASSEMBLIES	UM48-2
2	1ø RISER POLE (w/TERMS, JUMPERS, CUTOUTS, ARRESTERS, ECT.)	UA1
1	3ø RISER POLE (w/TERMS, JUMPERS, CUTOUTS, ARRESTERS, ECT.)	UC1

ALL CONDUIT FOOTAGES INCLUDE A 10% ADDER
ALL CABLE FOOTAGES HAVE 10' ADDED TO EACH CABLE TERMINATION IN SECTIONALIZING BOX, TRANSFORMER, AND SECONDARY PEDESTAL. 40' ADDED AT EACH RISER AND LIGHT POLE.
*CONTRACTOR RESPONSIBLE FOR VERIFING ACTUAL QUANTITIES REQUIRED IN FIELD



GENERAL NOTES

1. BEC'S CONTRACTOR SHALL ENSURE POSITIVE 1% MIN. DRAINAGE AWAY FROM THIS PEDESTAL IN ALL DIRECTIONS.
2. EQUIPMENT SHALL BE ANCHORED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

SECONDARY PEDESTAL (ABOVE GROUND)

ITEM	EST QTY	UNIT	
1	1	EA	SECONDARY PEDESTAL (ABOVE GROUND)
2	3	EA	CONNECTOR FLOOD SEAL #12-350 MCM (4-POSITION)

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STATE OF TEXAS
CHRISTOPHER T. HARPER
106036
LICENSED
PROFESSIONAL ENGINEER

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DRWN	02-24-22	GLS
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SCHNEIDER ENGINEERING

BANDERA ELECTRIC COOPERATIVE
REGENT PARK UNIT 7 DEVELOPMENT

SECONDARY PEDESTAL DETAILS

SCALE FOR 34 x 22 DWG: N.T.S.
DRAWING NO. E3

21BEC3207

SYSTEM VOLTAGE: 7.2 / 12.47 kV

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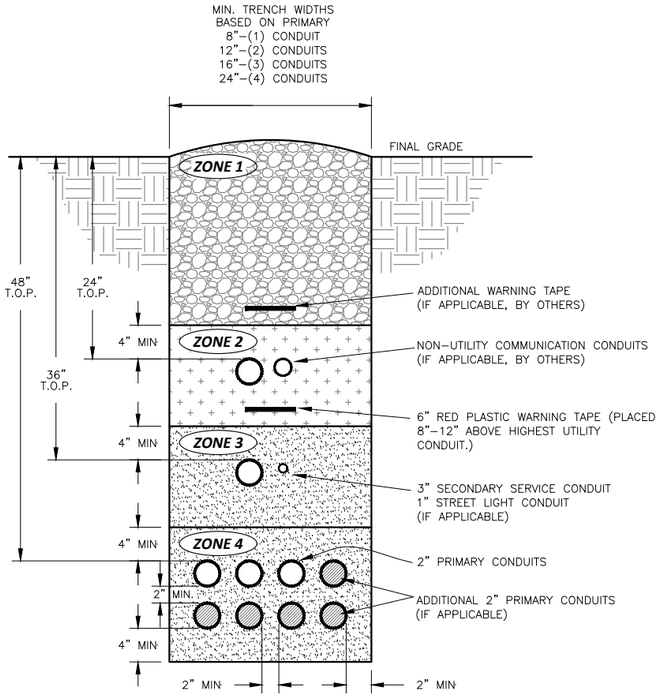


PRIMARY TRENCH DETAIL (48" T.O.P.)

ZONE 1

FINAL BACKFILL ZONE
UNLESS OTHERWISE SPECIFIED, CLEAN NATIVE MATERIAL MAYBE UTILIZED FOR BACKFILL IN THIS ZONE.

ZONE 2

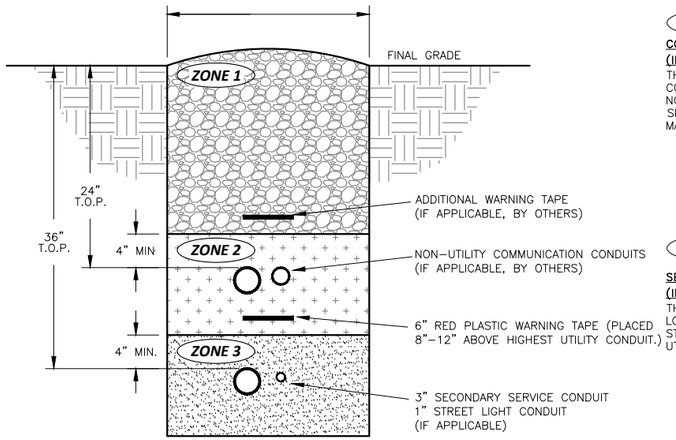
COMMUNICATION CONDUIT ZONE
(IF APPLICABLE/BY OTHERS)
THIS TRENCH ZONE IS RESERVED FOR COMMUNICATION CONDUITS AND LOW VOLTAGE APPLICATIONS THAT WILL NOT OWNED BY THE UTILITY. UNLESS OTHERWISE SPECIFIED BY THE OTHERS, CLEAN NATIVE MATERIAL MAYBE UTILIZED FOR BACKFILL IN THIS ZONE.

ZONE 3

SECONDARY CONDUIT ZONE
(IF APPLICABLE)
THIS TRENCH ZONE IS RESERVED FOR UTILITY OWNED LOW VOLTAGE CABLE INCLUDING SECONDARY AND STREET LIGHTING CONDUIT. BEDDING SAND SHALL BE UTILIZED FOR BACKFILL MATERIAL IN THIS ZONE.

ZONE 4

PRIMARY CONDUIT ZONE
THIS TRENCH ZONE IS RESERVED FOR UTILITY OWNED HIGH VOLTAGE CABLE INCLUDING ALL PRIMARY CONDUITS. BEDDING SAND SHALL BE UTILIZED FOR BACKFILL MATERIAL IN THIS ZONE.



SECONDARY JOINT-TRENCH DETAIL (36" T.O.P.)

ZONE 1

FINAL BACKFILL ZONE
UNLESS OTHERWISE SPECIFIED, CLEAN NATIVE MATERIAL MAYBE UTILIZED FOR BACKFILL IN THIS ZONE.

ZONE 2

COMMUNICATION CONDUIT ZONE
(IF APPLICABLE/BY OTHERS)
THIS TRENCH ZONE IS RESERVED FOR COMMUNICATION CONDUITS AND LOW VOLTAGE APPLICATIONS THAT WILL NOT OWNED BY THE UTILITY. UNLESS OTHERWISE SPECIFIED BY THE OTHERS, CLEAN NATIVE MATERIAL MAYBE UTILIZED FOR BACKFILL IN THIS ZONE.

ZONE 3

SECONDARY CONDUIT ZONE
(IF APPLICABLE)
THIS TRENCH ZONE IS RESERVED FOR UTILITY OWNED LOW VOLTAGE CABLE INCLUDING SECONDARY AND STREET LIGHTING CONDUIT. BEDDING SAND SHALL BE UTILIZED FOR BACKFILL MATERIAL IN THIS ZONE.

EMBEDMENT/BACKFILL MATERIAL

CLEAN NATIVE MATERIAL – SHALL CONSIST OF ON–SITE TRENCH EXCAVATIONS SO LONG AS IT IS FREE FROM ROCKS OR CLAY CLODS OVER 3" AVG. DIAMETER, TRASH AND ANY ORGANIC MATERIAL. NATIVE MATERIAL SHALL BE COMPACTED TO 92% STANDARD PROCTOR, WHEN TESTED IN ACCORDANCE WITH ASTM 698. NOTE THAT THE UTILITY STILL RESERVES THE RIGHT TO REQUIRE SAND BEDDING AT THEIR DISCRETION.

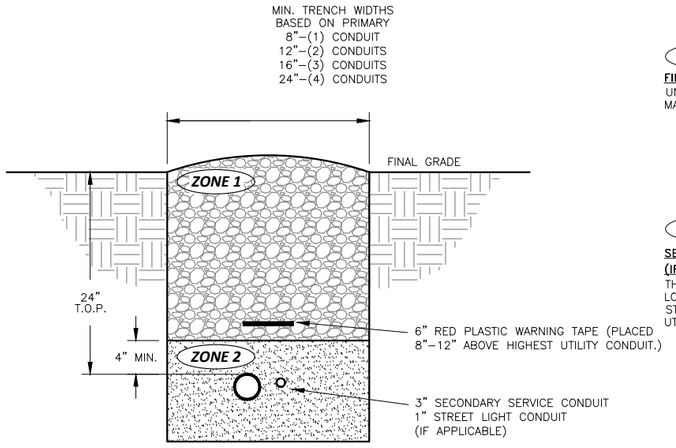
SAND BEDDING – WHEN REQUIRED BY UTILITY, BACKFILL SHALL CONSIST OF CLEAN PIT RUN SAND OR ROCK FINES GRADED AS SPECIFIED BELOW.(SUBMITTAL REQUIRED) COMPACTION TESTING WILL NOT BE REQUIRED FOR THIS MATERIAL, ALTHOUGH COMPACTION EFFORT MUST BE APPLIED. THIS CAN BE BY HAND OR MECHANICAL COMPACTION METHODS.

SIEVE NO.	% BY WEIGHT PASSING
4	100
40	60–100
100	30–70
200	0–8

LIMESTONE BASE – SHALL BE TX DOT TYPE A GRADE 1 OR 2 LIMESTONE BASE MATERIAL AND SHALL BE COMPACTED TO 95% MODIFIED PROCTOR WHEN TESTED IN ACCORDANCE WITH ASTM 1557.

GENERAL NOTES

1. ALL UTILITY CONDUITS SHALL BE SCHEDULE 40 PVC.
2. TO DETERMINE THE NUMBER AND AMOUNT OF CONDUITS FOR ZONES 3 AND 4 REFER TO THE APPROVED "FOR CONSTRUCTION" DRAWINGS.
3. THIS DRAWING IS A JOINT UTILITY TRENCH SECTION. ANY UNUSED UTILITY ZONES SHALL BE BACKFILLED AND COMPACTED WITH NATIVE MATERIAL, UNLESS OTHERWISE SPECIFIED.
4. WHERE TRENCH IS LOCATED BELOW A ROADWAY, ALL ZONES SPECIFYING NATIVE MATERIAL SHALL BE SUBSTITUTED WITH LIMESTONE BASE.
5. WHERE TRENCH CROSSES EITHER ABOVE ANOTHER UTILITY OR DRAINAGE LINE, CONTRACTOR SHALL INSTALL A MIN. 4" THICK 3,000 PSI CONCRETE CAP WITH RED DYE POWDER COATING ABOVE THE HIGHEST ELECTRIC UTILITY CONDUIT EXTENDING 5' IN EITHER DIRECTION OF THE CROSSING.
6. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER AND/OR CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY FOR SIZE AND NUMBER OF COMMUNICATIONS CONDUITS.
7. A MIN. OF 12" AND 24" VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN NON–UTILITY LINES AND UTILITY OWNED SECONDARY AND PRIMARY CONDUITS, RESPECTIVELY.
8. AS DETERMINED BY UTILITY, THERE ARE INSTANCES WHERE CONCRETE ENCASEMENT (4" MIN. SURROUNDING ALL PIPES) OR CONCRETE CAPPING (6" MIN. COVER) OF ELECTRICAL CONDUIT WILL BE REQUIRED. CONCRETE SHALL HAVE A MIN. STRENGTH OF 3,000 PSI WITH RED DYE POWDER. THE RED DYE CAN EITHER BE MIXED INTEGRAL OR APPLIED TO TOP OF WET CONCRETE AT THE TIME OF PLACEMENT.



SECONDARY NON-JOINT TRENCH DETAIL (24" T.O.P.)

ZONE 1

FINAL BACKFILL ZONE
UNLESS OTHERWISE SPECIFIED, CLEAN NATIVE MATERIAL MAYBE UTILIZED FOR BACKFILL IN THIS ZONE.

ZONE 2

SECONDARY CONDUIT ZONE
(IF APPLICABLE)
THIS TRENCH ZONE IS RESERVED FOR UTILITY OWNED LOW VOLTAGE CABLE INCLUDING SECONDARY AND STREET LIGHTING CONDUIT. BEDDING SAND SHALL BE UTILIZED FOR BACKFILL MATERIAL IN THIS ZONE.

THIS DRAWING IS CERTIFIED TO BE CORRECT FOR THE NEW FACILITIES SHOWN ONLY. INFORMATION CONCERNING EXISTING FACILITIES PROVIDED BY OTHERS HAS NOT BEEN VERIFIED.

ISSUED: 03-13-24
FOR CONSTRUCTION

STATE OF TEXAS
CHRISTOPHER T. HARPER
106036
LICENSED
PROFESSIONAL ENGINEER

NO	DATE	REVISION	BY	CHK	APPD

NO	DATE	REVISION	BY	CHK	APPD

	DATE	BY
DRWN	02–24–22	GLS
CHK	03–13–24	CTH
APPD	03–13–24	CTH

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SCHNEIDER ENGINEERING

BANDERA ELECTRIC COOPERATIVE

REGENT PARK UNIT 7 DEVELOPMENT

TRENCH DETAILS

SCALE FOR 34 x 22 DWG: N.T.S.

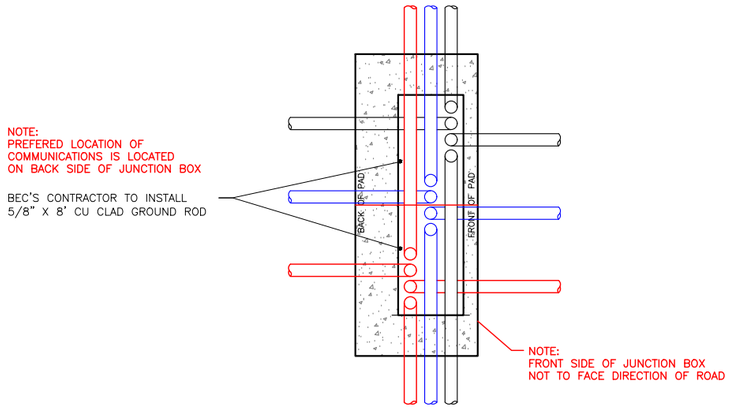
DRAWING NO. E4

21BEC3207

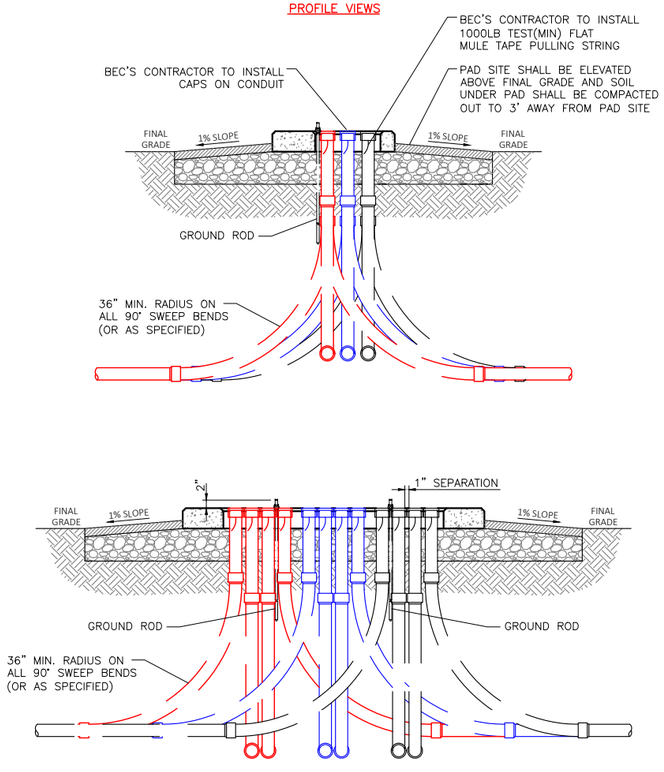
SYSTEM VOLTAGE: 7.2 / 12.47 kV

03/13/2024 9:44 AM * psalinas * N:\BEC\21BEC3207 Regent Park Unit 7 UG, WO 474026\Drawings\Plan View\E4–Trench Details.dwg

PLAN VIEW
3ø JUNCTION BOX PAD

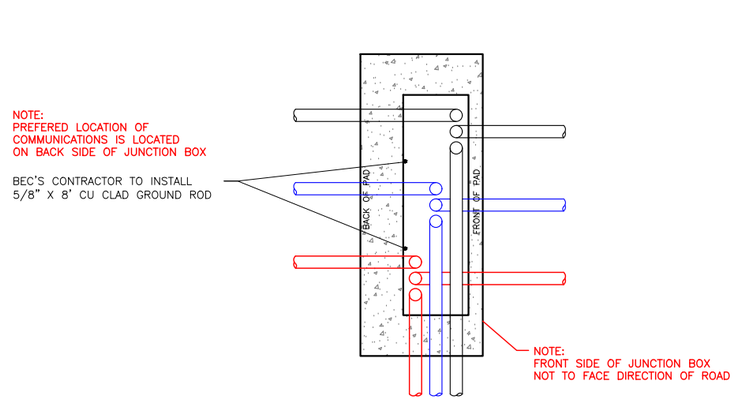


PROFILE VIEWS

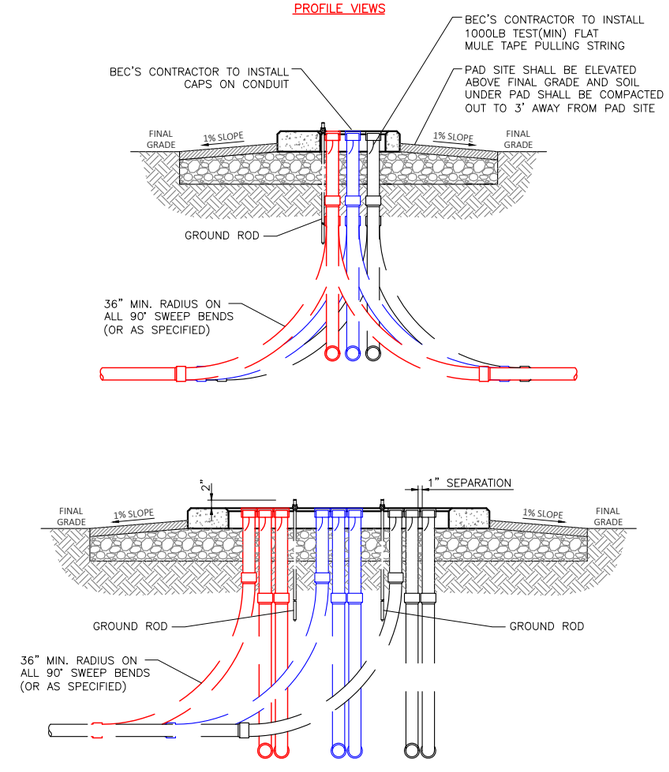


TYPICAL THREE PHASE J-BOX
CONDUIT CONFIGURATION(TWELVE PRIMARY STUB-UPS)

PLAN VIEW
3ø JUNCTION BOX PAD



PROFILE VIEWS



TYPICAL THREE PHASE J-BOX
CONDUIT CONFIGURATION(NINE PRIMARY STUB-UPS)

THIS DRAWING IS CERTIFIED TO BE CORRECT FOR THE NEW FACILITIES SHOWN ONLY. INFORMATION CONCERNING EXISTING FACILITIES PROVIDED BY OTHERS HAS NOT BEEN VERIFIED.

ISSUED: 03-13-24
FOR CONSTRUCTION

STATE OF TEXAS
CHRISTOPHER T. HARPER
106036
LICENSED
PROFESSIONAL ENGINEER

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REGENT PARK UNIT 7 DEVELOPMENT

CONDUIT
CONFIGURATION DETAILS

SCALE FOR 34 x 22 DWG
N.T.S.

DRAWING NO.
E5

21BEC3207

SYSTEM VOLTAGE: 7.2 / 12.47 kV

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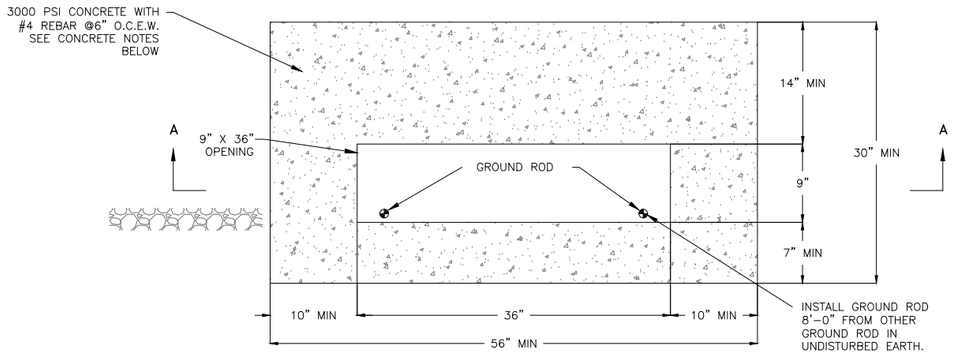
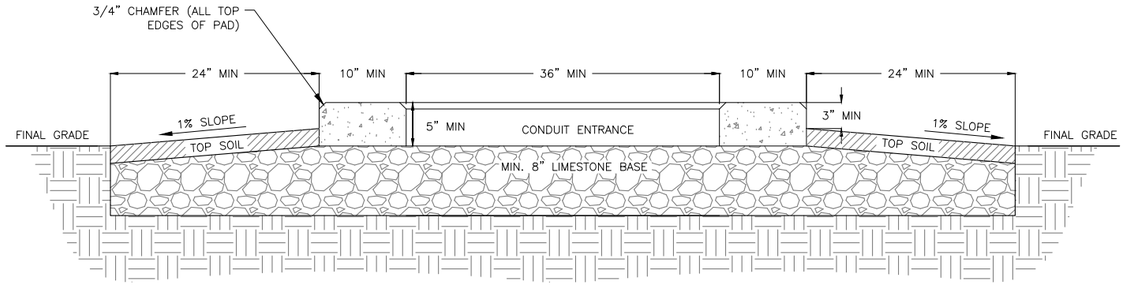


PLAN VIEW



SECTION A-A

CONCRETE NOTES:

1. FOUNDATIONS MAY BE PRECAST OR CAST-IN-PLACE. ALL FOUNDATIONS SHALL MEET THE MINIMUM CONSTRUCTION REQUIREMENTS LISTED BELOW. PRECAST FOUNDATIONS SHALL BE "BLOCK CONCRETE COMPANY NO.BCC56305JBS" OR PREAPPROVED EQUAL.
2. FOUNDATION SHALL NOT BE LESS THAN 5" IN THICKNESS.
3. CONCRETE SHALL HAVE A MIN. 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C39.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
5. STEEL REINFORCING SHALL BE A #4 REBAR AT 6" O.C.E.W. ENDING 2" FROM OUTSIDE EDGE AND CONDUIT OPENING.

GENERAL NOTES:

1. DIMENSIONS SHOWN HERE ARE FOR A 3-PHASE TYPE 1 SECTIONALIZING CABINET.
2. FOUNDATION ASSEMBLIES INCLUDE PAD PREPARATION, BACKFILL, LIMESTONE BASE, COMPACTION, FOUNDATION, DRAINAGE AND TOP SOIL WHEN REQUIRED.
3. BACKFILL OF TRENCHING BELOW PROPOSED PAD SHALL BE IN ACCORDANCE WITH TRENCH DETAILS, UNLESS OTHERWISE SPECIFIED.
4. TOP OF PAD SHALL BE A MIN. OF 3" ABOVE FINAL GRADE AND BEC'S CONTRACTOR SHALL ENSURE A MIN. OF 1% SLOPE AWAY FROM PAD IN ALL DIRECTIONS.
5. LIMESTONE BASE - SHALL BE TX-DOT TYPE A GRADE 1 OR 2 LIMESTONE BASE MATERIAL AND SHALL BE COMPACTED TO INDUSTRY STANDARDS.
6. INSTALL GROUND ROD AT CONDUIT ENTRANCE.
7. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3Ø SECTIONALIZING CABINET FOUNDATION (TYPE 1/UM1-2J)

THIS DRAWING IS CERTIFIED TO BE CORRECT FOR THE NEW FACILITIES SHOWN ONLY. INFORMATION CONCERNING EXISTING FACILITIES PROVIDED BY OTHERS HAS NOT BEEN VERIFIED.

ISSUED: 03-13-24
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STATE OF TEXAS
CHRISTOPHER T. HARPER
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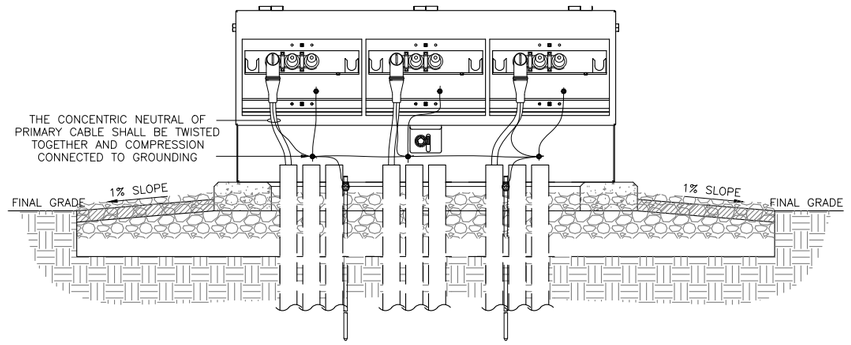

SECTIONALIZING CABINETS					
Description	Unit	Dimensions			Trinetics Catalog No.
		W	D	H	
3Ø Sectionalizing Cabinet (Type 1)	UM33-T1	48	22	30	CC348-22TH
3Ø Sectionalizing Cabinet (Type 2)	UM33-T2	66	22	30	CC366-22TH

GENERAL NOTES:

1. NOMENCLATURE FOR 3-PHASE SECTIONALIZING CABINETS IS UM33-T1 FOR "TYPE 1" AND UM33-T2 FOR "TYPE 2".
2. SECTIONALIZING CABINETS SHALL BE 12-GAUGE METAL, TOP HINGED , POWDER COATED AND BE LOCKABLE WITH PENTA-HEAD LATCH.
3. CABINETS SHALL ALSO BE RATED FOR A MIN. OF 25 KV AND 600 A EQUIPMENT.
4. THIS UNIT SHALL INCLUDE THE DELIVERY, INSTALLATION, MOUNTING, COMPLETE AND IN-PLACE.
5. FOUNDATION, BACKFILL AND DRAINAGE SHALL BE IN ACCORDANCE WITH 3ø SECTIONALIZING CABINET FOUNDATION DETAIL.
6. INSTALL GROUND ROD WITH THIS PIECE OF EQUIPMENT AS PER THE FOUNDATION DRAWINGS.
7. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3Ø SECTIONALIZING CABINET (TYPE 1) (UM4-200)

	DATE	BY
DRWN	02-24-22	GLS
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REGENT PARK UNIT 7 DEVELOPMENT

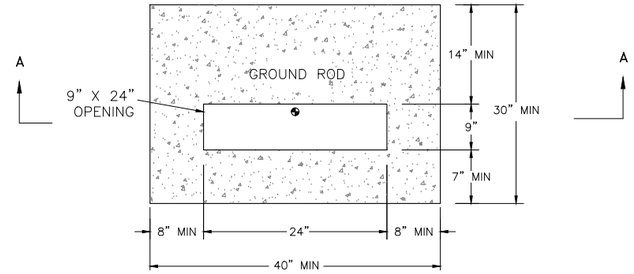
THREE PHASE SECTIONALIZING CABINET DETAILS
(TYPE 1)

SCALE FOR 34 x 22 DWG: N.T.S.

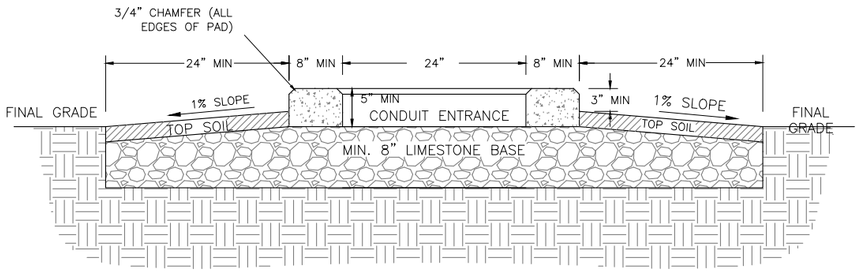
DRAWING NO. E6

SYSTEM VOLTAGE: 7.2 / 12.47 kV

03/13/2024 9:44 AM * psalinas * N:\BEC\21BEC3207 Regent Park Unit 7 UG, WO 474026\Drawings\Plan View\E6-3Ø Junction Box-Type 1 Detail.dwg



PLAN VIEW



SECTION A-A

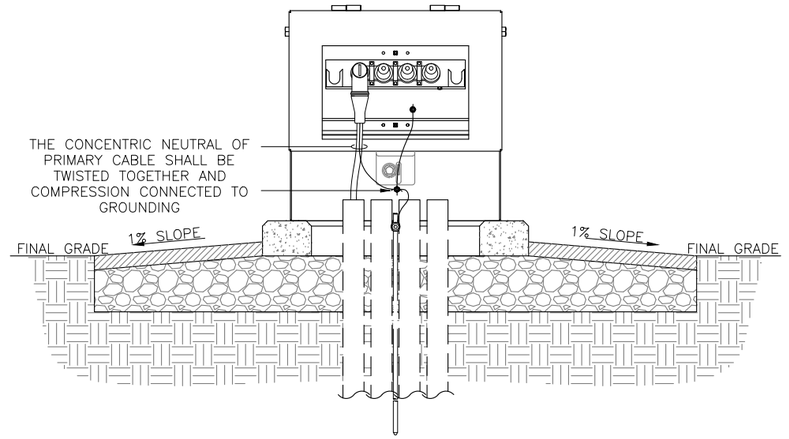
CONCRETE NOTES

1. FOUNDATIONS MAY BE PRECAST OR CAST-IN-PLACE. ALL FOUNDATIONS SHALL MEET THE MINIMUM CONSTRUCTION REQUIREMENTS LISTED BELOW. PRECAST FOUNDATIONS SHALL BE "BLOCK CONCRETE COMPANY NO.BCC38265PSP" OR PREAPPROVED EQUAL.
2. FOUNDATION SHALL NOT BE LESS THAN 5" IN THICKNESS.
3. CONCRETE SHALL HAVE A MIN. 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C39.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
5. STEEL REINFORCING SHALL BE A #4 REBAR AT 6" O.C.E.W. ENDING 2" FROM OUTSIDE EDGE AND CONDUIT OPENING.

GENERAL NOTES

1. DIMENSIONS SHOWN HERE ARE FOR A 1-PHASE SECTIONALIZING CABINET.
2. FOUNDATION ASSEMBLIES INCLUDE PAD PREPARATION, BACKFILL, LIMESTONE BASE, COMPACTION, FOUNDATION, DRAINAGE AND TOP SOIL WHEN REQUIRED.
3. BACKFILL OF TRENCHING BELOW PROPOSED PAD SHALL BE IN ACCORDANCE WITH TRENCH DETAILS, UNLESS OTHERWISE SPECIFIED.
4. TOP OF PAD SHALL BE A MIN. OF 3" ABOVE FINAL GRADE AND BEC'S CONTRACTOR SHALL ENSURE A MIN. OF 1% SLOPE AWAY FROM PAD IN ALL DIRECTIONS.
5. LIMESTONE BASE – SHALL BE TX-DOT TYPE A GRADE 1 OR 2 LIMESTONE BASE MATERIAL AND SHALL BE COMPACTED TO INDUSTRY STANDARDS.
6. INSTALL GROUND ROD AT CONDUIT ENTRANCE.
7. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

1Ø SECTIONALIZING CABINET FOUNDATION (UM1-5J)



SECTIONALIZING CABINETS					
Description	Unit	Dimensions			Trinetics Catalog No.
		W	D	H	
1Ø Sectionalizing Cabinet	UM33	30	18	30	CW330-18TH

GENERAL NOTES

1. SECTIONALIZING CABINETS SHALL BE 12-GAUGE METAL, TOP HINGED, POWDER-COATED, AND BE LOCKABLE WITH PENTA-HEAD LATCH.
2. CABINETS SHALL ALSO BE RATED FOR A MIN. OF 25 kV AND 600 AMP EQUIPMENT.
3. THIS UNIT SHALL INCLUDE THE DELIVERY, INSTALLATION, MOUNTING, COMPLETE AND IN-PLACE.
4. FOUNDATION, BACKFILL AND DRAINAGE SHALL BE IN ACCORDANCE WITH 1ø SECTIONALIZING CABINET FOUNDATION DETAIL.
5. INSTALL GROUND ROD WITH THIS PIECE OF EQUIPMENT AS PER THE FOUNDATION DRAWINGS.
6. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

1Ø SECTIONALIZING CABINET (UM3-14)

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ISSUED: 03-13-24
FOR CONSTRUCTION

STATE OF TEXAS
CHRISTOPHER T. HARPER
106036
LICENSED
PROFESSIONAL ENGINEER

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REGENT PARK UNIT 7 DEVELOPMENT

SINGLE PHASE SECTIONALIZING CABINET DETAILS

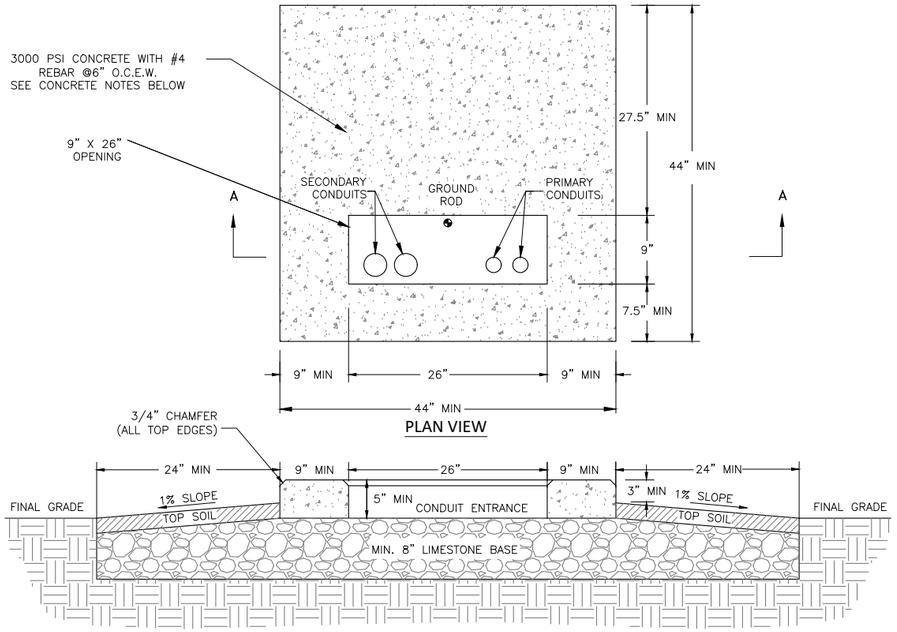
SCALE FOR 34 x 22 DWG: N.T.S.

DRAWING NO. E7

21BEC3207

SYSTEM VOLTAGE: 7.2 / 12.47 kV

03/13/2024 9:44 AM * psalinas * N:\BEC\21BEC3207 Regent Park Unit 7 UG, WO 474026\Drawings\Plan View\E7-Single Phase Sectionalizing Cabinet Details.dwg



1Ø TRANSFORMER PAD FOUNDATION (25-100 kVA)

CONCRETE NOTES

1. FOUNDATIONS MAY BE PRECAST OR CAST–IN–PLACE. ALL FOUNDATIONS SHALL MEET THE MINIMUM CONSTRUCTION REQUIREMENTS LISTED BELOW. PRECAST FOUNDATIONS SHALL BE "BLOCK CONCRETE COMPANY NO.BCC44445TP" OR PREAPPROVED EQUAL.
2. FOUNDATION SHALL NOT BE LESS THAN 5" IN THICKNESS.
3. CONCRETE SHALL HAVE A MIN. 28–DAY COMPRESSIVE STRENGTH OF 3,000 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C39.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
5. STEEL REINFORCING SHALL BE A #4 REBAR AT 6" O.C.E.W. ENDING 2" FROM OUTSIDE EDGE AND CONDUIT OPENING.

GENERAL NOTES

1. DIMENSIONS SHOWN HERE ARE FOR A 1–PHASE PAD MOUNT TRANSFORMER, 100 kVA OR SMALLER.
2. FOUNDATION ASSEMBLIES INCLUDE PAD PREPARATION, BACKFILL, LIMESTONE BASE, COMPACTION, FOUNDATION, DRAINAGE AND TOP SOIL WHEN REQUIRED.
3. BACKFILL OF TRENCHING BELOW PROPOSED PAD SHALL BE IN ACCORDANCE WITH TRENCH DETAILS, UNLESS OTHERWISE SPECIFIED.
4. TOP OF PAD SHALL BE A MIN. OF 3" ABOVE FINAL GRADE AND BEC'S CONTRACTOR SHALL ENSURE A MIN. OF 1% SLOPE AWAY FROM PAD IN ALL DIRECTIONS.
5. LIMESTONE BASE – SHALL BE TX–DOT TYPE A GRADE 1 OR 2 LIMESTONE BASE MATERIAL AND SHALL BE COMPACTED TO INDUSTRY STANDARDS.
6. INSTALL GROUND ROD AT CONDUIT ENTRANCE.
7. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

THIS DRAWING IS CERTIFIED TO BE CORRECT FOR THE NEW FACILITIES SHOWN ONLY. INFORMATION CONCERNING EXISTING FACILITIES PROVIDED BY OTHERS HAS NOT BEEN VERIFIED.

ISSUED: 03-13-24
FOR CONSTRUCTION

STATE OF TEXAS
CHRISTOPHER T. HARPER
106036
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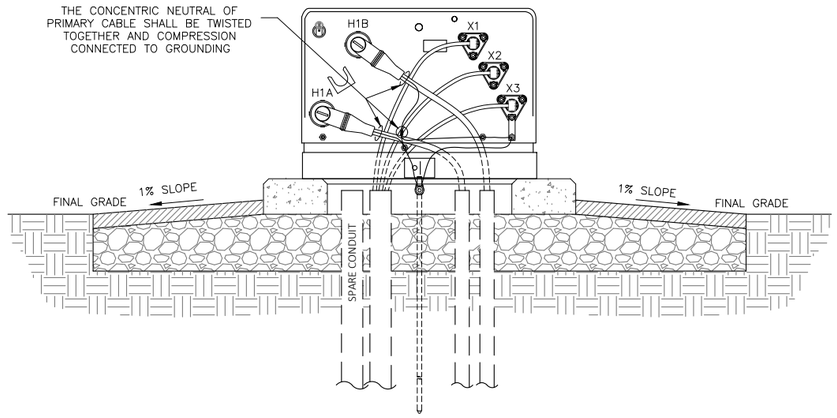

1 Ø PAD MOUNT TRANSFORMERS	
Description	Unit
25kVA-1Ø Pad Mount XFMR (120/240V)	UG7-25
37.5kVA-1Ø Pad Mount XFMR (120/240V)	UG7-37.5
50kVA-1Ø Pad Mount XFMR (120/240V)	UG7-50
75kVA-1Ø Pad Mount XFMR (120/240V)	UG7-75
100kVA-1Ø Pad Mount XFMR (120/240V)	UG7-100
167kVA-1Ø Pad Mount XFMR (120/240V)	UG7-167
200kVA-1Ø Pad Mount XFMR (120/240V)	UG7-200

GENERAL NOTES

1. NOMENCLATURE FOR 1–PHASE TRANSFORMERS IS AS FOLLOWS:

   EXAMPLE – "UG7–100"
   - "U" OR "V" DESIGNATES 7.2/12.5KV OR 14.4/24.9KV, RESPECTIVELY.
   - "G7" DESIGNATES 1–PHASE PAD MOUNT TRANSFORMER.
   - "–100–" REPRESENTS THE THE KVA RATING OF THE TRANSFORMER.

2. TRANSFORMER ASSEMBLIES INCLUDE SECONDARY BUSHINGS, SEC. SPADES, LOAD BREAK ELBOWS, INSULATING CAPS, INSULATED STANDOFF BRACKETS, DELIVERY, SET, COMPLETE AND IN–PLACE
3. FOUNDATION, BACKFILL AND DRAINAGE SHALL BE IN ACCORDANCE WITH 1ø TRANSFORMER FOUNDATION DETAIL.
4. INSTALL GROUND ROD AT CONDUIT ENTRANCE.
5. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

1Ø PADMOUNT TRANSFORMERS (25-250kVA)

	DATE	BY
DRWN	02–24–22	GLS
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REGENT PARK UNIT 7 DEVELOPMENT

SINGLE PHASE TRANSFORMER DETAILS

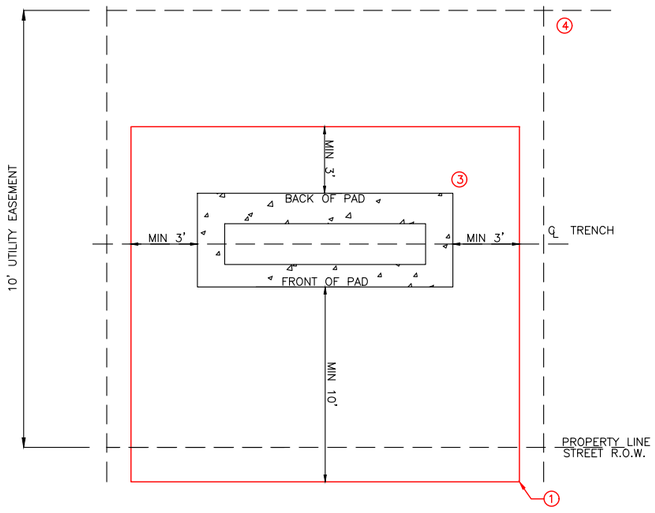
SCALE FOR 34 x 22 DWG: N.T.S.

DRAWING NO. E8

SYSTEM VOLTAGE: 7.2 / 12.47 kV

03/13/2024 9:44 AM * psalinas * N:\BEC\21BEC3207 Regent Park Unit 7 UG, WO 474026\Drawings\Plan View\E8–Single Phase Xfmr Details.dwg

PLAN VIEW



TYPICAL UTILITY ASSIGNMENT EQUIPMENT ORIENTATION/ SAFE ZONE DETAIL

GENERAL NOTES:

1. BEC'S CONTRACTOR SHALL MAINTAIN A 3 FOOT MINIMUM SAFE ZONE AROUND THE EQUIPMENT PAD AND A 10 FOOT MINIMUM SAFE ZONE ACROSS FRONT OF THE EQUIPMENT PAD, CLEAR OF ANY PEDESTALS OR EQUIPMENT BY OTHERS (NO COMMUNICATION PEDESTALS).
2. ANY PIECE OF EQUIPMENT WITHIN 10' OF A JUNCTION BOX / TRANSFORMER SHALL HAVE A #2 BARE COPPER WIRE TYING THAT PIECE OF EQUIPMENT'S GROUND ROD TO THE JUNCTION BOX / TRANSFORMER'S GROUND ROD AND EFFECTIVELY BONDING THE TWO CABINETS.
3. PREFERRED LOCATION OF COMMUNICATIONS IS ON BACK SIDE OF EQUIPMENT PAD.
4. DETAIL IS TO BE USED FOR FUSES, VACUUM FAULT INTERRUPTERS, AND JUNCTION BOXES

THIS DRAWING IS CERTIFIED TO BE CORRECT FOR THE NEW FACILITIES SHOWN ONLY. INFORMATION CONCERNING EXISTING FACILITIES PROVIDED BY OTHERS HAS NOT BEEN VERIFIED.

ISSUED: 03-13-24
FOR CONSTRUCTION

STATE OF TEXAS
CHRISTOPHER T. HARPER
106036
LICENSED
PROFESSIONAL ENGINEER

NO	DATE	REVISION	BY	CHK	APPD	NO	DATE	REVISION	BY	CHK	APPD

21BEC3207

	DATE	BY
DRWN	02-24-22	GLS
CHK	03-13-24	CTH
APPD	03-13-24	CTH

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TEXAS REGISTRATION NUMBER F-1594

SCHNEIDER ENGINEERING

BANDERA ELECTRIC COOPERATIVE

REGENT PARK UNIT 7 DEVELOPMENT

TYPICAL EQUIPMENT ORIENTATION AND SINGLE PHASE RISER DETAILS

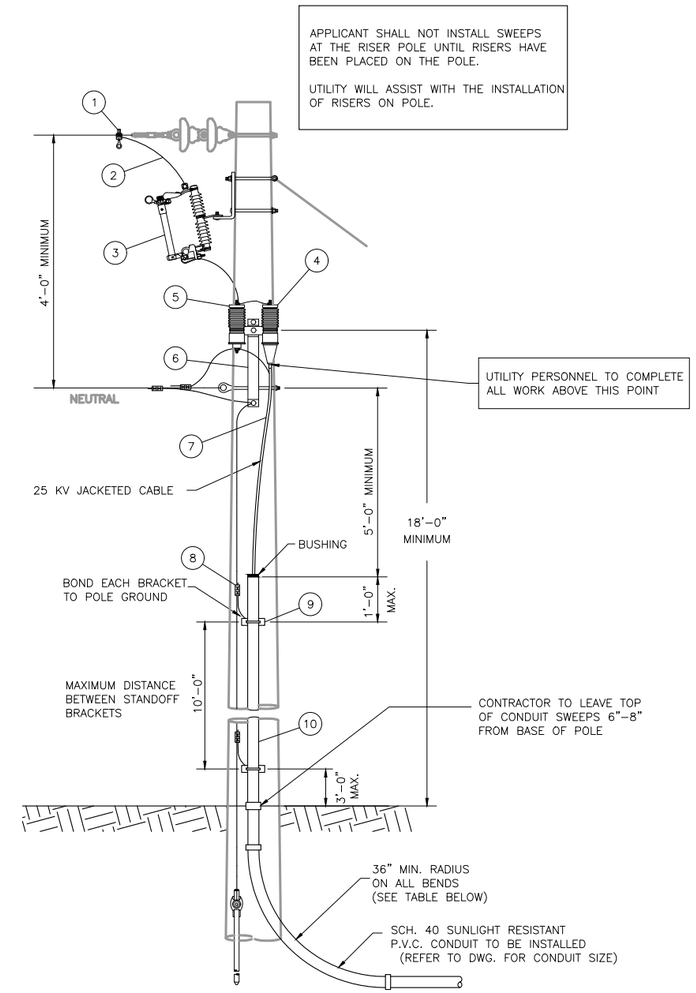
SCALE FOR 34 x 22 DWG: N.T.S.

DRAWING NO. E9

SYSTEM VOLTAGE: 7.2 / 12.47 kV

ITEM	EST QTY	UNIT	DESCRIPTION OF ITEMS TO BE INSTALLED PER RISER POLE	
1	1	EA	OVERHEAD PRIMARY HOT LINE TAP CLAMP (ALUMINUM)	
2	–	FT	BARE WIRE FOR JUMPERS (MATCH OVERHEAD CONDUCTOR)	
3	1	EA	FUSED CUTOUT (TO BE SIZED BY UTILITY)	
4	1	EA	25 kV CABLE TERMINATORS	*
5	1	EA	DISTRIBUTION CLASS ARRESTER FOR RISER POLE	
6	1	EA	SINGLE PHASE BRACKET COMBINATION FOR MOUNTING ARRESTER & TERMINATOR	
7	–	FT	PRIMARY CABLE URD 25 kV JACKETED CABLE	*
8	2	EA	CABLE TO CABLE TEE, BRONZE, CONNECTORS	
9	VARIES	EA	CONDUIT STANDOFF BRACKETS	
10	–	FT	CONDUIT, 2" SCH. 80 SUNLIGHT RESISTANT P.V.C.	**

* REFER TO DWG. FOR CABLE SIZE
** REFER TO DWG. FOR CONDUIT SIZE



TYPICAL 1 PHASE RISER

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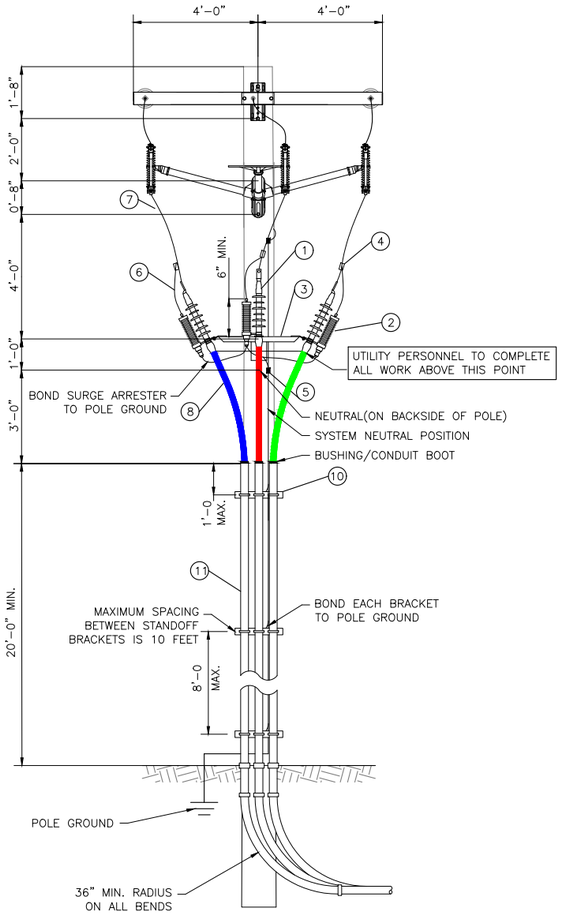
ITEM	EST QTY	UNIT	DESCRIPTION OF ITEMS TO BE INSTALLED PER RISER POLE
1	3	EA	25 kV CABLE TERMINATORS FOR 1/0 AL CABLE
2	3	EA	DISTRIBUTION CLASS ARRESTER FOR RISER POLE
3	1	EA	HEAVY DUTY 3 PHASE BRACKET FOR MTG. ARRESTERS & TERMINATORS
4	3	EA	CABLE TO CABLE TEE, BRONZE, CONNECTORS
5	1	EA	COPPER COMPRESSION GROUND CONNECTOR FOR CONCENTRIC
6	–	FT	#2 CU STRAND BARE WIRE FOR JUMPERS AND GROUNDING
7	–	FT	BARE WIRE FOR JUMPERS (MATCH OVERHEAD CONDUCTOR)
8	–	FT	PRIMARY CABLE 1/0 AL URD 25 kV JACKETED CABLE
9	3	EA	OVER CURRENT PROTECTION (TO BE DETERMINED BY BEC)
10	3	EA	CONDUIT STANDOFF BRACKET
11	–	FT	CONDUIT, 3" SCH. 80 SUNLIGHT RESISTANT P.V.C.

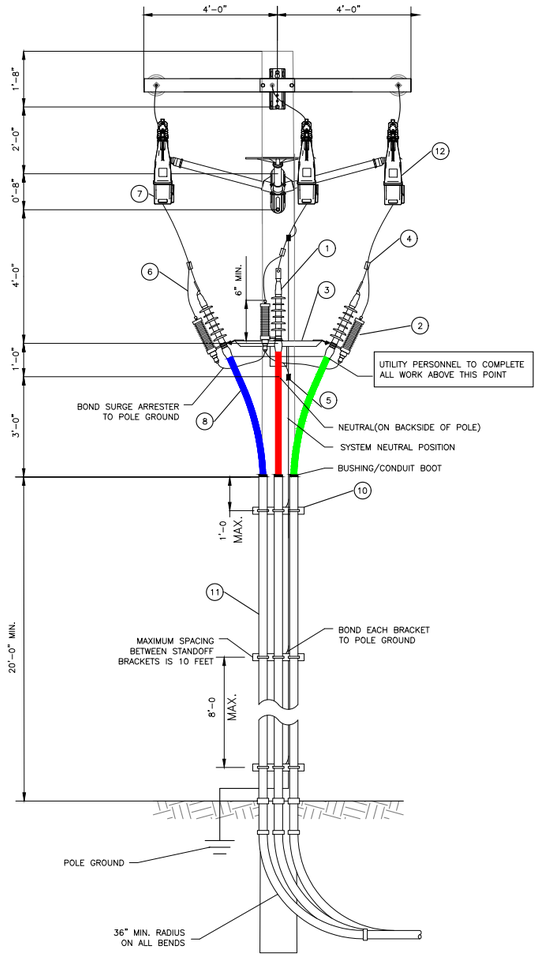
URD THREE PHASE RISER

UC1



TYPICAL 3 PHASE RISER

ITEM	EST QTY	UNIT	DESCRIPTION OF ITEMS TO BE INSTALLED PER RISER POLE
1	3	EA	25 kV CABLE TERMINATORS FOR 4/0 AL CABLE
2	3	EA	DISTRIBUTION CLASS ARRESTER FOR RISER POLE
3	1	EA	HEAVY DUTY 3 PHASE BRACKET FOR MTG. ARRESTERS & TERMINATORS
4	3	EA	CABLE TO CABLE TEE, BRONZE, CONNECTORS
5	1	EA	COPPER COMPRESSION GROUND CONNECTOR FOR CONCENTRIC
6	–	FT	#2 CU STRAND BARE WIRE FOR JUMPERS AND GROUNDING
7	–	FT	BARE WIRE FOR JUMPERS (MATCH OVERHEAD CONDUCTOR)
8	–	FT	PRIMARY CABLE 4/0 AL URD 25 kV JACKETED CABLE
9	3	EA	OVER CURRENT PROTECTION (TO BE DETERMINED BY BEC)
10	3	EA	CONDUIT STANDOFF BRACKET
11	–	FT	CONDUIT, 3" SCH. 80 SUNLIGHT RESISTANT P.V.C.
12	3	EA	TRIP SAVER II CUTOUT–MOUNTED RECLOSER

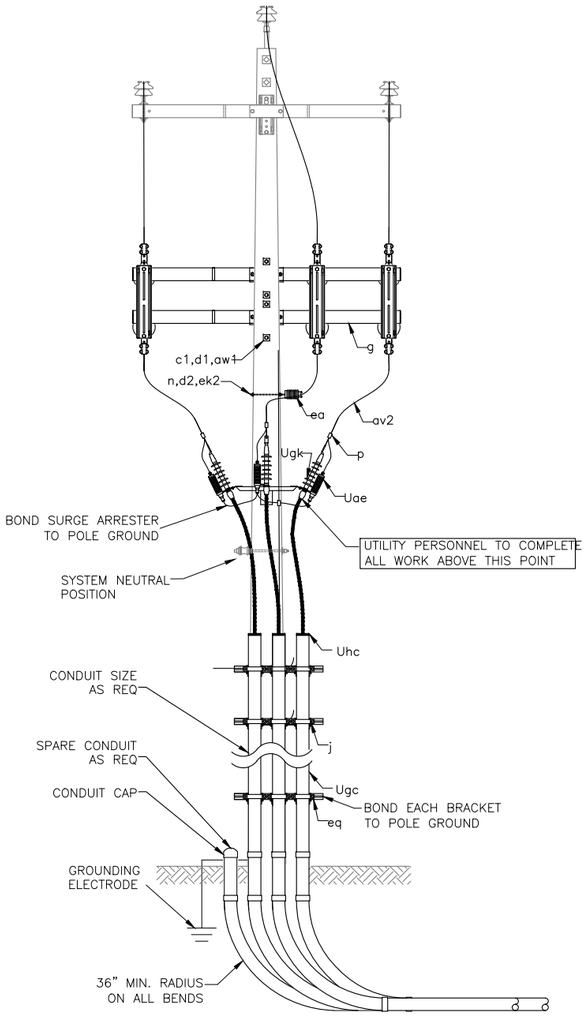


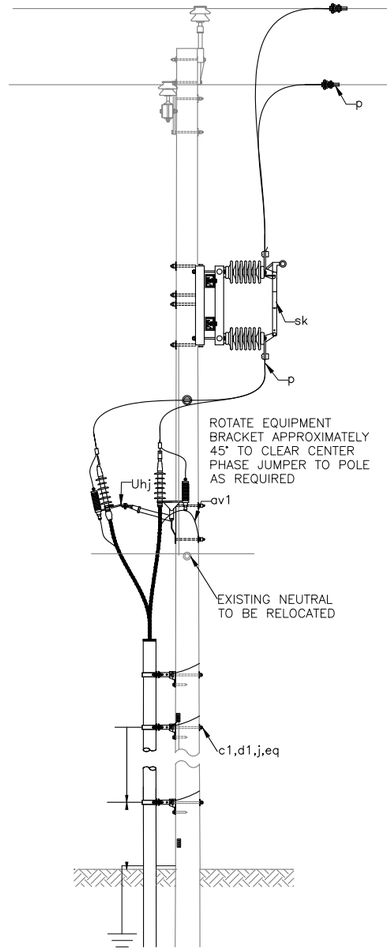
TYPICAL 3 PHASE RISER w/TRIP SAVERS

ITEM	QTY.	DESCRIPTION	ITEM	QTY.	DESCRIPTION
c1	9	Bolt, Machine, 5/8" x Required Length	av2	As Req	Bare Wire Jumpers (Match Overhead Conductor)
d1	9	Washer, Square, 2 1/4", 11/16" Hole	ea	1	Insulator, Post Type, 25 kV
d2	2	Washer, Square, 2 1/4", 13/16" Hole	eq	As Req	Conduit Standoff Bracket Kit, Minimum 3
g	2	Crossarm, PUPI TB2000–8'	ek2	3	Locknuts, 3/4"
j	As Req	Screw Lag 1/2" x 4 1/2"	sk	3	Hook Switch, 600 Amp, 27kV
n	1	Bolt, Double Arming, 3/4" x Req Length	Uae	3	Riser Class Arrester
p	As Req	Connectors, and SS Hardware	Ugc	As Req	Conduit, Sch 80 Sunlight Resistant P.V.C.
av1	As Req	#2 Cu., Stranded Bare Wire, Grounding	Ugk	3	Cable Termination
aw1	9	Washer, Double Coil Spring 5/8"	Uhc	3	Conduit Riser Support Grip
aw2	1	Washer, Double Coil Spring 3/4"	Uhj	1	Heavy Duty 3 Phase Bracket

24.9/14.4 kV PRIMARY, 3–PHASE
HOOK SWITCH RISER POLE

UC6





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STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER

NO	DATE	REVISION	BY	CHK	APPD
1	05–01–24	UPDATED EQUIPMENT AND NOTES	GLS	CTH	CTH

	DATE	BY
DRWN	02–24–22	GLS
CHK	03–13–24	CTH
APPD	03–13–24	CTH

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REGENT PARK UNIT 7 DEVELOPMENT

THREE PHASE RISER DETAILS

SCALE FOR 34 x 22 DWG: N.T.S.

DRAWING NO. E10

21BEC3207

SYSTEM VOLTAGE: 7.2 / 12.47 kV

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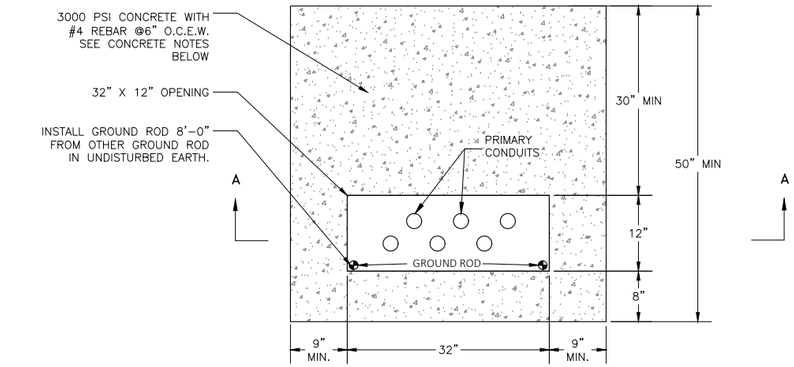
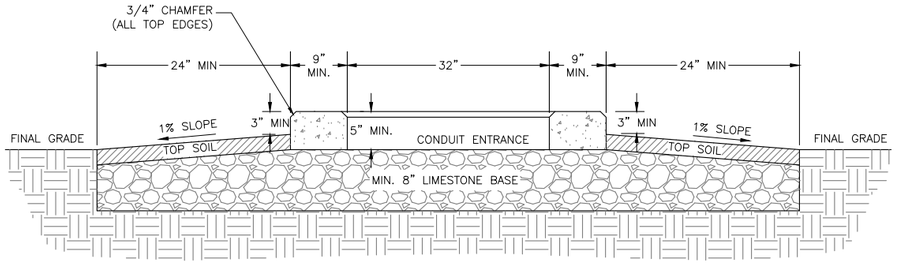


PLAN VIEW



SECTION A-A

3Ø VACUUM FAULT INTERRUPTER FOUNDATION

CONCRETE NOTES:

1. FOUNDATIONS MAY BE PRECAST OR CAST-IN-PLACE. ALL FOUNDATIONS SHALL MEET THE MINIMUM CONSTRUCTION REQUIREMENTS LISTED BELOW. PRECAST FOUNDATIONS SHALL BE "BLOCK CONCRETE COMPANY OR PREAPPROVED EQUAL.
2. FOUNDATION SHALL NOT BE LESS THAN 5" IN THICKNESS.
3. CONCRETE SHALL HAVE A MIN. 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C39.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
5. STEEL REINFORCING SHALL BE A #4 REBAR AT 6" O.C.E.W. ENDING 2" FROM OUTSIDE EDGE AND CONDUIT OPENING.

GENERAL NOTES:

1. DIMENSIONS SHOWN HERE ARE FOR A 3-PHASE VACUUM FAULT INTERRUPTER.
2. FOUNDATION ASSEMBLIES INCLUDE PAD PREPARATION, BACKFILL, LIMESTONE BASE, COMPACTION, FOUNDATION, DRAINAGE AND TOP SOIL WHEN REQUIRED.
3. BACKFILL OF TRENCHING BELOW PROPOSED PAD SHALL BE IN ACCORDANCE WITH TRENCH DETAILS, UNLESS OTHERWISE SPECIFIED.
4. TOP OF PAD SHALL BE A MIN. OF 3" ABOVE FINAL GRADE AND BEC'S CONTRACTOR SHALL ENSURE A MIN. OF 1% SLOPE AWAY FROM PAD IN ALL DIRECTIONS.
5. LIMESTONE BASE – SHALL BE TX-DOT TYPE A GRADE 1 OR 2 LIMESTONE BASE MATERIAL AND SHALL BE COMPACTED TO INDUSTRY STANDARDS.
6. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

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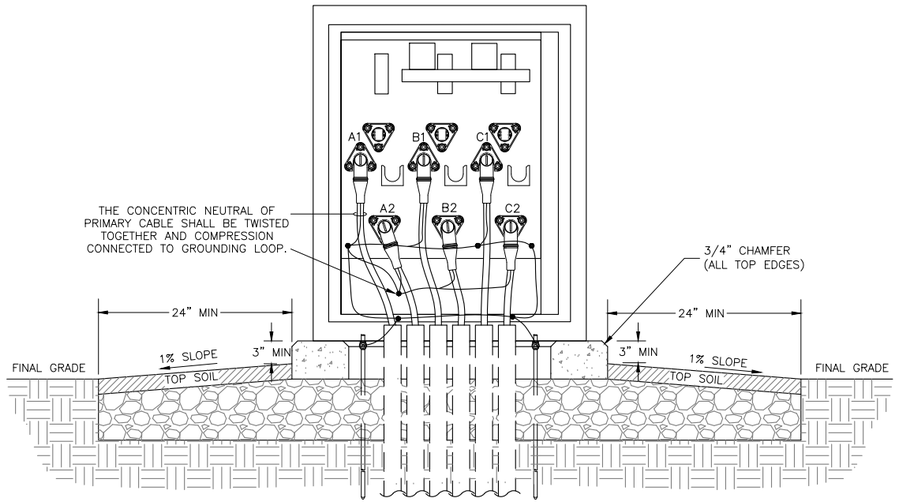

3Ø VACUUM FAULT INTERRUPTER (USG-VFI)

GENERAL NOTES:

1. THIS UNIT SHALL INCLUDE THE DELIVERY, INSTALLATION, MOUNTING, COMPLETE AND IN-PLACE.
2. FOUNDATION, BACKFILL AND DRAINAGE SHALL BE IN ACCORDANCE WITH 3ø VACUUM FAULT INTERRUPTER DETAIL.
3. INSTALL GROUND ROD WITH THIS PIECE OF EQUIPMENT AS PER THE FOUNDATION DRAWINGS.
4. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

	DATE	BY
DRWN	02-24-22	GLS
CHK	03-13-24	CTH
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REGENT PARK UNIT 7 DEVELOPMENT

THREE PHASE VACUUM FAULT INTERRUPTER DETAILS

SCALE FOR 34 x 22 DWG: N.T.S.

DRAWING NO. E11

SYSTEM VOLTAGE: 7.2 / 12.47 kV

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