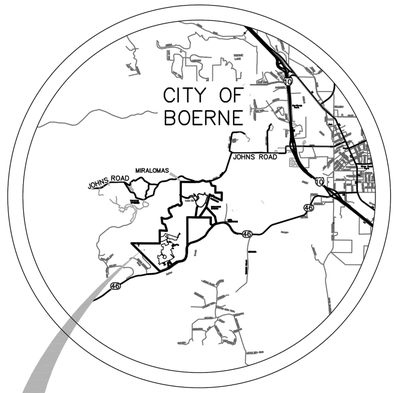
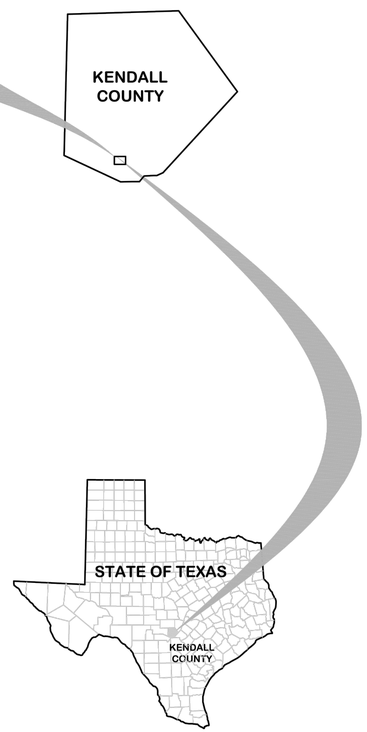
CONSTRUCTION DRAWINGS
MIRALOMAS GARDEN HOMES UNIT 3 ~~& 4~~
STREETS, DRAINAGE, AND UTILITIES
KENDALL COUNTY, TEXAS

~~JUNE 2021~~ JULY 2023





PROJECT MAP
SCALE: 1" = 500'

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PAPE-DAWSON ENGINEERS

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

7/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

11/10/22: REVISED SHEET BLOCK.
1/5/23: REVISED UNIT NUMBER AND PLAT SET DATE. REMOVED SHEET C3.00.
3/6/23: REVISED SHEET INDEX.
7/13/23: REVISED SHEET INDEX AND DATE.

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED
PROFESSIONAL ENGINEER
06/30/2021

PREPARED BY:
SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
TBPE FIRM NO. F1901
123 ALTGELT AVENUE
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
19-013

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GENERAL CONSTRUCTION NOTES

1. THE APPROXIMATE LOCATION OF THE EXISTING UTILITIES IS GIVEN FOR REFERENCE ONLY. BEFORE COMMENCING THE WORK, THE CONTRACTOR SHALL COORDINATE WITH UTILITY OWNERS TO DETERMINE ACTUAL LOCATION OF EXISTING AND PROPOSED UTILITIES. LOCATION OF UTILITIES, AS INDICATED, SHALL NOT RELIEVE THE CONTRACTOR OF HIS CONTRACTUAL OBLIGATIONS OF CONTACTING UTILITY OWNERS. MUNICIPALLY OWNED UTILITY LINES SUCH AS WATER, SANITARY SEWER, STORM SEWER AND TRAFFIC SIGNALIZATION MAY NO BE LOCATED BY THEIR OWNERS, AND IN SUCH CASE, THE CONTRACTORS SHALL DETERMINE THE LOCATION BY THE CONTRACTOR TO LOCATE, HORIZONTALLY AND VERTICALLY, EXISTING UTILITIES WHICH ARE SHOWN ON THE CONSTRUCTION DRAWINGS, OR WHICH THE CONTRACTOR HAS BEEN GIVEN NOTICE OR HAS KNOWLEDGE OF SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. THE COST OF REMEDIAL WORK, REMOVAL OF PORTIONS OF THE WORK OF EXTENSIVE DESIGN CHANGES OCCASIONED BY THE FAILURE OF THE CONTRACTOR TO VERIFY THE LOCATION OF EXISTING UTILITIES AS DESCRIBED ABOVE SHALL BE BORNE BY THE CONTRACTOR.
3. CONTRACTOR SHALL CONTACT UTILITY COMPANIES FOR LOCATION OF EXISTING FACILITIES THAT MAY NOT BE SHOWN ON THE PLANS 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
4. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE TRENCH SAFETY AND SHORING SYSTEMS IN ACCORDANCE WITH O.S.H.A. REGULATIONS.
5. CONTRACTOR SHALL PROVIDE ALL WORK TO MINIMIZE DISTURBANCES TO SURROUNDING LANDOWNERS. PROTECT EXISTING FENCING, GARDENS, TREES, AND OTHER EXISTING FACILITIES. IF NECESSARY, TO ORIGINAL CONDITION OR BETTER. CONTRACTOR SHALL INSTALL NEW MATERIALS IF THE EXISTING MATERIALS, WHEN REMOVED, ARE NOT SUITABLE FOR RE-USE AS DIRECTED BY THE ENGINEER. CONTRACTOR IS RESPONSIBLE FOR REPAVING ALL DAMAGED PAVEMENT AND DRIVEWAYS, RECONSTRUCTING DITCHES AND SWELLS, AND REPLACING CULVERTS, SIGNS, AND OTHER EXISTING FACILITIES.
6. THE CONTRACTOR IS RESPONSIBLE FOR TIMELY REMOVAL AND PROPER LEGAL DISPOSAL OF ANY TRASH OR DEBRIS LOCATED WITHIN CONSTRUCTION OF ACCESS AREAS, INCLUDING EXISTING MATERIAL LOCATED ON-SITE PRIOR TO MOVE-IN.
7. DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN AND VEHICULAR ACCESS TO ALL ADJACENT PROPERTIES, ACCESS SHALL BE MAINTAINED DURING ALL WEATHER CONDITIONS.
8. ENFORCE POSITIVE DRAINAGE OF ALL WORK AREAS DURING CONSTRUCTION. FINAL GRADE ALL AREAS OF CONSTRUCTION AND ACCESS LIMITS TO DRAIN AFTER COMPLETION OF ALL OTHER CONSTRUCTION ACTIVITIES.
9. CONTRACTOR SHALL PROVIDE ELEVATION AT THE TOP OF PIPE AT 100 – INTERVALS AND AT HORIZONTAL OR VERTICAL ALIGNMENT CHANGES.
10. CONTRACTOR SHALL CONTACT TEXAS 811 (@ (800)-344-8377). CONTRACTOR SHALL CONTACT ALL AGENCIES WITH UTILITIES IN THE VICINITY PRIOR TO CONSTRUCTION.
11. VALVES CONNECTING TO PUBLIC WATER SYSTEM SHALL BE OPERATED BY WATER SYSTEM EMPLOYEES ONLY.
12. TRENCH ALIGNMENT SHALL BE AS STRAIGHT AS CONDITIONS PERMIT. ANY DEVIATION FROM PLANNED ALIGNMENT SHALL HAVE PRIOR APPROVAL BY THE PROJECT ENGINEER/INSPECTOR. ALL TRENCH CUTS SHALL BE IN ACCORDANCE WITH EXISTING SAFETY REGULATIONS IN EFFECT.
13. TRENCH BOTTOM SHOULD BE UNDISTURBED, TAMPERED, OR RELATIVELY SMOOTH EARTH. WHERE EXCAVATION IS IN ROCK, THE CONDUIT SHOULD BE LAID ON A LAYER OF CLEAN BACK FILL.
14. ALL BACK FILL SHOULD BE FREE OF DEBRIS OR OTHER MATERIAL THAT MAY DAMAGE THE CONDUIT SYSTEM OR CAUSE SETTLING. THE MATERIAL SHOULD FILL THE VOIDS AROUND THE CONDUIT TO PREVENT HOT SPOTS & SETTLING.
15. CONTRACTOR MUST COORDINATE ALL WORK TROUGH THE OWNER, THE ENGINEER, AND WITH ALL OTHER TRADE CONTRACTORS WHO MAY BE WORKING ON-SITE SIMULTANEOUSLY. INCLUDE KENDALL COUNTY IN COORDINATION OF STREETS AND DRAINAGE CONSTRUCTION. PROVIDE MIN. 24 HR NOTICE FOR INSPECTIONS.
16. CONTRACTORS SHALL COMPLY WITH KENDALL COUNTY RULES AND REGULATIONS DATED JANUARY 1, 1997, AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THIS PROJECT.
17. IF GROUNDWATER OR SEEPAGE IS ENCOUNTERED DURING CONSTRUCTION, CONTRACTORS SHALL NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY.
18. EXISTING LARGE TREES, WHEN LOCATED NEAR THE STREET RIGHT-OF-WAY LINES OR WITHIN UTILITY EASEMENT, SHALL NOT BE REMOVED WITHOUT FINAL PERMISSION FROM THE OWNER. EXISTING TREES WITHING THE "LOT" AREAS SHALL BE PROTECTED FROM DAMAGE DURING ALL PHASES OF CONSTRUCTION.
19. THE FIRE MARSHAL SHALL INSPECT ALL FIRE HYDRANTS PRIOR TO BEING COVERED.

KENDALL WEST UTILITY (KWU)

1. ALL DOMESTIC & RECYCLED WATER LINES AND FORCE MAIN SHALL BE AWWA C-900 DR-18. LOW PRESSURE SEWER SHALL PVC SDR 21 OR PVC SCH 40. FORCE MAINS SHALL BE PVC SDR-26 (MIN. 160 PSI). SANITARY SEWER SHALL BE PVC SDR-26 MINIMUM 160 PSI AT WATER MAIN CROSSING.
2. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THE PROJECT SHALL CONFORM TO APPLICABLE KENDALL WEST UTILITY STANDARDS AND SPECIFICS FOR CONSTRUCTION AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THE PROJECT.
3. ALL PUBLIC WATER AND/OR SANITARY SEWER INFRASTRUCTURE SHALL BE TESTED BY THE CONTRACTOR, AS PROVIDED FOR IN THE KENDALL WEST UTILITY STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION.
4. FOR PURPOSES OF RECORD DRAWINGS FOR KENDALL WEST UTILITY, THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL FINAL MEASUREMENTS, TAPS AND LENGTH OF SERVICE CONNECTIONS.
5. CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND STORM DRAINAGE STRUCTURE WHETHER SHOWN ON THE PLANS OR NOT.
6. ALL GARBAGE AND SPOIL MATERIAL FROM THE WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS/HER EXPENSE.
7. ALL TRENCH BACKFILL FROM THE PROJECT SHALL BE ACCOMPLISHED ACCORDING THE KENDALL WEST UTILITY "UTILITY PIPE TRENCH" DRAWING NO. 02221-1.0. NO WATER JETTING SHALL BE ALLOWED. OBSERVATION OF TRENCH BACKFILL SHALL BE SUPPLEMENTED BY MOISTURE-DENSITY TESTING CONDUCTED AT PERIODIC INTERVALS DURING THE COMPACTION PROJECT. THE CONTRACTOR SHALL BE REQUIRED THE MAKE SUITABLE EXCAVATION TO ALLOW ACCESS FOR SUCH TESTING, AND SHALL BE REQUIRED TO REMOVE AND REPLACE BACKFILL AS MANY TIMES AS NECESSARY TO ACHIEVE MINIMUM COMPACTION REQUIREMENTS SPECIFIED IN KENDALL WEST UTILITY STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING PERMITS, PERFORMING TESTS, AND OBTAINING APPROVALS AND ACCEPTANCES REQUIRED FOR COMPLETE CONSTRUCTION OF THIS PROJECT.
9. ALL ITEMS NOT SPECIFICALLY CALLED FOR IN THE PLANS, OR IN THE KENDALL WEST UTILITY STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITY OR IMPROVEMENT, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS SHALL BE MADE FOR THESE ITEMS.
10. THE CONTRACTOR SHALL EXCAVATE AND FIELD VERIFY EXISTING UTILITIES (LOCATION, DEPTH AND SIZE) CROSSING THE PROPOSED ALIGNMENT OF THE PROPOSED WATER AND/OR SANITARY SEWER UTILITY AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS, PRIOR TO ANY CONSTRUCTION IN THE AREA.
11. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY.
12. CONTRACTOR TO PROTECT AND PRESERVE EXISTING UTILITIES (E.G. IRRIGATION, ELECTRIC, GAS, STORM SEWER, SANITARY SEWER, CATV, ETC.) UNLESS NOTED OR OTHERWISE IN PLANS. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
13. ALL WATER AND SANITARY SEWER MAINS REQUIRE INSPECTION BY KENDALL WEST UTILITY.
14. ALL CONSTRUCTION OF DOMESTIC AND RECYCLED WATER LINES, SERVICE AND METERS AND THE LOW-PRESSURE SEWER SYSTEM SHALL COMPLY WITH KENDALL WEST UTILITY STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED (MAY 2016).

TEXAS WATER COMPANY STANDARD WATER NOTES

1. NO CONSTRUCTION ACTIVITIES SHALL BEGIN UNTIL A PRECONSTRUCTION MEETING HAS BEEN HELD BETWEEN THE CONTRACTOR, ENGINEER OF RECORD, AND A REPRESENTATIVE OF CLWSC.
2. IT IS THE INTENT OF THESE PLANS TO SHOW THE LOCATION OF EXISTING UNDERGROUND FACILITIES IN ACCORDANCE WITH EXISTING RECORDS. HOWEVER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY THE EXACT LOCATION OF ALL EXISTING UNDERGROUND FACILITIES PRIOR TO EXCAVATION. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY OF ANY AND ALL DAMAGES TO EXISTING FACILITIES.
3. BOUNDARY FENCES OR OTHER IMPROVEMENTS REMOVED TO PERMIT CONSTRUCTION SHALL BE REPLACED IN THE SAME LOCATION AND IN SAME CONDITION AS GOOD OR BETTER THAN IN WHICH THEY WERE FOUND. NO COMPENSATION SHALL BE GIVEN TO THE CONTRACTOR FOR REMOVAL AND REPLACEMENT OF FENCES.
4. CONTRACTOR SHALL NOTIFY THE CLWSC (830-964-3854) AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO PROJECT FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION.
6. CONTRACTOR SHALL NOT PLACE FILL OR WASTE MATERIAL ON ANY PRIVATE PROPERTY WITHOUT PRIOR WRITTEN AGREEMENT WITH THE PROPERTY OWNER. A COPY OF ANY WRITTEN AGREEMENT BETWEEN PROPERTY OWNER AND CONTRACTOR SHALL BE FURNISHED TO CLWSC.
7. NO EXCESS EXCAVATION MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAY WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
8. ALL VEGETATED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITIONS THAN FOUND PRIOR TO THE BEGINNING OF CONSTRUCTION.
9. BEFORE FINAL COMPLETION OF THE PROPOSED WORK, ALL ROADWAY, SLOPES, DITCHES AND BERMS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
10. REMOVE AND DISPOSE OF TREES, STUMPS, BRUSH, ROOTS, VEGETATION, LOGS, RUBBISH AND OTHER OBJECTIONABLE MATTER WITHIN THE LIMITS OF AREA AFFECTED BY THE WORK, INCLUDING ALL AREAS TO BE RE-GRADED. PROTECT TREES, SHRUBS, AND OTHER LANDSCAPE FEATURES SPECIFICALLY DESIGNATED FROM DAMAGE DURING CONSTRUCTION OPERATIONS.
11. CONTRACTOR TO CONFIRM ACTUAL HORIZONTAL AND VERTICAL LOCATION OF EXISTING STRUCTURES, PIPING, PAVING, FENCING AND ALL OTHER EXISTING FACILITIES PRIOR TO CONSTRUCTION.
12. CONTRACTOR SHALL COORDINATE FOR ALL NECESSARY UTILITY LOCATES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY TEXAS DEPARTMENT OF TRANSPORTATION AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN THE STATE RIGHT-OF-WAY.
14. CONTRACTOR SHALL NOT OPEN CUT ANY IMPROVED DRIVEWAY IN STATE RIGHT-OF-WAY WITHOUT PRIOR WRITTEN APPROVAL OF PROPERTY OWNER.

TEXAS WATER COMPANY STANDARD WATER NOTES (CONT)

15. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED OR RESTORE EXISTING GRADES. REMOVE RUBBISH VEGETATION AND ROCKS OVER 1½" IN DIAMETER. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM STRUCTURES. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER WILL STAND.
16. NO UTILITY TRENCHES OR PITS ARE TO BE LEFT OPEN OVERNIGHT, CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ADEQUATE SAFETY MEASURES ARE IN PLACE FOR BOTH HUMANS AND LIVESTOCK FOR ANY TRENCH LEFT OPEN OVERNIGHT. BACKFILLING WILL OCCUR DAILY AND AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OPERATIONS.
17. THE MOST RECENT CLWSC STANDARDS AND SPECIFICATIONS SHALL APPLY TO ALL CONSTRUCTION REGARDLESS OF INFORMATION PROVIDED ON PLANS. CONTRACTORS ARE ENCOURAGED TO VERIFY CURRENT INFORMATION WITH CLWSC STAFF PRIOR TO THE BEGINNING OF CONSTRUCTION.
18. ALL ROAD CROSSINGS UNDER KENDALL COUNTY ROADWAYS SHALL REQUIRE A SEPARATE PERMIT FROM KENDALL COUNTY ENGINEER. CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS AND SHALL CONSTRUCT ALL CROSSINGS IN ACCORDANCE WITH KENDALL COUNTY STANDARDS.
19. CONTRACTOR SHALL FOLLOW METHODS AND PROCEDURES OF SHUTDOWN AS DIRECTED BY THE CLWSC STAFF.
20. CONTRACTOR SHALL NOTIFY CONSUMERS OF, AND COORDINATE ALL SHUTDOWNS WITH CLWSC, PER CLWSC GUIDELINES.
21. CONTRACTOR SHALL ESTABLISH PIPE GRADES USING TOP OF FINISHED GRADE UNLESS OTHERWISE INDICATED ON PLANS.
22. CONTRACTOR SHALL GRADE MAIN TO AVOID USE OF AIR VALVES.
23. CONTRACTOR SHALL MAINTAIN MINIMUM 10 FEET CLEARANCE BETWEEN MAINS AND SANITARY SEWERS.
24. CONTRACTOR SHALL CONSTRUCT ALL CROSSINGS WITH SANITARY SEWER FACILITIES IN ACCORDANCE WITH THE MOST RECENT VERSION OF APPLICABLE TCEQ STANDARDS.
25. CONTRACTOR SHALL MAINTAIN MINIMUM 10 FEET CLEARANCE BETWEEN HYDRANTS AND DRIVEWAYS.
26. CONTRACTOR SHALL INSTALL SERVICES SUCH THAT CONSUMER'S LINES DO NOT CROSS DRIVEWAYS.
27. CONTRACTOR SHALL PROVIDE A CLEAN NEAT AS-BUILT DRAWING WITHIN 30 DAYS OF JOB COMPLETION IN BOTH PAPER AND ELECTRONIC (.PDF) FORMAT.
28. CONTRACTOR SHALL USE DUCTILE IRON FITTING WITH MECHANICAL JOINT AND MEGALUG PER CLWSC STANDARD SPECIFICATIONS ON ALL PIPE REGARDLESS OF PIPE MATERIAL UNLESS OTHERWISE INDICATED ON PLANS.
29. CONTRACTOR SHALL INSTALL ALL APPURTENANCES ON WATER MAIN IN ACCORDANCE WITH APPLICABLE CLWSC STANDARD DETAILS.
30. CONTRACTOR SHALL INSTALL TRACER WIRE ON ALL WATER MAINS LOCATED IN COMMERCIAL SUBDIVISIONS AND RESIDENTIAL SUBDIVISIONS WITH URBAN STREET CROSS SECTIONS.
31. CONTRACTOR SHALL MAINTAIN A COPY OF THE STAMPED SET OF PLANS "APPROVED FOR CONSTRUCTION" ON THE JOB SITE AT ALL TIMES.

GENERAL SITE PREPARATION NOTES

1. CONTRACTOR SHALL FOLLOW ALL APPLICABLE GUIDELINES IN ACCORDANCE TO WITH THE GEOTECHNICAL INVESTIGATION UNLESS DIRECTED OTHERWISE IN THE SPECIFICATIONS OR CONSTRUCTION DRAWINGS.
2. FINAL GRADING AND REVEGETATION SHALL OCCUR IN DISTURBED AREAS WITHIN SEVEN (7) DAYS OF INSTILLATION AND BACKFILLING OF THE LINES.
3. THE ENGINEER SHALL APPROVE THE FINAL GRADING PRIOR TO HYDROMULCH SEEDING.
4. ALL AREAS DISTURBED DURING CONSTRUCTION THAT ARE NOT COVERED IN CONCRETE SHALL BE HYDROMULCH. AREAS OUTSIDE OF CLEARING LIMITS THAT ARE DISTURBED FOR CONTRACTOR CONVENIENCE (HAUL ROADS, STAGING AREAS) WILL BE HYDROMULCH WITH NO SEPARATE PAY.

SEWER AND WATER GENERAL NOTES

1. MUNICIPAL WATER LINES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS, SECTION 290, AS ADOPTED BY THE TCEQ.
2. SANITARY SEWER LINES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 217, DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS ADOPTED BY THE TCEQ.
3. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E. WATER WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTILLATION MUST MEET THE REQUIREMENTS OF 30 TAC 217.53 OR 30 TAC 290.44 (E) (WATER HYGIENE).
4. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXACT SIZE, TYPE, AND LOCATION OF ALL UTILITIES AND PROTECTING AND REPAIRING THE SAME AT NO ADDITIONAL COST TO THE OWNER.
5. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING ALL MANHOLES, CLEANOUTS, VALVE VAULTS, VALVE BOXES AND ANY OTHER SURFACE UTILITY FEATURES TO THE FINAL FINISHED GRADE.
6. PRIOR TO BEGINNING ANY ON-SITE WORK, ADEQUATE HORIZONTAL AND VERTICAL CONTROLS SHALL BE PLACED FOR LOCATING THE PROPOSED UTILITY LINES.
7. EXISTING LINE LOCATIONS ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR IN ACCORDANCE WITH THE BEST INFORMATION AVAILABLE, BUT ARE NOT GUARANTEED TO CORRECT OR COMPLETE.
8. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH THE SET OF RECORD DRAWINGS SHOWING THE CONSTRUCTED FLOWLINE AND TOP OF MANHOLE ELEVATIONS AND ANY DEVIATIONS FROM THE PLANS. THE ENGINEER SHALL COMPILE AND CONFIRM THE INFORMATION AND PROVIDE FULL SIZE (11 X 17), RECORD DRAWINGS TO KENDALL COUNTY.

CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAIN (TCEQ 30 TAC 290.44(a))

1. 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 THE NINE (9) FEET OF THE WATER LINE SHALL BE CONSTRUCTED USING 150 PSI PRESSURE RATED DUCTILE IRON, CAST IRON, OR PVC PIPE AND JOINED WITH EQUALLY PRESSURE RATED PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVISES OF A CAST IRON OR DUCTILE IRON MATERIAL A SECTION SECTION OF 150 PSI PRESSURE RATED PIPE AT LEAST EIGHTEEN (18) FEET MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEM.)
2. WHERE A SEMI-RIGID OR RIGID SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE (9) FEET BUT GREATER THAN TWO (2) FEET, THE INITIAL BACKFILL SHALL BE CEMENT STABILIZED SAND, (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR ALL SECTION OF THE SEWER WITHIN NINE (9) FEET OF THE WATER MAIN.
3. WHERE A SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION IS LESS THAN TWO (2) FEET, THE SEWER MAIN SHALL BE CONSTRUCTED OF CAST IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PS1 WITHIN 9 (9) FEET SHALL HAVE A SEGMENT OF SEWER PIPE CENTERED ON THE WATER MAIN, SHALL BE PLACED NO CLOSER THAN SIX INCHES BETWEEN OUTER DIAMETERS, AND SHALL BE JOINED WITH PRESSURE RATED RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVISES OF A CAST IRON, DUCTILE IRON MATERIAL A SECTION OF 150 PSI PRESSURE RATED PIPE AT LEAST EIGHTEEN (18) FEET MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEMS.)
4. WHERE A SEWER MAIN PARALLELS A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE (9) 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 99) FEET BEYOND THE POINT OF CONFLICT, SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE BETWEEN OUTER DIAMETERS OF TWO (2) FEET VERTICALLY AND FOUR (4) FEET HORIZONTALLY, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVISES OF A CAST IRON OR DUCTILE MATERIAL.
5. THE OUTER EDGE OF SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED ANY CLOSER THAN NINE 99) FEET TO WATER MAINS.

NON-EDWARDS AQUIFER RECHARGE ZONE SANITEAY SEWER SYSTEM GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL COMPLY WITH THE FOLLOWING AS APPLICABLE:

   (A) CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S CRITERIA FOR SEWAGE SYSTEMS [30 TAC 317.1, 30 TAC 317.2, 30 TAC 317.3, AND 30 TAC 317.4].
2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTILLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED PERMIT FROM THE CONSULTANT.
3. THE LOCATIONS AND DEPTHS OF 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.

   TEXAS 811 800-344-8377
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESTORING TO ITS ORIGINAL OR BETTER CONDITION FROM DAMAGE DONE TO EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, LANDSCAPING, AND STRUCTURES.
5. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAT ONE INCH DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE OWNER FOR GUIDANCE. CONSTRUCTION INSPECTOR SHALL ALSO BE NOTIFIED.
6. THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING SANITARY SEWERS AT THE TIMES DURING CONSTRUCTION.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, UTILITY COMPANY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREA.
8. ALL RESIDENTIAL SEWER SERVICE LATERALS SERVING VACANT TRACTS SHALL BE EXTENDED TO THE PROPERTY LINE AND CAPPED AND SEALED.

BLASTING (BLASTING WILL NOT BE PERMITTED IN THIS PROJECT

EXCAVATION

9. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTILLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS, AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS.SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
10. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.

WATER LINE CROSSING

11. WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN SEWER LINES AND WATER LINES/MAINS CANNOT BE MAINTAINED, THE INSULATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCES CONSERVATION COMMISSION'S RULES (30 TAC 317.13 APPENDIX E)

EROSION AND SEDIMENT CONTROL

12. 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 THIS PROJECT'S PLAN AND PROFILE SHEETS.
13. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINALL ACCEPTANCE OF PROJECT.

SUPPLEMENTARY

14. 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 WHICH IT RELATES.
15. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH PIPE, MINIMUM STIFFNESS OF 115 PS1.
16. WORK COMPLETED BY THE CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR THE NOTICE TO PROCEED WITH THE OWNER OF ENGINEER WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
17. 4. ALL PIPE MATERIAL USED IN A SEWER COLLECTION SYSTEM UNDER PRESSURE FLOW CONDITIONS SHALL MEET THE PERFORMANCE REQUIREMENTS OF ATSM D2241 CLASS 200 PVC PIPE.

NO.	REMISION	DATE
1	ADDED NOTE	01/05/23
2	ADDED TX WATER CO NOTES	03/20/23

3/20/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

GENERAL NOTES
(SHEET 1 OF 2)

PLAT NO.
JOB NO. 12616-04
DATE MARCH 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C1.00

Date: Mar 20, 2023, 4:19pm User ID: achamberlin
File: P:\126\16\04\Design\Civil\SN126160604.dwg

TCEQ GENERAL NOTES

1. THIS ORGANIZED SEWAGE COLLECTION SYSTEM MUST BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) EDWARDS AQUIFER RULES 30 TEXAS ADMINISTRATIVE CODE (TAC) §§213.5(C) AND 217.51 - 217.70 AND 30 TAC CHAPTER 217, SUBCHAPTER D, AND KENDALL WEST UTILITY STANDARD SPECIFICATIONS.

2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROPOSED REGULATED PROJECT MUST BE PROVIDED WITH COPIES OF THE SEWAGE COLLECTION SYSTEM PLANS AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS MUST BE REQUIRED TO KEEP ON-SITE COPIES OF THE PLAN AND THE APPROVAL LETTER.

3. NO LATER THAN 48 HOURS PRIOR TO COMMENCING ANY REGULATED ACTIVITY, THE APPLICANT OR HIS AGENT MUST NOTIFY THE SAN ANTONIO REGIONAL OFFICE, IN WRITING, OF THE DATE ON WHICH THE REGULATED ACTIVITY WILL BEGIN.

4. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED SCS APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF AN SCS APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.

5. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE INSTALLED PRIOR TO CONSTRUCTION, MUST BE MAINTAINED DURING CONSTRUCTION, AND MUST BE REMOVED WHEN SUFFICIENT VEGETATION IS ESTABLISHED TO CONTROL THE EROSION AND SEDIMENTATION AND THE CONSTRUCTION AREA IS STABILIZED.

6. THE SEWER LINE TRENCH DETAILS SHOWING THE CROSS SECTION WITH THE DIMENSIONS, PIPE PLACEMENT, AND BACKFILL INSTRUCTIONS ARE INCLUDED ON PLAN SHEET __ OF __ OF THESE PLANS. ALL SEWER PIPES JOINTS MUST MEET THE REQUIREMENTS IN 30 TAC §§217.53(C) AND 217.65.

   GRAVITY LINES MUST HAVE A SDR 35 OR LESS. PRESSURIZED SEWER SYSTEMS MUST HAVE PIPE WITH A MINIMUM WORKING PRESSURE RATING OF 150 PSI.

   THE ASTM, ANSI, OR AWWA SPECIFICATION NUMBERS FOR THE PIPE(S) AND JOINTS ARE C110, C111, & C900 PER AWWA.

   THE PIPE MATERIAL, THE PRESSURE CLASSES, AND THE SDR AND/OR DR DESIGNATIONS ARE PVC OR DUCTILE IRON, CLASS 150, AND SDR-26, SDR-35 OR DR-14. SEE KENDAL WEST UTILITY SECTION 02530 - SANITARY SEWER SYSTEM.

7. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY OF THE FEATURE DISCOVERED. A GEOLOGISTS ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING WITHIN TWO WORKING DAYS. THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.
8. SEWER LINES LOCATED WITHIN OR CROSSING THE 5-YEAR FLOODPLAIN OF A DRAINAGE WAY WILL BE PROTECTED FROM INUNDATION AND STREAM VELOCITIES WHICH COULD CAUSE EROSION AND SCOURING OF BACKFILL. THE TRENCH MUST BE CAPPED WITH CONCRETE TO PREVENT SCOURING OF BACKFILL, OR THE SEWER LINES MUST BE ENCASED IN CONCRETE. ALL CONCRETE SHALL HAVE A MINIMUM THICKNESS OF SIX (6) INCHES.

9. BLASTING PROCEDURES FOR PROTECTION OF EXISTING SEWER LINES AND OTHER UTILITIES WILL BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION CRITERIA. SAND IS NOT ALLOWED AS BEDDING OR BACKFILL IN TRENCHES THAT HAVE BEEN BLASTED. IF ANY EXISTING SEWER LINES ARE DAMAGED, THE LINES MUST BE REPAIRED AND RETESTED.

10. ALL MANHOLES CONSTRUCTED OR REHABILITATED ON THIS PROJECT MUST HAVE WATERTIGHT SIZE ON SIZE RESILIENT CONNECTORS ALLOWING FOR DIFFERENTIAL SETTLEMENT. IF MANHOLES ARE CONSTRUCTED WITHIN THE 100-YEAR FLOODPLAIN, THE COVER MUST HAVE A GASKET AND BE BOLTED TO THE RING. WHERE GASKETED MANHOLE COVERS ARE REQUIRED FOR MORE THAN THREE MANHOLES IN SEQUENCE OR FOR MORE THAN 1500 FEET, ALTERNATE MEANS OF VENTING WILL BE PROVIDED. BRICKS ARE NOT AN ACCEPTABLE CONSTRUCTION MATERIAL FOR ANY PORTION OF THE MANHOLE.

    THE DIAMETER OF THE MANHOLES MUST BE A MINIMUM OF FOUR FEET AND THE MANHOLE FOR ENTRY MUST HAVE A MINIMUM CLEAR OPENING DIAMETER OF 30 INCHES. THESE DIMENSIONS AND OTHER DETAILS SHOWING COMPLIANCE WITH THE COMMISSION'S RULES CONCERNING MANHOLES AND SEWER LINE/MANHOLE INVERTS DESCRIBED IN 30 TAC §217.55 ARE INCLUDED ON PLAN SHEET __ OF __.

    IT IS SUGGESTED THAT ENTRANCE INTO MANHOLES IN EXCESS OF FOUR FEET DEEP BE ACCOMPLISHED BY MEANS OF A PORTABLE LADDER. THE INCLUSION OF STEPS IN A MANHOLE IS PROHIBITED.

11. WHERE WATER LINES AND NEW SEWER LINE ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC §217.53(D) (PIPE DESIGN) AND 30 TAC §290.44(E) (WATER DISTRIBUTION).

12. ~~WHERE SEWERS LINES DEVIATE FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE ALL CURVATURE OF SEWER PIPE MUST BE ACHIEVED BY THE FOLLOWING PROCEDURE WHICH IS RECOMMENDED BY THE PIPE MANUFACTURER: ___ _____;~~

    ~~IF PIPE FLEXURE IS PROPOSED, THE FOLLOWING METHOD OF PREVENTING DEFLECTION OF THE JOINT MUST BE USED: _____;~~

    SPECIFIC CARE MUST BE TAKEN TO ENSURE THAT THE JOINT IS PLACED IN THE CENTER OF THE TRENCH AND PROPERLY BEDDED IN ACCORDANCE WITH 30 TAC §217.54.

13. NEW SEWAGE COLLECTION SYSTEM LINES MUST BE CONSTRUCTED WITH STUB OUTS FOR THE CONNECTION OF ANTICIPATED EXTENSIONS. THE LOCATION OF SUCH STUB OUTS MUST BE MARKED ON THE GROUND SUCH THAT THEIR LOCATION CAN BE EASILY DETERMINED AT THE TIME OF CONNECTION OF THE EXTENSIONS. SUCH STUB OUTS MUST BE MANUFACTURED WYES OR TEES THAT ARE COMPATIBLE IN SIZE AND MATERIAL WITH BOTH THE SEWER LINE AND THE EXTENSION. AT THE TIME OF ORIGINAL CONSTRUCTION, NEW STUB-OUTS MUST BE CONSTRUCTED SUFFICIENTLY TO EXTEND BEYOND THE END OF THE STREET PAVEMENT. ALL STUB-OUTS MUST BE SEALED WITH A MANUFACTURED CAP TO PREVENT LEAKAGE. EXTENSIONS THAT WERE NOT ANTICIPATED AT THE TIME OF ORIGINAL CONSTRUCTION OR THAT ARE TO BE CONNECTED TO AN EXISTING SEWER LINE NOT FURNISHED WITH STUB OUTS MUST BE CONNECTED USING A MANUFACTURED SADDLE AND IN ACCORDANCE WITH ACCEPTED PLUMBING TECHNIQUES.

    ~~IF NO STUB-OUT IS PRESENT AN ALTERNATE METHOD OF JOINING LATERALS IS SHOWN IN THE DETAIL ON PLAN SHEET __ OF __ (FOR POTENTIAL FUTURE LATERALS).~~

    ~~THE PRIVATE SERVICE LATERAL STUB-OUTS MUST BE INSTALLED AS SHOWN ON THE PLAN AND PROFILE SHEETS ON PLAN SHEET __ OF __ AND MARKED AFTER BACKFILLING AS SHOWN IN THE DETAIL ON PLAN SHEET __ OF __.~~

14. TRENCHING, BEDDING AND BACKFILL MUST CONFORM WITH 30 TAC §217.54. THE BEDDING AND BACKFILL FOR FLEXIBLE PIPE MUST COMPLY WITH THE STANDARDS OF ASTM D-2321, CLASSES IA, IB, II OR III. RIGID PIPE BEDDING MUST COMPLY WITH THE REQUIREMENTS OF ASTM C 12 (ANSI A 106.2) CLASSES A, B OR C.

15. SEWER LINES MUST BE TESTED FROM MANHOLE TO MANHOLE. WHEN A NEW SEWER LINE IS CONNECTED TO AN EXISTING STUB OR CLEAN-OUT, IT MUST BE TESTED FROM EXISTING MANHOLE TO NEW MANHOLE. IF A STUB OR CLEAN-OUT IS USED AT THE END OF THE PROPOSED SEWER LINE, NO PRIVATE SERVICE ATTACHMENTS MAY BE CONNECTED BETWEEN THE LAST MANHOLE AND THE CLEANOUT UNLESS IT CAN BE CERTIFIED AS CONFORMING WITH THE PROVISIONS OF 30 TAC §213.5(C)(3)(E).

16. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH 30 TAC §217.57. THE ENGINEER MUST RETAIN COPIES OF ALL TEST RESULTS WHICH MUST BE MADE AVAILABLE TO THE EXECUTIVE DIRECTOR UPON REQUEST. THE ENGINEER MUST CERTIFY IN WRITING THAT ALL WASTEWATER LINES HAVE PASSED ALL REQUIRED TESTING TO THE APPROPRIATE REGIONAL OFFICE WITHIN 30 DAYS OF TEST COMPLETION AND PRIOR TO USE OF THE NEW COLLECTION SYSTEM. TESTING METHOD WILL BE:
    (a) FOR A COLLECTION SYSTEM PIPE THAT WILL TRANSPORT WASTEWATER BY GRAVITY FLOW, THE DESIGN MUST SPECIFY AN INFILTRATION AND EXFILTRATION TEST OR A LOW-PRESSURE AIR TEST. A TEST MUST CONFORM TO THE FOLLOWING REQUIREMENTS:
    (1) LOW PRESSURE AIR TEST.
    (A) A LOW PRESSURE AIR TEST MUST FOLLOW THE PROCEDURES DESCRIBED IN AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) C-828, ASTM C-924, OR ASTM F-1417 OR OTHER PROCEDURE APPROVED BY THE EXECUTIVE DIRECTOR, EXCEPT AS TO TESTING TIMES AS REQUIRED IN TABLE C.3 IN SUBPARAGRAPH (C) OF THIS PARAGRAPH OR EQUATION C.3 IN SUBPARAGRAPH (B)(II) OF THIS PARAGRAPH.
    (B) FOR SECTIONS OF COLLECTION SYSTEM PIPE LESS THAN 36 INCH AVERAGE INSIDE DIAMETER, THE FOLLOWING PROCEDURE MUST APPLY, UNLESS A PIPE IS TO BE TESTED AS REQUIRED BY PARAGRAPH (2) OF THIS SUBSECTION.
    (i) A PIPE MUST BE PRESSURIZED TO 3.5 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE PRESSURE EXERTED BY GROUNDWATER ABOVE THE PIPE.
    (ii) ONCE THE PRESSURE IS STABILIZED, THE MINIMUM TIME ALLOWABLE FOR THE PRESSURE TO DROP FROM 3.5 PSI GAUGE TO 2.5 PSI GAUGE IS COMPUTED FROM THE FOLLOWING EQUATION:

    EQUATION C.3

    WHERE:

    T = TIME FOR PRESSURE TO DROP 1.0 POUND PER SQUARE INCH GAUGE IN SECONDS
    K = 0.000419 X D X L, BUT NOT LESS THAN 1.0
    D = AVERAGE INSIDE PIPE DIAMETER IN INCHES
    L = LENGTH OF LINE OF SAME SIZE BEING TESTED, IN FEET
    Q = RATE OF LOSS, 0.0015 CUBIC FEET PER MINUTE PER SQUARE FOOT INTERNAL SURFACE
    (C) SINCE A K VALUE OF LESS THAN 1.0 MAY NOT BE USED, THE MINIMUM TESTING TIME FOR EACH PIPE DIAMETER IS SHOWN IN THE FOLLOWING TABLE C.3:

Pipe Diameter (inches)	Minimum Time (seconds)	Maximum Length for Minimum Time (feet)	Time for Longer Length (seconds/foot)
6	340	398	0.8550
8	454	298	1.5200
10	567	239	2.3740
12	680	199	3.4190
15	850	159	5.3420
18	1020	133	7.6930
21	1190	114	10.4710
24	1360	100	13.6760
27	1530	88	17.3090
30	1700	80	21.3690
33	1870	72	25.8560

    (D) AN OWNER MAY STOP A TEST IF NO PRESSURE LOSS HAS OCCURRED DURING THE FIRST 25% OF THE CALCULATED TESTING TIME.
    (E) IF ANY PRESSURE LOSS OR LEAKAGE HAS OCCURRED DURING THE FIRST 25% OF A TESTING PERIOD, THEN THE TEST MUST CONTINUE FOR THE ENTIRE TEST DURATION AS OUTLINED ABOVE OR UNTIL FAILURE.
    (F) WASTEWATER COLLECTION SYSTEM PIPES WITH A 27 INCH OR LARGER AVERAGE INSIDE DIAMETER MAY BE AIR TESTED AT EACH JOINT INSTEAD OF FOLLOWING THE PROCEDURE OUTLINED IN THIS SECTION.
    (G) A TESTING PROCEDURE FOR PIPE WITH AN INSIDE DIAMETER GREATER THAN 33 INCHES MUST BE APPROVED BY THE EXECUTIVE DIRECTOR.
    (2) INFILTRATION/EXFILTRATION TEST.
    (A) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF 2.0 FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE.
    (B) AN OWNER SHALL USE AN INFILTRATION TEST IN LIEU OF AN EXFILTRATION TEST WHEN PIPES ARE INSTALLED BELOW THE GROUNDWATER LEVEL.
    (C) THE TOTAL EXFILTRATION, AS DETERMINED BY A HYDROSTATIC HEAD TEST, MUST NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET ABOVE THE CROWN OF A PIPE AT AN UPSTREAM MANHOLE, OR AT LEAST TWO FEET ABOVE EXISTING GROUNDWATER LEVEL, WHICHEVER IS GREATER.
    (D) FOR CONSTRUCTION WITHIN A 25-YEAR FLOOD PLAIN, THE INFILTRATION OR EXFILTRATION MUST NOT EXCEED 10 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT THE SAME MINIMUM TEST HEAD AS IN SUBPARGRAPH (C) OF THIS PARAGRAPH.
    (E) IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, AN OWNER SHALL UNDERTAKE REMEDIAL ACTION IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED. AN OWNER SHALL RETEST A PIPE FOLLOWING A REMEDIATION ACTION.

    (b) IF A GRAVITY COLLECTION PIPE IS COMPOSED OF FLEXIBLE PIPE, DEFLECTION TESTING IS ALSO REQUIRED. THE FOLLOWING PROCEDURES MUST BE FOLLOWED:
    (1) FOR A COLLECTION PIPE WITH INSIDE DIAMETER LESS THAN 27 INCHES, DEFLECTION MEASUREMENT REQUIRES A RIGID MANDREL.
    (A) MANDREL SIZING.
    (i) A RIGID MANDREL MUST HAVE AN OUTSIDE DIAMETER (OD) NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER (ID) OR AVERAGE ID OF A PIPE, AS SPECIFIED IN THE APPROPRIATE STANDARD BY THE ASTMS, AMERICAN WATER WORKS ASSOCIATION, UNI-BELL, OR AMERICAN NATIONAL STANDARDS INSTITUTE, OR ANY RELATED APPENDIX.
    (i) IF A MANDREL SIZING DIAMETER IS NOT SPECIFIED IN THE APPROPRIATE STANDARD, THE MANDREL MUST HAVE AN OD EQUAL TO 95% OF THE ID OF A PIPE. IN THIS CASE, THE ID OF THE PIPE, FOR THE PURPOSE OF DETERMINING THE OD OF THE MANDREL, MUST EQUAL BE THE AVERAGE OUTSIDE DIAMETER MINUS TWO MINIMUM WALL THICKNESSES FOR OD CONTROLLED PIPE AND THE AVERAGE INSIDE DIAMETER FOR ID CONTROLLED PIPE.
    (iii) ALL DIMENSIONS MUST MEET THE APPROPRIATE STANDARD.
    (B) MANDREL DESIGN.
    (i) A RIGID MANDREL MUST BE CONSTRUCTED OF A METAL OR A RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
    (ii) A MANDREL MUST HAVE NINE OR MORE ODD NUMBER OF RUNNERS OR LEGS.
    (iii) A BARREL SECTION LENGTH MUST EQUAL AT LEAST 75% OF THE INSIDE DIAMETER OF A PIPE.
    (iv) EACH SIZE MANDREL MUST USE A SEPARATE PROVING RING.
    (C) METHOD OPTIONS.
    (i) AN ADJUSTABLE OR FLEXIBLE MANDREL IS PROHIBITED.
    (ii) A TEST MAY NOT USE TELEVISION INSPECTION AS A SUBSTITUTE FOR A DEFLECTION TEST.
    (iii) IF REQUESTED, THE EXECUTIVE DIRECTOR MAY APPROVE THE USE OF A DEFLECTOMETER OR A MANDREL WITH REMOVABLE LEGS OR RUNNERS ON A CASE-BY-CASE BASIS.
    (2) FOR A GRAVITY COLLECTION SYSTEM PIPE WITH AN INSIDE DIAMETER 27 INCHES AND GREATER, OTHER TEST METHODS MAY BE USED TO DETERMINE VERTICAL DEFLECTION.
    (3) A DEFLECTION TEST METHOD MUST BE ACCURATE TO WITHIN PLUS OR MINUS 0.2% DEFLECTION.
    (4) AN OWNER SHALL NOT CONDUCT A DEFLECTION TEST UNTIL AT LEAST 30 DAYS AFTER THE FINAL BACKFILL.
    (5) GRAVITY COLLECTION SYSTEM PIPE DEFLECTION MUST NOT EXCEED FIVE PERCENT (5%).
    (6) IF A PIPE SECTION FAILS A DEFLECTION TEST, AN OWNER SHALL CORRECT THE PROBLEM AND CONDUCT A SECOND TEST AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.

17. ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC §217.58.
    (a) ALL MANHOLES MUST PASS A LEAKAGE TEST.
    (b) AN OWNER SHALL TEST EACH MANHOLE (AFTER ASSEMBLY AND BACKFILLING) FOR LEAKAGE, SEPARATE AND INDEPENDENT OF THE COLLECTION SYSTEM PIPES, BY HYDROSTATIC EXFILTRATION TESTING, VACUUM TESTING, OR OTHER METHOD APPROVED BY THE EXECUTIVE DIRECTOR.
    (1) HYDROSTATIC TESTING.
    (A) THE MAXIMUM LEAKAGE FOR HYDROSTATIC TESTING OR ANY ALTERNATIVE TEST METHODS IS 0.025 GALLONS PER FOOT DIAMETER PER FOOT OF MANHOLE DEPTH PER HOUR.
    (B) TO PERFORM A HYDROSTATIC EXFILTRATION TEST, AN OWNER SHALL SEAL ALL WASTEWATER PIPES COMING INTO A MANHOLE WITH AN INTERNAL PIPE PLUG, FILL THE MANHOLE WITH WATER, AND MAINTAIN THE TEST FOR AT LEAST ONE HOUR.
    (C) A TEST FOR CONCRETE MANHOLES MAY USE A 24-HOUR WETTING PERIOD BEFORE TESTING TO ALLOW SATURATION OF THE CONCRETE.
    (2) VACUUM TESTING.
    (A) TO PERFORM A VACUUM TEST, AN OWNER SHALL PLUG ALL LIFT HOLES AND EXTERIOR JOINTS WITH A NON-SHRINK GROUT AND PLUG ALL PIPES ENTERING A MANHOLE.
    (B) NO GROUT MUST BE PLACED IN HORIZONTAL JOINTS BEFORE TESTING.
    (C) STUB-OUTS, MANHOLE BOOTS, AND PIPE PLUGS MUST BE SECURED TO PREVENT MOVEMENT WHILE A VACUUM IS DRAWN.
    (D) AN OWNER SHALL USE A MINIMUM 60 INCH/LB TORQUE WRENCH TO TIGHTEN THE EXTERNAL CLAMPS THAT SECURE A TEST COVER TO THE TOP OF A MANHOLE.
    (E) A TEST HEAD MUST BE PLACED AT THE INSIDE OF THE TOP OF A CONE SECTION, AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
    (F) THERE MUST BE A VACUUM OF 10 INCHES OF MERCURY INSIDE A MANHOLE TO PERFORM A VALID TEST.
    (G) A TEST DOES NOT BEGIN UNTIL AFTER THE VACUUM PUMP IS OFF.
    (H) A MANHOLE PASSES THE TEST IF AFTER 2.0 MINUTES AND WITH ALL VALVES CLOSED, THE VACUUM IS AT LEAST 9.0 INCHES OF MERCURY.

18. ALL PRIVATE SERVICE LATERALS MUST BE INSPECTED AND CERTIFIED IN ACCORDANCE WITH 30 TAC §213.5(C)(3)(I). AFTER INSTALLATION OF AND, PRIOR TO COVERING AND CONNECTING A PRIVATE SERVICE LATERAL TO AN EXISTING ORGANIZED SEWAGE COLLECTION SYSTEM, A TEXAS LICENSED PROFESSIONAL ENGINEER, TEXAS REGISTERED SANITARIAN, OR APPROPRIATE CITY INSPECTOR MUST VISUALLY INSPECT THE PRIVATE SERVICE LATERAL AND THE CONNECTION TO THE SEWAGE COLLECTION SYSTEM, AND CERTIFY THAT IT IS CONSTRUCTED IN CONFORMITY WITH THE APPLICABLE PROVISIONS OF THIS SECTION. THE OWNER OF THE COLLECTION SYSTEM MUST MAINTAIN SUCH CERTIFICATIONS FOR FIVE YEARS AND FORWARD COPIES TO THE APPROPRIATE REGIONAL OFFICE UPON REQUEST. CONNECTIONS MAY ONLY BE MADE TO AN APPROVED SEWAGE COLLECTION SYSTEM.

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

** SCALES ARE BASED ON SHEET SIZE OF 22" X 34"

NOTE: NO GRAVITY SANITARY SEWER IS INCLUDED IN UNIT 3 & 4. ALL SANITARY SEWER SERVICE UTILIZE GRINDER PUMPS AND LOW PRESSURE SEWER IN ACCORDANCE WITH 30 TAC §217 SUBCHAPTER D - ALTERNATIVE COLLECTION SYSTEMS. THE PROPOSED FORCE MAIN REROUTED FROM THE EXISTING LIFT STATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH 30 TAC §217 SUBCHAPTER C - CONVENTIONAL COLLECTION SYSTEMS.

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

REMOVED "& 4" FROM SHEET TITLE

10/31/2022
STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED
PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION
UNIT 3 ~~& 4~~
KENDALL COUNTY, TEXAS
GENERAL NOTES

REVISIONS

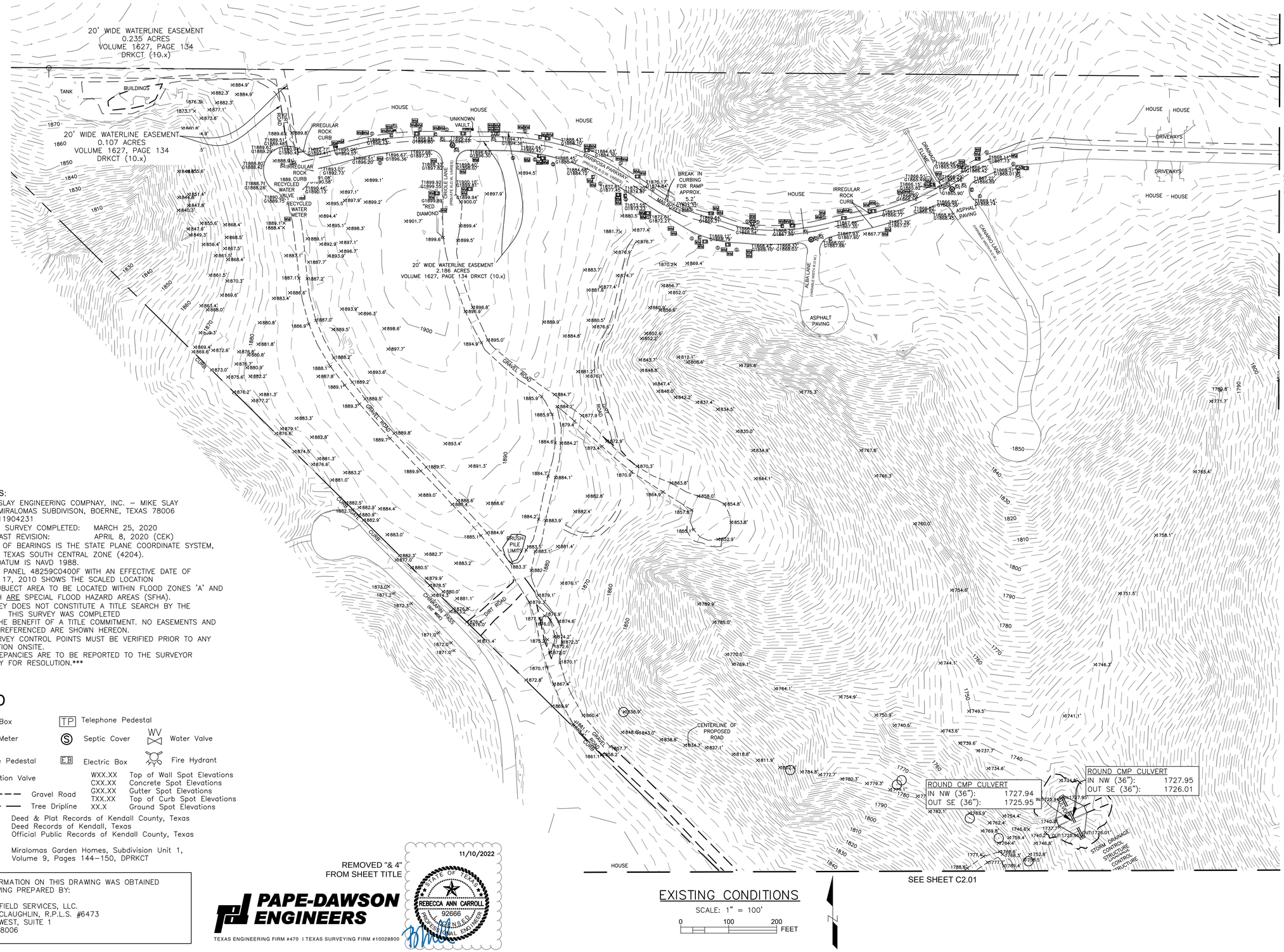
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

SHEET NO. C1.01

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\General\1.00 – General notes.dwg, C1.01 C1.01 GENERAL NOTES, silvia, Jul 01, 2021 – 9:04:28am



SURVEY NOTES:

(1) CLIENT: SLAY ENGINEERING COMPNAY, INC. – MIKE SLAY
SITUS: MIRALOMAS SUBDIVISON, BOERNE, TEXAS 78006
JOB NO. 1190423.1
(1) DATE FIELD SURVEY COMPLETED: MARCH 25, 2020
DATE OF LAST REVISION: APRIL 8, 2020 (CEK)
(2) THE BASIS OF BEARINGS IS THE STATE PLANE COORDINATE SYSTEM, NAD 1983, TEXAS SOUTH CENTRAL ZONE (4204). VERTICAL DATUM IS NAVD 1988.
(3) FEMA FIRM PANEL 48259C0400F WITH AN EFFECTIVE DATE OF DECEMBER 17, 2010 SHOWS THE SCALED LOCATION OF THE SUBJECT AREA TO BE LOCATED WITHIN FLOOD ZONES 'A' AND 'AE', WHICH ARE SPECIAL FLOOD HAZARD AREAS (SFHA).
(4) THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY THE SURVEYOR. THIS SURVEY WAS COMPLETED WITHOUT THE BENEFIT OF A TITLE COMMITMENT. NO EASEMENTS AND SETBACKS REFERENCED ARE SHOWN HEREON.
(5) ***ALL SURVEY CONTROL POINTS MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION ONSITE.
ANY DISCREPANCIES ARE TO BE REPORTED TO THE SURVEYOR IMMEDIATELY FOR RESOLUTION.***

LEGEND

- E Electric Box
- TP Telephone Pedestal
- WM Water Meter
- S Septic Cover
- WV Water Valve
- CAB Cable Pedestal
- EB Electric Box
- Fire Hydrant
- ICV Irrigation Valve
- WXX.XX Top of Wall Spot Elevations
- CXX.XX Concrete Spot Elevations
- GXX.XX Gutter Spot Elevations
- TXX.XX Top of Curb Spot Elevations
- XX.X Ground Spot Elevations
- Gravel Road
- Tree Dripline

DPRKCT Deed & Plat Records of Kendall County, Texas
DRKCT Deed Records of Kendall, Texas
OPRKCT Official Public Records of Kendall County, Texas

R1 – Miralomas Garden Homes, Subdivision Unit 1, Volume 9, Pages 144–150, DPRKCT

EXISTING INFORMATION ON THIS DRAWING WAS OBTAINED FROM A DRAWING PREPARED BY:

OPEN RANGE FIELD SERVICES, LLC.
W. ANDREW MCLAUGHLIN, R.P.L.S. #6473
39350 IH 10 WEST, SUITE 1
BOERNE, TX 78006

REMOVED "& 4" FROM SHEET TITLE

11/10/2022

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

EXISTING CONDITIONS
SCALE: 1" = 100'
0 100 200 FEET

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION
UNIT 3 & 4
KENDALL COUNTY, TEXAS
EXISTING CONDITIONS

REVISIONS

NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19–013

SHEET NO. C2.00

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\General\2.00 – EX CONDITIONS.dwg, C2.00 EXISTING CONDITIONS, srezaui, Nov 09, 2021 – 9:22:50am

SURVEY NOTES:

(1) CLIENT: SLAY ENGINEERING COMPNAY, INC. – MIKE SLAY
SITUS: MIRALOMAS SUBDIVISON, BOERNE, TEXAS 78006
JOB NO. 11904231

(1) DATE FIELD SURVEY COMPLETED: MARCH 25, 2020
DATE OF LAST REVISION: APRIL 8, 2020 (CEK)

(2) THE BASIS OF BEARINGS IS THE STATE PLANE COORDINATE SYSTEM, NAD 1983, TEXAS SOUTH CENTRAL ZONE (4204). VERTICAL DATUM IS NAVD 1988.

(3) FEMA FIRM PANEL 48259C0400F WITH AN EFFECTIVE DATE OF DECEMBER 17, 2010 SHOWS THE SCALED LOCATION OF THE SUBJECT AREA TO BE LOCATED WITHIN FLOOD ZONES 'A' AND 'AE', WHICH ARE SPECIAL FLOOD HAZARD AREAS (SFHA).

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LEGEND

- E — Electric Box
- TP — Telephone Pedestal
- WM — Water Meter
- S — Septic Cover
- WV — Water Valve
- CAB — Cable Pedestal
- EB — Electric Box
- Fire Hydrant
- ICV — Irrigation Valve
- Gravel Road
- Tree Dripline

WXX.XX	Top of Wall Spot Elevations
CXX.XX	Concrete Spot Elevations
GXX.XX	Gutter Spot Elevations
TXX.XX	Top of Curb Spot Elevations
XX.X	Ground Spot Elevations

DPRKCT	Deed & Plat Records of Kendall County, Texas
DRKCT	Deed Records of Kendall, Texas
OPRKCT	Official Public Records of Kendall County, Texas
R1 –	Miralomas Garden Homes, Subdivision Unit 1, Volume 9, Pages 144–150, DPRKCT

EXISTING INFORMATION ON THIS DRAWING WAS OBTAINED FROM A DRAWING PREPARED BY:

OPEN RANGE FIELD SERVICES, LLC.
W. ANDREW MCLAUGHLIN, R.P.L.S. #6473
39350 IH 10 WEST, SUITE 1
BOERNE, TX 78006

REMOVED "& 4" FROM SHEET TITLE

11/10/2022

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

EXISTING CONDITIONS

SCALE: 1" = 100'

0 100 200 FEET

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION
UNIT 3 & 4
KENDALL COUNTY, TEXAS

EXISTING CONDITIONS

REVISIONS

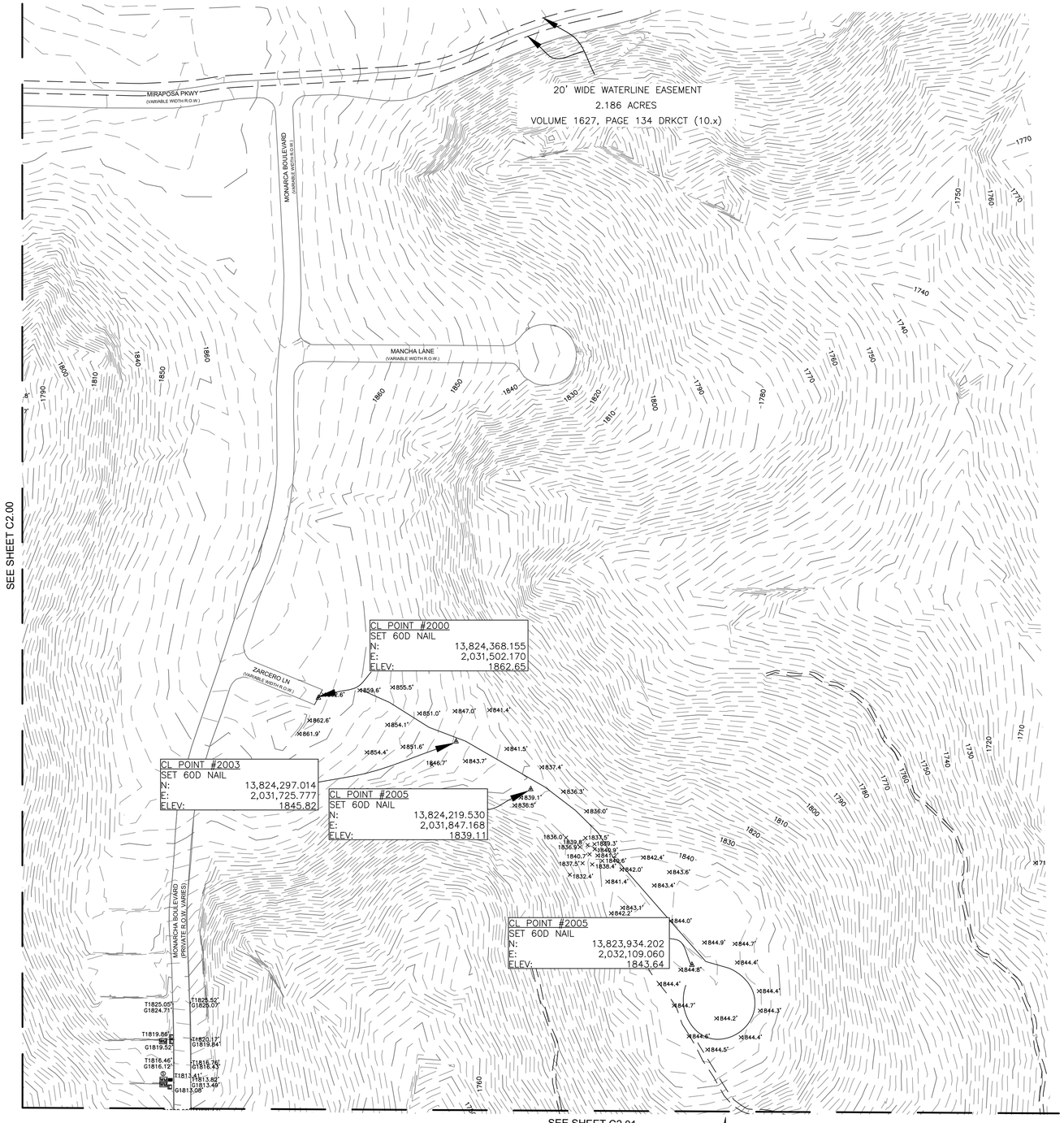
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19–013

SHEET NO. C2.01

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\General\2.00 – EX CONDITIONS.dwg, C2.01 EXISTING CONDITIONS, srezaui, Nov 09, 2021 – 9:24:03am



SURVEY NOTES:

(1) CLIENT: SLAY ENGINEERING COMPNAY, INC. – MIKE SLAY
SITUS: MIRALOMAS SUBDIVISON, BOERNE, TEXAS 78006
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LEGEND

E Electric Box		TP Telephone Pedestal	
WM Water Meter		Septic Cover	WV Water Valve
CAB Cable Pedestal		EB Electric Box	Fire Hydrant
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Gravel Road		CXX.XX Concrete Spot Elevations	
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DPRKCT Deed & Plat Records of Kendall County, Texas
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R1 – Miralomas Garden Homes, Subdivision Unit 1, Volume 9, Pages 144–150, DPRKCT

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W. ANDREW MCLAUGHLIN, R.P.L.S. #6473
39350 IH 10 WEST, SUITE 1
BOERNE, TX 78006

EXISTING CONDITIONS
SCALE: 1" = 100'
0 100 200 FEET

REMOVED "& 4" FROM SHEET TITLE

11/10/2022

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

SLAY ENGINEERING CO., INC.
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123 ALTGELT AVE.
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TELEPHONE (210) 734-4388
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SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION
UNIT 3 & 4
KENDALL COUNTY, TEXAS

EXISTING CONDITIONS

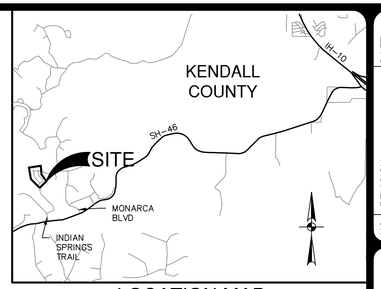
REVISIONS

NO.	REVISION

DESIGNED BY: M.S.
DRAWN BY: M.H.
CHECKED BY: M.S.
DATE: 06/30/2021
JOB NO. 19–013
SHEET NO. C2.02

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\General\2.00 – EX CONDITONS.dwg, C2.02 EXISTING CONDITONS, srezaui, Nov 09, 2021 – 9:24:50am

NO.	REVISION	DATE
1	ADDED STOP BARS, EXISTING SIGNAGE, GATE SIGN, REV LBLS	02/15/23
2	ADDED NOTE, REVISED LEGEND AND EMERGENCY GATE NOTE	03/06/23



LOCATION MAP
NOT-TO-SCALE

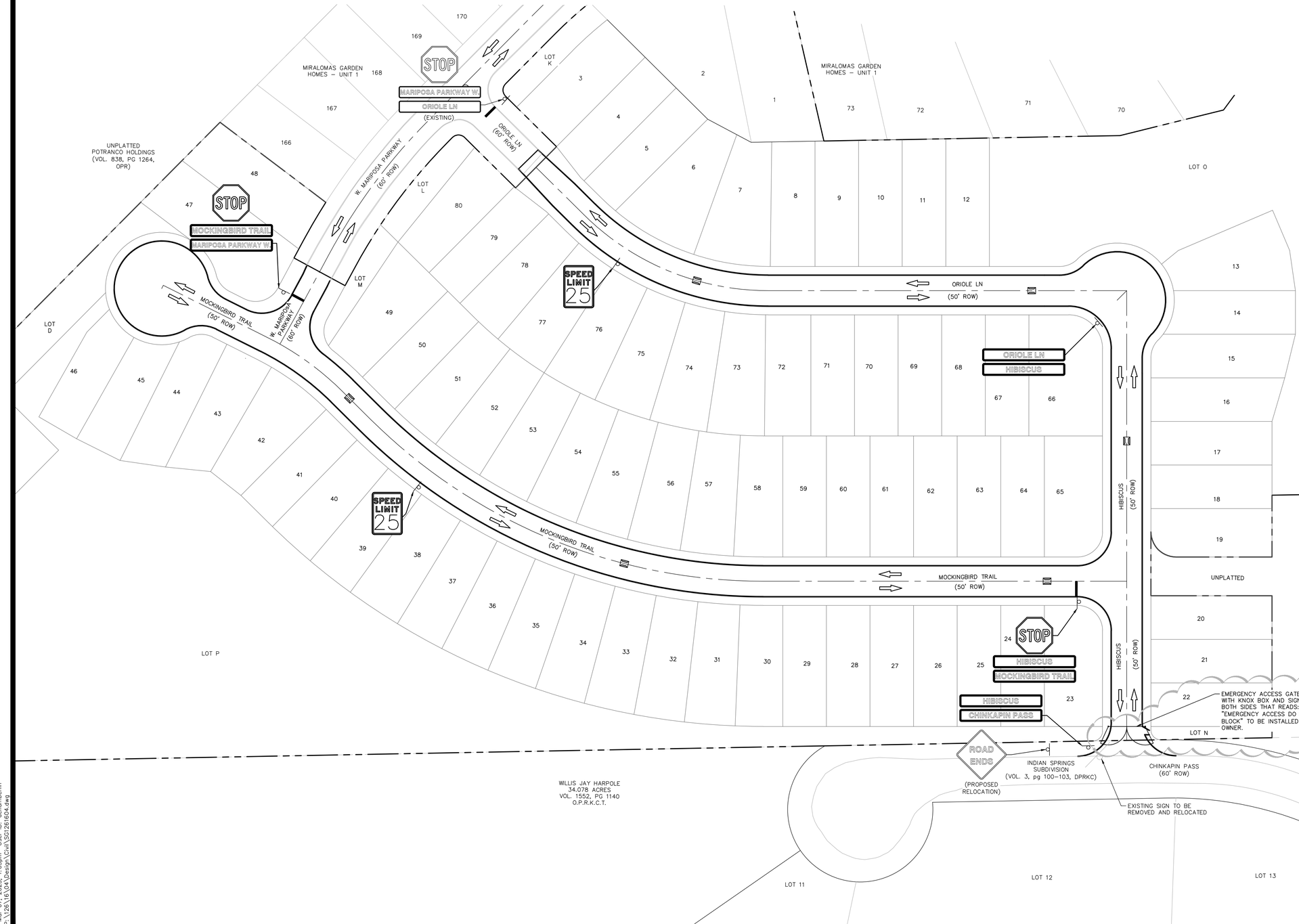
3/7/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

SIGNAGE PLAN



SCALE: 1"= 50'

0' 50' 100' 150'

SYMBOL	ITEM NUMBER
UNIT BOUNDARY	
TRAFFIC FLOW ARROW	
TYPE II BLUE RAISED PAVEMENT MARKERS – NO SEPARATE PAY ITEM (N.T.S.)	
Street Name STREET SIGN	531.57
SPEED LIMIT 25 R2-1 24X30	
STOP R1-1 30"X30"	531.3
24" WHITE THERMOPLASTIC STOP BAR	

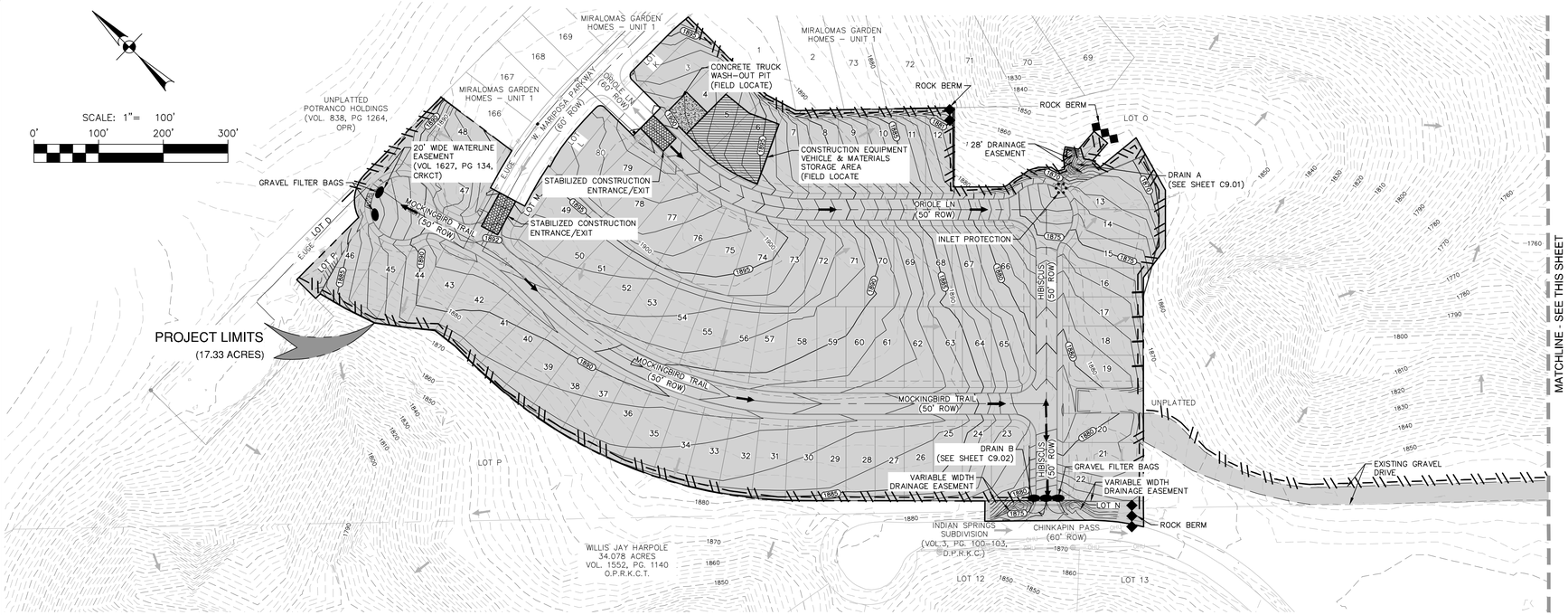
NOTE:
CUSTOM SIGNAGE TO BE INSTALLED BY OWNER'S VENDOR.

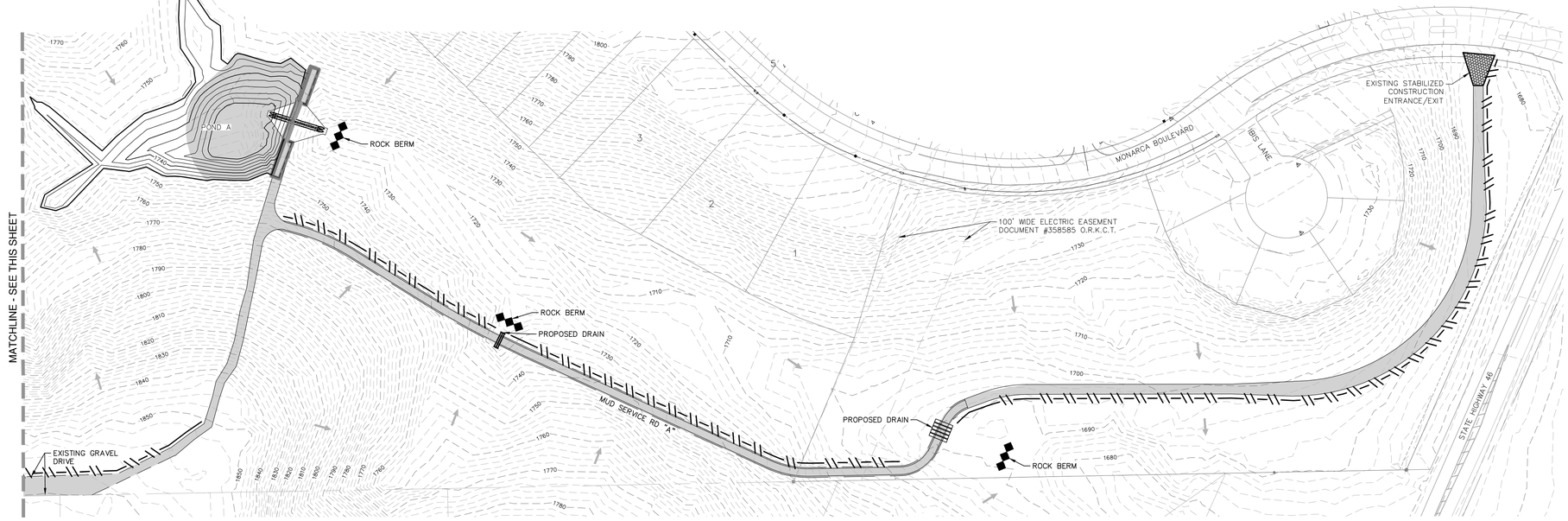
TRENCH EXCAVATION SAFETY PROTECTION:

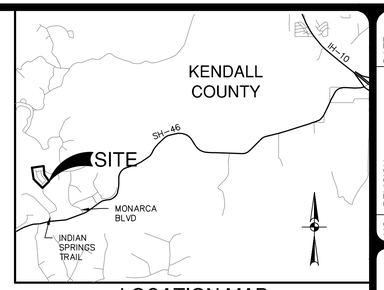
CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

PLAT NO.
JOB NO. 12616-04
DATE MARCH 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C3.01

Date: Mar 07, 2023, 1:03pm User ID: achamberlin
File: P:\126\16\04\Design\Civil\SC126160 4.dwg







LOCATION MAP
NOT-TO-SCALE

SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR (976)
- PROPOSED CONTOUR (970)
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM
- GRAVEL FILTER BAGS
- GRATE INLET PROTECTION
- SEDIMENT CONTROL ROLLS
- LIMITS OF DISTURBED AREA
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

2. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.

3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.

4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.

5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

6. FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.

7. STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.

8. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.

9. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.

10. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.

11. UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.

12. WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS, OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.

13. SHADED AREA ▭ DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT A PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES. HOUSE CONSTRUCTION ACTIVITIES WILL REQUIRE A SEPARATE STORM WATER POLLUTION PREVENTION PLAN.

14. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE PLACEMENT OF TEMPORARY BEST MANAGEMENT PRACTICES WITHIN TXDOT RIGHT-OF-WAY WITH TXDOT.

15. CPS ENERGY WILL FUNCTION AS A SECONDARY OPERATOR ON THIS PROJECT AND WILL BE INSTALLING ELECTRIC UTILITIES FOR ON-SITE CONSTRUCTION AND OFF-SITE FEED TO THE PROJECT.

SWP3 MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

NO.	REVISION	DATE
1	REVISED PROJECT LIMITS	02/15/23
2	ADDED PROPOSED CONTOURS	06/16/23

6/21/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

STORMWATER POLLUTION PREVENTION PLAN

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

PLAT NO.
JOB NO. 12616-04
DATE JUNE 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C5.00

Date: Jun 21, 2023, 3:38pm User ID: achamberlin
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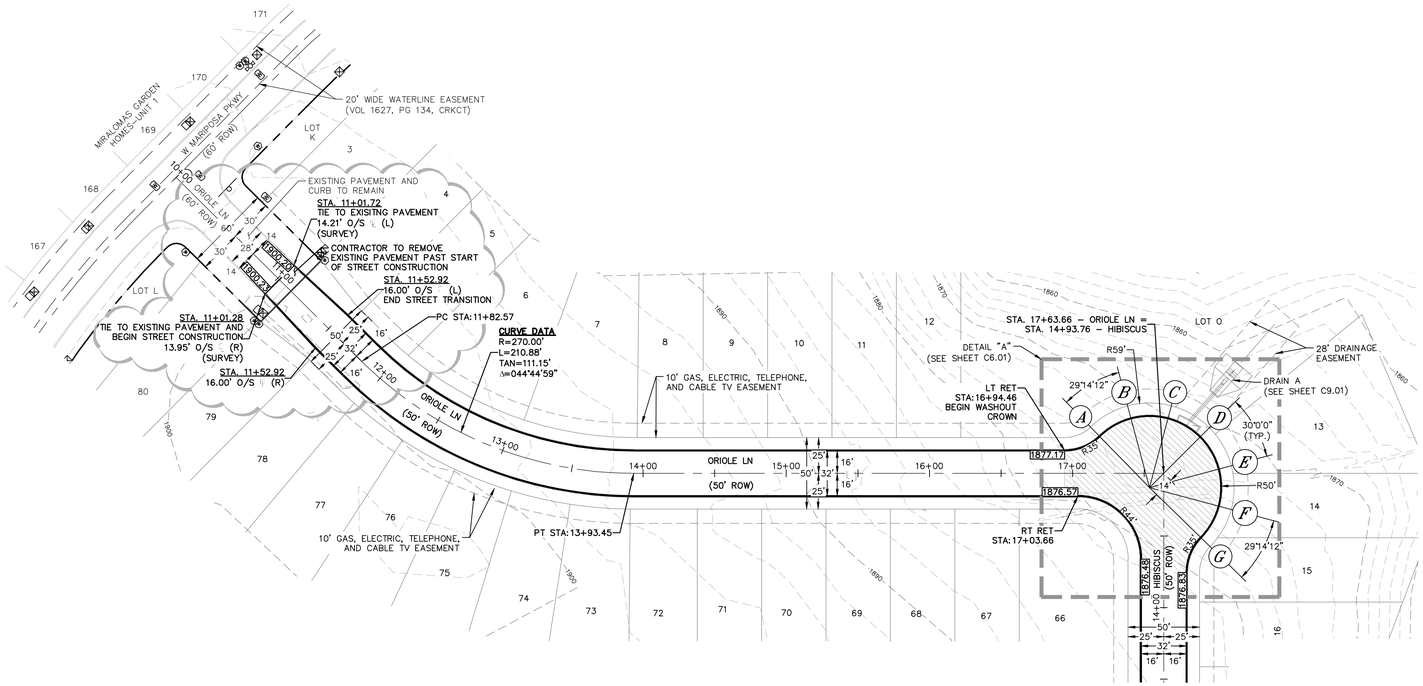
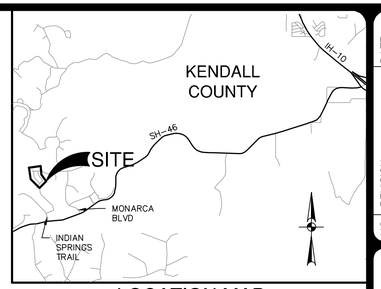




LOCATION MAP
NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
TOP OF CURB SPOT ELEVATION	995.00
WASHOUT CROWN SECTION	
DRIVEWAY	

NO.	REVISION	DATE
1.	REVISED STREET NAME, STREET TIE-IN TO EXISTING PAVEMENT, & REVISED PROFILE	01/23/22

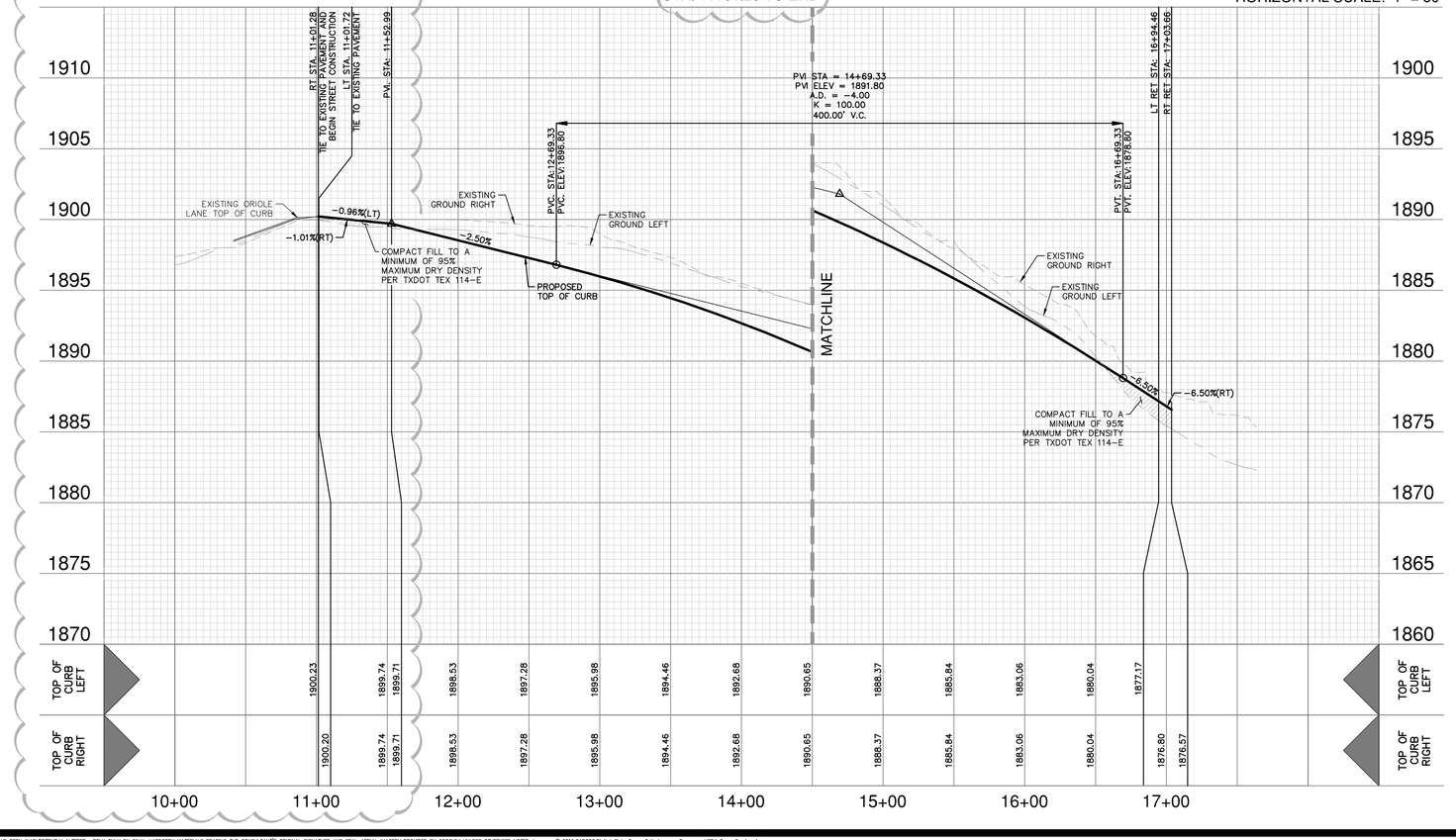
2/10/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ORIOLE LN
STA. 11+01.28 TO END

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



PLAT NO.	
JOB NO.	12616-04
DATE	FEBRUARY 2023
DESIGNER	AC
CHECKED	BC
DRAWN	AR
SHEET	C6.00

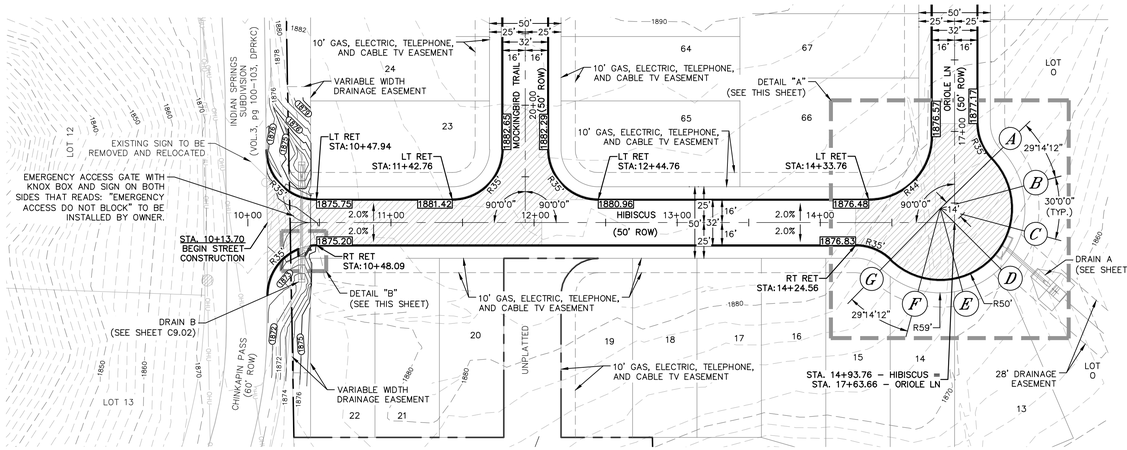
MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

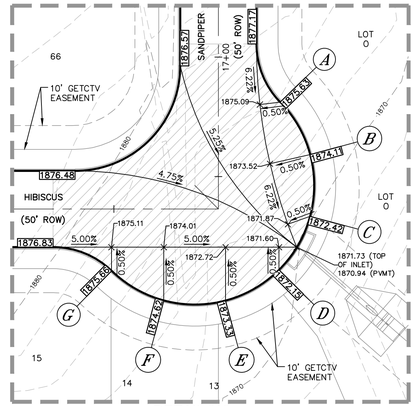
ORIOLE LANE
PLAN AND PROFILE

Date: Feb 10, 2023, 5:27pm User ID: ARECNAGA
File: P:\126\16\04\Design\Civil\ST1261604-HIBISCUS.dwg

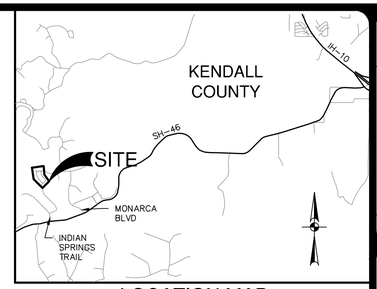
NOTE:

1. TxDOT TRAFFIC CONTROL DETAILS FOR WORK ALONG CHINKAPIN PASS CAN BE REFERENCED ON SHEETS C12.05–C12.07.





DETAIL "A"
SCALE: 1" = 30'



LOCATION MAP
NOT-TO-SCALE

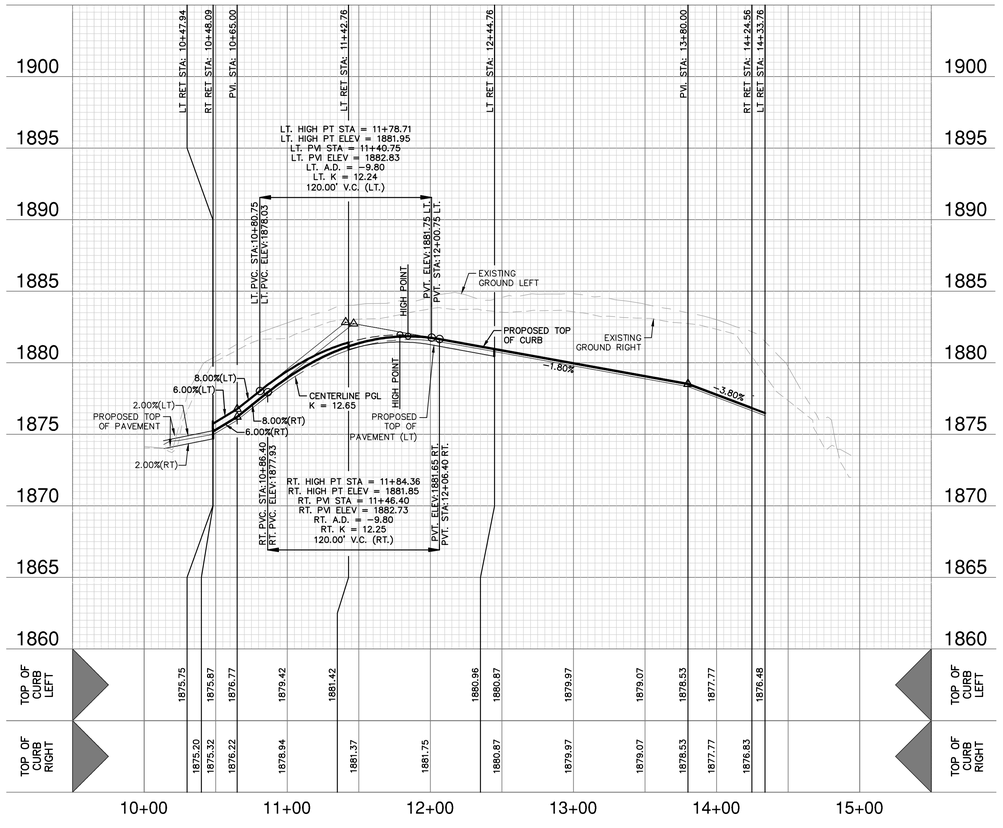
SCALE: 1"= 50'
0' 50' 100' 150'

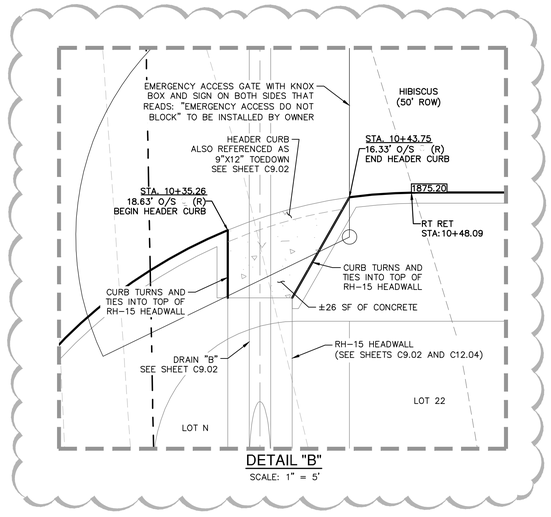
STREET LEGEND

PROJECT LIMITS	
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
TOP OF CURB SPOT ELEVATION	995.00
WASHOUT CROWN SECTION	
DRIVEWAY	

HIBISCUS
STA. 10+13.70 TO END

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





DETAIL "B"
SCALE: 1" = 5'

NO.	REVISION	DATE
1.	REVISED CURB, PROFILES AND CUL-DE-SAC DESIGN, ADDED PROPOSED CONOUTRS AROUND CULVERTS AND NOTE	02/15/23
2.	REMOVED GATE DETAIL, REVISED TYPE OF GATE AND NOTE	03/07/23
3.	ADDED HEADER CURB LABELS	03/17/23
4.	ADDED DETAIL "B"	04/19/23

4/19/2023

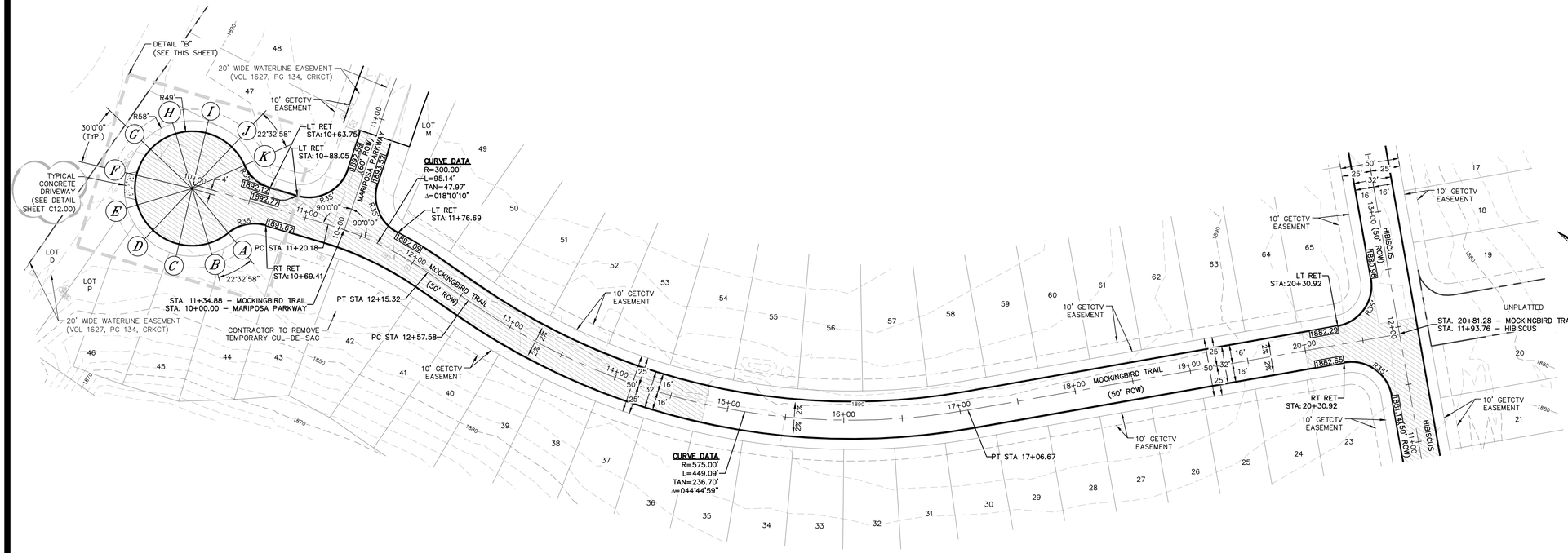
STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

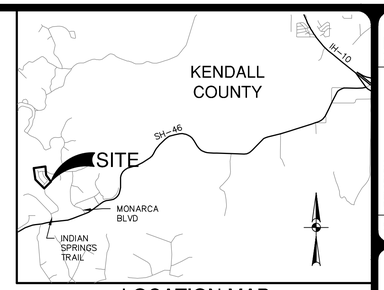
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

HIBISCUS
PLAN AND PROFILE

PLAT NO.
JOB NO. 12616-04
DATE APRIL 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C6.01





LOCATION MAP
NOT-TO-SCALE

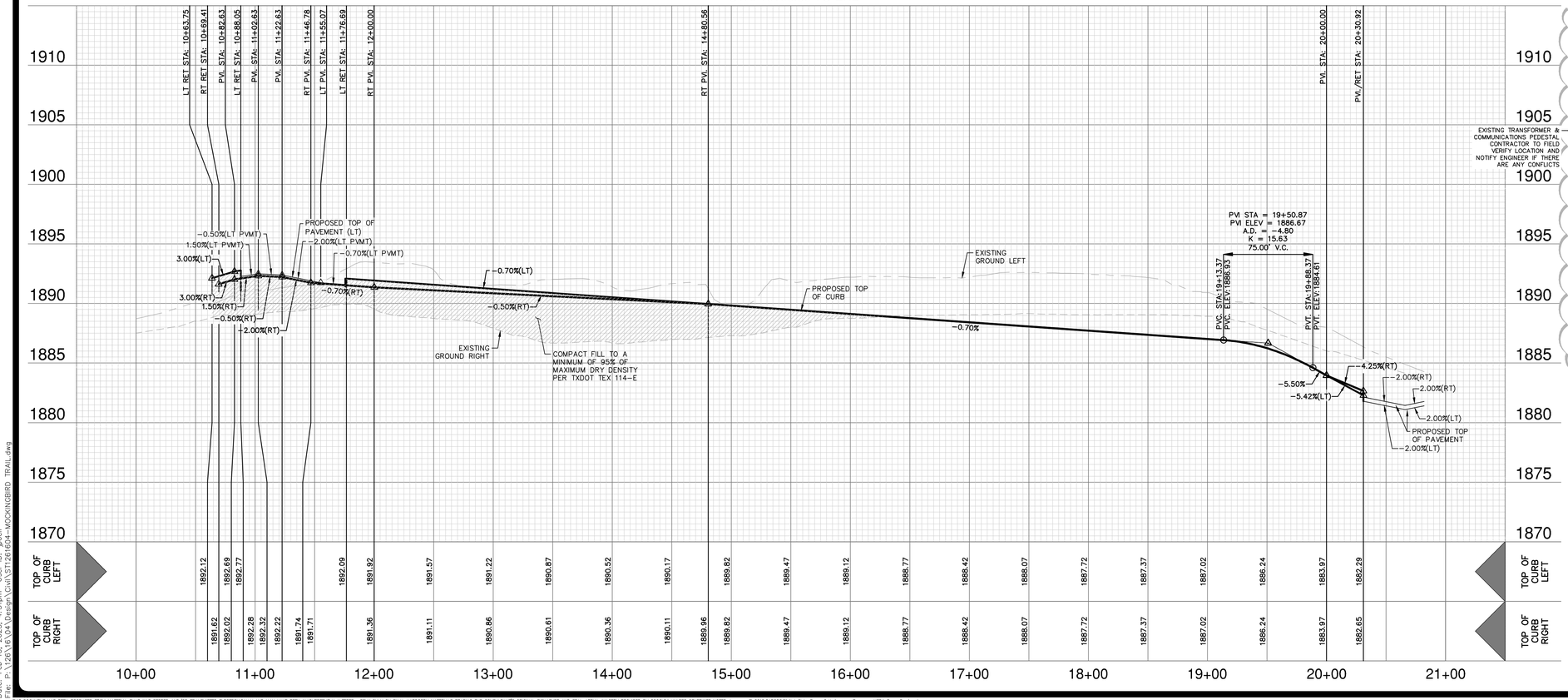
0' 50' 100' 150'
SCALE: 1"= 50'

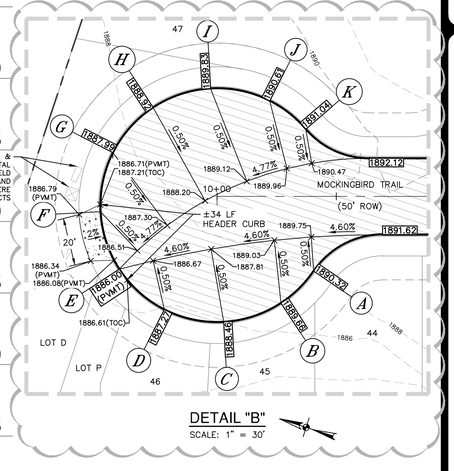
STREET LEGEND

PROJECT LIMITS	
WHEELCHAIR RAMP	Ⓘ
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
TOP OF CURB SPOT ELEVATION	995.00
WASHOUT CROWN SECTION	
PROPOSED CONCRETE SIDEWALK (BY SITE CONTRACTORS – SEE DETAIL SHEET C2.10)	
PROPOSED CONCRETE SIDEWALK (BY OTHERS)	
DRIVEWAY	

MOCKINGBIRD TRAIL
STA. 10+00.00 TO END

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





NO.	REVISION	DATE
1	REVISED CUL-DE-SAC DESIGN, RETURNS, & ADDED DRIVEWAY	02/13/23

2/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

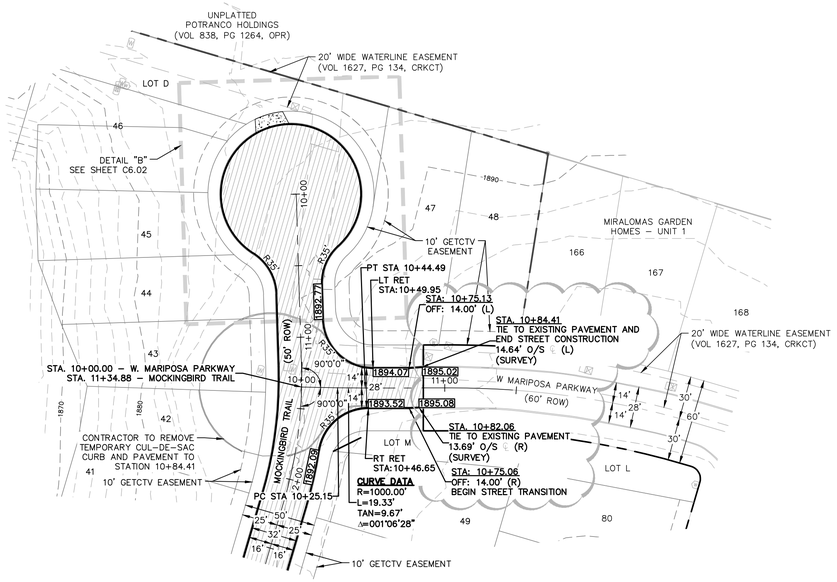
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

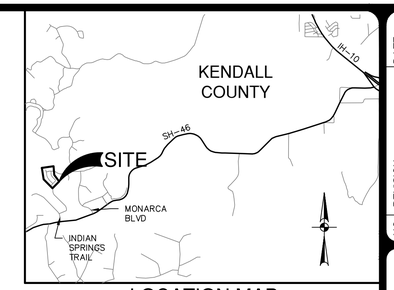
MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

MOCKINGBIRD TRAIL
PLAN AND PROFILE

PLAT NO.
JOB NO. 12616-04
DATE FEBRUARY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C6.02

Date: Feb 13, 2023, 4:31pm User ID: jpell
File: P:\126\16\04\Design\Civil\ST126I604-MOCKINGBIRD TRAIL.dwg





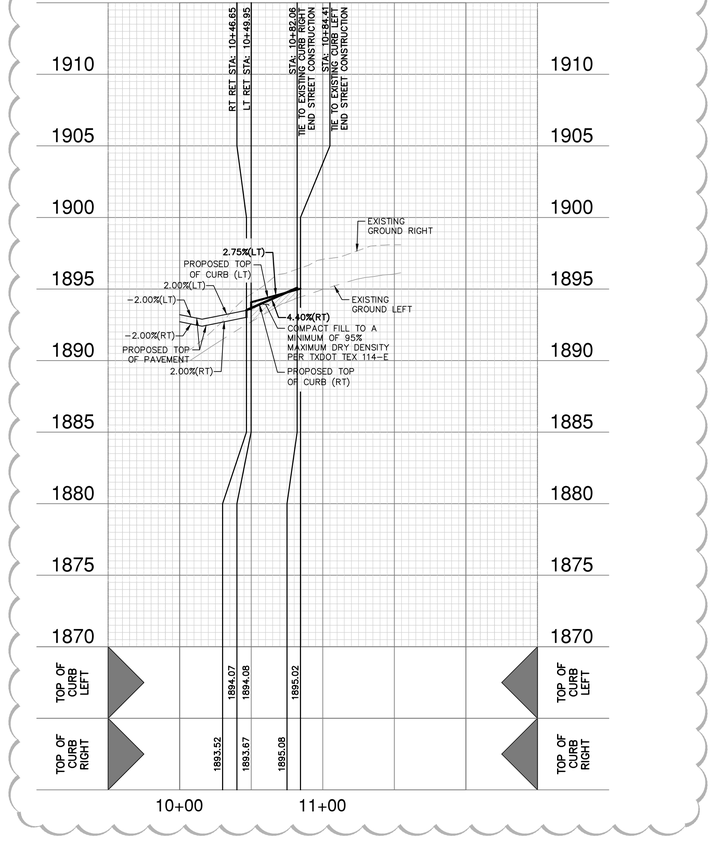
LOCATION MAP
NOT-TO-SCALE

0' 50' 100' 150'

SCALE: 1"= 50'

STREET LEGEND

PROJECT LIMITS	
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
TOP OF CURB SPOT ELEVATION	995.00
WASHOUT CROWN SECTION	
DRIVEWAY	



NO.	REVISION	DATE
1.	REVISED PROFILE, RETURNS, AND PAVEMENT TIE-INS	02/10/23

2/13/2023

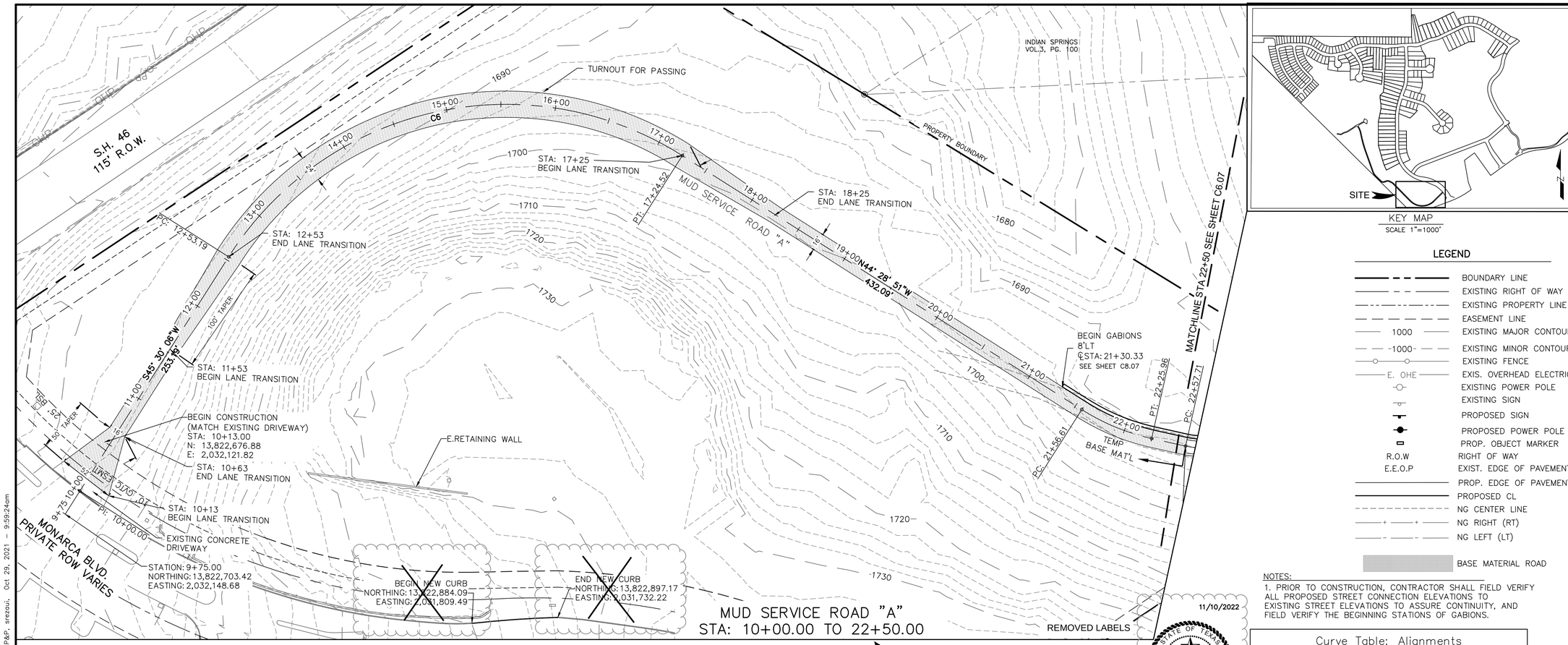
STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

W. MARIPOSA PARKWAY
PLAN AND PROFILE

PLAT NO.
JOB NO. 12616-04
DATE FEBRUARY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C6.03



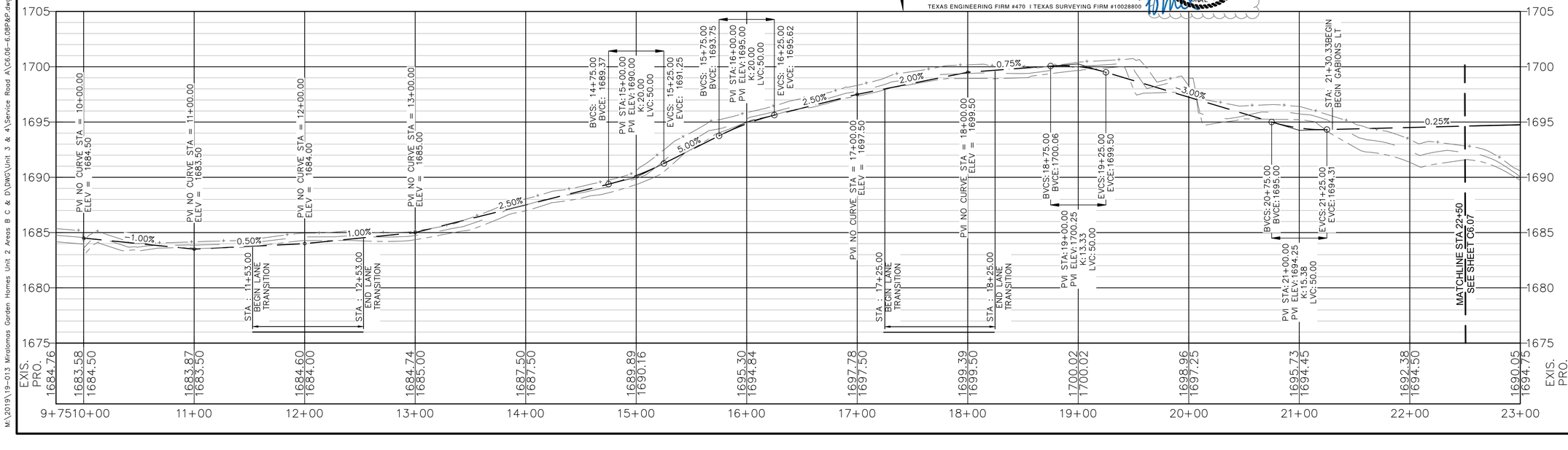
LEGEND

- BOUNDARY LINE
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- EASEMENT LINE
- 1000 — EXISTING MAJOR CONTOUR
- -1000- — EXISTING MINOR CONTOUR
- EXISTING FENCE
- E. OHE — EXIS. OVERHEAD ELECTRIC
- EXISTING POWER POLE
- EXISTING SIGN
- PROPOSED SIGN
- PROPOSED POWER POLE
- PROP. OBJECT MARKER
- R.O.W — RIGHT OF WAY
- E.E.O.P — EXIST. EDGE OF PAVEMENT
- PROP. EDGE OF PAVEMENT
- PROPOSED CL
- NG CENTER LINE
- NG RIGHT (RT)
- NG LEFT (LT)
- BASE MATERIAL ROAD

NOTES:
1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED STREET CONNECTION ELEVATIONS TO EXISTING STREET ELEVATIONS TO ASSURE CONTINUITY, AND FIELD VERIFY THE BEGINNING STATIONS OF GABIONS.

Curve Table: Alignments					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C6	471.33	300.00	90.02	N89° 29' 23"W	424.33

0 50 100 FEET
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



11/10/2022

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED
PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS
STREET PLAN AND PROFILE

REVISIONS

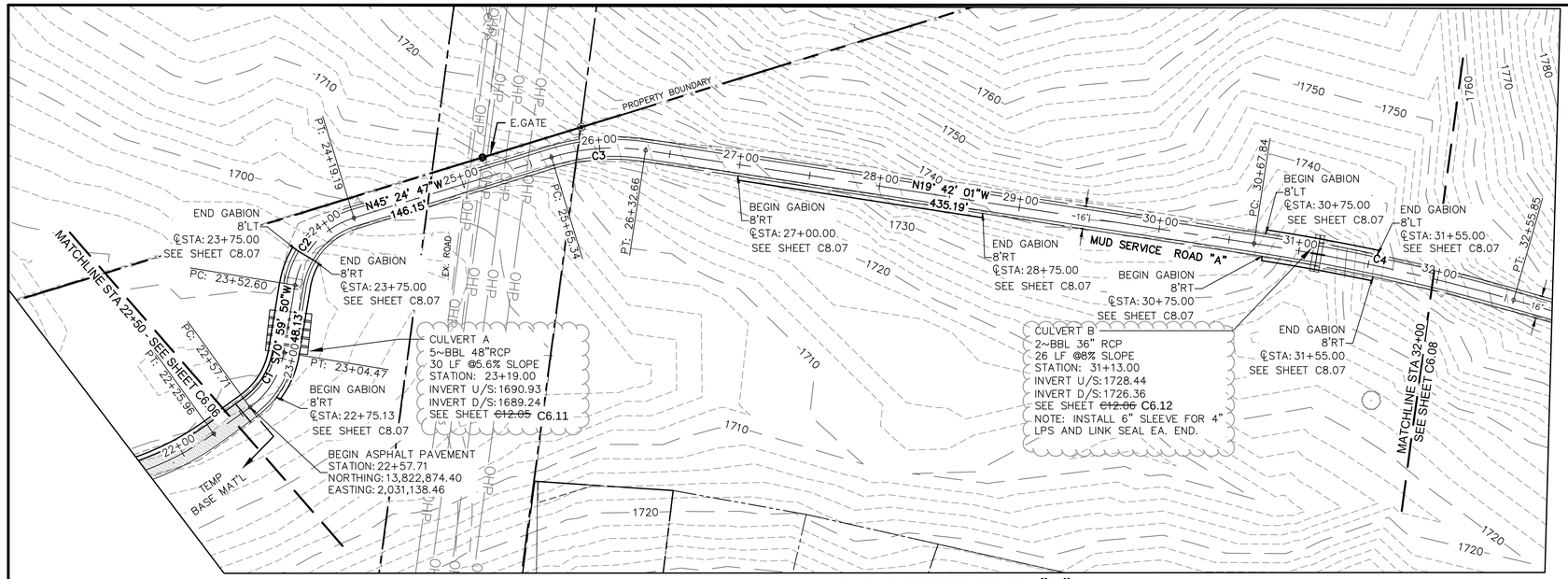
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

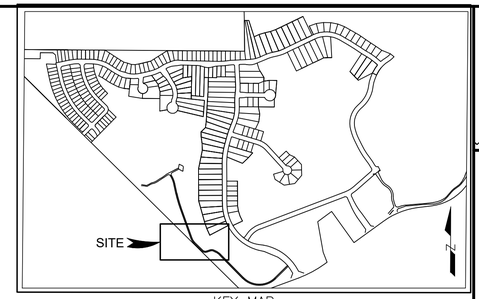
JOB NO. 19–013

SHEET NO. C6.06

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\Service Road A\C6.06-6.08P&P.dwg, C6.06 RD A P&P, srezaui, Oct 29, 2021 – 9:59:24am

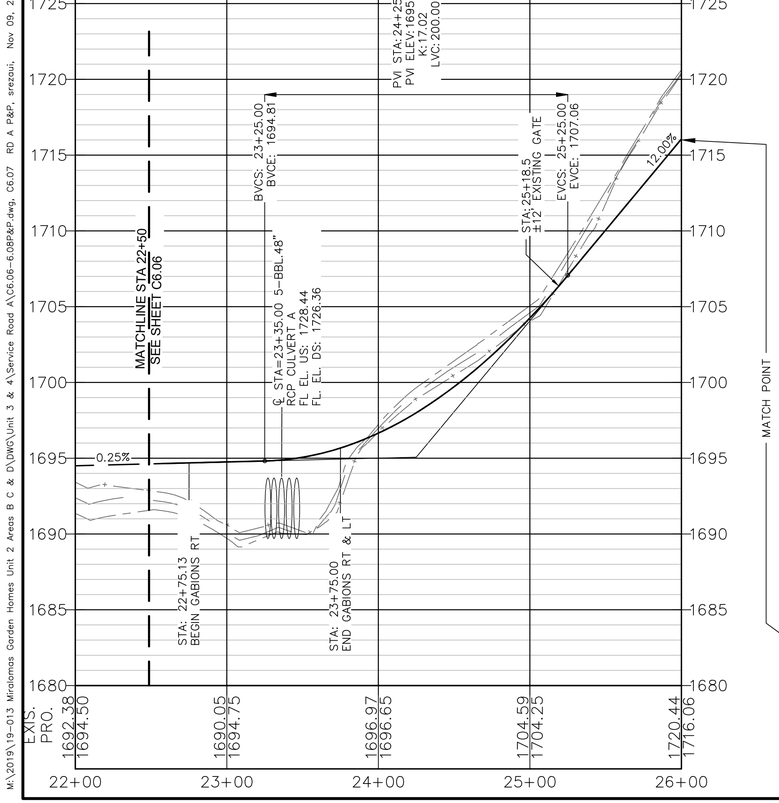


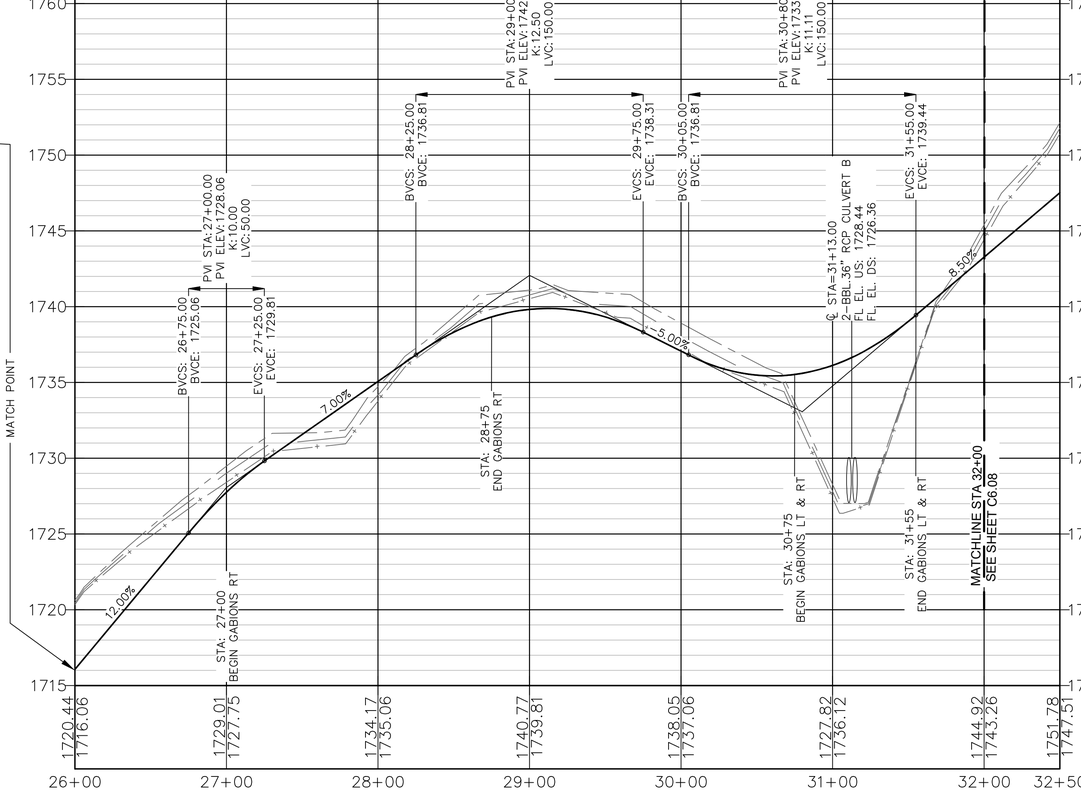
MUD SERVICE ROAD "A"
STA: 22+50.00 TO 32+50.00



KEY MAP
SCALE 1"=1000'

Curve Table: Alignments					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C2	66.59	60.00	63.59	N77° 12' 28"W	63.23
C3	67.32	150.00	25.71	N32° 33' 24"W	66.75
C4	188.00	1500.00	7.18	N16° 06' 35"W	187.88





LEGEND

- BOUNDARY LINE
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- EASEMENT LINE
- 1000 EXISTING MAJOR CONTOUR
- 1000 EXISTING MINOR CONTOUR
- EXISTING FENCE
- E. OHE EXIS. OVERHEAD ELECTRIC
- EXISTING POWER POLE
- EXISTING SIGN
- PROPOSED SIGN
- PROPOSED POWER POLE
- PROP. OBJECT MARKER
- R.O.W RIGHT OF WAY
- E.E.O.P EXIST. EDGE OF PAVEMENT
- PROP. EDGE OF PAVEMENT
- PROPOSED CL
- NG CENTER LINE
- NG RIGHT (RT)
- NG LEFT (LT)

NOTES:
1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED STREET CONNECTION ELEVATIONS TO EXISTING STREET ELEVATIONS TO ASSURE CONTINUITY, AND FIELD VERIFY THE BEGINNING STATIONS OF GABIONS.

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800
7/13/2023
REBECCA ANN CARROLL 92666 LICENSED PROFESSIONAL ENGINEER
7/13/23: REVISED SHEET REFERENCE LABEL.

0 50 100 FEET
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'

STATE OF TEXAS MICHAEL M. SLAY 44379 REGISTERED PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL - SURVEYING - CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

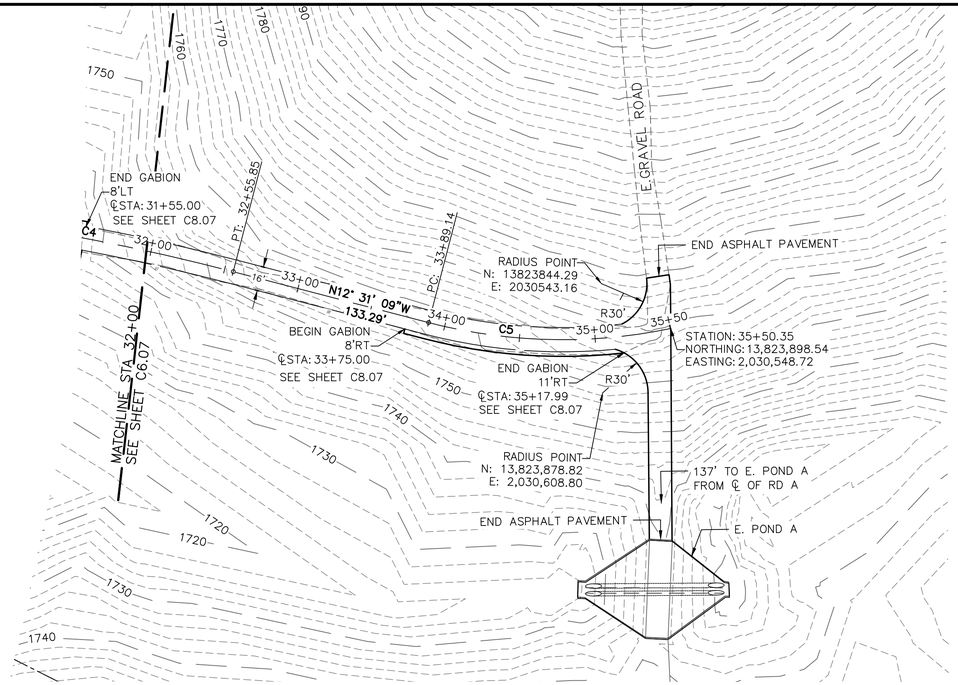
MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS
STREET PLAN AND PROFILE

REVISIONS

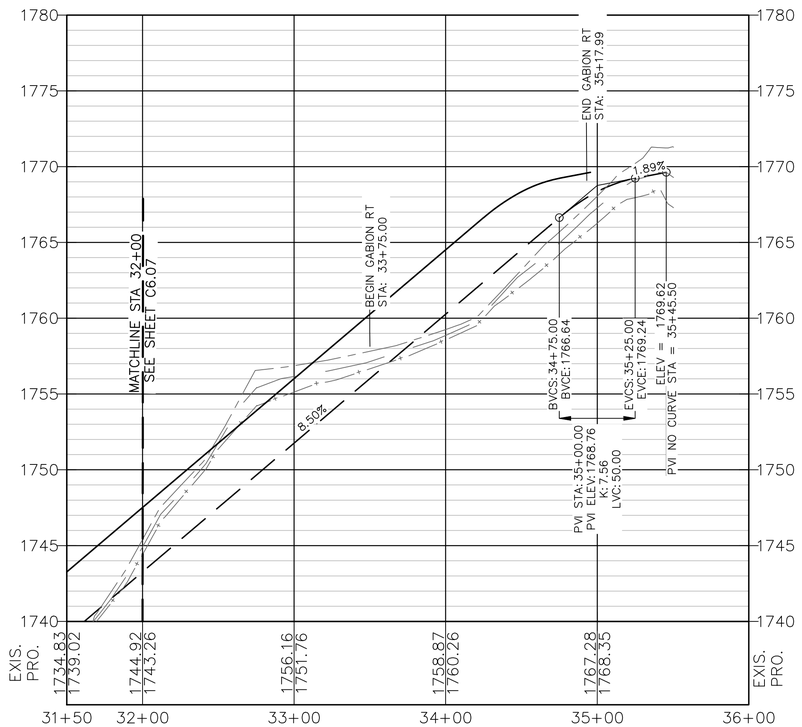
NO.	REVISION

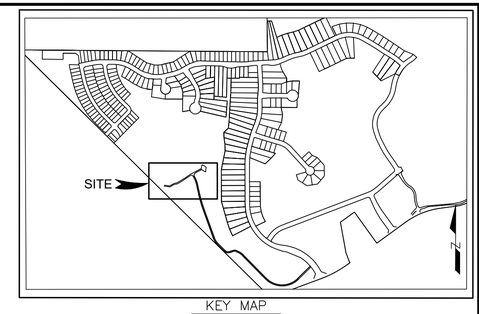
DESIGNED BY: M.S. | DRAWN BY: M.H.
CHECKED BY: M.S. | DATE: 06/30/2021
JOB NO. 19-013
SHEET NO. C6.07

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\Service Road A\C6.06-6.08P&P.dwg, C6.07 RD A P&P, srezaui, Nov 09, 2021 - 9:55:33am



MUD SERVICE ROAD "A"
STA: 32+00.00 TO 35+45.50





KEY MAP
SCALE 1"=1000'

LEGEND

	RIGHT OF WAY LINE
	PROPERTY LINE
	EASEMENT LINE
1000	EXISTING MAJOR CONTOUR
-1000-	EXISTING MINOR CONTOUR
	EXISTING FENCE
E. OHE	EXIS. OVERHEAD ELECTRIC
	EXISTING POWER POLE
	EXISTING SIGN
	PROPOSED SIGN
	PROPOSED POWER POLE
	PROP. OBJECT MARKER
R.O.W	RIGHT OF WAY
E.E.O.P	EXIST. EDGE OF PAVEMENT
	PROP. EDGE OF PAVEMENT
	PROPOSED CL
	NG CENTER LINE
	NG RIGHT (RT)
	NG LEFT (LT)

NOTES:
1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED STREET CONNECTION ELEVATIONS TO EXISTING STREET ELEVATIONS TO ASSURE CONTINUITY, AND FIELD VERIFY THE BEGINNING STATIONS OF GABIONS.

Curve Table: Alignments

Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C4	188.00	1500.00	7.18	N16° 06' 35"W	187.88
C5	161.21	350.00	26.39	N25° 42' 51"W	159.79

0 50 100 FEET

HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
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TBPE FIRM REGISTRATION NO. F1901

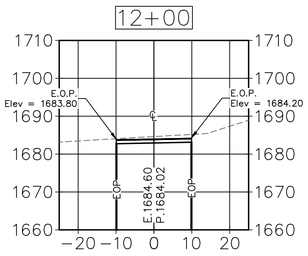
SLAY ENGINEERING CO., INC.

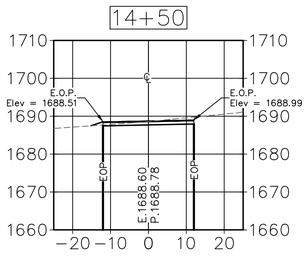
MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS
STREET PLAN AND PROFILE

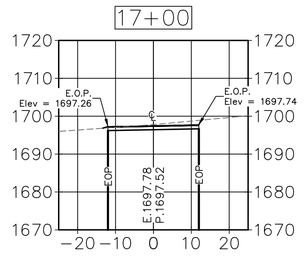
REVISIONS

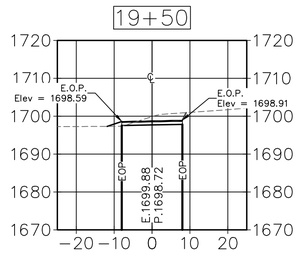
NO.	REVISION

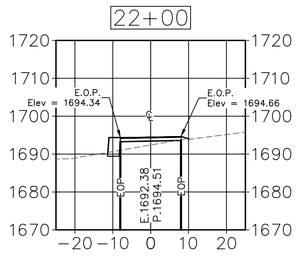
DESIGNED BY: M.S.	DRAWN BY: M.H.
CHECKED BY: M.S.	DATE: 06/30/2021
JOB NO. 19-013	
SHEET NO. C6.08	

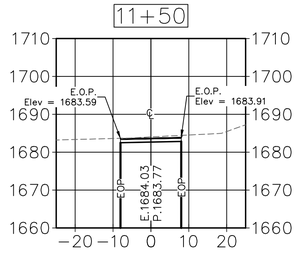


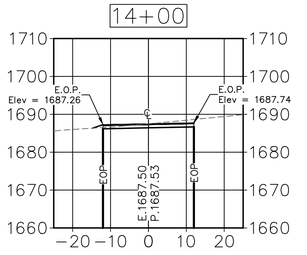


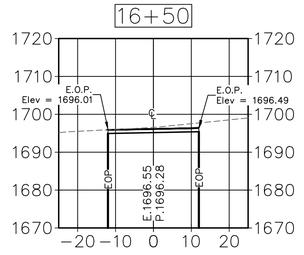


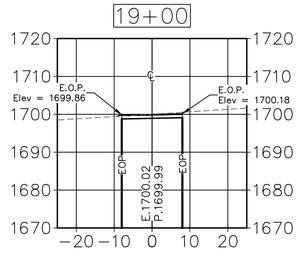


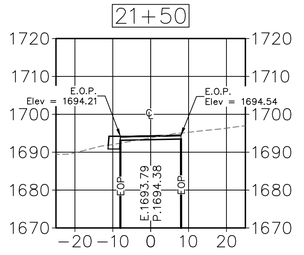


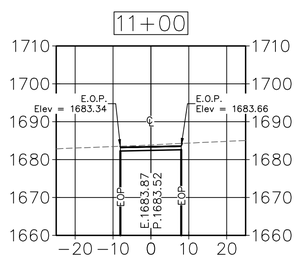


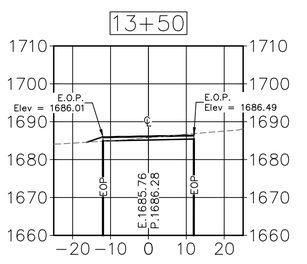


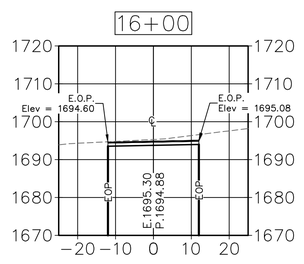


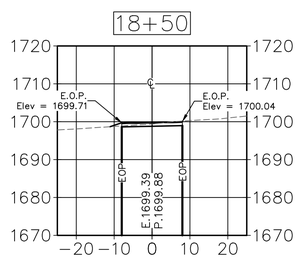


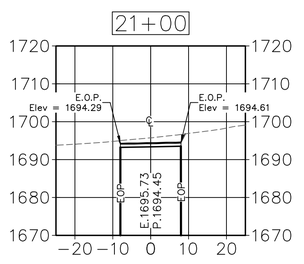


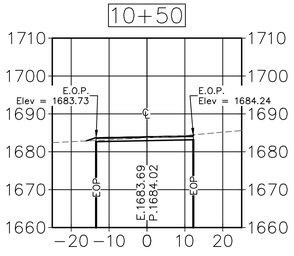


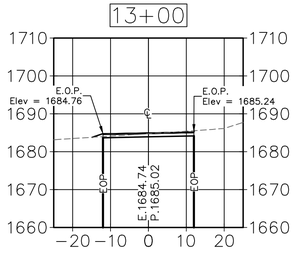


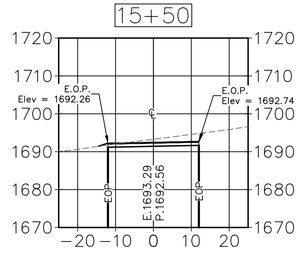


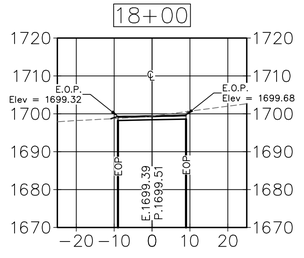


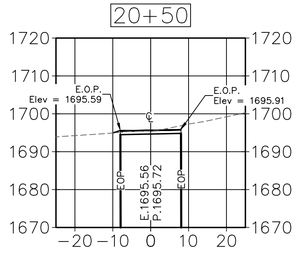


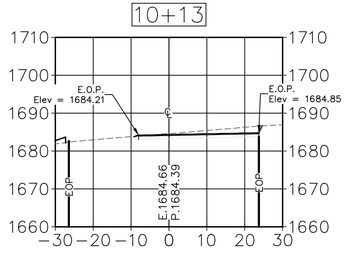


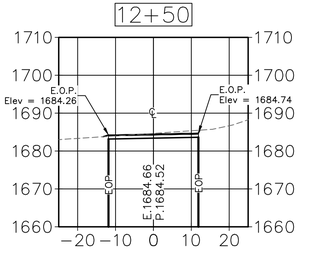


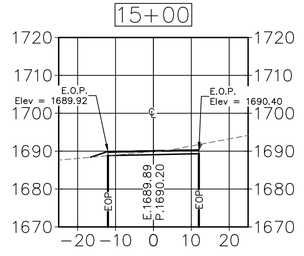


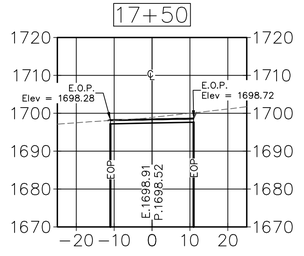


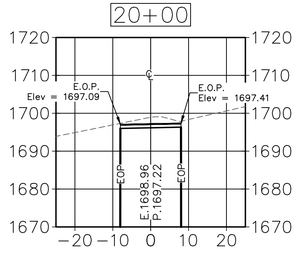












MUD SERVICE ROAD "A"

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 20'

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\Service Road A\C6.09-6.11 Sections.dwg, C6.09 RD A x-sections, srezaui, Oct 29, 2021 - 11:02:24am

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL - SURVEYING - CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS
CROSS SECTIONS

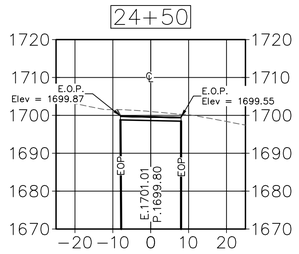
REVISIONS

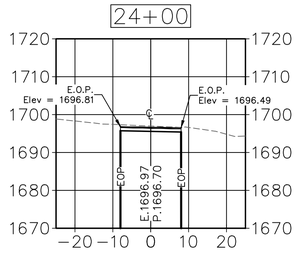
NO.	REVISION

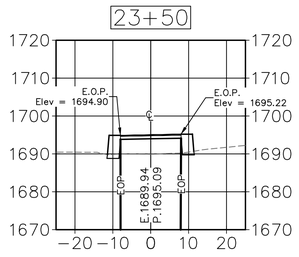
DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

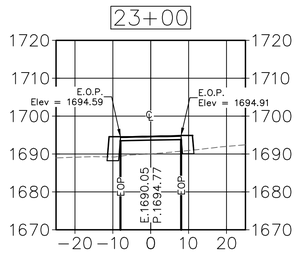
JOB NO. 19-013

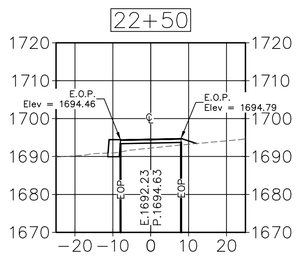
SHEET NO. C6.09

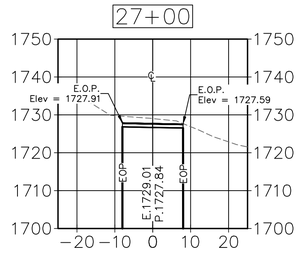


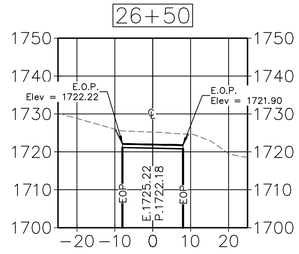


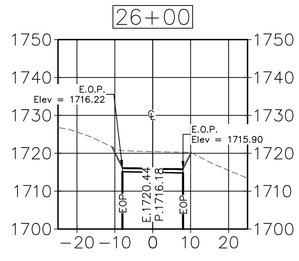


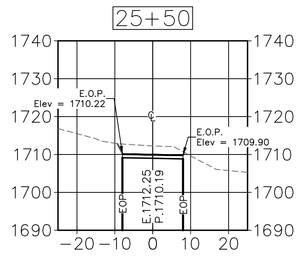


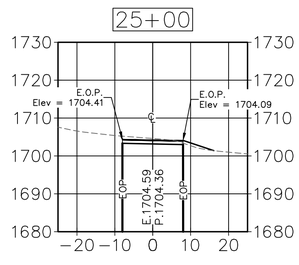


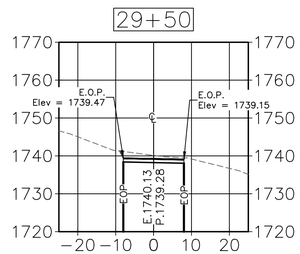


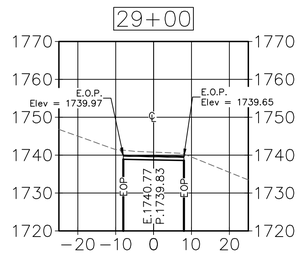


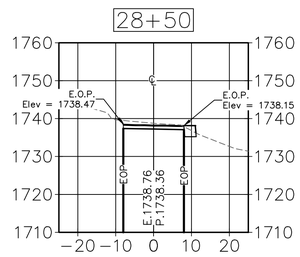


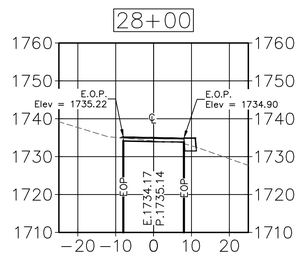


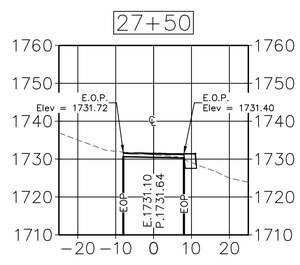


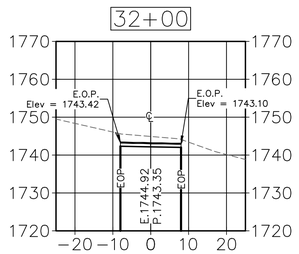


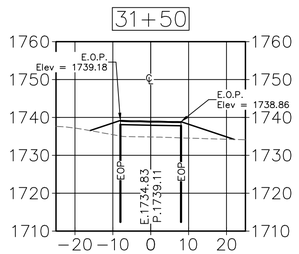


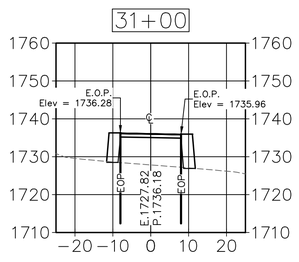


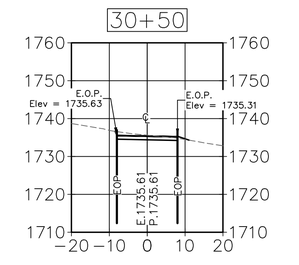


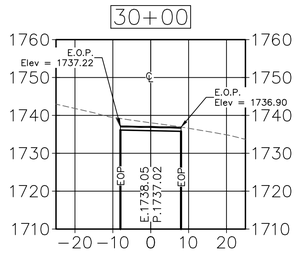


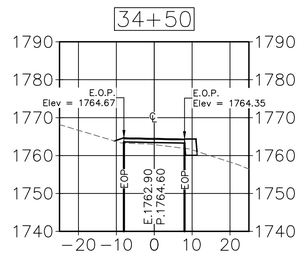


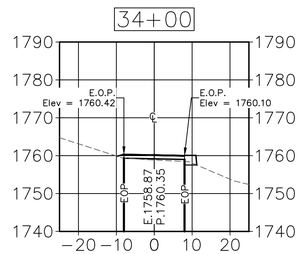


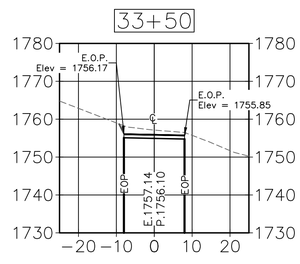


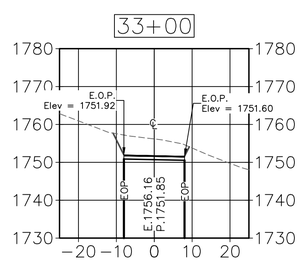


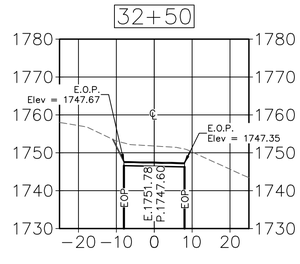


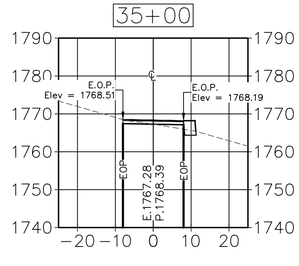












MUD SERVICE ROAD "A"

HORIZ. SCALE: 1" = 20'
VERT. SCALE: 1" = 20'

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS
CROSS SECTIONS

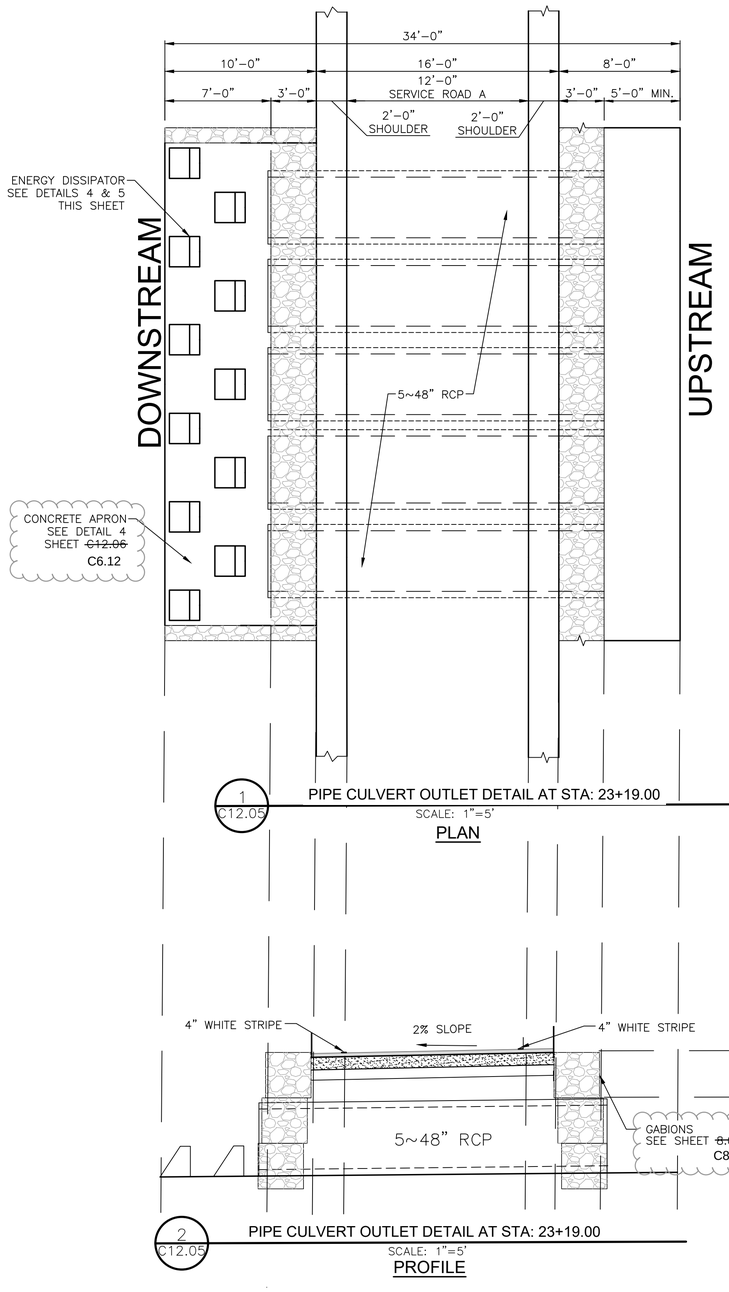
REVISIONS

NO.	REVISION

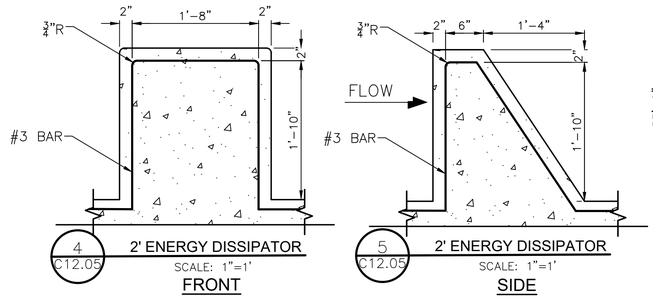
DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19–013

SHEET NO. C6.10



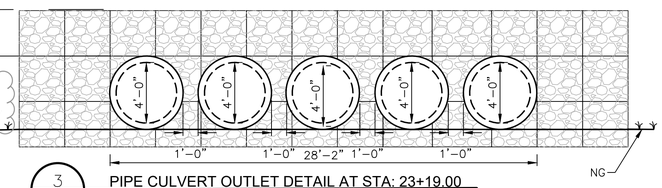
1 C12.05 PIPE CULVERT OUTLET DETAIL AT STA: 23+19.00
SCALE: 1"=5'
PLAN



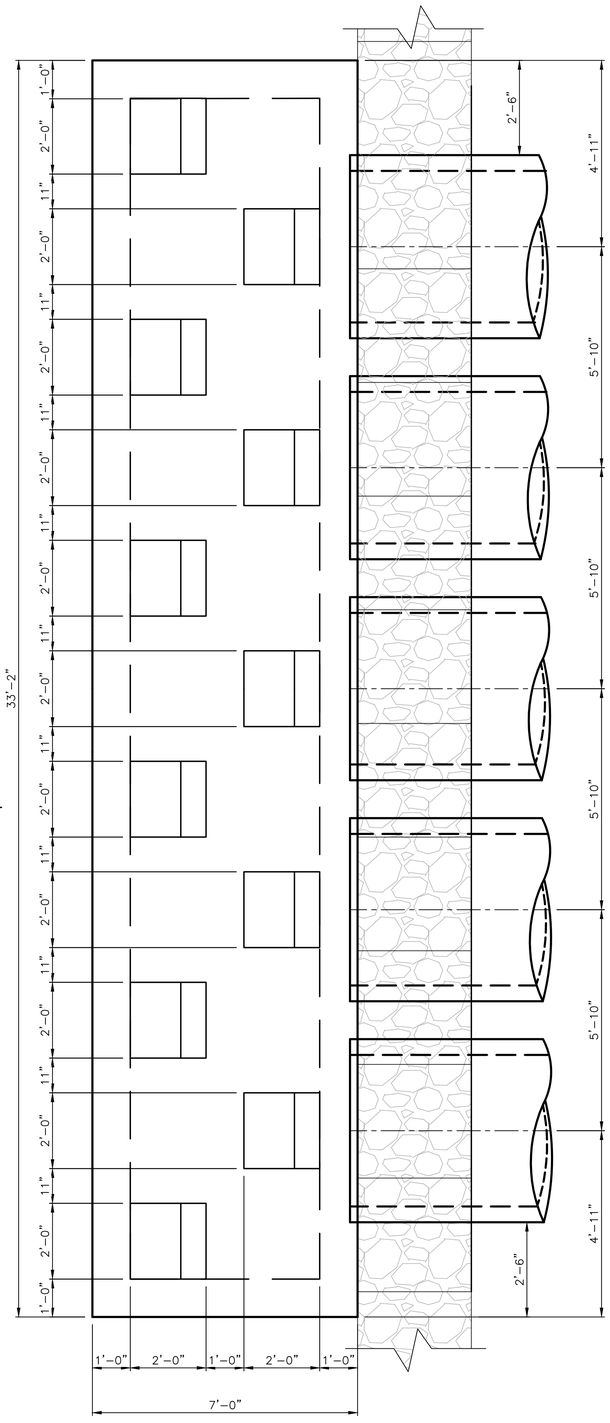
4 C12.05 2' ENERGY DISSIPATOR
SCALE: 1"=1'
FRONT

5 C12.05 2' ENERGY DISSIPATOR
SCALE: 1"=1'
SIDE

2 C12.05 PIPE CULVERT OUTLET DETAIL AT STA: 23+19.00
SCALE: 1"=5'
PROFILE



3 C12.05 PIPE CULVERT OUTLET DETAIL AT STA: 23+19.00
SCALE: 1"=5'
SECTION



6 C12.05 ENERGY DISSIPATERS SPACING AT CULVERT 5~48" RCP
SCALE: 1"=2'

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800
7/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

7/13/23: REVISED SHEET NUMBER AND SHEET REFERENCE LABELS.

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED
PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS
ROAD A DETAILS

REVISIONS

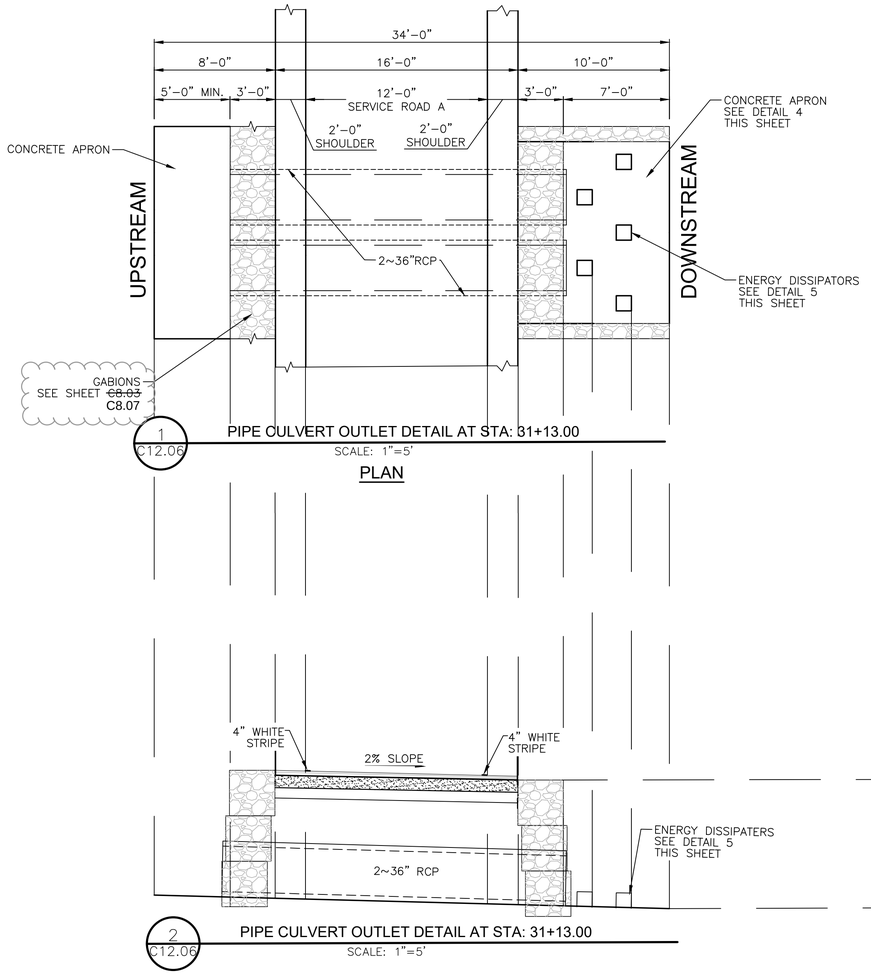
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

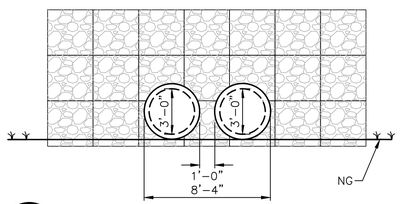
SHEET NO. C6.11 (~~C12.05~~)

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\Service Road A\C12.06-12.09-SERVICE ROAD A DETAILS.dwg, C12.05 ROAD A DETAILS, Silvia, Jun 30, 2021 - 5:24:10pm

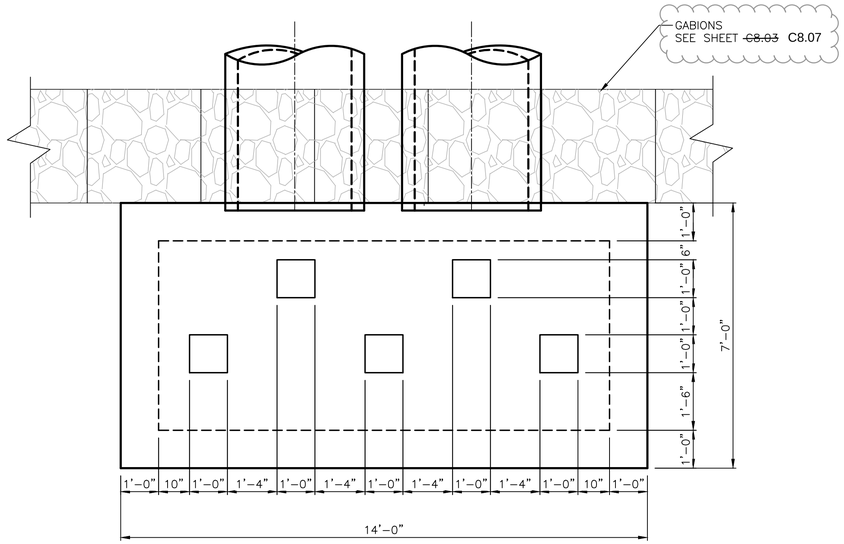


1 C12.06 PIPE CULVERT OUTLET DETAIL AT STA: 31+13.00
SCALE: 1"=5'
PLAN

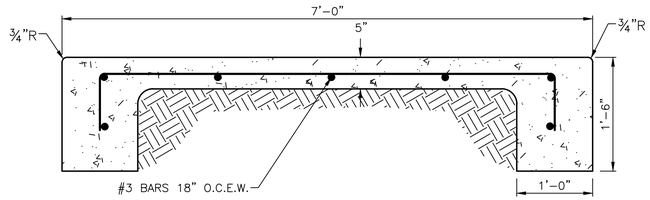
2 C12.06 PIPE CULVERT OUTLET DETAIL AT STA: 31+13.00
SCALE: 1"=5'
PROFILE



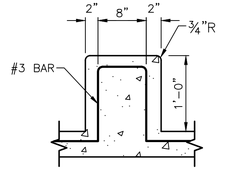
3 C12.06 PIPE CULVERT OUTLET DETAIL AT STA: 31+13.00
SCALE: 1"=5'
SECTION



4 C12.06 ENERGY DISSIPATORS SPACING AT CULVERT 2~36" RCP
SCALE: 1"=2'



5 C12.06 CONCRETE APRON
SCALE: 1"=1'



6 C12.06 1' ENERGY DISSIPATOR
SCALE: 1"=1'

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
06/30/2021

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SLAY ENGINEERING CO., INC.

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800
7/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

7/13/23: REVISED SHEET NUMBER AND SHEET REFERENCE LABELS.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS
ROAD A DETAILS

REVISIONS

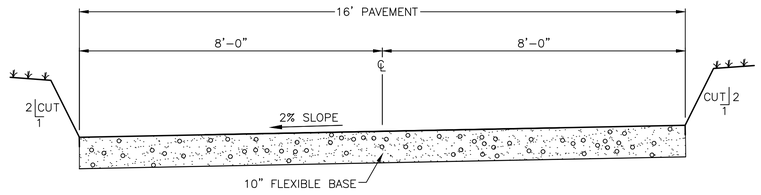
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

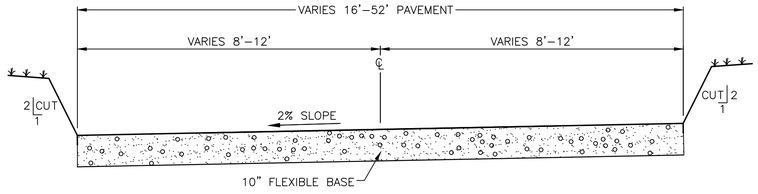
SHEET NO. C6.12 (~~C12.06~~)

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\Service Road A\C12.06-12.09-SERVICE ROAD A DETAILS.dwg, C12.06 ROAD A DETAILS, Silvia, Jun 30, 2021 - 5:24:41pm



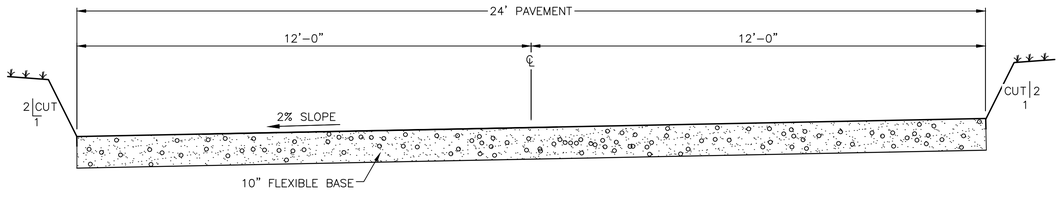
ROAD "A" TYP. CROSS SECTION
FROM STA. 10+63 TO STA. 11+53
FROM STA. 18+25 TO STA. 22+58

SCALE: 1"=2'



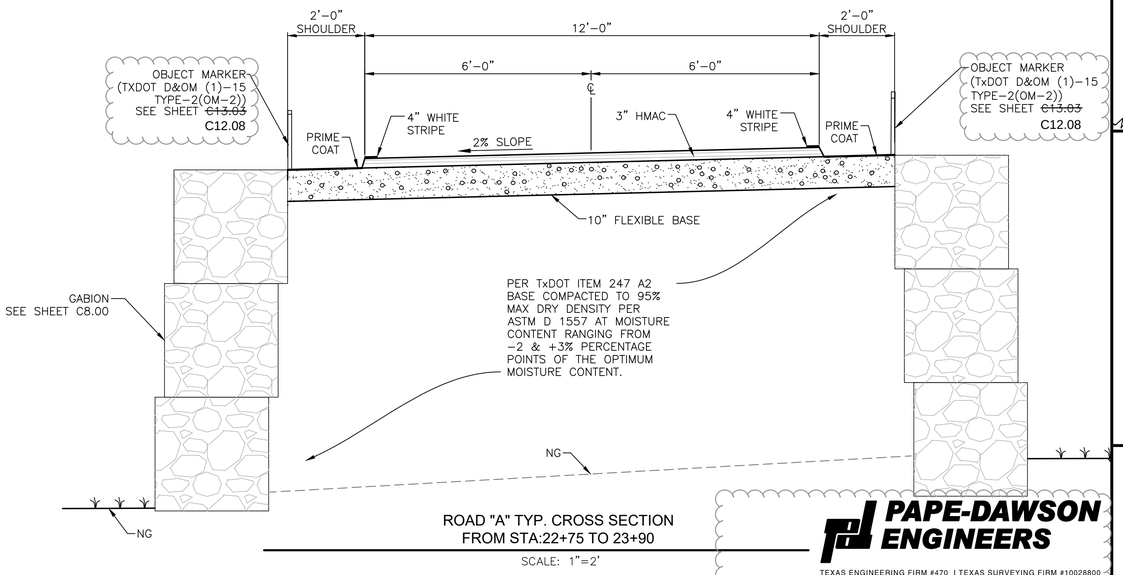
ROAD "A" TYP. CROSS SECTION
FROM STA. 10+00 TO STA. 10+63
FROM STA. 11+53 TO STA. 12+53
FROM STA. 17+25 TO STA. 18+25

SCALE: 1"=2'



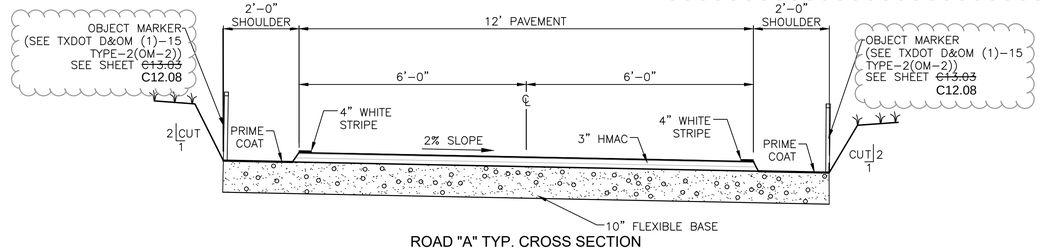
ROAD "A" TYP. CROSS SECTION
FROM STA. 12+53 TO STA. 17+25

SCALE: 1"=2'



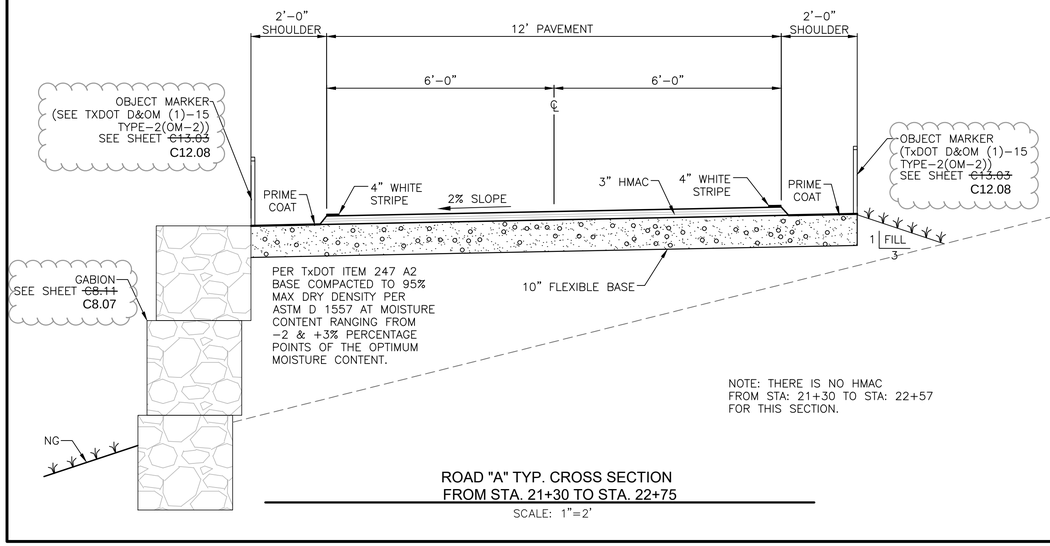
ROAD "A" TYP. CROSS SECTION
FROM STA:22+75 TO 23+90

SCALE: 1"=2'



ROAD "A" TYP. CROSS SECTION
FROM STA: 23+90 TO 27+00

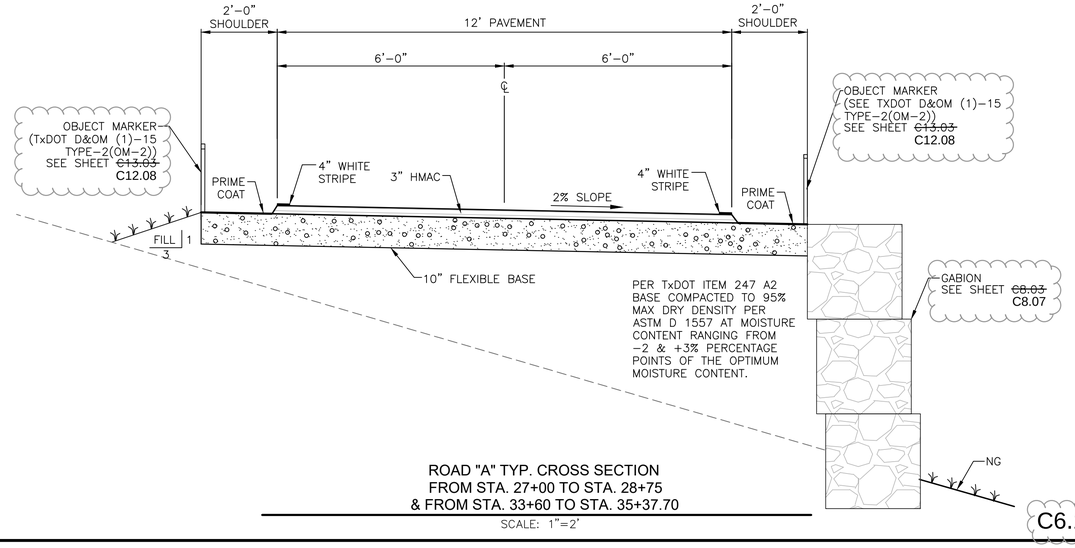
SCALE: 1"=2'



NOTE: THERE IS NO HMAC
FROM STA: 21+30 TO STA: 22+57
FOR THIS SECTION.

ROAD "A" TYP. CROSS SECTION
FROM STA. 21+30 TO STA. 22+75

SCALE: 1"=2'



ROAD "A" TYP. CROSS SECTION
FROM STA. 27+00 TO STA. 28+75
& FROM STA. 33+60 TO STA. 35+37.70

SCALE: 1"=2'

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
m. slay 06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL - SURVEYING - CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

7/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

7/13/23: REVISED SHEET NUMBER AND SHEET REFERENCE LABELS.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS

PAVEMENT DETAILS

REVISIONS

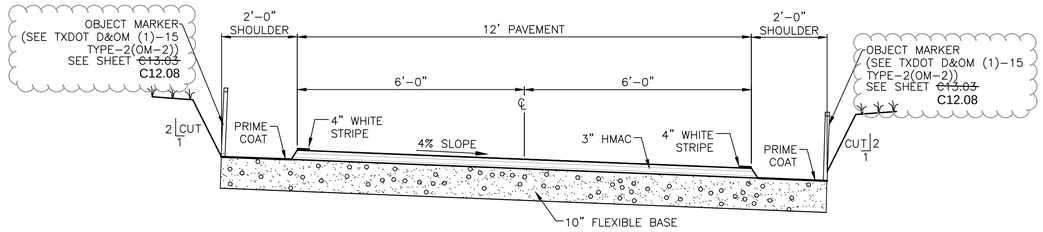
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

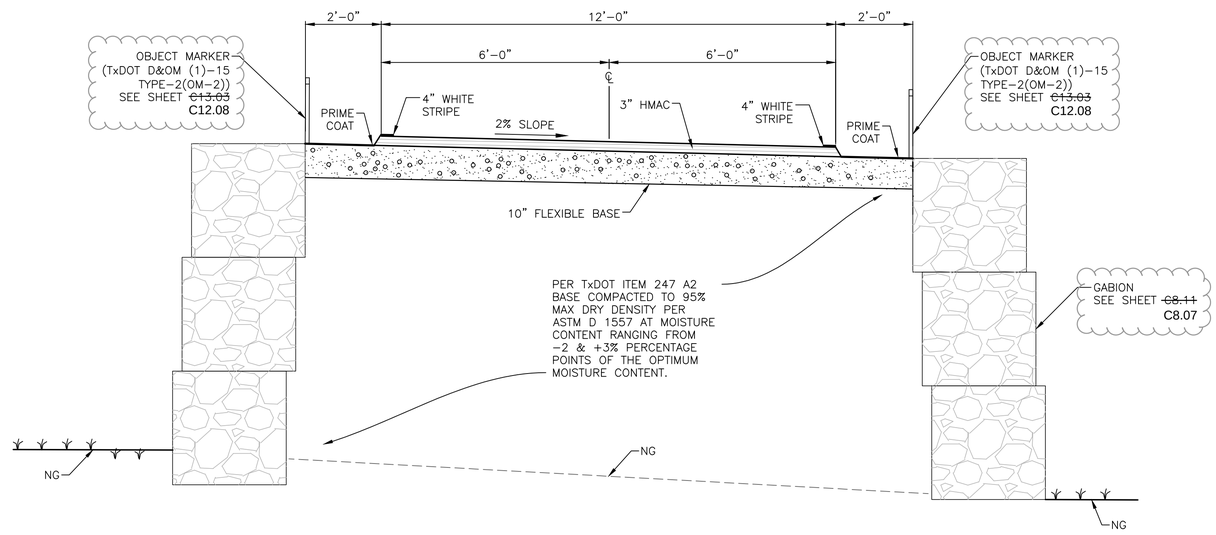
SHEET NO. ~~C12.09~~ C6.13

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\Service Road A\C12.06-12.09-SERVICE ROAD A DETAILS.dwg, C12.09 PAVEMENT DETAILS, Silvia, Jun 30, 2021 - 5:25:34pm



ROAD "A" TYP. CROSS SECTION
FROM STA: 28+75 TO STA: 30+75
& FROM STA: 31+40 TO STA: 33+60

SCALE: 1"=2'



ROAD "A" TYP. CROSS SECTION
FROM STA:30+75 TO 31+40

SCALE: 1"=2'

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
m. slay 06/30/2021

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7/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
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7/13/2023

7/13/23: REVISED SHEET NUMBER AND SHEET REFERENCE LABELS.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
MUD SERVICE RD "A"
KENDALL COUNTY, TEXAS

PAVEMENT DETAILS

REVISIONS

NO.	REVISION

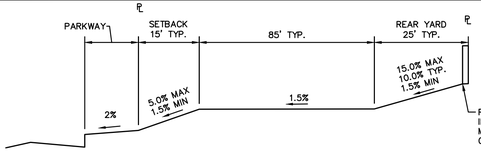
DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

SHEET NO. ~~C12.10~~

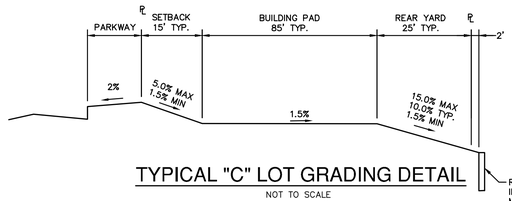
C6.14

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\Service Road A\C12.06-12.09-SERVICE ROAD A DETAILS.dwg, C12.10 PAVEMENT DETAILS, Silvia, Jun 30, 2021 - 5:26:10pm



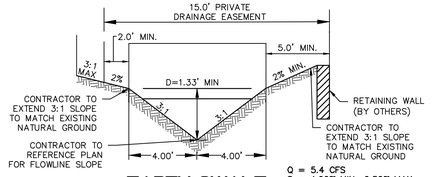
TYPICAL "A" LOT GRADING DETAIL

NOT TO SCALE



TYPICAL "C" LOT GRADING DETAIL

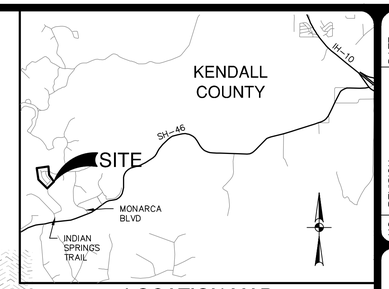
NOT TO SCALE



EARTH SWALE SECTION A-A

NOT-TO-SCALE

Q = 5.4 CFS
S = 4.00% MIN; 6.50% MAX
V = 3.97 FPS MIN; 4.76 FPS MAX
Dn = 0.67" MAX; 0.62" MIN
D = 1.33" MIN.

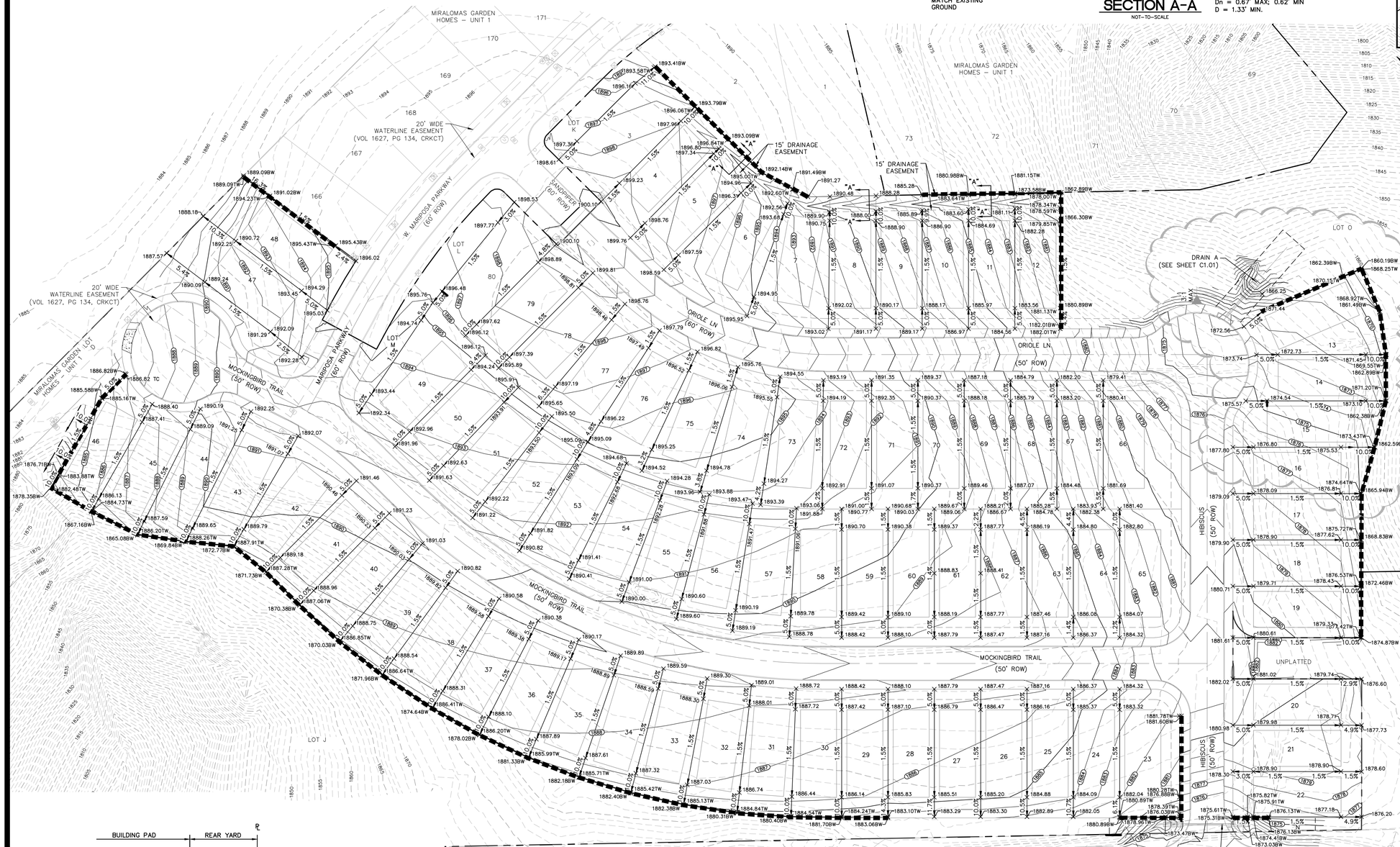


LOCATION MAP

NOT-TO-SCALE

0' 50' 100' 150'

SCALE: 1"= 50'



GRADING LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR 976
- PROPOSED CONTOUR 970
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- TYPICAL HOUSE PAD
- RETAINING WALL (CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN)

GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).

2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.

5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.

6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.

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

8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OFF SITE THOSE MATERIALS NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPINGS AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.

9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.

10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS (USE OF SILT FENCES, ETC.) TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPERTY, STREETS, OR DRAINAGE WAYS. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS WHICH WASHES OFFSITE OR INTO EXISTING STORM DRAIN SYSTEMS. (SEE SWPPP PLANS & TPDES BOOK).

11. THE CONTRACTOR SHALL OBTAIN GRADES SHOWN HEREON WITHIN +/– ONE–TENTH (0.10) FOOT.

12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE SHOWN.

13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING SITE AND PROPOSED IMPROVEMENTS.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).

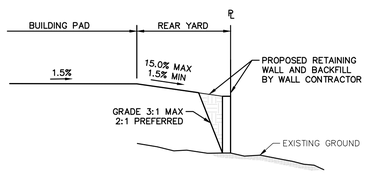
15. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN WORKING NEAR UTILITIES, GAS LINES, SEWER, OR EXISTING APPURTENANCES. PRIOR TO PERFORMING ANY EXCAVATION, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND ASSURE HIMSELF THAT ALL UTILITIES HAVE BEEN ADEQUATELY LOCATED AND IDENTIFIED. THE ENGINEER SHALL BE NOTIFIED IF ANY UTILITY CONFLICTS ARE DISCOVERED.

16. UTILITIES SHOWN ON THE PLANS ARE FROM INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION AND VERIFY SIZE, GRADE AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR, AT HIS OWN EXPENSE.

17. POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE SCOPE OF THE PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.

18. FOR FILL PLACEMENT ON HILL SIDES OR STEEP SLOPE AREAS, THE CONTRACTOR SHALL REFERENCE THE PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR SPECIAL INSTRUCTIONS REGARDING BENCHING.

19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT–OF–WAY WITHOUT A PERMIT.



GRADING DETAIL AT RETAINING WALLS

NOT TO SCALE

NO.	REVISION	DATE
1	REVISED LOT LINES, GRADING, AND RETAINING WALLS	02/15/23

2/15/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

OVERALL GRADING PLAN

PLAT NO.
JOB NO. 12616-04
DATE FEBRUARY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C7.00

Date: Feb 15, 2023, 12:30pm User ID: jpell
File: P:\126\16\04\Design\Civil\GR126160404.dwg

CONSTRUCTION NOTES

1.0 MATERIALS

1.1 GABIONS SHALL BE DOUBLE TWISTED HEXAGONAL MESH GABIONS. GABIONS SHALL BE MANUFACTURED FROM GALVANIZED WIRE WITH A NOMINAL MESH OPENING DIMENSION OF 3.25 INCHES. AS MANUFACTURED BY MACAFFERRI, INC. GABIONS OR EQUAL.

1.2 STONE WITHIN GABION SHALL RANGE BETWEEN 4 AND 8 INCHES AND MEET USACE SPECIFICATIONS.

1.3 GEOTEXTILE FABRIC SHALL BE MIRAFI 160N OR APPROVED EQUAL.

2.0 TECHNICAL REQUIREMENTS

2.1 PRIOR TO CONSTRUCTION OF THE GABIONS, THE CONTRACTOR SHALL CLEAR AND GRUB THE AREA BENEATH THE GABIONS, REMOVING TOPSOILS, BRUSH, SOD OR OTHER ORGANIC OR DELETERIOUS MATERIALS. ANY UNSUITABLE SOILS SHALL BE OVER-EXCAVATED, REPLACED AND COMPACTED WITH BACKFILL MATERIAL TO PROJECT SPECIFICATIONS OR AS OTHERWISE DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER.

2.2 THE CONTRACTOR SHALL HAVE AN APPROVED SET OF CONSTRUCTION DRAWINGS AND CONTRACT SPECIFICATIONS ON-SITE AT ALL TIMES DURING CONSTRUCTION.

3.0 DESIGN PARAMETERS

3.1 DESIGN OF THE GABION RETAINING WALLS ARE BASED ON THE FOLLOWING PARAMETERS:

	EFFECTIVE FRICTION ANGLE	EFFECTIVE COHESION	MOIST UNIT WT
RETAINED SOILS	28°	0 psf	120 pcf
FOUNDATION SOILS	28°	0 psf	120 pcf

3.2 FACTORS OF SAFETY:

MINIMUM FACTOR OF SAFETY FOR SLIDING AT BASE	= 1.5
MINIMUM FACTOR OF SAFETY FOR OVERTURNING	= 2.0
MINIMUM FACTOR OF SAFETY FOR GLOBAL STABILITY	= 1.5

3.3 SURCHARGE LOADING = 250 psf

4.0 SPECIAL PROVISIONS

4.1 LOCATIONS AND GEOMETRY OF EXISTING STRUCTURES AND GRADE ABOVE AND BELOW THE GABION STRUCTURES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

4.2 THE CONTRACTOR SHALL BE ON-SITE TO ASSURE THE PROVISIONS IN THE CONSTRUCTION NOTES ARE FOLLOWED.

4.3 IF ANY ROCK FORMATIONS AND/OR GROUNDWATER ARE ENCOUNTERED DURING THE CONSTRUCTION OF THE GABION STRUCTURES, THE CONTRACTOR SHALL IMMEDIATELY CONTACT GEOSOLUTIONS, INC. AND THE OWNER.

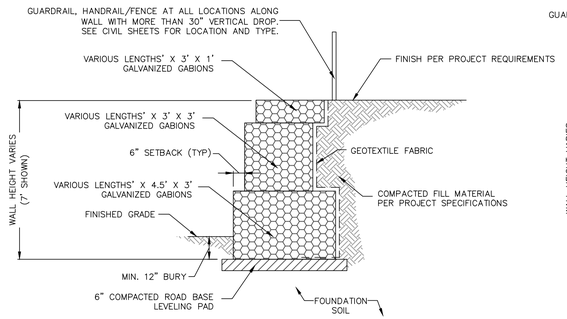
4.4 ANY REVISIONS TO THE STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

4.5 ~~THIS DESIGN IS VALID ONLY FOR THE PROPOSED RETAINING WALLS FOR THE SOLMS LANDING PHASE II COLLECTOR PROJECT, NEW BRAUNFELS, TEXAS.~~

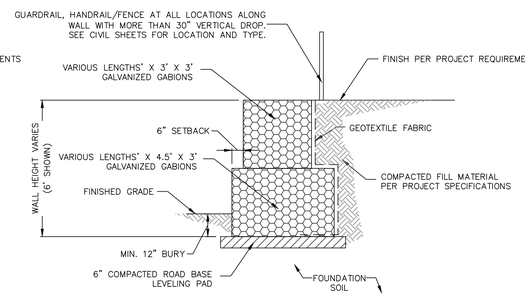
5.0 CONTRACTOR'S RESPONSIBILITIES

5.1 CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING THAT ALL REQUIREMENTS SET FORTH ON THESE DRAWINGS ARE MET. ASSIGNMENT OR DELEGATION OF RESPONSIBILITIES BY CONTRACTOR SHALL NOT RELIEVE CONTRACTOR OF RESPONSIBILITY OF CONFIRMING THAT ALL REQUIREMENTS SET FORTH HEREIN ARE MET.

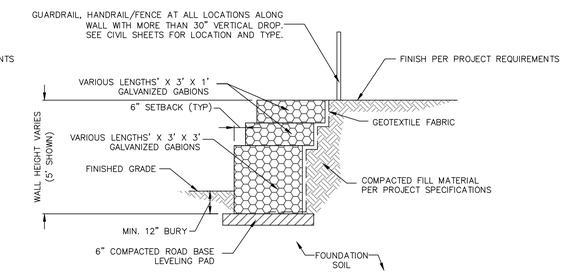
5.2 CONTRACTOR SHALL ASSURE CONFORMITY WITH CONSTRUCTION DRAWINGS AND NOTES DURING CONSTRUCTION BY ON-SITE INSPECTION.



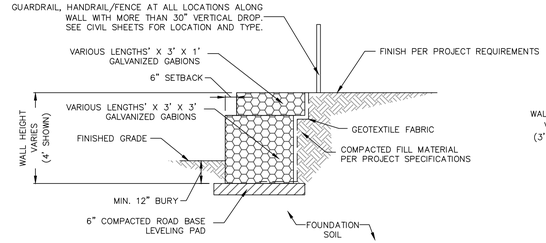
TYPICAL CROSS-SECTION
GABION 7' GRAVITY WALL
N.T.S.



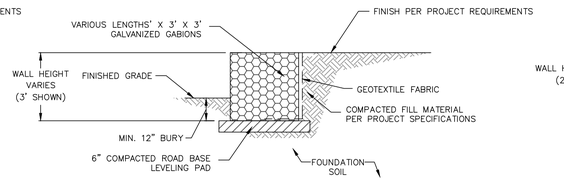
TYPICAL CROSS-SECTION
GABION 6' GRAVITY WALL
N.T.S.



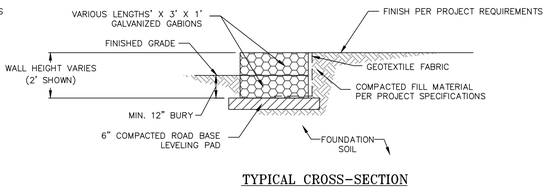
TYPICAL CROSS-SECTION
GABION 5' GRAVITY WALL
N.T.S.



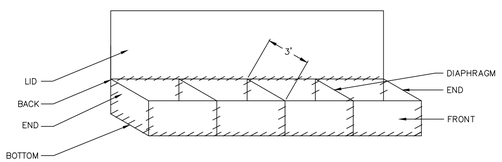
TYPICAL CROSS-SECTION
GABION 4' GRAVITY WALL
N.T.S.



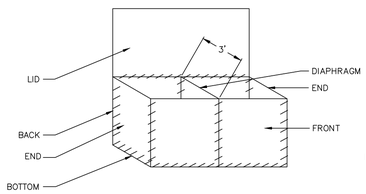
TYPICAL CROSS-SECTION
GABION 3' GRAVITY WALL
N.T.S.



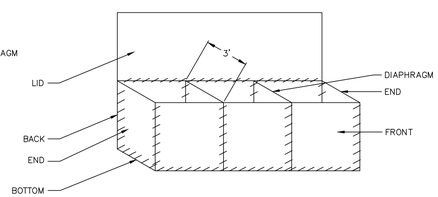
TYPICAL CROSS-SECTION
GABION 2' GRAVITY WALL
N.T.S.



12X3X1 GABION BASKET
N.T.S.



6X3X3 GABION BASKET
N.T.S.



9X3X3 GABION BASKET
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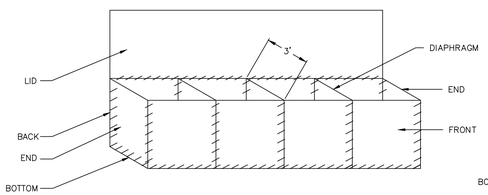
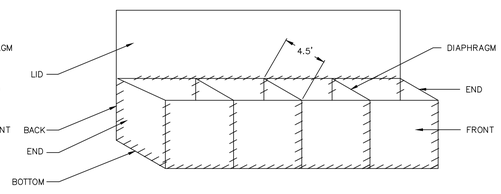


12X3X3 GABION BASKET
N.T.S.



12X4.5X3 GABION BASKET
N.T.S.

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800
7/13/2023

7/13/23: REMOVED NOTE.

CAREY M. WITT
77259
REGISTERED PROFESSIONAL ENGINEER
09/16/20

4417 BURLESON ROAD
AUSTIN, TEXAS 78744
Phone: 512-445-0796
www.geosolutionsinc.com
Reg. Eng. Firm #F-4189
GEOSOLUTIONS

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
THE SUMMIT AT MIRALOMAS
KENDALL COUNTY, TEXAS
GABION RETAINING WALL SECTIONS, NOTES, & DETAILS

REVISIONS

NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/29/2021

JOB NO. 19-013

SHEET NO. C8.07

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\General\GEO SOLUTIONS.dwg, C8.07 Gabions, srezaui, Sep 09, 2021 - 4:59:46pm

Proposed Conditions Calculations

Ref. Point	Structure / Description	Drainage Areas #	Area (Ac)	C	Total Flowpath (ft)	Overland/Sheet Flow (TR-55) L_O (FT)	n	P_2	S_O (ft/ft)	T_O* (MIN)	Shallow Concentrated Flow - 1** L_{SC} (FT)	Condition***	Slope (ft/ft)	V_{SC} (FPS)	T_{SC}** (MIN)	Channelized Flow** L_{CH} (FT)	V_{CH} (FPS)	T_{CH}** (MIN)	$T_{C\text{-}TOT}$	Rational Method Q=CIA IDF Curve: USER Return Year	Atlas 14 Intensity (in/hr)	Q (cfs)
A3	STREET CAPACITY / PROPOSED DRAIN	A3	7.38	0.72	1,433	281	0.240	4.15	0.030	20	1,152	S	0.018	3.8	5.1	-	-	-	25	2	3.43	18.2
																			25	5	4.29	22.8
																			25	10	5.00	26.6
																			25	25	5.98	31.8
																			25	50	6.72	35.7
																			25	100	7.49	39.8
A4	PROPOSED SWALE	A4	1.33	0.72	521	300	0.240	4.15	0.032	20	221	U	0.058	3.9	0.9	-	-	-	20	2	3.85	3.7
																			20	5	4.82	4.6
																			20	10	5.62	5.4
																			20	25	6.74	6.5
																			20	50	7.58	7.3
																			20	100	8.46	8.1
I1	STREET CAPACITY / DOWNSTREAM POINT	I1	1.10	0.72	417	300	0.240	4.15	0.034	20	117	U	0.050	3.6	0.5	-	-	-	20	2	3.85	3.0
																			20	5	4.82	3.8
																			20	10	5.62	4.5
																			20	25	6.74	5.3
																			20	50	7.58	6.0
																			20	100	8.46	6.7
I2	PROPOSED DRAIN	I1+I2	1.58	0.72	671	300	0.240	4.15	0.034	20	117	U	0.050	3.6	0.5	254	6.0	0.7	21	2	3.77	4.3
																			21	5	4.71	5.4
																			21	10	5.50	6.3
																			21	25	6.59	7.5
																			21	50	7.41	8.4
																			21	100	8.26	9.4

Rational Method Time of Concentration
*Seelye Chart or TR-55 Eqn. 3-3
**As Calculated using Mannings or TR-55 Figure 3-1 or 6 ft/s

From TR-55 Equation 3-3*

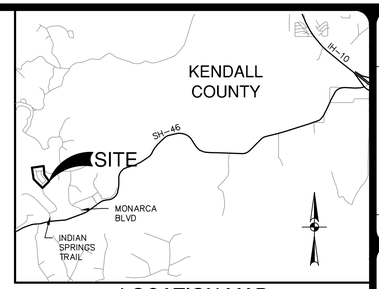
$$T_o = \frac{(0.007(n*L)^{0.8})}{(P2^{0.5}*S^{0.4})} *60$$

From TR-55 Figure 3-1**

$$v = \frac{k}{n} R^{2/3} S_o^{1/2}$$

$$k = 1.486\ ft^{1/3}/s$$

S: For Streets: n = 0.018, R = 0.2 (Adapted from Mannings)
P: For Paved: n = 0.025, R = 0.2
U: For Unpaved: n = 0.05, R = 0.4
D: For Default: v = 6 fps



LOCATION MAP
NOT-TO-SCALE

LEGEND:

- UNIT BOUNDARY
- 700 — EXISTING CONTOUR
- 665 — PROPOSED CONTOURS
- DRAINAGE AREA BOUNDARY
- 1 — DRAINAGE CALCULATION POINT
- AREA 9.12 AC — DRAINAGE AREA
- Lc=200' — CHANNELIZED FLOW PATH
- Lsc=200' — SHALLOW CONCENTRATED FLOW PATH
- Lo=100' — OVERLAND FLOW PATH

SCALE: 1"= 100'
0' 100' 200' 300'

NO.	REVISION	DATE
1.	REVISED DRAINAGE AREAS, DRAINAGE POINTS, AND CALCULATIONS, ADDED PROPOSED CONTOURS AND REVISED SHEET NUMBER	02/10/23

2/10/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

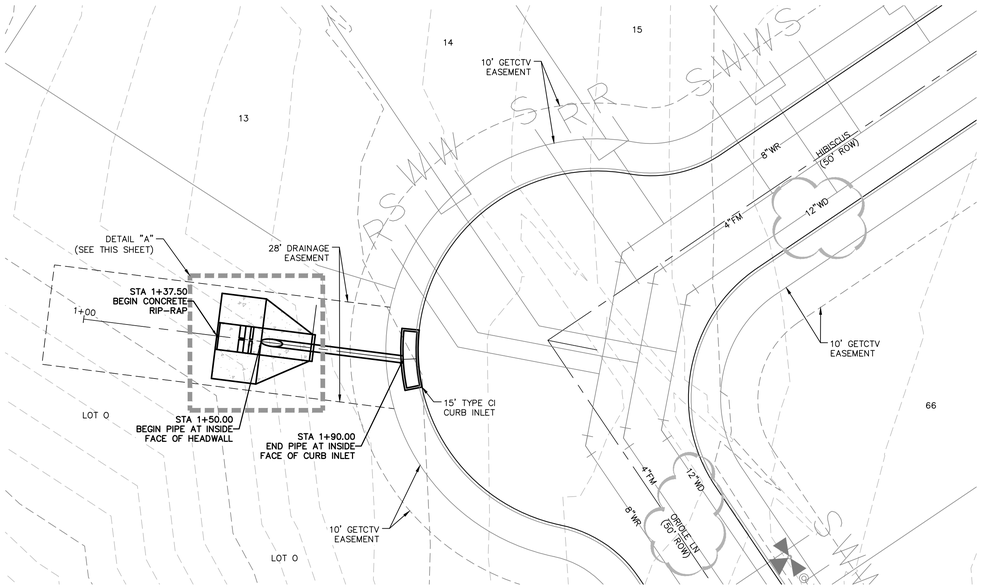
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

MASTER DRAINAGE PLAN
PROPOSED HYDROLOGY PLAN

PLAT NO.
JOB NO. 12616-04
DATE FEBRUARY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C9.00

Date: Feb 10, 2023, 5:32pm User ID: jpoell
File: P:\126\16\04\Design\Civil\DRMP12616604.dwg



1 - 24" CMP HYDRAULIC CALCULATION

Q_{25} = 22.8 CFS
n = 0.024
S = 8.00%
Sf = 3.46%
dn = 1.04'
Vn = 11.77 FPS

HYDRAULIC CALCULATIONS - 1 - 15' INLET

TOTAL Q_5 = 22.8 CFS

Q_5 = 22.8 CFS

$Q_5 = CA\sqrt{2gh}$ (ORIFICE FLOW EQN.)

A = L(0.53), h = 0.53, g = 32.2, c = 0.70

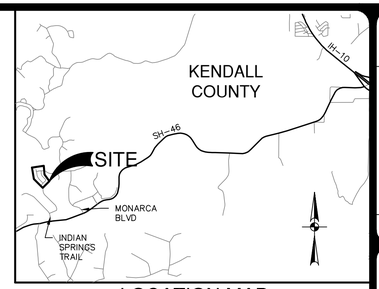
$$L = \frac{22.8\ CFS}{(0.70)\ (0.53)\sqrt{2}\ (32.2)\ (0.53)}$$

L = 10.52 FT USE 1 ~ 15 FT INLET

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{22.2}{(3.087)\ (15)}\right)^{2/3} = 0.62\ FT.$$

h = 0.62 < 0.79 OK



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 20'

0' 20' 40' 60'

DRAINAGE LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	690
EXISTING RECYCLED WATER	E.8" WR
EXISTING DOMESTIC WATER	E.12" WD
EXISTING FORCE MAIN	E.3" FM
PROPOSED FORCE MAIN	4"FM
PROPOSED RECYCLED WATER	8"WR
PROPOSED DOMESTIC WATER	8"WD

NO.	REMARK	DATE
1.	REVISED DRAIN ALIGNMENT, DETAIL, CALCULATIONS & SHEET NUMBER	02/09/23
2.	REVISED STREET NAME AND WATER MAIN LABEL	03/20/23

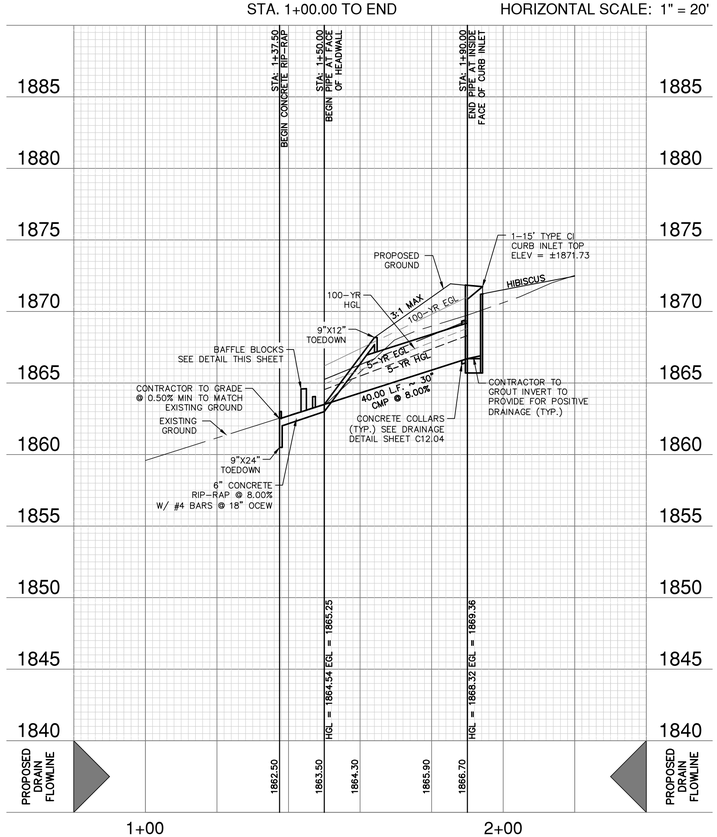
3/20/2023

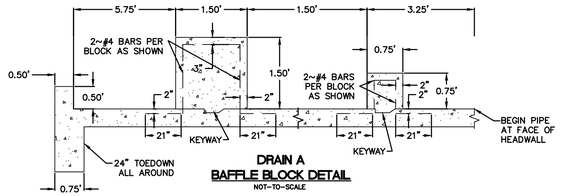
STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

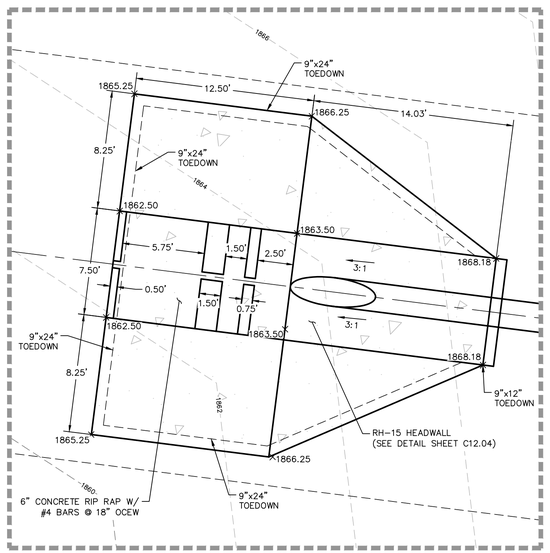
DRAIN "A"
STA. 1+00.00 TO END

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





DRAIN A
BAFFLE BLOCK DETAIL
NOT-TO-SCALE



DETAIL "A"

SCALE 1" = 5'

DRAINAGE & GRADING NOTES:

1. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

TRENCH EXCAVATION SAFETY PROTECTION:

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

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

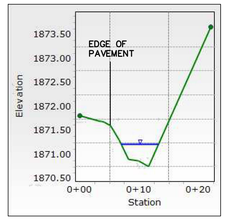
STORM DRAIN PLAN & PROFILE - DRAIN A

PLAT NO.
JOB NO. 12616-04
DATE MARCH 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C9.01

Date: Mar 20, 2023, 4:24pm User ID: achamberlin
File: P:\126\16\04\Design\Civil\DRA12616O4.dwg

PRE-DEV Q_5= 5.3 CFS (PT "I")
S = 1.80%
V = 2.90 FPS
Dn = 0.47'
D = 0.94' (EDGE OF PAVEMENT TO SURVEYED FLOWLINE)

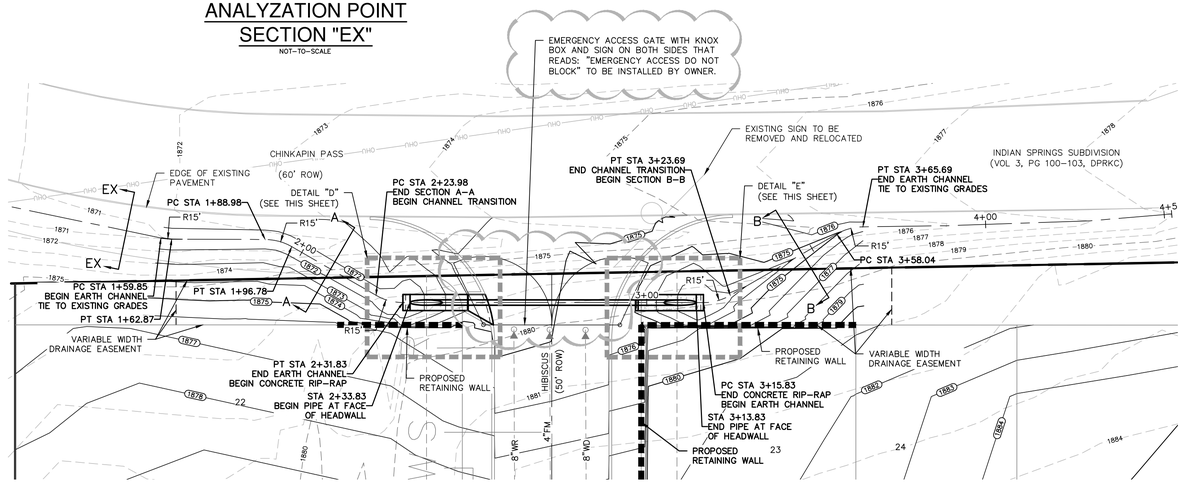
POST-DEV Q_5= 5.4 CFS (PT "I")
S = 1.80%
V = 2.91 FPS
Dn = 0.47'
D = 0.94' (EDGE OF PAVEMENT TO SURVEYED FLOWLINE)



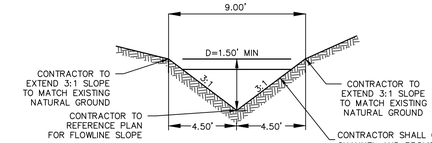
ANALYZATION POINT SECTION "EX"
NOT-TO-SCALE

1 - 18" RCP HYDRAULIC CALCULATION

Q_5= 3.80 CFS
n = 0.013
S = 1.00%
Sf = 0.13%
dn = 0.94'
Vn = 3.26 FPS



EARTH SWALE SECTION "A-A"
NOT-TO-SCALE



CONTRACTOR TO EXTEND 3:1 SLOPE TO MATCH EXISTING NATURAL GROUND

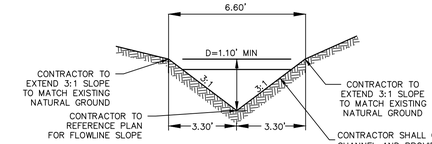
CONTRACTOR TO REFERENCE PLAN FOR FLOWLINE SLOPE

CONTRACTOR TO EXTEND 3:1 SLOPE TO MATCH EXISTING NATURAL GROUND

CONTRACTOR SHALL OVEREXCAVATE CHANNEL AND PROVIDE 6" MINIMUM TOPSOIL (STRIPPINGS FROM INITIAL CLEANING OPERATIONS ARE ACCEPTABLE). NO SEPARATE PAY ITEM.

NOTE: CONTRACTOR TO HYDROMULCH AND WATER UNTIL VEGETATION IS ESTABLISHED. SEED MIXTURE TO BE DETERMINED BY OWNER.

EARTH SWALE SECTION "B-B"
NOT-TO-SCALE



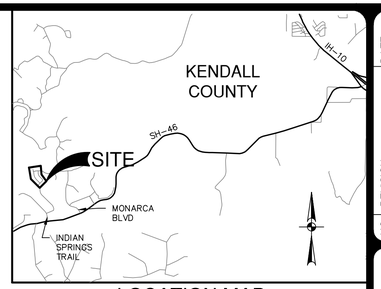
CONTRACTOR TO EXTEND 3:1 SLOPE TO MATCH EXISTING NATURAL GROUND

CONTRACTOR TO REFERENCE PLAN FOR FLOWLINE SLOPE

CONTRACTOR TO EXTEND 3:1 SLOPE TO MATCH EXISTING NATURAL GROUND

CONTRACTOR SHALL OVEREXCAVATE CHANNEL AND PROVIDE 6" MINIMUM TOPSOIL (STRIPPINGS FROM INITIAL CLEANING OPERATIONS ARE ACCEPTABLE). NO SEPARATE PAY ITEM.

NOTE: CONTRACTOR TO HYDROMULCH AND WATER UNTIL VEGETATION IS ESTABLISHED. SEED MIXTURE TO BE DETERMINED BY OWNER.

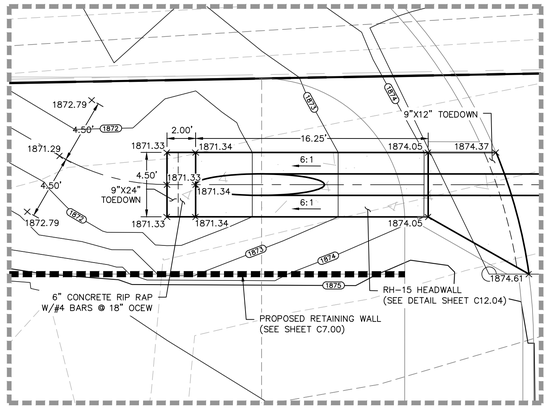


LOCATION MAP
NOT-TO-SCALE

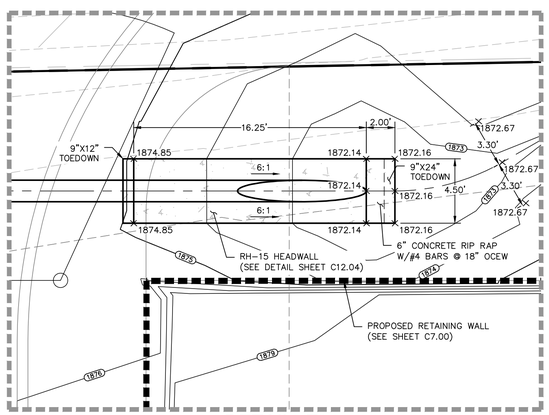
SCALE: 1"= 20'
0' 20' 40' 60'

DRAINAGE LEGEND

PROJECT LIMITS	
EXISTING CONTOUR	690
EXISTING RECYCLED WATER	E.8" WR
EXISTING DOMESTIC WATER	E.12" WD
EXISTING FORCE MAIN	E.3" FM
PROPOSED FORCE MAIN	4"FM
PROPOSED RECYCLED WATER	8"WR
PROPOSED DOMESTIC WATER	8"WD



DETAIL "D"
SCALE 1" = 5'



DETAIL "E"
SCALE 1" = 5'

DRAINAGE & GRADING NOTES:

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7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

TRENCH EXCAVATION SAFETY PROTECTION:

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CAUTION!!

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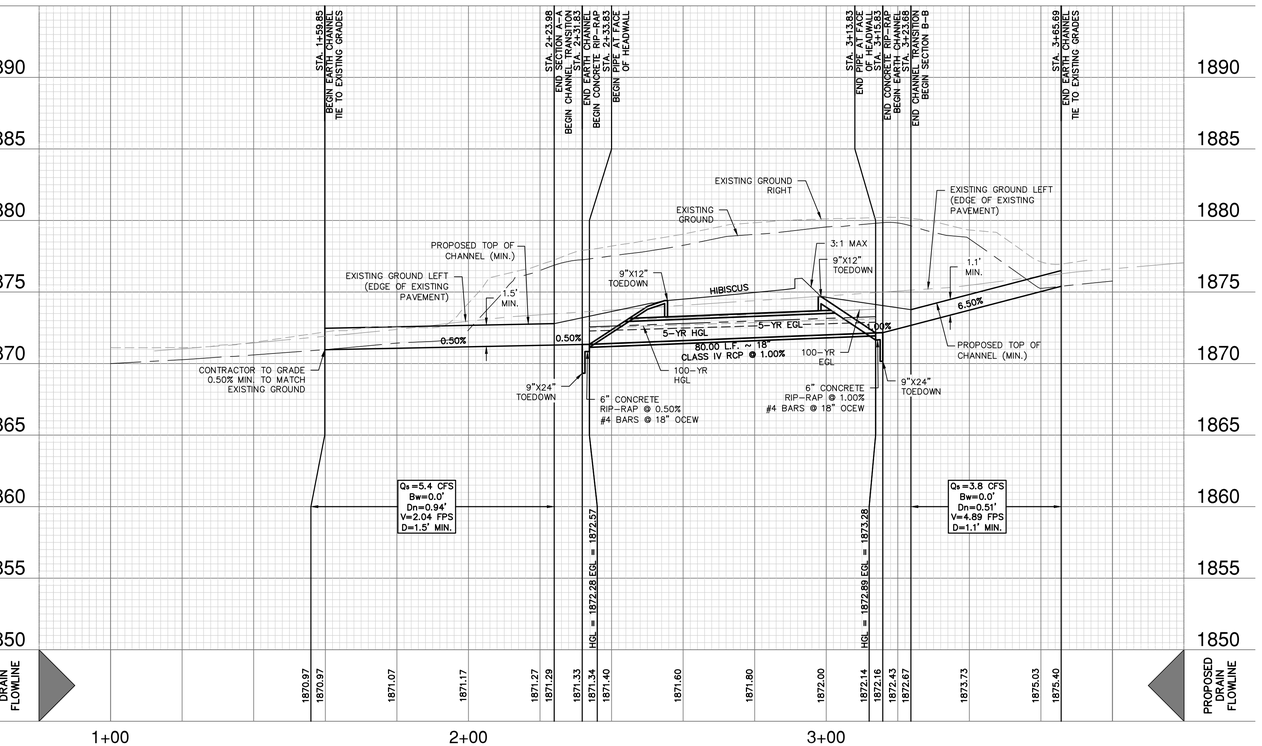


NO.	REVISION	DATE
1.	REVISED DRAIN ALIGNMENT PROFILE, CROSS SECTIONS DETAILS, CALCULATIONS & SHEET NUMBER ADDED PROPOSED CONTOURS	02/13/23
2.	REVISED GATE AND NOTE	03/08/23

3/8/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

DRAIN B
STORM DRAIN PLAN AND PROFILE

PLAT NO.
JOB NO. 12616-04
DATE MARCH 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C9.02

Date: Mar 08, 2023, 9:07am User ID: achamberlin
File: P:\12616\04\Design\Civil\DRB\261604.dwg

TRENCH EXCAVATION SAFETY PROTECTION:

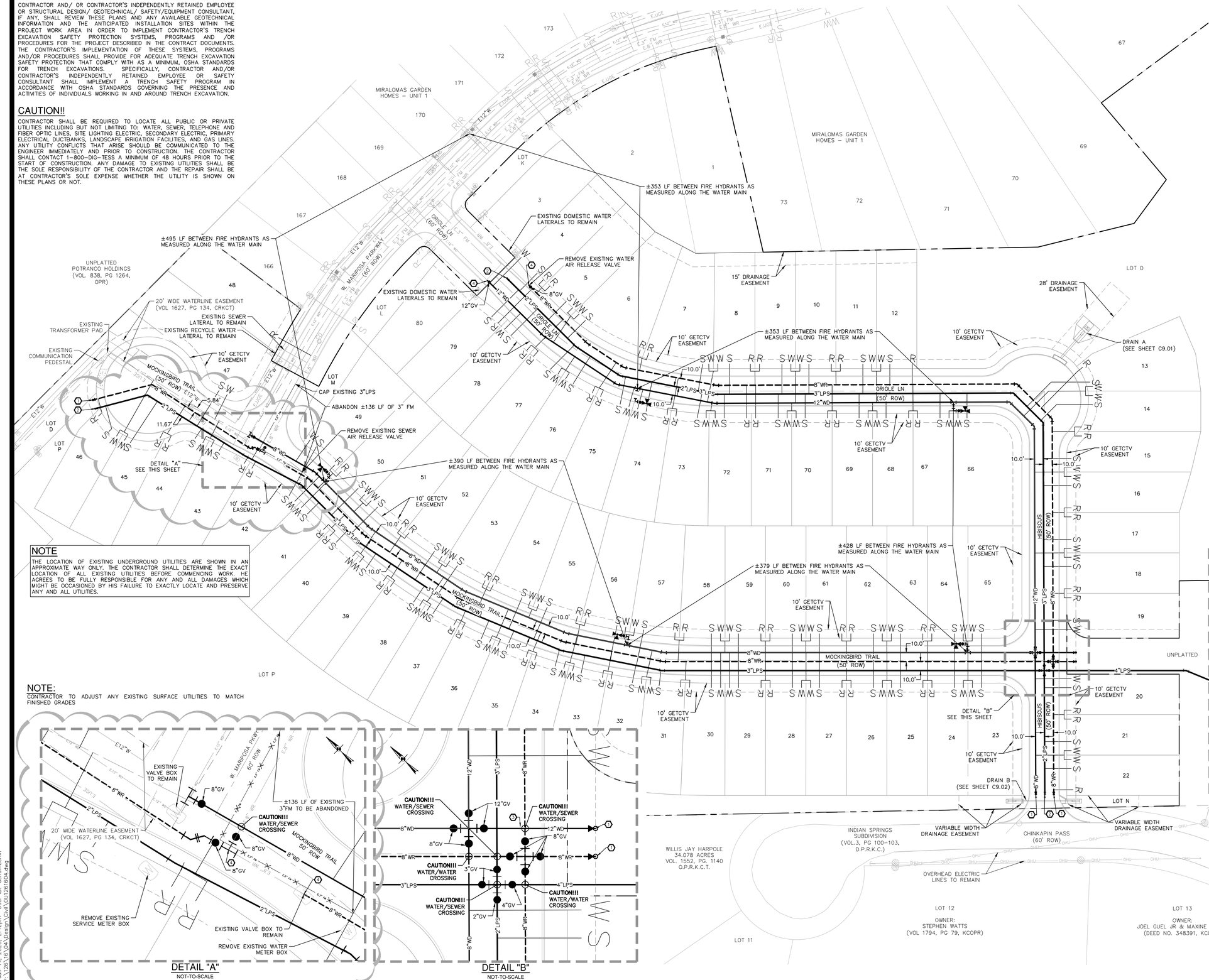
CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S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

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NOTE

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

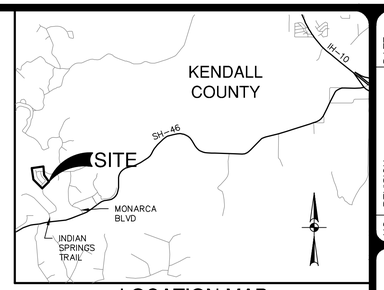


NOTE:

CONTRACTOR TO ADJUST ANY EXISTING SURFACE UTILITIES TO MATCH FINISHED GRADES

DETAIL "A"
NOT-TO-SCALE

DETAIL "B"
NOT-TO-SCALE



LOCATION MAP
NOT-TO-SCALE

SCALE: 1"= 50'
0' 50' 100' 150'

UTILITY LEGEND

- PROJECT LIMITS
- EXISTING RECYCLED WATER — E.8" WR
- EXISTING DOMESTIC WATER — E.12" WD
- EXISTING LOW PRESSURE SEWER — E.3" FM
- PROPOSED LOW PRESSURE SEWER — 4"LPS
- PROPOSED RECYCLED WATER — 8"WR
- PROPOSED DOMESTIC WATER — 8"WD
- INSTALL NEW FIRE HYDRANT PER DETAIL 02660-1.1 OR 1.2 ON SHEET C12.11 — FIRE HYDRANT
- INSTALL NEW SEWER SERVICE AND VALVE BOX — S
- INSTALL NEW DOMESTIC WATER METER BOX AND SERVICE PER DETAIL 02660-1.6 OR 1.7 ON SHEET C12.12 (SINGLE & DOUBLE SERVICE) — WM
- INSTALL NEW RECYCLE WATER METER BOX AND SERVICE PER DETAIL 02660-1.6 OR 1.7 ON SHEET C12.12 — RR
- INSTALL GATE VALVE PER DETAIL #02660-1.0, ON SHEET C12.11 (8" WATER GATE VALVE, 12" WATER GATE VALVE OR 4" SEWER GATE VALVE) — X" GATE VALVE

1. INSTALL PERMANENT BLOWOFF PER DETAIL #02660-1.5, SHEET C12.11
2. INSTALL PRESSURE MAIN FLUSING ASSEMBLY (END OF LINE) REFER TO DETAIL #02221-10, SHEET C12.12
3. INSTALL PRESSURE MAIN FLUSHING ASSEMBLY (CLEANOUT) AND PLUG VALVE (VS) (MAIN LINE), REFER TO DETAIL # LPFM3, ON SHEET C12.12
4. CONNECT NEW UTILITY LINE TO EXISTING UTILITY LINE

CONDUIT NOTES:

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

NO.	REVISION	DATE
1	ADDED LABELS, REVISED BACKGROUNDS	02/23/23
2	EXTENDED VIEWPORT TO SHOW MORE OF CHINKAPIN PASS	03/20/23
	REPLACED 8" WTH 12" DOMESTIC WATER MAIN	
3	RELOCATED LPS PIPING	03/28/23
4	REVISED LPS PIPE SIZING	04/12/23

6/14/2023

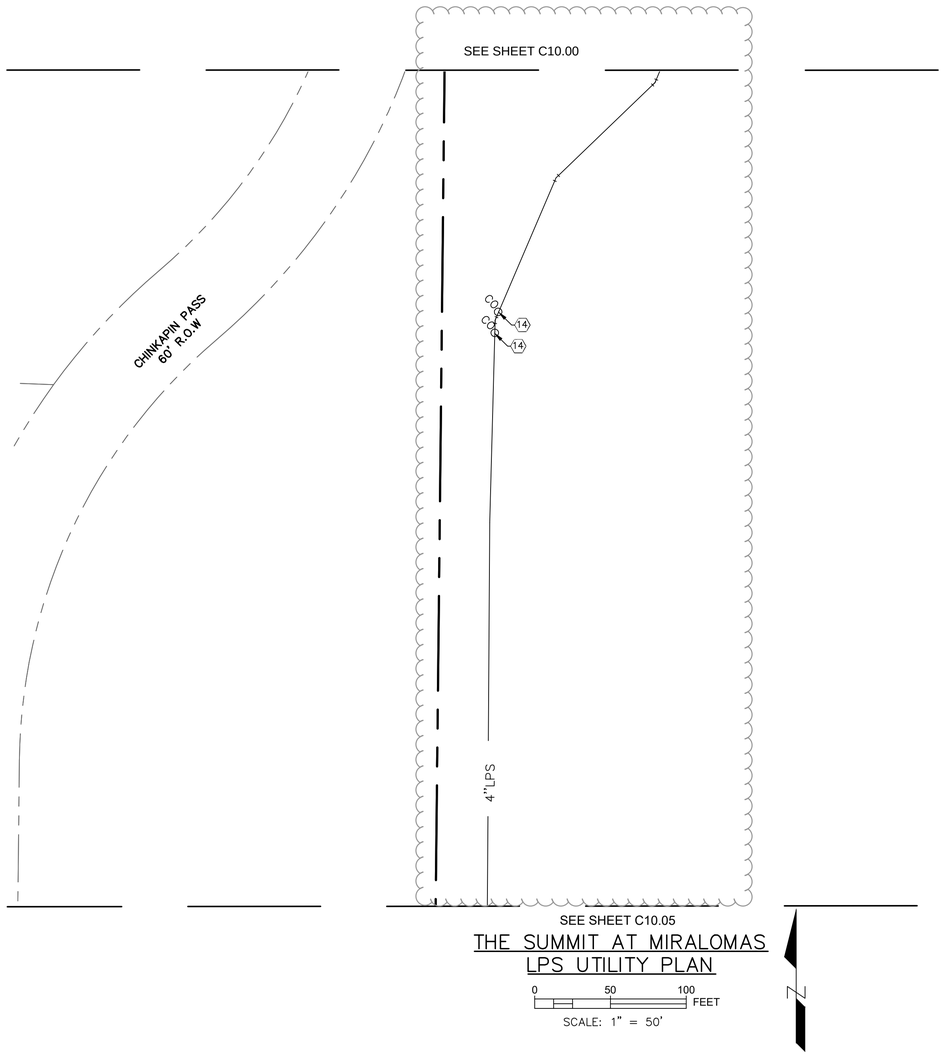
STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

UTILITY PLAN

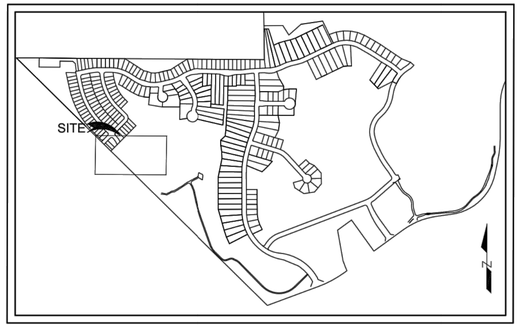
PLAT NO.
JOB NO. 12616-04
DATE JUNE 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C10.00



THE SUMMIT AT MIRALOMAS
LPS UTILITY PLAN

0 50 100 FEET

SCALE: 1" = 50'



KEY MAP
SCALE 1"=1000'

LEGEND

- PROPERTY LINE
- R.O.W.
- EXISTING FENCE
- E. OHE — EXISTING OVERHEAD ELECTRIC
- E8"WR — EXISTING RECYCLED WATER LINE
- E12"WD — EXISTING DOMESTIC WATER LINE
- E3"FM — EXISTING SANITARY SEWER LINE
- EXISTING DOMESTIC WATER METER
- EXISTING RECYCLE WATER METER
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- VP — EXISTING RECYCLE WATER GATE VALVE
- AR — EXISTING RECYCLE WATER AIR RELEASE VALVE
- EXISTING PERMANENT BLOW OFF (DOMESTIC OR RECYCLED)
- PROPOSED DOMESTIC WATER METER
- PROPOSED RECYCLE WATER METER
- PROPOSED WATER GATE VALVE (DOMESTIC OR RECYCLED)
- PROPOSED FIRE HYDRANT
- ARV — PROPOSED PERMANENT BLOW-OFF (DOMESTIC OR RECYCLED)
- ARVS — PROPOSED AIR RELEASE SEWER VALVE
- 12" WD — PROPOSED 12" DOMESTIC WATER LINE
- 8" WD — PROPOSED 8" DOMESTIC WATER LINE
- 8" WR — PROPOSED 8" RECYCLED WATER LINE
- 3" WR — PROPOSED 3" RECYCLED WATER LINE
- 4" LPS — PROPOSED SANITARY SEWER LOW PRESSURE LINE
- 4" SS FM — PROPOSED SANITARY SEWER FORCE MAIN LINE
- EXISTING UNDERGROUND ELECTRIC CROSSING

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 ◦ TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER
1/6/2023

11/10/22 REV: REMOVED UPPER PORTION OF VIEWPORT AND ADDED MATCHLINE; REMOVED KEYED NOTES

1/06/23 REV: REMOVED CONCEPTUAL ROW LINEWORK AND LABEL

KEY NOTES

(11) INSTALL SEWER AIR RELEASE VALVE PER DETAIL# 02660-1.4, SHEET C12.12

(14) INSTALL PRESSURE MAIN FLUSHING ASSEMBLY (CO) AND PLUG VALVE (VS) (MAIN LINE), REFER TO DETAIL NO# LPFM3, SHEET C12.12

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
THE SUMMIT AT MIRALOMAS
KENDALL COUNTY, TEXAS
LPS PLAN

REVISIONS

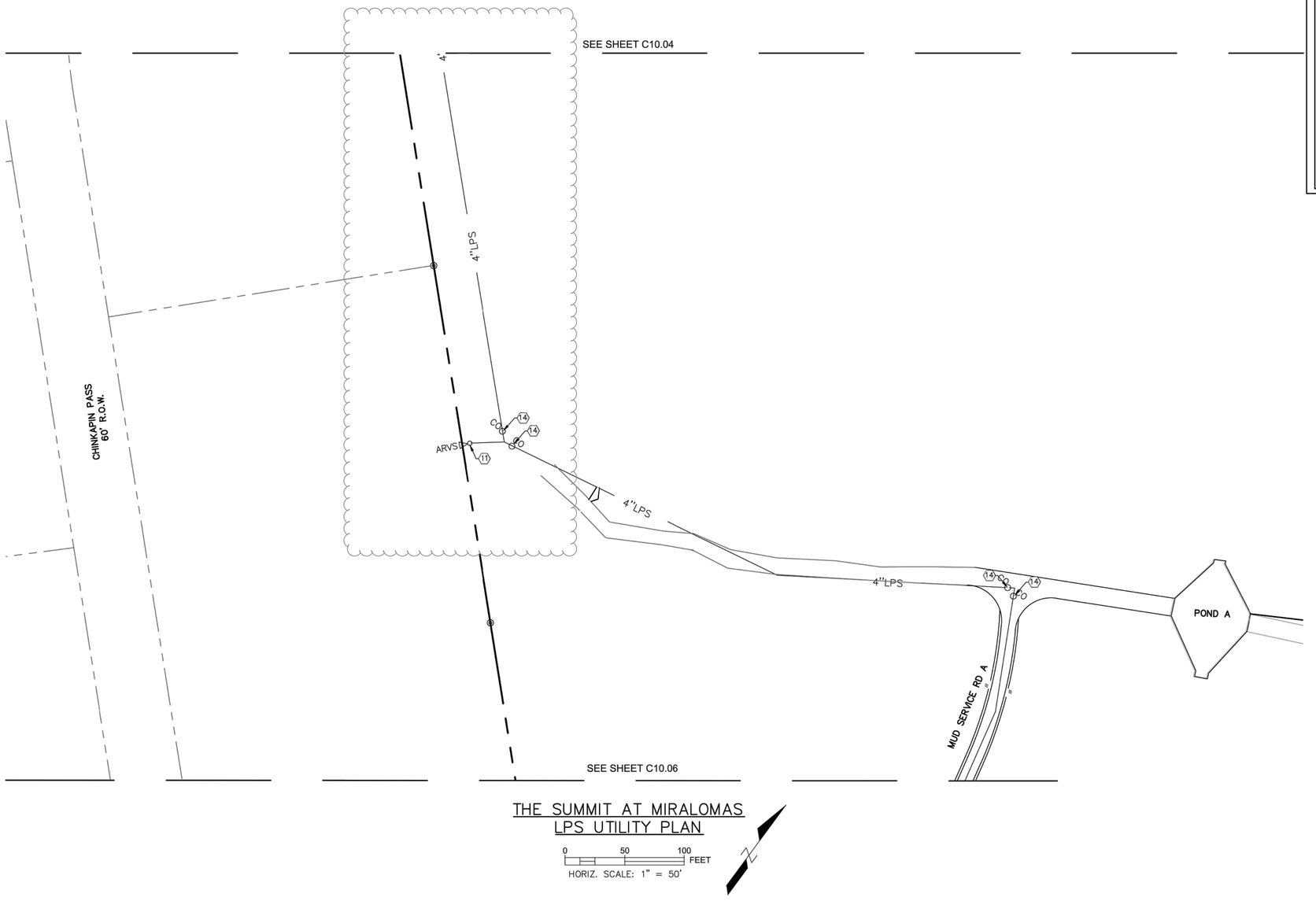
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

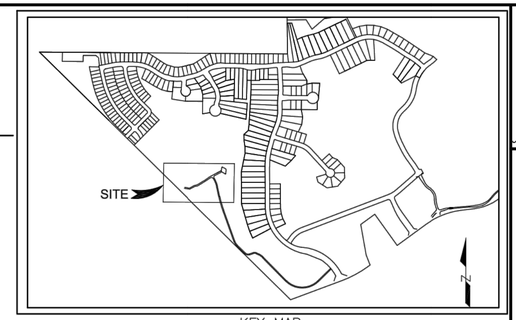
SHEET NO. C10.04

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\The Summit\6.00 - SEWER PLAN.dwg, C10.04 LPS-SUM-1, srezaui, Nov 09, 2021 - 10:30:12am



THE SUMMIT AT MIRALOMAS
LPS UTILITY PLAN

0 50 100 FEET
HORIZ. SCALE: 1" = 50'



KEY MAP
SCALE 1"=1000'

LEGEND

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- EXISTING DOMESTIC WATER METER
- EXISTING RECYCLE WATER METER
- EXISTING FIRE HYDRANT
- M — EXISTING WATER VALVE
- VP — EXISTING RECYCLE WATER GATE VALVE
- AR — EXISTING RECYCLE WATER AIR RELEASE VALVE
- EXISTING PERMANENT BLOW OFF (DOMESTIC OR RECYCLED)
- PROPOSED DOMESTIC WATER METER
- PROPOSED RECYCLE WATER METER
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- EXISTING UNDERGROUND ELECTRIC CROSSING

KEY NOTES

(11) INSTALL SEWER AIR RELEASE VALVE PER DETAIL# 02660-1.4, SHEET C12.12

(14) INSTALL PRESSURE MAIN FLUSHING ASSEMBLY (CO) AND PLUG VALVE (VS) (MAIN LINE), REFER TO DETAIL NO# LPFM3, SHEET C12.12

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER
1/6/2023

11/10/22 REV: REMOVED UPPER PORTION OF VIEWPORT AND ADDED MATCHLINE; REMOVED KEYED NOTES

1/06/23 REV: REMOVED CONCEPTUAL ROW LINEWORK AND LABEL

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED
PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL - SURVEYING - CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION
THE SUMMIT AT MIRALOMAS
KENDALL COUNTY, TEXAS
LPS PLAN

REVISIONS

NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

SHEET NO. C10.05

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 3 & 4\The Summit\6.00 - SEWER PLAN.dwg, C10.05 LPS-SUM-2, arezaui, Nov 09, 2021 - 10:32:04am

SEE SHEET C10.05

CHINKAPIN PASS
60' R.O.W.

MUD SERVICE RD A

4"LPS

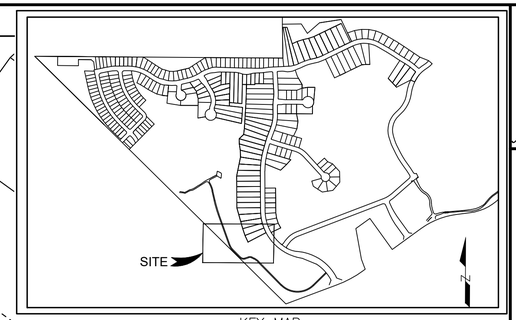
ARVS

PIPE CULVERT – B.

100' APPOXIMATE
POWER LINE EASEMENT

SEE SHEET C10.07

17
16
15
14
13
12
11
10
9
8
7



KEY MAP
SCALE 1"=1000'

LEGEND

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	R.O.W.
	EXISTING FENCE
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	EXISTING FIRE HYDRANT
	EXISTING WATER VALVE
VP	EXISTING RECYCLE WATER GATE VALVE
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	EXISTING UNDERGROUND ELECTRIC CROSSING

REMOVED KEY NOTES

11/10/2022

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

KEY NOTES

(11) INSTALL SEWER AIR RELEASE VALVE PER DETAIL# 02660–1.4, SHEET C12.12

(14) INSTALL PRESSURE MAIN FLUSHING ASSEMBLY (CO) AND PLUG VALVE (VS) (MAIN LINE), REFER TO DETAIL NO# LPFM3, SHEET C12.12

THE SUMMIT AT MIRALOMAS
LPS UTILITY PLAN

0 50 100 Feet

SCALE: 1" = 50'

STATE OF TEXAS
MICHAEL M. SLAY
44379
REGISTERED PROFESSIONAL ENGINEER
06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734–4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
THE SUMMIT AT MIRALOMAS
KENDALL COUNTY, TEXAS
LPS PLAN

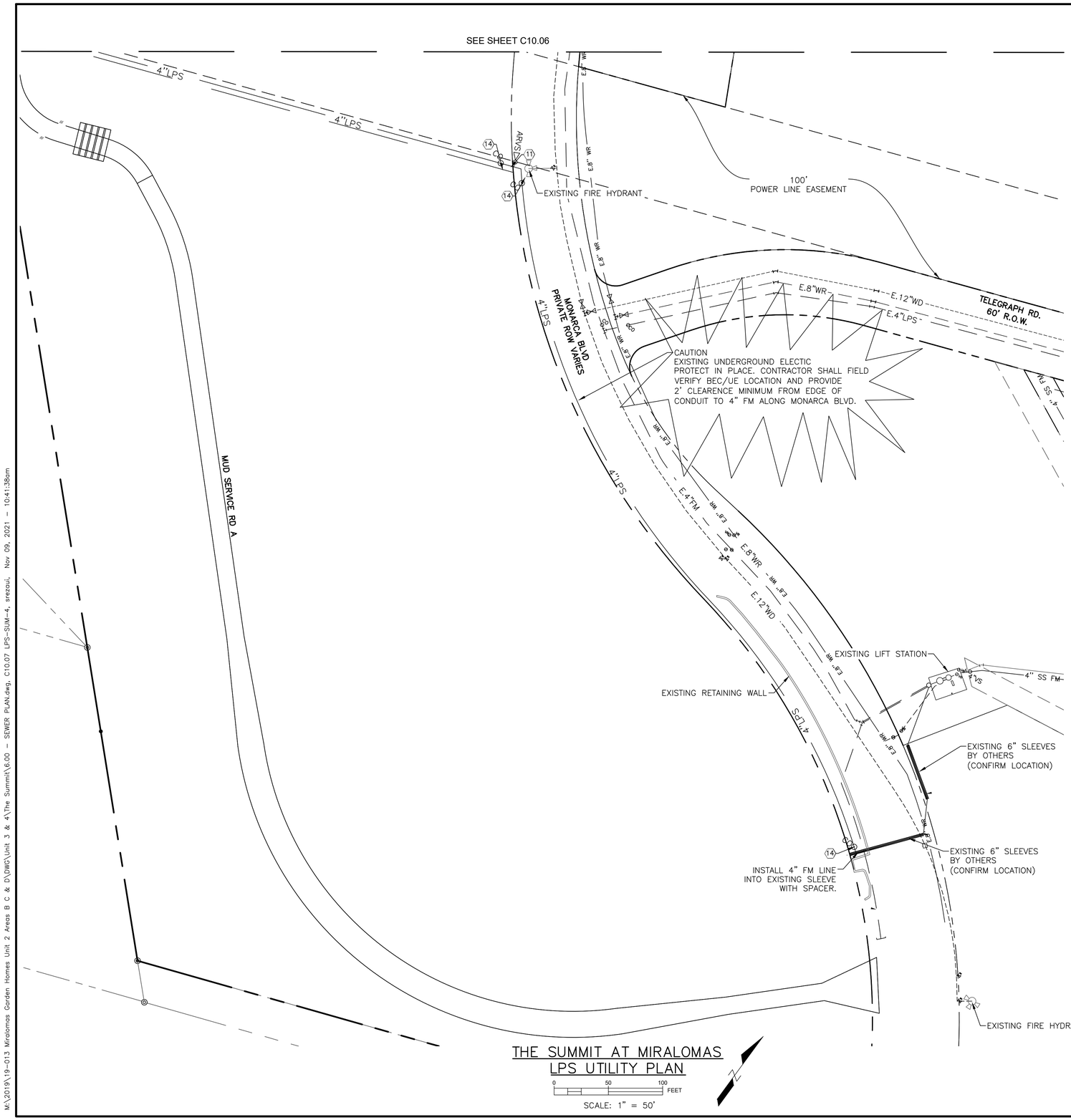
REVISIONS

NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19–013

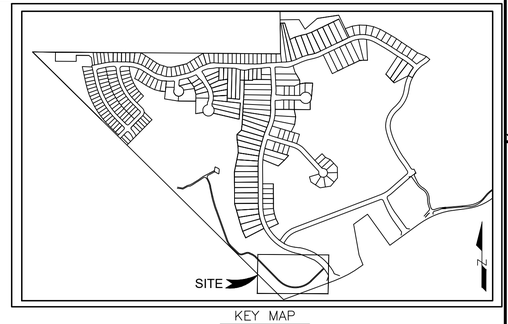
SHEET NO. C10.06



THE SUMMIT AT MIRALOMAS
LPS UTILITY PLAN

0 50 100 FEET

SCALE: 1" = 50'



KEY MAP
SCALE 1"=1000'

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	EXISTING RECYCLE WATER METER
	EXISTING FIRE HYDRANT
W	EXISTING WATER VALVE
VP	EXISTING RECYCLE WATER GATE VALVE
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	EXISTING UNDERGROUND ELECTRIC CROSSING

REMOVED KEY NOTES

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

11/10/2022

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

KEY NOTES

(11) INSTALL SEWER AIR RELEASE VALVE PER DETAIL# 02660-1.4, SHEET C12.12

(14) INSTALL PRESSURE MAIN FLUSHING ASSEMBLY (CO) AND PLUG VALVE (VS) (MAIN LINE), REFER TO DETAIL NO# LPFM3, SHEET C12.12

STATE OF TEXAS
MICHAEL M. SLAY
44379
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06/30/2021

SLAY ENGINEERING CO., INC.
CIVIL - SURVEYING - CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
THE SUMMIT AT MIRALOMAS
KENDALL COUNTY, TEXAS
LPS PLAN

REVISIONS

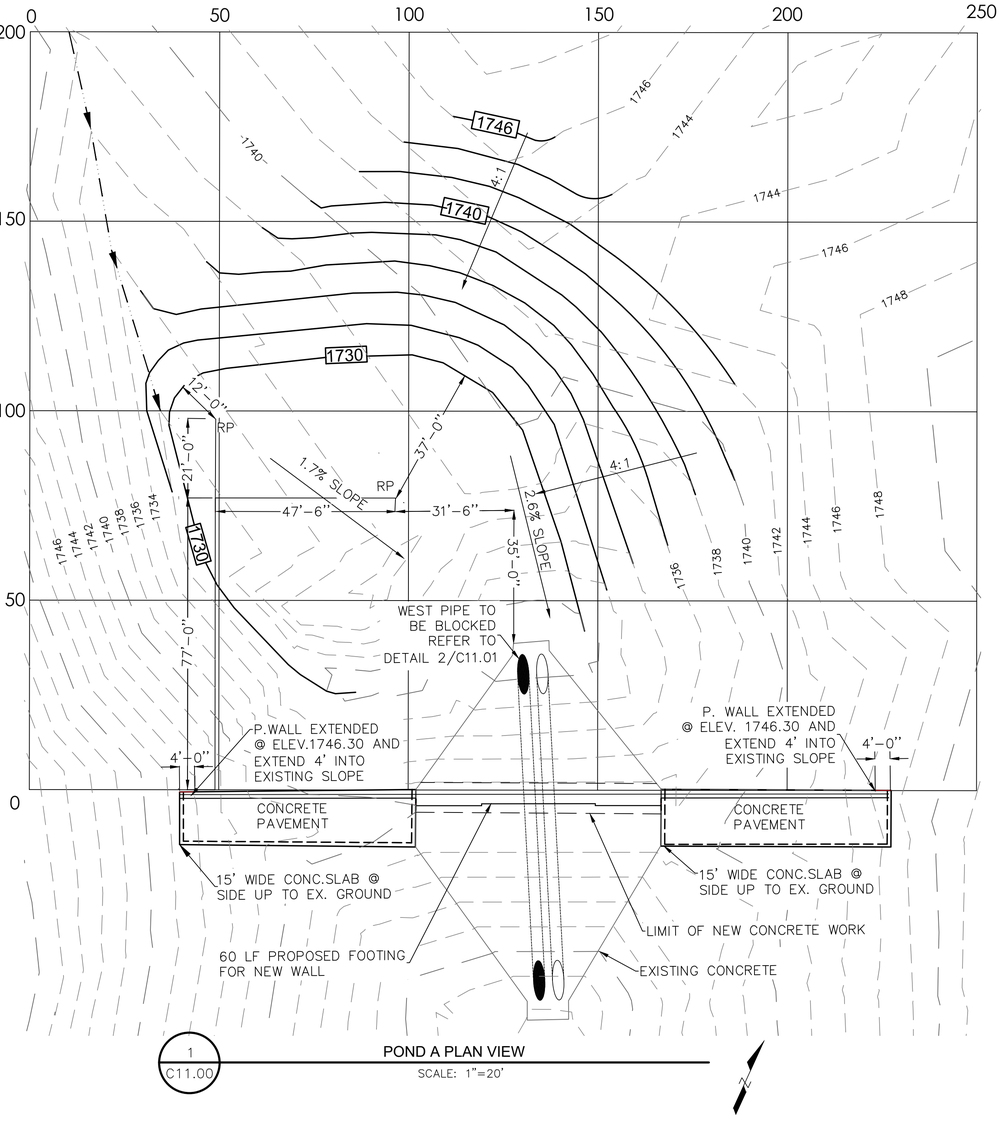
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	06/30/2021

JOB NO. 19-013

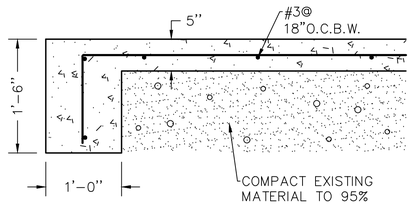
SHEET NO. C10.07

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B, C & D\DWG\Unit 3 & 4\The Summit\6.00 - SEWER PLAN.dwg, C10.07 LPS-SUM-4, srezaui, Nov 09, 2021 - 10:41:38am

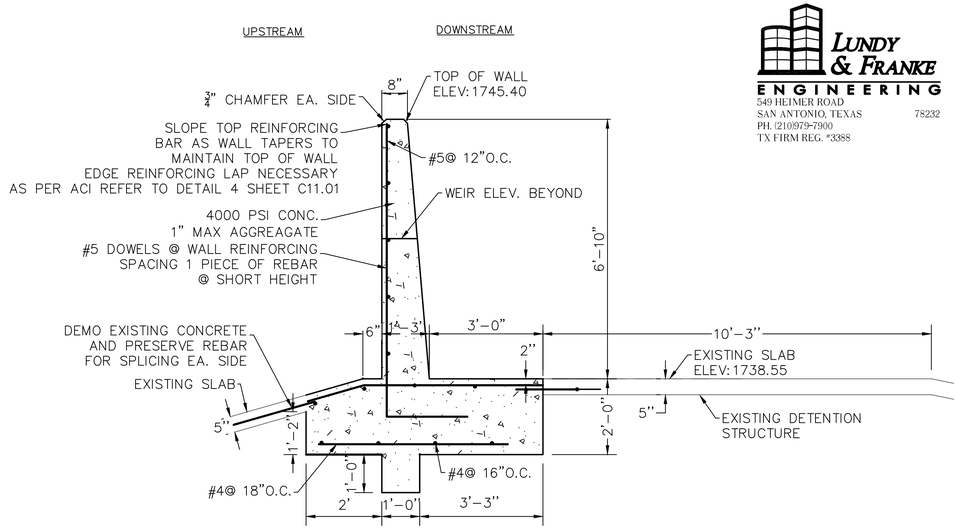


1 C11.00 POND A PLAN VIEW
SCALE: 1"=20'

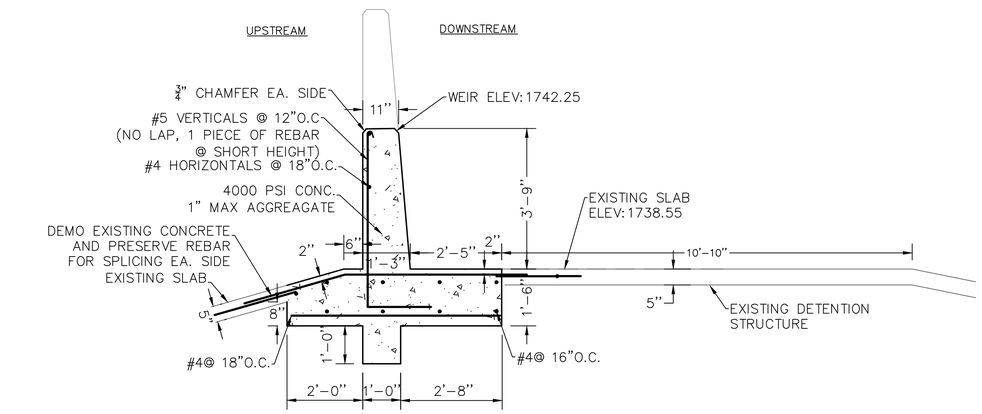
NOTE: FOR RESTORATION OF DISTURBED LANDSCAPING REFER TO DEMOLITION GENERAL NOTES ON SHEET C11.02.



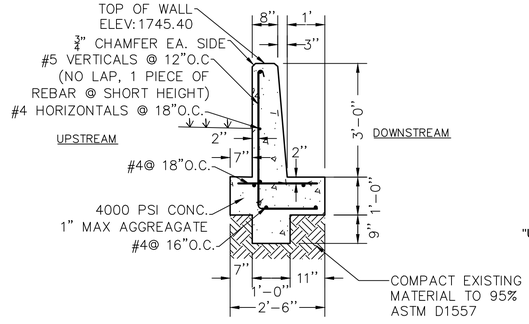
2 C11.00 CONC. PAVEMENT DETAIL
SCALE: 1"=1'



3 C11.00 P. WALL CROSS SECTION
SCALE: 1"=2'



4 C11.00 CROSS SECTION @ WEIR
SCALE: 1"=2'



5 C11.00 WALL OUTSIDE CONCRETE LIMITS
SCALE: 1"=2'

DATE: 03/08/2021

LUNDY & FRANKE ENGINEERING
549 HEIMER ROAD
SAN ANTONIO, TEXAS 78232
PH. (210)979-7900
TX FIRM REG. #3388

STATE OF TEXAS — SHAWN J. FRANKE — 82639 — LICENSED PROFESSIONAL ENGINEER

STATE OF TEXAS — MICHAEL M. SLAY — 84379 — REGISTERED PROFESSIONAL ENGINEER
03/09/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

REVISED "UNIT 4" TO "UNIT 3" IN SHEET TITLE

STATE OF TEXAS — REBECCA ANN CARROLL — 92666 — LICENSED PROFESSIONAL ENGINEER
10/31/2022

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
POND A
KENDALL COUNTY, TEXAS
MODIFICATION TO EXISTING POND A

REVISIONS

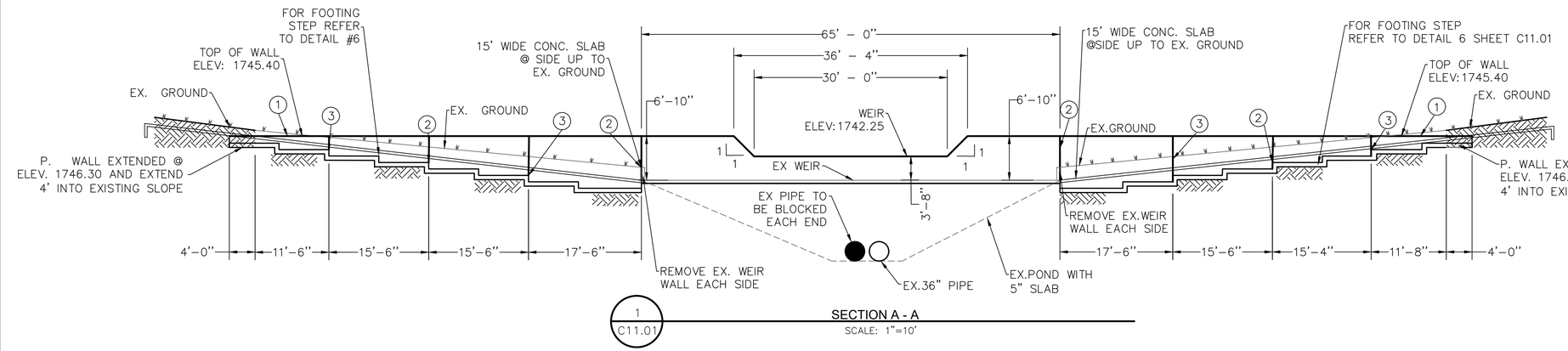
NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	01/22/2021

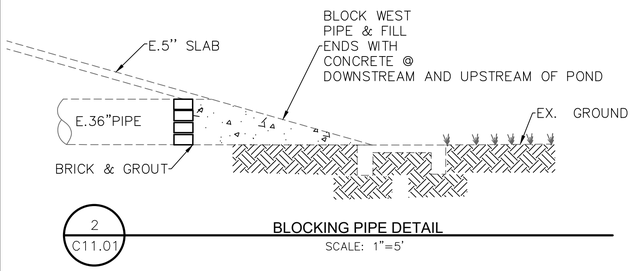
JOB NO. 19-013

SHEET NO. C11.00

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 2\POND A\Pond A.dwg, C11.00, dylan, Mar 08, 2021 - 10:25:09am

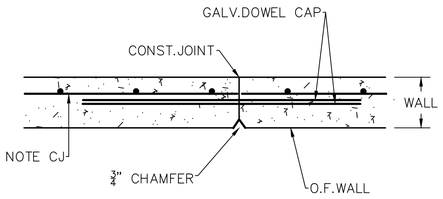


1 / C11.01 — SECTION A - A
SCALE: 1"=10'



2 / C11.01 — BLOCKING PIPE DETAIL
SCALE: 1"=5'

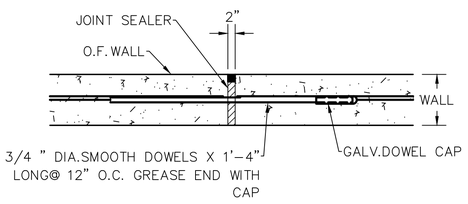
DOWNSTREAM

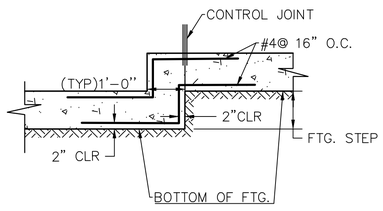


DOWNSTREAM

5 / C11.01 — TYP. CONSTRUCTION JOINT DETAIL PLAN
SCALE: 1"=1'

DOWNSTREAM

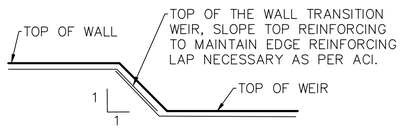




UPSTREAM

3 / C11.01 — EXPANSION JOINT DETAIL PLAN
SCALE: 1"=1'

6 / C11.01 — TYPICAL FOOTING STEP
SCALE: 1"=2'



4 / C11.01 — SLOPE REINFORCING AT WALL EDGES
SCALE: 1"=5'

KEY NOTES

1. CONTRACTOR SHALL FIELD VERIFY WALL EMBEDDED 4' INTO EXISTING SLOPE AND NOTIFY ENGINEER.
2. EXPANSION JOINT AS PER DETAIL # 3
3. CONSTRUCTION JOINT AS PER DETAIL # 5

DATE: 03/08/2021

STATE OF TEXAS — SHAWN J. FRANKE — 82639 — LICENSED PROFESSIONAL ENGINEER

LUNDY & FRANKE ENGINEERING
549 HEIMER ROAD
SAN ANTONIO, TEXAS 78232
PH. (210)979-7900
TX FIRM REG. #3388

REVISED "UNIT 4" TO "UNIT 3" IN SHEET TITLE

10/31/2022
STATE OF TEXAS — REBECCA ANN CARROLL — 92666 — LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS — MICHAEL M. SLAY — #4379 — REGISTERED PROFESSIONAL ENGINEER
03/09/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
TBPE FIRM REGISTRATION NO. F1901

SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
POND A
KENDALL COUNTY, TEXAS
MODIFICATION TO EXISTING POND A

GENERAL NOTES
THE FOLLOWING GENERAL NOTES CONSTITUTE A MAJOR PART OF THE PLANS AND SPECIFICATIONS. STRICT COMPLIANCE WITH THESE NOTES IS ESSENTIAL TO THE PROPER CONSTRUCTION OF THE PROJECT.

1. THE DETAILS DESIGNATED AS "TYPICAL DETAILS", AND NOTES MARKED "TYPICAL" OR "TYP" APPLY GENERALLY TO THE DRAWINGS IN ALL AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE DESCRIBED IN THE DETAILS.
2. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES, DIMENSIONS AND CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES BEFORE PROCEEDING WITH THE WORK.
3. COMPLETE SHOP DRAWINGS SHALL BE PROVIDED, AS SPECIFIED FOR ALL FABRICATED ITEMS AND SHALL BE REVIEWED PRIOR TO FABRICATION. STRUCTURAL DRAWINGS SHALL NOT BE REPRODUCED FOR SHOP DRAWINGS.

CODES AND DESIGN SPECIFICATIONS
1. STRUCTURAL STEEL: "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, THIRTEENTH EDITION.
2. STRUCTURAL CONCRETE: "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE ACI 318-08", THE AMERICAN CONCRETE INSTITUTE.
3. WELDING: STRUCTURAL WELDING CODE - STEEL, LATEST EDITION, AMERICAN WELDING SOCIETY (AWS D1.1 AND AWS D1.3

SITE PREPARATION FOR SOIL SUPPORTED FOUNDATIONS
1. PRIOR TO THE PLACEMENT OF SELECT STRUCTURAL FILL MATERIAL, THE EXPOSED SUBGRADE AT THE BOTTOM OF THE EXCAVATION SHALL BE PROOFROLLED TO LOCATE AND DENSIFY ANY WEAK AND COMPRESSABLE ZONES, ANY WEAK AND/OR COMPRESSIBLE ZONES ENCOUNTERED SHALL BE OVEREXCAVATED AND BACKFILLED WITH SELECT STRUCTURAL FILL IN ACCORDANCE WITH THE SELECT FILL NOTE (#4 BELOW), PROOFROLLING SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER OF RECORD TO VERIFY THAT THE SUBGRADE IS PREPARED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, PROOFROLLING OPERATIONS MAY BE PERFORMED USING HAND OPERATED EQUIPMENT.
2. PRIOR TO THE PLACEMENT OF SELECT STRUCTURAL FILL MATERIAL, THE EXPOSED SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES, MOISTURE CONDITIONED IF NECESSARY, AND RECOMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY DETERMINED FROM TxDOT, TEX-114-E, COMPACTION TEST.
3. GOOD SURFACE DRAINAGE SHALL BE ESTABLISHED PRIOR TO AND MAINTAINED AFTER CONSTRUCTION TO PREVENT WATER FROM PONDING WITHIN OR ADJACENT TO THE RETAINING WALL, THE TOP OF EACH COMPACTED FILL MATERIAL LIFT SHALL BE SLOPED TO PROVIDE POSITIVE SURFACE TOWARDS THE BUILDS PERIMETER.
4. MATERIALS USED FOR SELECT STRUCTURAL FILL SHALL BE CRUSHED STONE OR GRAVEL AGGREGATE CONFORMING TO TEXAS HIGHWAY DEPARTMENT (TxDOT) 2014 STANDARD SPECIFICATION FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES, ITEM 247, TYPE "A' OR "C", GRADES 1 THROUGH 3.
5. SELECT STRUCTURAL FILL MATERIAL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS AND SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY AS DETERMINED BY TxDOT, TEX-113-E, COMPACTION TEST, THE MOISTURE CONTENT OF THE SELECT STRUCTURAL FILL SHALL BE MAINTAINED WITHIN THE RANGE 2 PERCENTAGE POINTS BELOW TO 2 PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT UNTIL FINAL COMPACTION.
6. COMPACTION TESTS SHALL BE PERFORMED ON THE SUBGRADE AND FOR EACH LIFT OF THE SELECT STRUCTURAL FILL MATERIAL.

SITE PREPARATION FOR SOIL SUPPORTED FOUNDATIONS
7. ALL MATERIAL ABOVE SUBGRADE SHALL BE SELECT STRUCTURAL FILL AS NOTED ABOVE.
8. SUBGRADE SOILS AND FILL MATERIALS SHALL BE INSPECTED IN ACCORDANCE WITH TO TEXAS HIGHWAY DEPARTMENT (TxDOT) LATEST EDITION STANDARD SPECIFICATION FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES, ITEM 247.

REVISIONS

NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	01/22/2021

JOB NO. 19–013

SHEET NO. C11.01

M:\2019\19-013 Miralomas Garden Homes Unit 2 Areas B C & D\DWG\Unit 2\POND A\Pond A.dwg, C11.01, dylan, Mar 08, 2021 – 10:27:17am

CONCRETE AND CONCRETE REINFORCEMENT

1. ALL CONCRETE REINFORCEMENT SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A 615, GRADE 60.
2. DETAIL REINFORCING BARS AND PROVIDE BAR SUPPORTS AND SPACERS IN ACCORDANCE WITH THE ACI DETAILING MANUAL.
3. ALL REINFORCING SHALL BE PROPERLY CHAIRED AND TIED PER ACI CODE PRIOR TO PLACING CONCRETE.
4. PLACEMENT OF ALL REINFORCING STEEL SHALL BE OBSERVED BY THE ENGINEER OF RECORD PRIOR TO CONCRETE PLACEMENT.
5. ALL CONCRETE SHALL BE PROPORTIONED TO DEVELOP THE FOLLOWING MINIMUM ULTIMATE COMPRESSIVE STRENGTHS IN 28 DAYS, BY TEST, AS SPECIFIED:
   A. ALL SOIL SUPPORTED CONCRETE 4,000 PSI
   B. PRECAST RETAINER BLOCKS 4,000 PSI

FLY ASH WILL BE PERMITTED UP TO 20% PORTLAND CEMENT REPLACEMENT, REFER TO SPECIFICATIONS.

6. IMMEDIATELY FOLLOWING FOUNDATION CONSTRUCTION AND FORM REMOVAL, PROVIDE POSITIVE DRAINAGE AWAY FROM THE SLAB A MINIMUM OF 10 FEET IN ALL DIRECTIONS.
7. BAR LAPS AND SPLICES SHALL BE A LENGTH EQUAL TO AT LEAST 40 BAR DIAMETERS. PROVIDE 80 BAR DIA. BENT BARS FOR CONTINUOUS BARS AT CORNERS. SPIRALS SHALL BE LAPPED 1–1/2 TURNS. WELDED WIRE MESH SHALL BE LAPPED 8" MINIMUM AT SPLICE POINTS, OR 1–1/2 MESHES, WHICHEVER IS GREATEST.
8. CONTRACTOR SHALL PROVIDE NECESSARY CONSTRUCTION JOINTS IN MONOLITHIC CONCRETE FORMING SO THAT NOT MORE THAN 400 CUBIC YARDS IS POURED IN ONE DAY. LOCATION OF CONSTRUCTION JOINTS MUST HAVE PRIOR APPROVAL OF STRUCTURAL ENGINEER OF RECORD AND SHALL GENERALLY BE LOCATED AT OR NEAR MID–POINTS OF SPANS OF SLAB, BEAMS AND WALLS. ALL CONTINUOUS REINFORCING SHALL BE CARRIED THROUGH THE JOINT. SEE DETAILS FOR CONTINUOUS KEY BETWEEN ADJACENT POURS.
9. WALL INTERSECTIONS: AT CORNERS, ANGLE BENDS, AND AT JUNCTION WITH OTHER WALLS, LAP ALL HORIZONTAL BARS IN BOTH FACES 40 DIAMETERS OR USE MATCHING 80 DIAMETER "CORNER BARS".
10. WALL ENDS: WHERE WALLS STOP, POSITION TWO (2) OF THE WALL VERTICAL BARS AT THE END OF THE WALL: PROVIDE THAT VERTICAL BARS ARE #6 OR LARGER. IF WALL VERTICAL BARS ARE SMALLER THAN #6, USE 2–#6 AT WALL ENDS IN LIEU OF WALL VERTICAL BARS. PROVIDE #4 U–BARS (40 DIAMETER LAPS) ENCLOSING VERTICAL BARS AT END FACES, SAME SPACING AS HORIZONTAL BARS.
11. WALL DOWELS: PROVIDE 80 DIAMETER WALL DOWELS FROM BEAM OR FOOTING TO MATCH THE SIZE AND SPACING OF ALL VERTICAL BARS IN WALL ABOVE: EXTENDED 40 DIAMETERS INTO WALL. AT CONSTRUCTION JOINTS, EITHER CONTINUE ALL VERTICAL BARS PR PROVIDE FOR 40 DIAMETER LAPS OF ALL VERTICAL BARS INTO WALL ABOVE.

CONCRETE COVER REQUIREMENTS

1. FOOTINGS AND OTHER PRINCIPAL STRUCTURAL MEMBERS IN WHICH CONCRETE IS DEPOSITED AGAINST THE GROUND: 3 INCHES.
2. WHERE CONCRETE SURFACES, AFTER REMOVAL OF FORMS, ARE EXPOSED TO WEATHER OR GROUND
   BARS MORE THAN 5/2 INCHES IN DIAM. 2 INCHES
   BARS EQUAL TO OR LESS THAN 5/2 INCHES IN DIAM. 1 ½ INCHES
3. WHERE SURFACES ARE NOT DIRECTLY EXPOSED TO WEATHER OR GROUND
   SLAB ON GRADE (FROM TOP OF SLAB) 1 ½ INCHES

GROUT

1. NON–SHRINK, NON–METALLIC GROUT SHALL BE USED UNDER ALL PLATES WHEREVER CALLED FOR ON THE DRAWINGS.
2. MATERIALS SHALL BE READY TO USE WITH ONLY THE ADDITION OF WATER, WHICH SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. THE MANUFACTURER'S NAME AND ADDRESS MUST APPEAR ON EACH PACKAGE AND IN ALL LITERATURE; EACH BAG MUST PROVIDE BATCH CODE IDENTIFICATION.
3. MATERIAL SHALL MEET THE TEST CRITERIA OF THE CORPS OF ENGINEERS CRD–C–621, WITH THE FOLLOWING ADDITIONAL REQUIREMENTS.
   A. 28 DAY COMPRESSIVE STRENGTH SHALL NOT BE LESS THAN 5,000 PSI AT FLUID CONSISTENCY.
   B. EXPANSION SHALL NOT BE CAUSED BY GAS LIBERATION.
4. APPROVED PRODUCTS:
   A. "NS GROUT" AS MANUFACTURED BY EUCLID CHEMICAL COMPANY, INC.
   B. "MASTERFLOW 928" AS MANUFACTURED BY MASTER BUILDERS.

DEMOLITION

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND BECOME FAMILIAR WITH THE EXISTING SYSTEM BEFORE PROCEEDING WITH ANY DEMOLITION.
2. PROVIDE ADEQUATE BRACING, SHORING, SUPPORT STAGING, ETC., BEFORE REMOVING ANY STRUCTURAL ELEMENTS.
3. THE CONTRACTOR SHALL PROVIDE ADEQUATE BARRICADES, SIGNAGE, ETC., AS REQUIRED BY BUILDING CODES AND ORDINANCES TO INSURE SAFETY PERSON(S) AND PROPERTY.
4. CONTRACTOR SHALL REMOVE EXISTING SIGNS, STRUCTURES, PAVEMENT, ETC. AS NEEDED TO CONSTRUCT THE PROPOSED IMPROVEMENTS. THIS SHALL INCLUDE SUB–SURFACE UTILITIES THAT WILL NO LONGER REMAIN IN SERVICE.
5. THE GENERAL EXTENT OF DEMOLITION WORK IS SHOWN ON THE DRAWINGS. IT IS NOT POSSIBLE TO SHOW REQUIRED DEMOLITION, REMODELING AND PATCHING IN EVERY DETAIL. THE CONTRACTOR SHALL VISIT THE SITE TO DETERMINE THE EXTENT OF DEMOLITION AND REMODELING WORK, AND TO FAMILIARIZE HIMSELF WITH THE CONDITIONS UNDER WHICH THE WORK SHALL BE PERFORMED. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR WORK SHOWN OR REQUIRED AS A RESULT OF WORK SHOWN, OR FOR PATCHING REQUIRED AS A RESULT OF NEW WORK OR DEMOLITION.
6. EXISTING ABOVE GROUND UTILITIES HAVE BEEN PLOTTED BY DIRECT FIELD INVESTIGATION (ON SURVEY PERFORMED BY OTHERS). CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF UNDERGROUND ELECTRIC, GAS, TELEPHONE, AND WATER FACILITIES PRIOR TO BEGINNING DEMOLITION. CONTRACTOR WILL CALL THE LOCAL UTILITY LOCATOR 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
7. DEMOLITION INCLUDES REMOVAL AND DISPOSAL OF DEMOLISHED MATERIALS. CONTRACTOR SHALL PROVIDE DUMPSTER OR OTHER SUITABLE MEANS OF DISPOSAL OF DEMOLISHED MATERIALS AND CONSTRUCTION DEBRIS. DUMPSTER SHALL BE PLACED IN A LOCATION APPROVED BY THE OWNER AND IN ACCORDANCE WITH LOCAL CODES AND REQUIREMENTS.
8. ALL DEMOLISHED MATERIALS, DEBRIS, AND RUBBISH SHALL BE THE PROPERTY OF THE CONTRACTOR AND SHALL BE HIS RESPONSIBILITY TO REMOVE THIS MATERIAL FROM THE SITE AND DISPOSED OF PROPERLY.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO EXISTING ABOVE GROUND OR UNDERGROUND UTILITIES, INCLUDING THOSE NOT SHOWN ON DRAWINGS. ANY UTILITIES REMOVED, DAMAGED OR UNDERCUT BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE OWNER AND APPROVED BY THE RESPECTIVE UTILITY AT THE CONTRACTOR'S EXPENSE.
10. REPAIR DAMAGE TO ADJACENT AREAS, FACILITIES, MATERIALS AND EQUIPMENT BY DEMOLITION AND NEW CONSTRUCTION OPERATIONS, AT NO EXTRA COST TO THE OWNER.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING LANDSCAPE AND/OR RESTORING DISTURBED LANDSCAPE AREAS TO ITS ORIGINAL OR BETTER CONDITION, WITH ACCEPTABLE MATERIAL.
12. COMPACT FILL AS REQUIRED SO THAT REQUIRED ROUGH GRADE ELEVATIONS DO NOT SUBSIDE WITHIN ONE YEAR AFTER COMPLETION.

DATE: 03/08/2021

LUNDY & FRANKE ENGINEERING
549 HEIMER ROAD
SAN ANTONIO, TEXAS 78232
PH. (210)979-7900
TX FIRM REG. #3388

STATE OF TEXAS
SHAWN J. FRANKE
82639
LICENSED
PROFESSIONAL ENGINEER

REVISED "UNIT 4" TO "UNIT 3" IN SHEET TITLE 10/31/2022

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS
MICHAEL M. SLAY
#4379
REGISTERED
PROFESSIONAL ENGINEER
m. slay 03/09/2021

SLAY ENGINEERING CO., INC.
CIVIL – SURVEYING – CONSULTING
123 ALTGELT AVE.
SAN ANTONIO, TEXAS 78201
TELEPHONE (210) 734-4388
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SLAY ENGINEERING CO., INC.

MIRALOMAS GARDEN HOMES SUBDIVISION UNIT 3
POND A
KENDALL COUNTY, TEXAS
MODIFICATION TO EXISTING POND A

REVISIONS

NO.	REVISION

DESIGNED BY:	DRAWN BY:
M.S.	M.H.
CHECKED BY:	DATE:
M.S.	04/03/2020

JOB NO. 19–013

SHEET NO. C11.02

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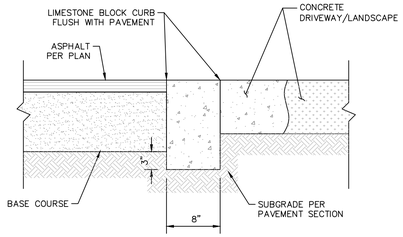

HEADER CURB DETAIL

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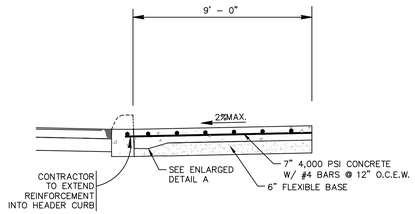

TYPICAL COMMERCIAL DRIVEWAY SECTION

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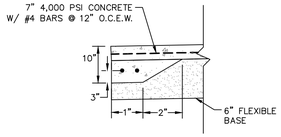

ENLARGED DETAIL-A

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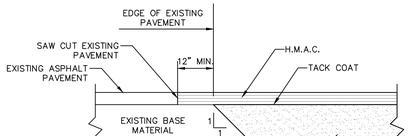

ASPHALT/ASPHALT JUNCTURE DETAIL

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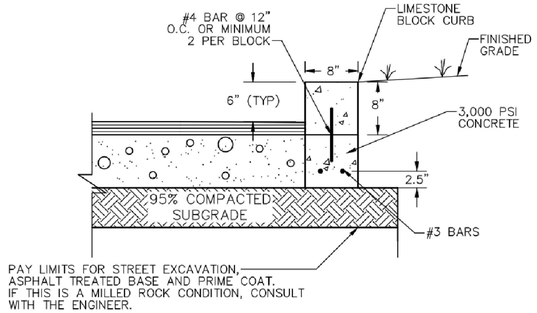

3
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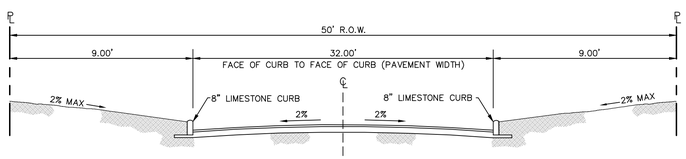
8" LIMESTONE CURB

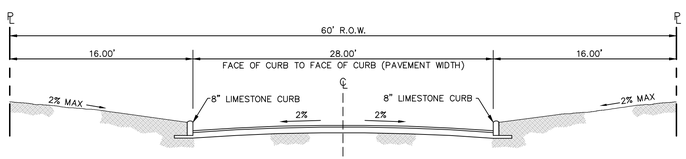
SCALE: 1"=1'



50' R.O.W. STREET SECTION (RESIDENTIAL CLASS A)

NOT TO SCALE

(ORIOLE LN, HIBISCUS, MOCKINBIRD TRAIL)



60' R.O.W. STREET SECTION (RESIDENTIAL CLASS A)

NOT TO SCALE

(W. MARIPOSA PKWY)

PAVEMENT SECTION DETAIL

STREET NAME	CLASSIFICATION	STATION	TYPE "D" HMAC SURFACE TXDOT ITEM 340, in.	AGGREGATE BASE, in. (TxDOT ITEM 247 TYPE A GRADE 1 OR 2)	MOISTURE CONDITIONED SUBGRADE
WEST MARIPOSA PARKWAY	RESIDENTIAL CLASS A	10+16.00 TO 10+84.41	2"	8"	6"
ORIOLE LN	RESIDENTIAL CLASS A	11+01.28 TO END	2"	8"	6"
MOCKINGBIRD TRAIL	RESIDENTIAL CLASS A	10+00.00 TO END	2"	8"	6"
HIBISCUS	RESIDENTIAL CLASS A	10+13.70 TO END	2"	8"	6"

GENERAL NOTES:

1. CONTRACTOR SHALL REFERENCE THE PROJECT PAVEMENT DESIGN REPORT PREPARED BY **TERRACON CONSULTANTS, INC.** DATED **MARCH 12, 2020.**
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER TO VERIFY THE SUB GRADE CONDITION PRIOR TO PLACING ANY BASE MATERIAL. GEOTECHNICAL ENGINEER SHALL DETERMINE THE SUB GRADE CONDITION AND IF LIME STABILIZATION IS REQUIRED.
3. GEOTECHNICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE.
4. THE FLEXIBLE BASE COURSE SHOULD BE CRUSHED LIMESTONE CONFORMING TO TXDOT STANDARD SPECIFICATIONS, ITEM 247, TYPE A, GRADES 1 OR 2.
5. THE MOISTURE CONTENT OF THE FILL SHOULD BE MAINTAINED WITHIN THE RANGE OF OPTIMUM WATER CONTENT TO 3 PERCENTAGE POINTS ABOVE THE OPTIMUM WATER CONTENT UNTIL PERMANENTLY COVERED.
6. IN THE EVENT THAT THE CLAY FILL USED IS DIFFERENT THAN THE EXISTING SUBGRADE, THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT COULD BE INVALIDATED AND THE DESIGN ENGINEER MUST BE CONSULTED TO DETERMINE IF ADDITIONAL CBR TESTING AND THICKER PAVEMENT SECTIONS ARE REQUIRED.
7. WHERE PAVEMENT SUBGRADE IS LOCATED WITHIN 2-FEET OF THE EXISTING GROUND SURFACE (STRATUM 1 CLAYS), MOISTURE CONDITIONED SUBGRADE WILL BE REQUIRED. GEOTECHNICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE TO DETERMINE WHERE THE MOISTURE CONDITIONED SUBGRADE IS NEEDED. REFERENCE GEOTECHNICAL ENGINEERING REPORT FOR MORE INFORMATION.
8. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL MATERIAL TESTING WITH THE PROJECT GEOTECHNICAL ENGINEER. TESTING SHALL BE PAID FOR BY THE OWNER.
9. FILL MATERIAL SHOULD BE EITHER:

9.1. GRANULAR SELECT FILL CONSISTING OF CRUSHED LIMESTONE BASE MEETING THE GRADATION REQUIREMENTS OF TXDOT ITEM 247, TYPE A, GRADE 1-2. PLASTICITY INDEX SHOULD BE BETWEEN 5 AND 12.

9.2. ON-SITE SOILS CLASSIFIED AS CL AND GC SOILS, GIVEN THEY MEET SELECT FILL CRITERIA. PRIOR TO ANY FILLING OPERATIONS, SAMPLES OF THE PROPOSED BORROW AND ON-SITE MATERIALS SHOULD BE OBTAINED FOR LABORATORY MOISTURE-DENSITY TESTING. THE TESTS WILL PROVIDE A BASIS FOR EVALUATION OF FILL COMPACTION BY IN-PLACE DENSITY TESTING. A QUALIFIED SOIL TECHNICIAN SHOULD PERFORM SUFFICIENT IN-PLACE DENSITY TESTS DURING THE FILLING OPERATIONS TO EVALUATE THAT PROPER LEVELS OF COMPACTION, INCLUDING DRY UNIT WEIGHT AND MOISTURE CONTENT, ARE BEING ATTAINED.

STREET SUBGRADE NOTES:

1. IF THE MOISTURE, DENSITY, AND/OR THE REQUIREMEENTS DO NOT MEET THE CRITERIA LISTED BELOW, TEH SUBGRADE SHOULD BE SCARIFIED TO A DEPTH OF 6 INCHES; MOISTURE ADJUSTED AND COMPACTED TO AT LEAST 95 PERCENT OF THE STANDARD EFFORT (ASTM D 698) MAXIMUM DRY DENSITY.
2. ALL FILL SHOULD BE PLACED IN THIN, LOOSE LIFTS NOT TO EXCEED 8 INCHES, WITH COMPACTED THICKNESS OF ABOUT 6 INCHES.
3. COMPACTION OF ON-SITE SOIL AND GRANULAR SELECT FILL SHOULD MEET 95% OF MATERIALS STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698).
4. THE MOISTURE CONTENT OF ON-SITE SOIL AND GRANULAR SELECT FILL SHOULD BE MOISTURE CONDITIONED BETWEEN -2 AND +3 PERCENT POINTS OF THE OPTIMUM MOISTURE CONTENT.
5. THE SUBGRADE SHOULD BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE TREATMENT.

NO.	REVISION	DATE
1	REVISED STREET NAME & ADDED DETAILS	02/15/23

2/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

STREET DETAILS

PLAT NO.
JOB NO. 12616-04
DATE FEBRUARY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.00

Date: Feb 13, 2023, 4:09pm User ID: pcell
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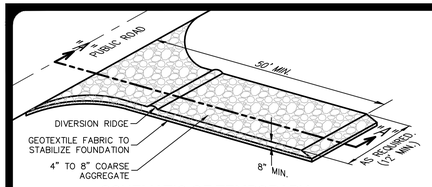
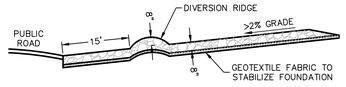


SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT



SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

MATERIALS

1. THE AGGREGATE SHOULD CONSIST OF 4–INCH TO 8–INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.

2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8–INCHES.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD², A MULLEN BURST RATING OF 140 LB/IN², AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4–INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.

4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6–INCHES TO 8–INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

COMMON TROUBLE POINTS

1. INADEQUATE RUNOFF CONTROL–SEDIMENT WASHES ONTO PUBLIC ROAD.

2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.

3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC–EXTEND PAD BEYOND THE MINIMUM 50–FOOT LENGTH AS NECESSARY.

4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.

5. UNSTABLE FOUNDATION – USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.

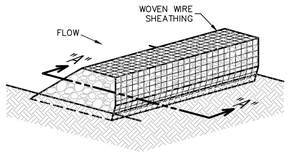
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

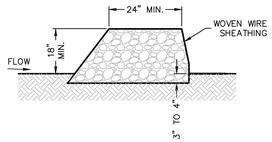
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW



SECTION "A-A"

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT–LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.

2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

3. REPAIR ANY LOOSE WIRE SHEATHING.

4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

MATERIALS

1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

2. CLEAN, OPEN GRADED 3–INCH TO 5–INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5–INCH TO 8–INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION

1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.

2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".

4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

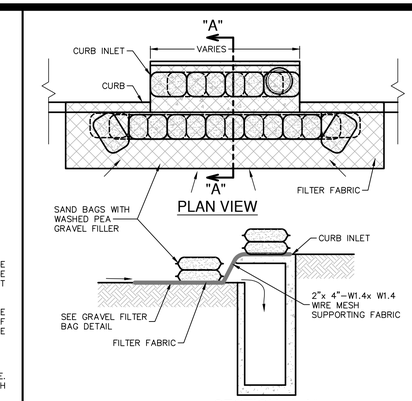
COMMON TROUBLE POINTS

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL

NOT–TO–SCALE



PLAN VIEW

SECTION "A-A"

GENERAL NOTES

1. CONTRACTOR TO INSTALL 2"x4"–W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

2. 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.

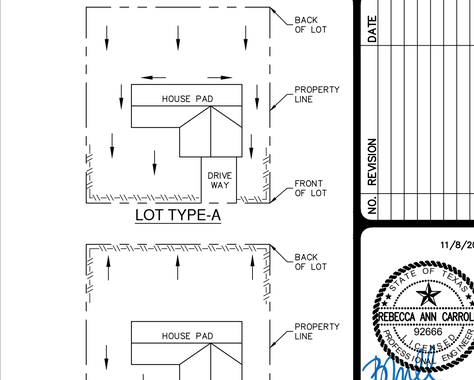
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

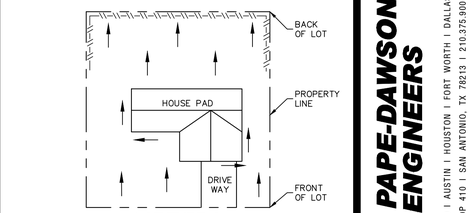
BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT–TO–SCALE



LOT TYPE-A

LOT TYPE-B



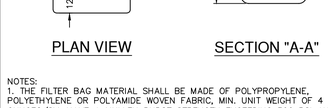
LOT TYPE-C

NOTE: SILT FENCE TO BE INSTALLED PER THESE DETAILS AND LOCATED ON THE DOWNGRADIENT SIDE OF EACH LOT LINE OR LIMITS OF CLEARING AS GENERALLY SHOWN ON THE OVERALL SITE PLAN.

LEGEND
SILT FENCE
DRAINAGE FLOW

TYPICAL HOUSE LOT LAYOUTS

NOT–TO–SCALE



PLAN VIEW

SECTION "A-A"

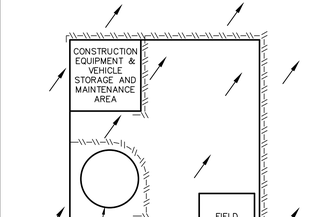
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

GRAVEL FILTER BAG DETAIL

NOT–TO–SCALE

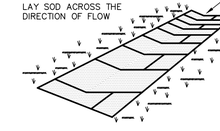


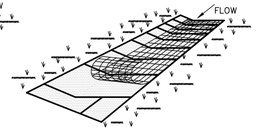
CONSTRUCTION STAGING AREA

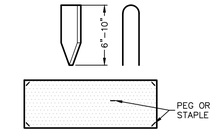
NOT–TO–SCALE

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES–STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.





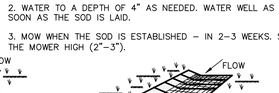


USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

SOD INSTALLATION

LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.



APPEARANCE OF GOOD SOD

NOTES:
1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

3. MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").

MATERIALS

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION

1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

INSTALLATION IN CHANNELS

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).

2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2–3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

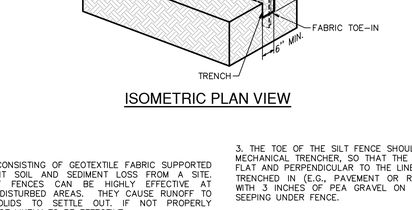
INSPECTION AND MAINTENANCE GUIDELINES

1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

SOD INSTALLATION DETAIL

NOT–TO–SCALE



ISOMETRIC PLAN VIEW

SILT FENCE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE, WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER–BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

MATERIALS

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.

2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y–BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS EXCEEDING 140.

3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION

1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1–FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

2. LAY OUT FENCING DOWN–SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN–SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3–FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS

1. FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES).

4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECT ALL FENCING WEEKLY, AND AFTER RAINFALL.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

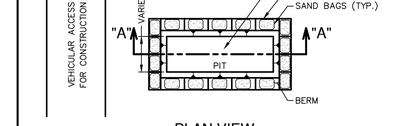
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

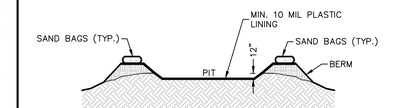
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT–TO–SCALE



PLAN VIEW



SECTION "A-A"

GENERAL NOTES

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

MATERIALS

PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

MAINTENANCE

1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

CONCRETE TRUCK WASHOUT PIT DETAIL

NOT–TO–SCALE

NO.	REVISION	DATE

11/8/2022

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

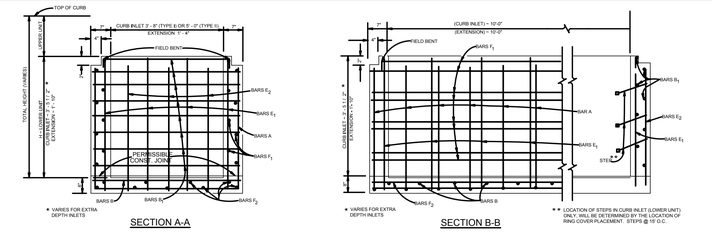
MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

STORMWATER POLLUTION PROTECTION PLAN DETAILS

PLAT NO.
JOB NO. 12616–04
DATE NOVEMBER 2022
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.01

Date: Nov 08, 2022, 2:18pm User ID: gdillebrew
File: P:\126\16\04\Design\Civil\SWPPP\DT126160404.dwg



★ VARIES FOR EXTRA DEPTH INLETS

SECTION A-A

★ VARIES FOR EXTRA DEPTH INLETS

★★ LOCATION OF STEPS IN CURB INLET (LOWER UNIT) ONLY. WILL BE DETERMINED BY THE LOCATION OF RING COVER PLACEMENT. STEPS @ 15' O.C.

SECTION B-B

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'-6"
B_1	VARIES	#4	12"	4'-6"
E_1	20	#4	18" ±	VARIES
E_2	6	#3	18" ±	VARIES
F_1	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"	6'-10"
B_1	VARIES	#4	12"	6'-10"
E_1	22	#4	18" ±	VARIES
E_2	9	#3	18" ±	VARIES
F_1	VARIES	#4	12" ±	10'-10"
F_2	11	#4	—	10'-10"

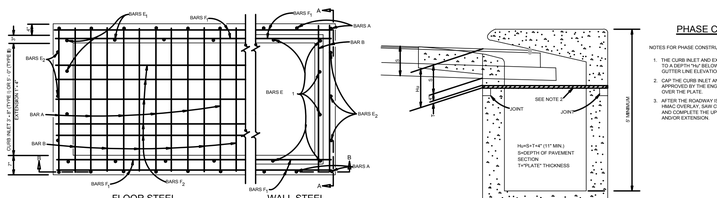
GENERAL NOTES

1. 5' INLETS AND 6' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE "E" STD. (1).
2. TYPE "C-II" 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", 3000 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 & COVER, AND ALL OTHER MATERIALS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "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 IN INLET WALLS SHOULD NOT EXCEED 3' BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE, AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

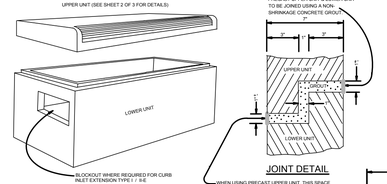
1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE, AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND/OR EXTENSION.



FLOOR STEEL

WALL STEEL

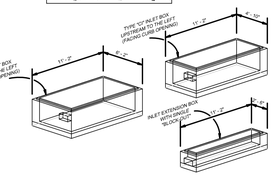
PLAN



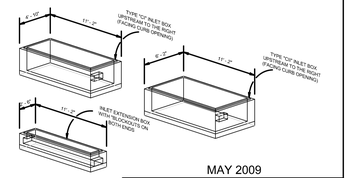
JOINT DETAIL

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.

BARS A
(LOWER UNIT)



CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)



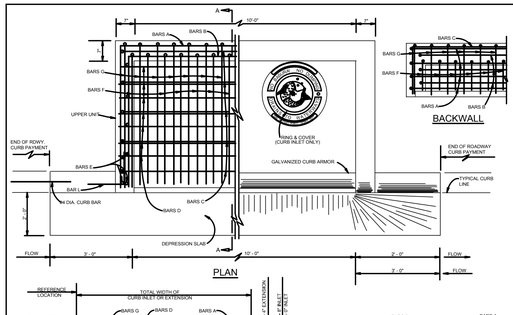
CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)

MAY 2009

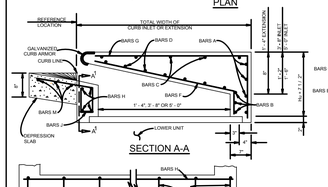
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 1 OF 3

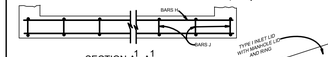
% SUBMITTAL	PROJECT NO.	DATE
DRAWN BY: V. VASQUEZ	DSGN BY: J.E. WALTOS, P.E.	CHKD BY: B.S. HOSSEIN, P.E.



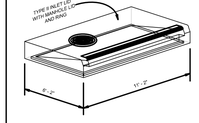
PLAN



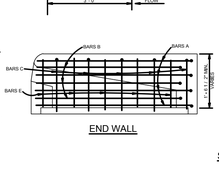
SECTION A-A



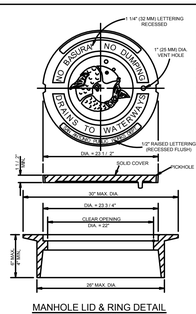
SECTION A - A[1]



CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



END WALL



BACKWALL

MANHOLE LID & RING DETAIL (ITEM 409)

NOTES FOR MANHOLE LID AND RING

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

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

REINFORCING STEEL (FOR Hu=11")

UPPER UNIT 10' X 3'-8" (TYPE I)

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10'-10"	51
B	3	#4	—	10'-10"	38
C	5	#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	22	#6	6"	5'-6"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					620 LBS.

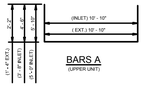
UPPER UNIT 10' X 5'-0" (TYPE II)

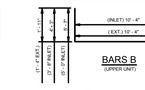
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'-6"	60
B	3	#4	—	21'-6"	43
C	5	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	28	#6	6"	7'-0"	231
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT					759 LBS.

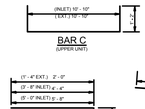
CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

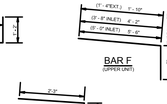
DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

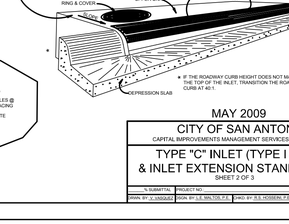
UPPER UNIT (ONLY)	C.Y.
10' X 3'-8" CURB INLET	1.9
10' X 5'-0" CURB INLET	2.7
10' EXTENSION	1.0









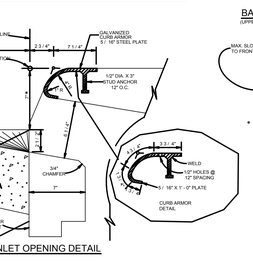


MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 2 OF 3

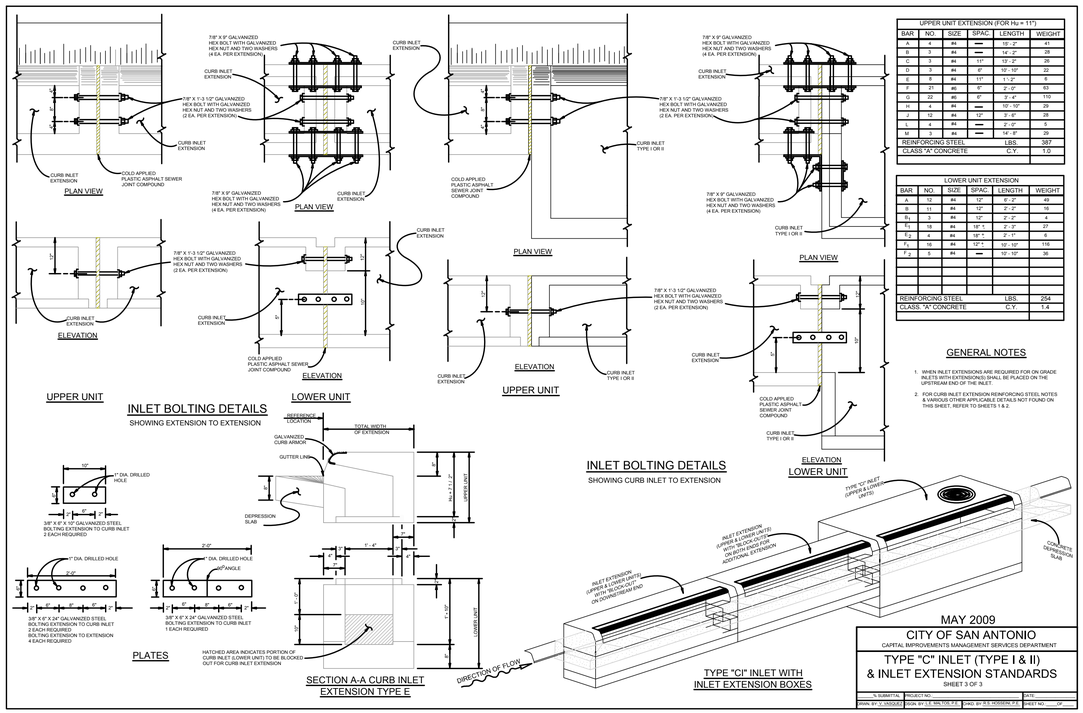
% SUBMITTAL	PROJECT NO.	DATE
DRAWN BY: V. VASQUEZ	DSGN BY: J.E. WALTOS, P.E.	CHKD BY: B.S. HOSSEIN, P.E.



INLET OPENING DETAIL

GENERAL NOTES

1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS WITH EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.



INLET BOLTING DETAILS
SHOWING EXTENSION TO EXTENSION

INLET BOLTING DETAILS
SHOWING CURB INLET TO EXTENSION

TYPE "CI" INLET WITH INLET EXTENSION BOXES

UPPER UNIT EXTENSION (FOR Hu = 11")

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10'-2"	41
B	3	#4	—	14'-2"	28
C	3	#4	11"	13'-2"	26
D	3	#4	6"	10'-10"	22
E	9	#4	11"	1'-2"	6
F	21	#6	6"	2'-6"	63
G	22	#6	6"	3'-4"	110
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
REINFORCING STEEL				LBS.	387
CLASS "A" CONCRETE				C.Y.	1.0

LOWER UNIT EXTENSION

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6'-2"	49
B	11	#4	12"	2'-2"	16
B_1	3	#4	12"	2'-2"	4
E_1	18	#4	18" ±	2'-3"	27
F_2	4	#4	18" ±	2'-1"	6
F_4	16	#4	12" ±	10'-10"	116
F_2	5	#4	—	10'-10"	36
REINFORCING STEEL				LBS.	254
CLASS. "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS WITH EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 3 OF 3

% SUBMITTAL	PROJECT NO.	DATE
DRAWN BY: V. VASQUEZ	DSGN BY: J.E. WALTOS, P.E.	CHKD BY: B.S. HOSSEIN, P.E.

NO.	REVISION	DATE

11/8/2022

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

DRAINAGE DETAILS
(SHEET 1 OF 2)

PLAT NO. _____
JOB NO. 12616-04
DATE NOVEMBER 2022
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.03

Date: Nov 08, 2022, 2:19pm User ID: gkillebrew
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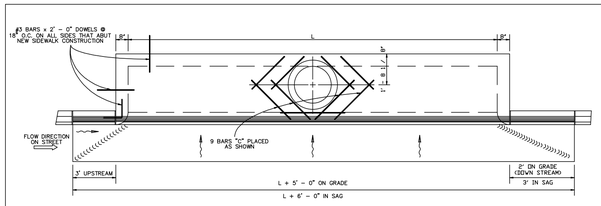
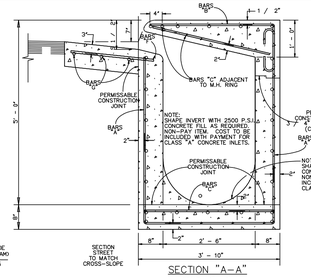


PLAN VIEW

SCALE : 1" = 2'



SECTION "A-A"

SCALE : 1" = 1'

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=5' - 0"	A	10	4	5" O.C.	13' - 9 1/4"	92
	B	10	6	5" O.C.	5' - 1 3/4"	80
	C	10	6	12" O.C.	5' - 4"	80
	D	10	4	10 1/2" O.C.	6' - 10"	46
	E	10	4	10 1/2" O.C.	7' - 4"	49
	F	5	5	12" O.C.	2' - 10"	20
	G	5	5	12" O.C.	3' - 8"	23
	H	5	5	12" O.C.	1' - 8"	9

* CONCRETE TOTAL=3.53 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=438 LBS.

	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=10' - 0"	A	20	4	5" O.C.	13' - 9 1/4"	184
	B	20	6	5" O.C.	5' - 1 3/4"	160
	C	10	6	12" O.C.	5' - 4"	80
	D	22	4	10 1/2" O.C.	11' - 1"	163
	E	10	4	10 1/2" O.C.	6' - 10"	46
	F	10	5	12" O.C.	2' - 10"	40
	G	5	5	12" O.C.	3' - 8"	23
	H	5	5	12" O.C.	1' - 8"	9

* CONCRETE TOTAL=5.75 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=704 LBS.

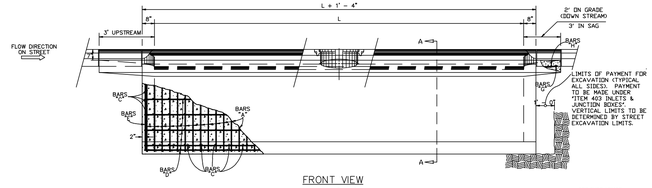
	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=15' - 0"	A	30	4	5" O.C.	13' - 9 1/4"	369
	B	30	6	5" O.C.	5' - 1 3/4"	234
	C	10	6	12" O.C.	5' - 4"	80
	D	44	4	10 1/2" O.C.	16' - 1"	478
	E	10	4	10 1/2" O.C.	6' - 10"	46
	F	10	5	12" O.C.	2' - 10"	40
	G	5	4	12" O.C.	3' - 8"	49
	H	5	5	12" O.C.	1' - 8"	9

* CONCRETE TOTAL=7.97 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=963 LBS.

	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=20' - 0"	A	51	4	5" O.C.	13' - 9 1/4"	470
	B	51	6	5" O.C.	5' - 1 3/4"	399
	C	20	6	5" O.C.	5' - 4"	160
	D	66	4	10 1/2" O.C.	21' - 1"	927
	E	10	4	10 1/2" O.C.	6' - 10"	46
	F	10	5	12" O.C.	2' - 10"	40
	G	5	4	12" O.C.	3' - 8"	49
	H	5	5	12" O.C.	1' - 8"	9

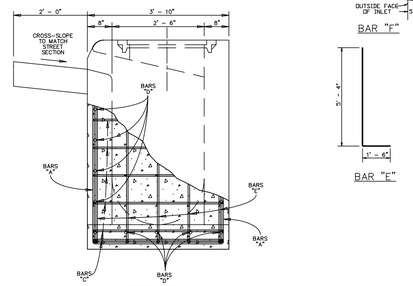
* CONCRETE TOTAL=10.19 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1227 LBS.

* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC. PIPE.
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY 05 C.Y. FOR INLETS IN SUMP.



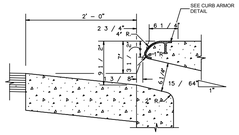
FRONT VIEW

SCALE : 1" = 2'



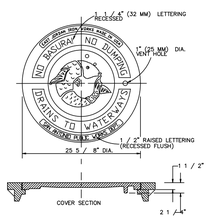
SIDE VIEW

SCALE : 1" = 1'



OPENING DETAIL FOR CURB SECTION

SCALE : 1" = 6"



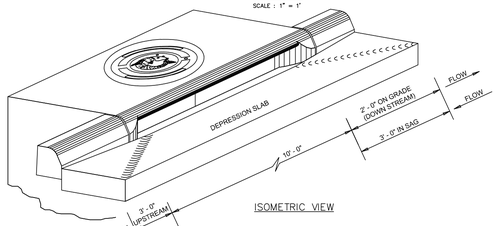
MANHOLE LID & RING DETAIL

(ITEM 409)

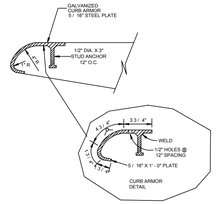
SCALE : 1" = 6"

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 MANUFACTOR'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.



ISOMETRIC VIEW



CURB ARMOR DETAIL

GENERAL NOTES:

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 / 4".
5. CONSTRUCTION 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".

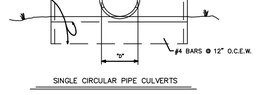
CURB INLET DETAILS

N.T.S.

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

TYPE "C" INLET STANDARDS

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



SINGLE CIRCULAR PIPE CULVERTS

DIMENSIONS FOR CIRCULAR PIPE CULVERTS

"D" INSIDE DIA. of PIPE	"L"	"C"		SINGLE	DOUBLE
		PVC CMP	RCP	"B"	
12"	1'-4"	1'-0"	0'-3"	4'-0"	6'-0"
15"	2'-0"	1'-0"	0'-3"	4'-3"	6'-6"
18"	2'-0"	1'-3"	0'-3"	4'-6"	7'-3"
21"	2'-6"	1'-3"	0'-1½"	5'-3"	8'-4"
24"	3'-0"	1'-3"	0'-1½"	6'-0"	9'-3"
30"	4'-0"	1'-9"	1'-1"	7'-6"	11'-6"
36"	5'-0"	1'-1½"	1'-3"	9'-0"	13'-11"
42"	6'-0"	2'-3"	1'-5"	10'-6"	16'-3"
48"	7'-0"	2'-5"	1'-7"	12'-0"	18'-6"

NOTES:

1.) FOR RIPRAP QUANTITIES AND SLOPES, SEE CULVERT LAYOUT SHEET.

2.) ALL METAL PIPES (CSM AND/OR ARCH) SHALL HAVE 5/8" X 6" GALVANIZED BOLTS WITH 2 HEX NUTS AT 24" CENTERS TO ANCHOR THE PIPE TO THE CONCRETE. THIS WORK WILL BE SUBSIDIARY TO THE RIPRAP HEADWALL ITEM.

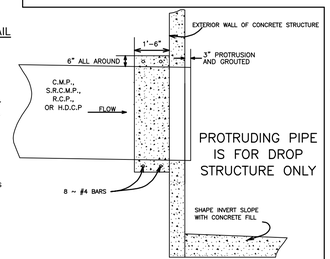
3.) FOR CONCRETE ARCH PIPES, THE ABOVE DIMENSIONS WILL HAVE TO BE ADJUSTED FOR THE PIPE WALL THICKNESS.

4.) IF THE SIDES OF THE HEAD WALL IS ADJACENT TO A RIPRAP SLOPE AND IF THE TOP OF THE HEAD WALL IS ADJACENT TO THE ROADWAY FOUNDATION OR RIPRAP SLOPE, THE SIDE AND TOP TIE WALLS MAY BE ELIMINATED IF APPROVED BY THE ENGINEER.

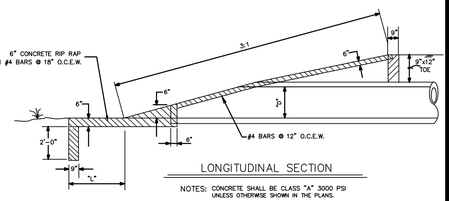
CONCRETE COLLAR DETAIL

(NOT TO SCALE)

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



PROTRUDING PIPE IS FOR DROP STRUCTURE ONLY



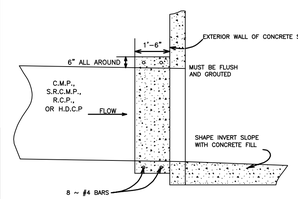
LONGITUDINAL SECTION

NOTES: CONCRETE SHALL BE CLASS "A", 3000 PSI UNLESS OTHERWISE SHOWN IN THE PLANS.

CONCRETE RIP-RAP END SECTION

(RH-15 HEADWALL)

(NOT TO SCALE)



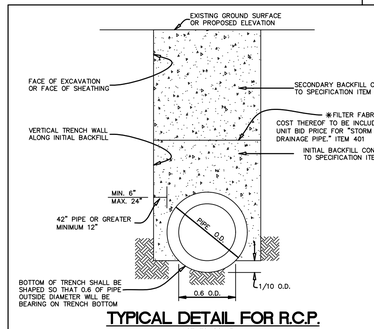
PIPE FLUSH WITH INVERT

JANUARY 2006

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEVELOPMENT SERVICES

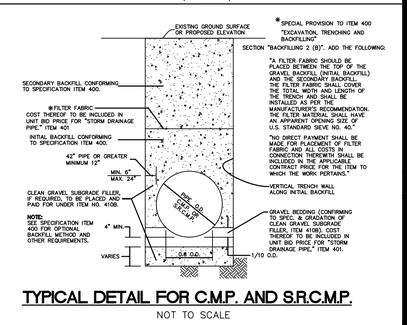
CONCRETE COLLAR DETAIL

DESIGN BY: ANDREW WINTER, P.E.	DATE	REVISIONS	SCALE: SEE ABOVE
CHECKED BY: SAM BENT, P.E.			DATE: 31 JANUARY 2006
			SHEET: 1 OF 1



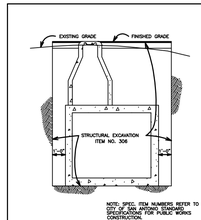
TYPICAL DETAIL FOR R.C.P.

NOT-TO-SCALE



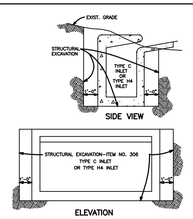
TYPICAL DETAIL FOR C.M.P. AND S.R.C.M.P.

NOT TO SCALE



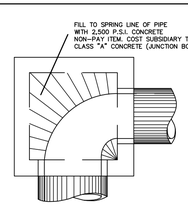
STRUCTURAL EXCAVATION AT JUNCTION BOXES

(NOT TO SCALE)



STRUCTURAL EXCAVATION AT DRAINAGE INLETS

(NOT TO SCALE)



CURVED DEFLECTOR DETAIL

(NOT TO SCALE)

NO.	REVISION	DATE

11/8/2022

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

DRAINAGE DETAILS (SHEET 2 OF 2)

PLAT NO. _____
JOB NO. 12616-04
DATE NOVEMBER 2022
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.04

Date: Nov 08, 2022, 2:19pm User ID: gkilsbrow
File: P:\126\16\04\Design\Civil\DRDT126160404.dwg

DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing Safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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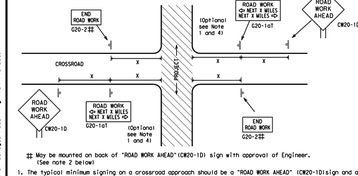
REVISIONS				
4-03 1-13	DIST	COUNTY		SHEET NO.
9-07 8-14				
5-10 5-21				

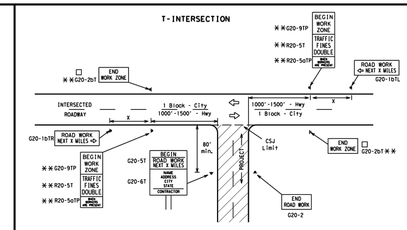
10-1

DATE:
FILE:

TYPICAL LOCATION OF CROSSROAD SIGNS



T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-10TL) and "ROAD WORK NEXT X MILES" right arrow (G20-10TR)* signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE			SPACING	
Sign Number or Series	Conventional Road	Expressway/ Freeway	Posted Speed	Sign △ Spacing "X"
			MPH	Feet (Appr.x.)
CW20[4]	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	55	500[2]
			60	600[2]
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	65	700[2]
			70	800[2]
			75	900[2]
			80	1000[2]
*			*	* [3]

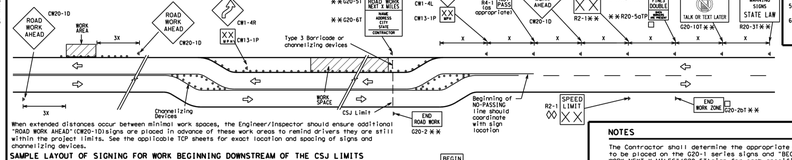
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

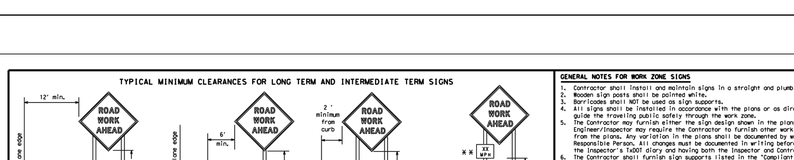
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ limits where traffic fines may double if workers are present.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND	
⟼	Type 3 Barricade
○○○	Channelizing Devices
▲	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				

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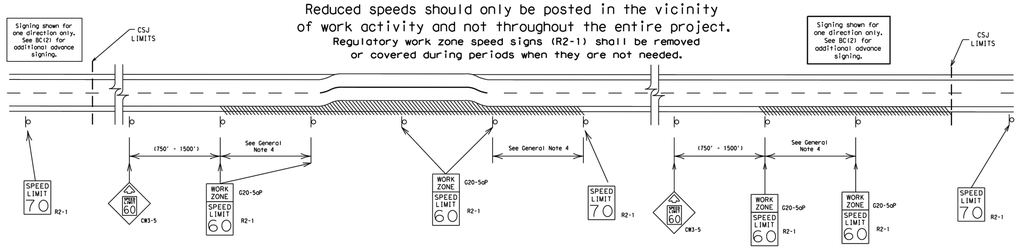
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.
Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background. See "Reflective Sheet Type" on BC(4).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5oP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

SHEET 3 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				

10-3

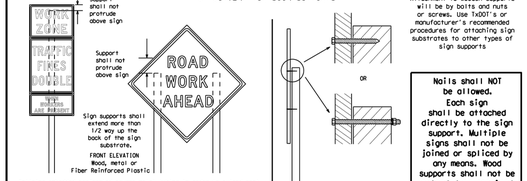
DATE:
FILE:

TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 1.5 times nominal post size, centered on the splice and at least the same gauge material.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by Flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.

SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better, route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any sign(s) in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary or by inputting both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height,the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-Term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-Term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are not approved sign substrate, regardless of the fineness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with department standards.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or Intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor studs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a uniform weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or told over the base supports of the traffic control device and shall not be suspended above ground level or placed in such a way that they become projectiles. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skids and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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7-13 5-21				

10-4

NO.	REVISION	DATE
1	REVISED SHEET DESCRIPTION	07/15/23

7/13/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED
PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

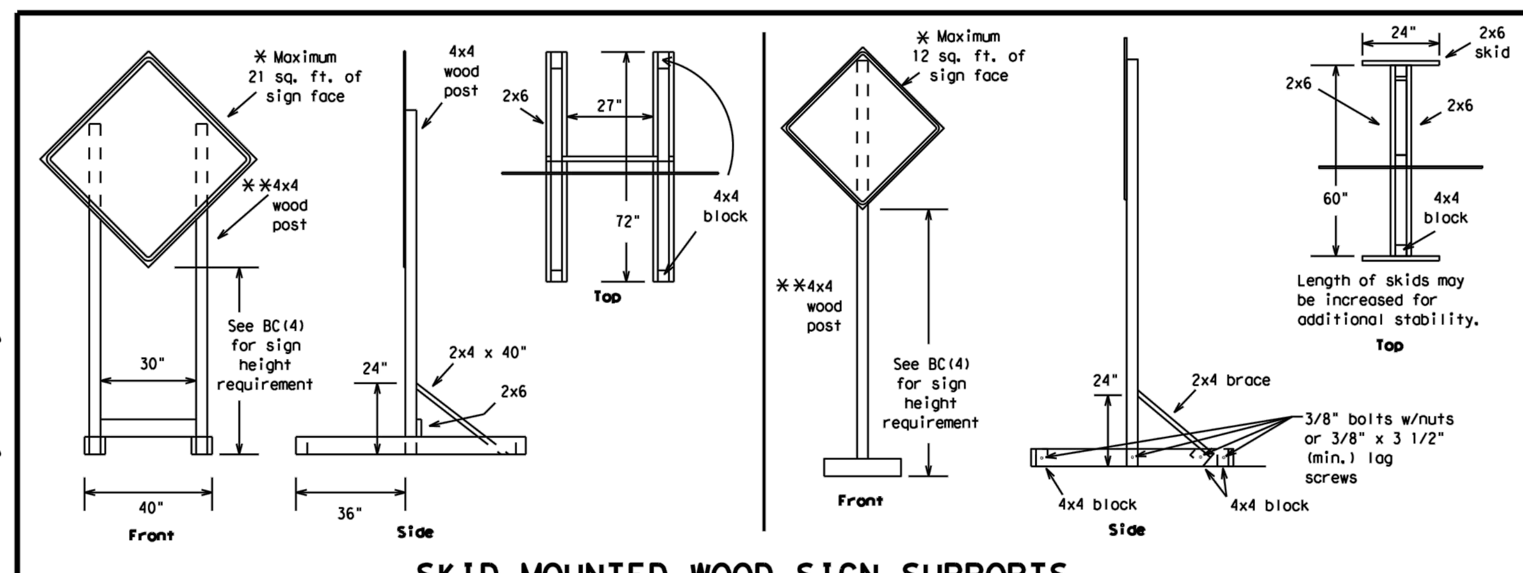
MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

TRAFFIC CONTROL DETAILS

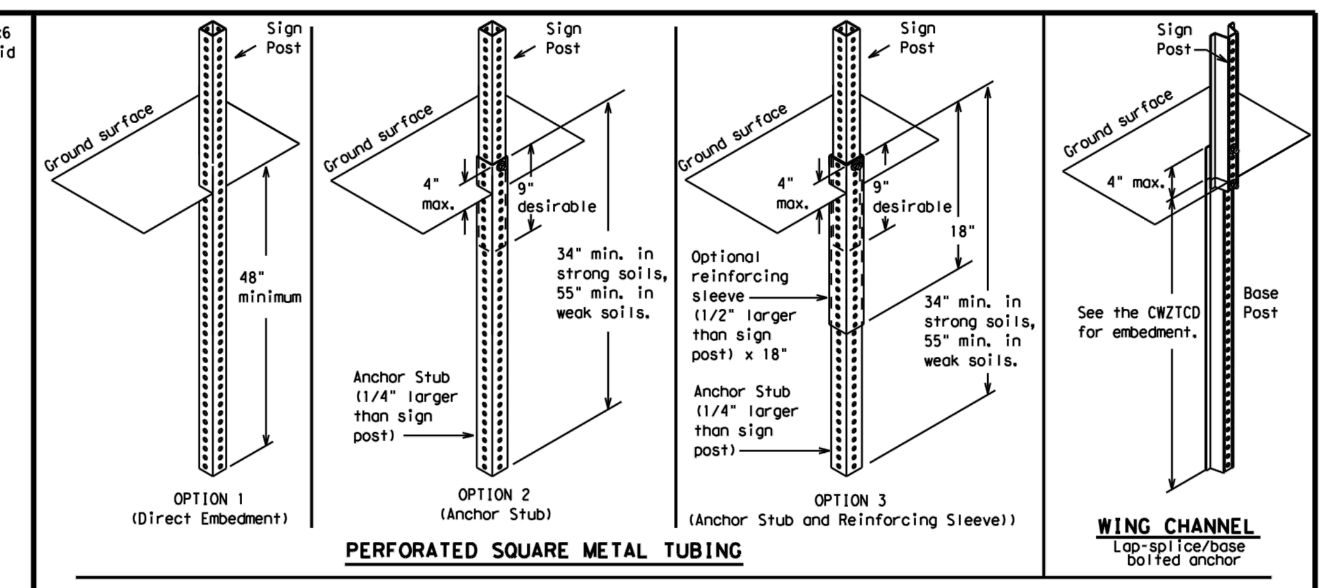
SHEET 1 OF 4

PLAT NO.
JOB NO. 12616-04
DATE JULY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.05



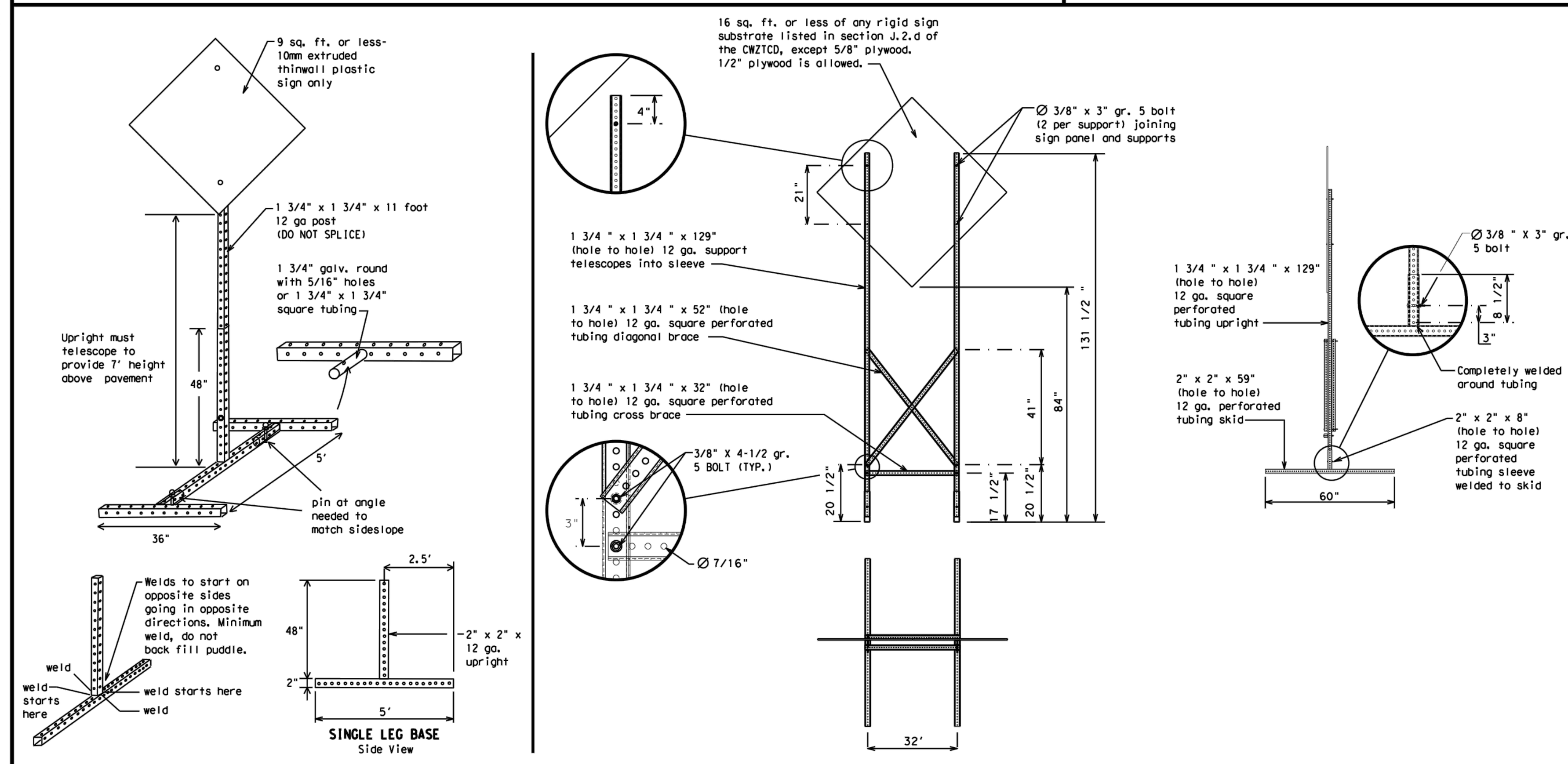
SKID MOUNTED WOOD SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

☐ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLRS
High-Occupancy Vehicle	HOV	Tuesday	TUES
Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

Roadway designation # IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT
RIGHT X LANES CLOSED	RIGHT X LANES OPEN
CENTER LANE CLOSED	DAYTIME LANE CLOSURES
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE
EXIT CLOSED	RIGHT LN TO BE CLOSED
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI
XXXXXXXX BLVD CLOSED	

Other Condition List

ROADWORK XXX FT	ROAD REPAIRS XXXX FT
FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
BUMP XXXX FT	US XXX EXIT X MILES
TRAFFIC SIGNAL XXXX FT	LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

MERGE RIGHT	FORM X LINES RIGHT
DETOUR NEXT X EXITS	USE XXXXX RD EXIT
USE EXIT XXX	USE EXIT I-XX NORTH
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
WATCH FOR TRUCKS	EXPECT DELAYS
EXPECT DELAYS	PREPARE TO STOP
REDUCE SPEED XXX FT	END SHOULDER USE
USE OTHER ROUTES	WATCH FOR WORKERS
STAY IN LANE *	

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXX TO XXXXXXX
US XXX TO FM XXXX

Warning List

SPEED LIMIT XX MPH
MAXIMUM SPEED XX MPH
MINIMUM SPEED XX MPH
ADVISORY SPEED XX MPH
RIGHT LANE EXIT
USE CAUTION
DRIVE SAFELY
DRIVE WITH CARE

** Advance Notice List

TUE-FRI XX AM- X PM
APR XX- XX X PM-X AM
BEGINS MONDAY
BEGINS MAY XX
MAY X-X XX PM - XX AM
NEXT FRI-SUN
XX AM TO XX PM
NEXT TUE AUG XX
TONIGHT XX PM- XX AM

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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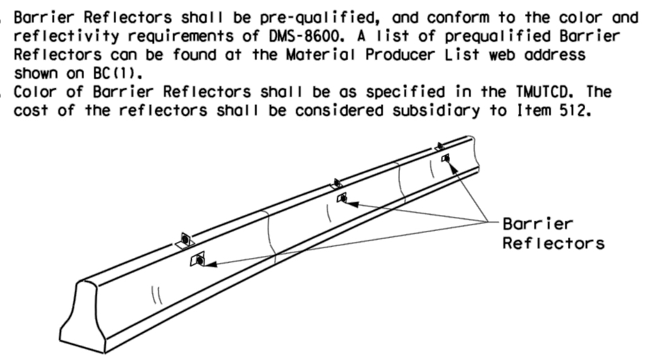
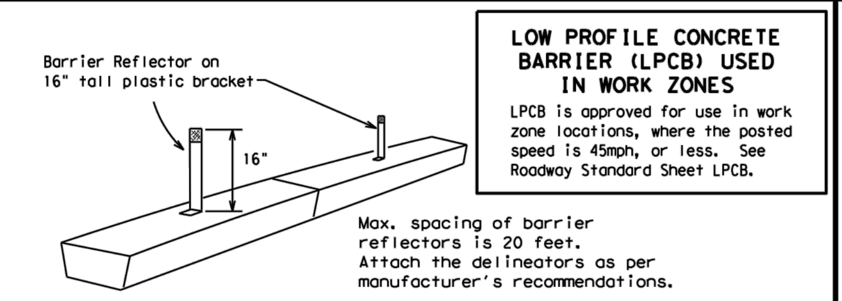
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

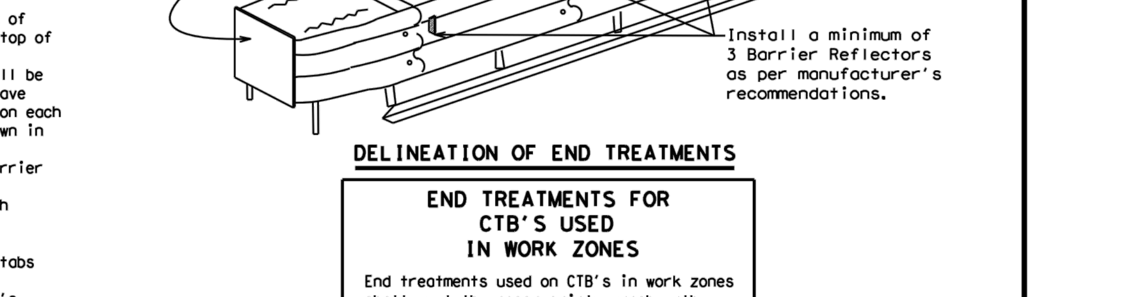


LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.

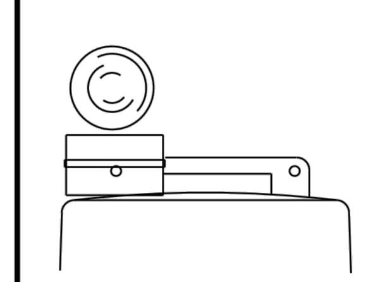


DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



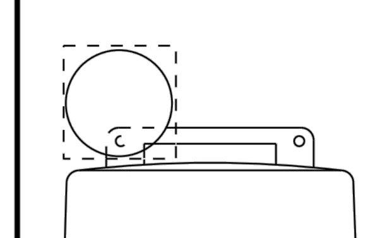
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.



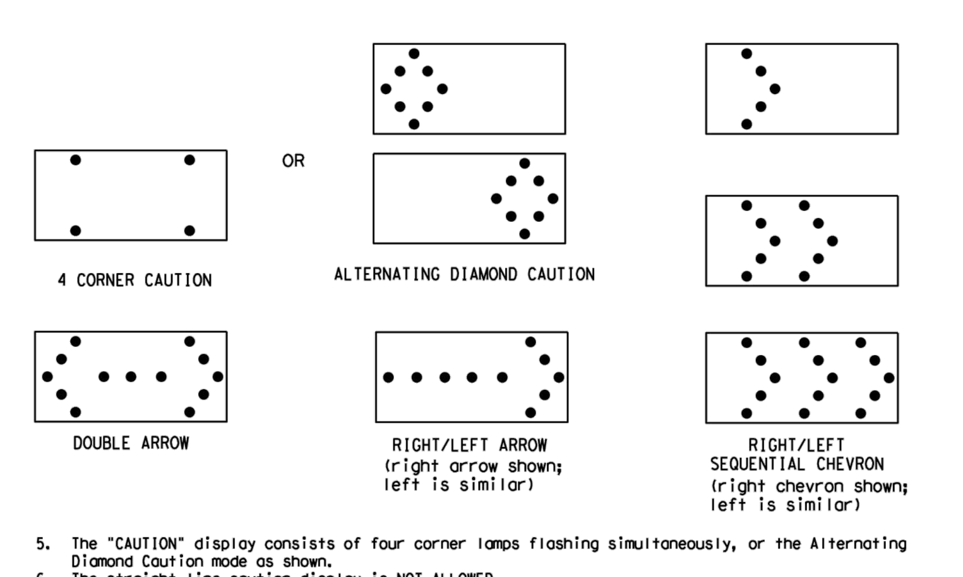
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION
Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

SHEET 7 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13 5-21	DIST	COUNTY		SHEET NO.

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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

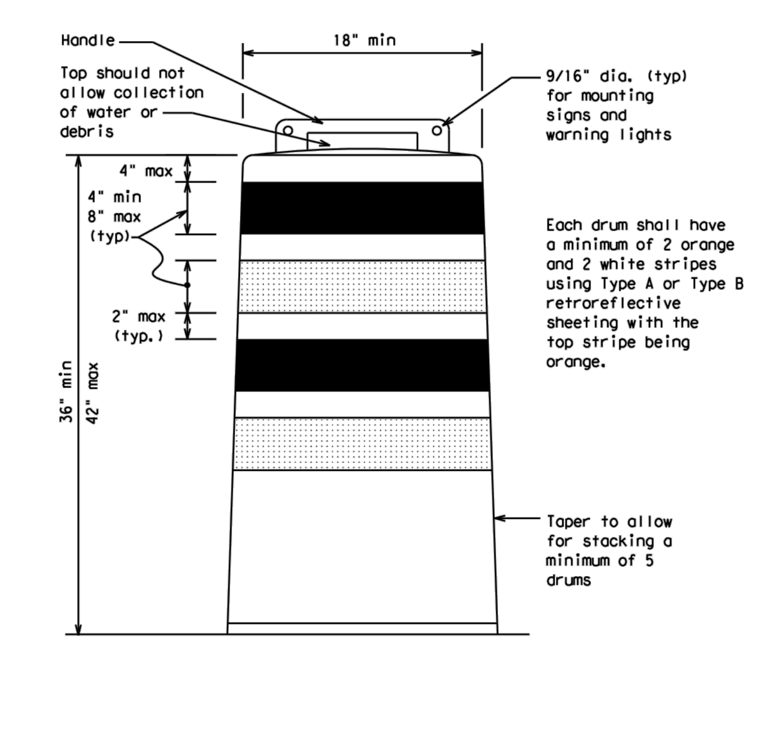
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

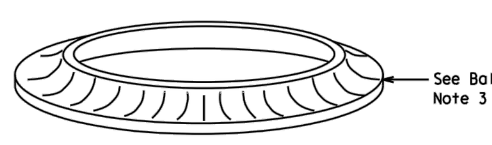
RETROREFLECTIVE SHEETING

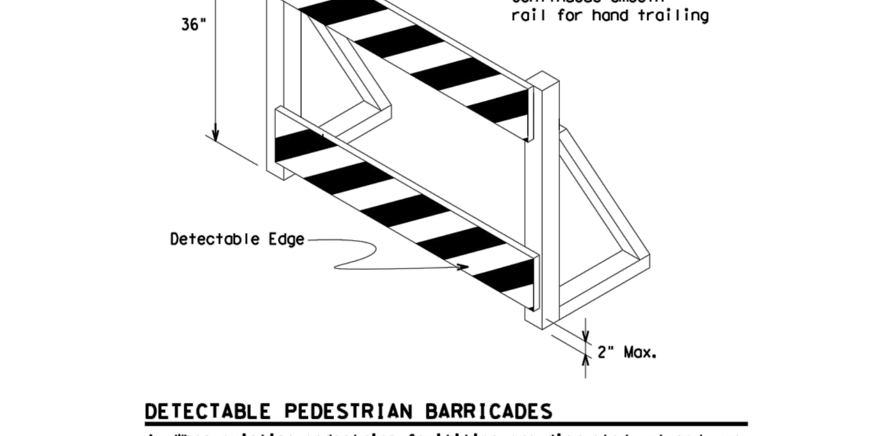
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

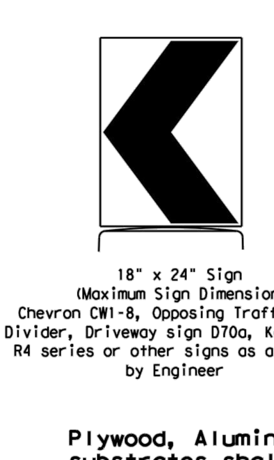




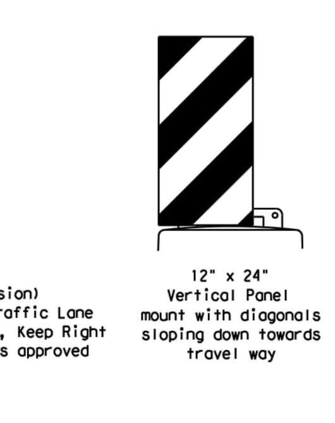


DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign (Maximum Sign Dimension) Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24" Vertical Panel mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 4-03 8-14 9-07 5-21 7-13	DIST	COUNTY		SHEET NO.

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NO.	REVISION	DATE
1	REVISED SHEET DESCRIPTION	07/13/23

7/13/2023

STATE OF TEXAS — REBECCA ANN CARROLL — 92666 — LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS

SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

TRAFFIC CONTROL DETAILS
SHEET 2 OF 4

PLAT NO.
JOB NO. 12616-04
DATE JULY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.06

Date: Jul 13, 2023, 3:58pm User ID: achamberlin
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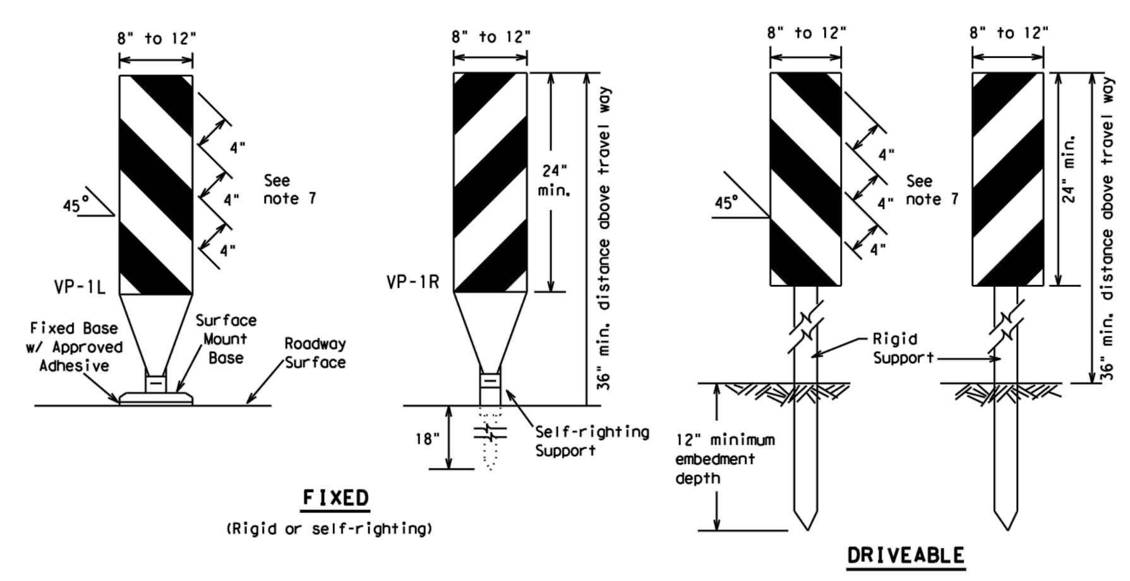
VERTICAL PANELS (VPs)



FIXED (Rigid or self-righting)

DRIVEABLE

PORTABLE

CHEVRONS

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

GENERAL NOTES

7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

LONGITUDINAL CHANNELIZING DEVICES (LCD)

WATER BALLASTED SYSTEMS USED AS BARRIERS

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

Posted Speed	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

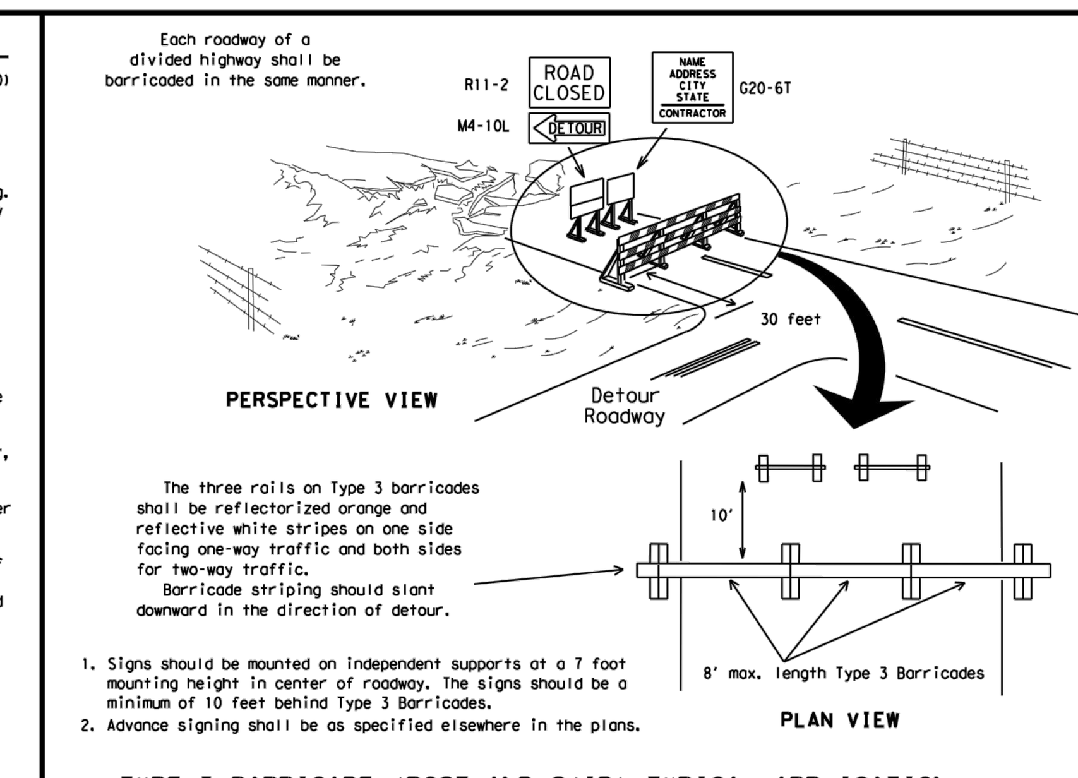
SHEET 9 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

TYPE 3 BARRICADES



TYPICAL STRIPING DETAIL FOR BARRICADE RAIL

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

CONES

Two-Piece cones — One-Piece cones — Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

WORK ZONE PAVEMENT MARKINGS

GENERAL

REMOVAL OF PAVEMENT MARKINGS

RAISED PAVEMENT MARKERS

PREFABRICATED PAVEMENT MARKINGS

MAINTAINING WORK ZONE PAVEMENT MARKINGS

Temporary Flexible-Reflective Roadway Marker Tabs

STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

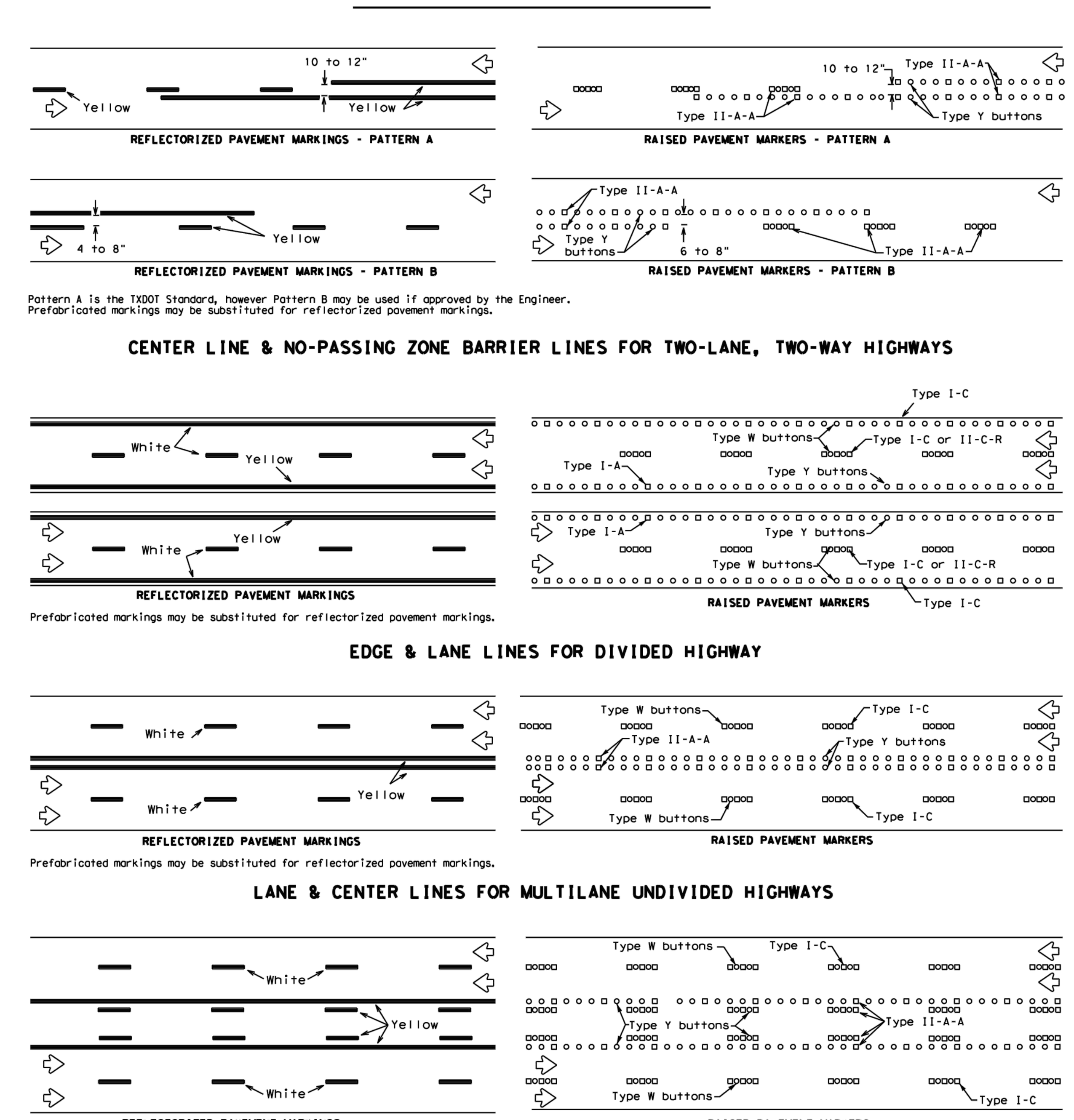
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

SHEET 11 OF 12

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

PAVEMENT MARKING PATTERNS



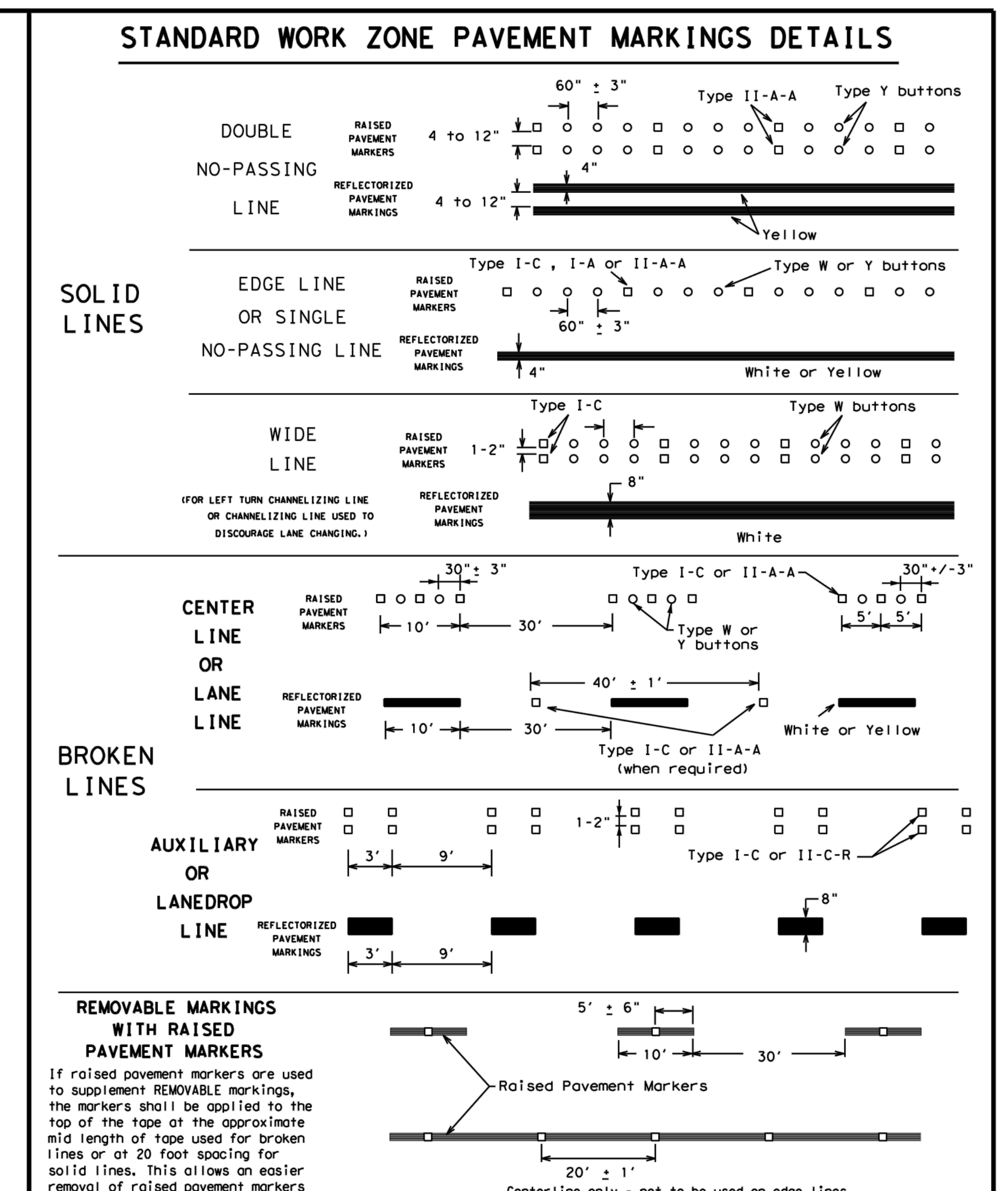
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS

EDGE & LANE LINES FOR DIVIDED HIGHWAY

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

SHEET 12 OF 12

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

NO.	REVISION	DATE
1	REVISED SHEET DESCRIPTION	07/13/23

7/13/2023

STATE OF TEXAS — REBECCA ANN CARROLL — 92666 — LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

TRAFFIC CONTROL DETAILS SHEET 3 OF 4

PLAT NO.
JOB NO. 12616-04
DATE JULY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.07

Date: Jul 13, 2023, 3:58pm User ID: achamberlin
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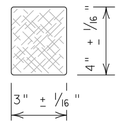
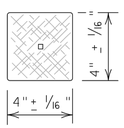
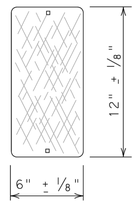
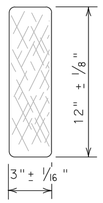
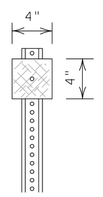
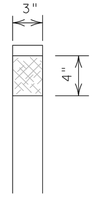
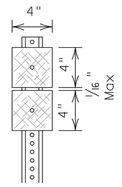
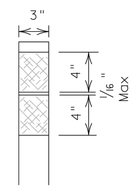
REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			

NOTE

1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx).
2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	FLX	WC	FLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXX)XXX(XX)

NUMBER OF REFLECTORS
- S = Single
- D = Double

COLOR OF REFLECTORS
- W = White
- Y = Yellow
- R = Red

REFLECTOR UNIT SIZE
- 1 or 2

TYPE OF POST OR DELINEATOR
- WC = Wing Channel Post
- FLX = Flexible Post
- BRF = Barrier Reflector

TYPE OF MOUNT
- GND = Embedded (drivable or set in concrete)
- CTB = Concrete Barrier Mount
- GF1 or GF2 = Guard Fence Attachment
- SRF = Surface Mount

DIRECTION
- If Required
- BI = Bi-Directional
- BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXX)XXX(XX)

TYPE OF OBJECT MARKER
- 1, 2, 3, or 4

NUMBER OF REFLECTORS OR DIRECTION
- X = 3-Size 2 reflector units (Type 2 only)
- Y = 1-Size 3 reflector unit (Type 2 only)
- Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
- L = Left Side (Type 3 Object Marker only)
- R = Right Side (Type 3 Object Marker only)
- C = Center (Type 3 Object Marker only)

TYPE OF POST
- WC = Wing Channel Post
- FLX = Flexible Post
- TWT = Thin Walled Tubing

TYPE OF MOUNT
- GND = Embedded (drivable)
- SRF = Surface Mount
- WAS = Wedge Anchor Steel
- WAP = Wedge Anchor Plastic

DIRECTION
- If Required
- BI = Bi-Directional

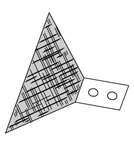
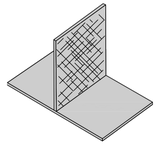
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	FLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

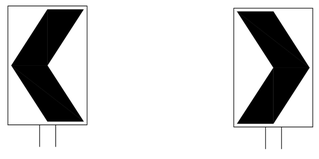
	GF1	GF2	CTB
DEVICE			

1. Barrier reflectors shall meet the requirements of DMS 8600.
2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.

SHEETING	Yellow, White, Red
NOTE	1. Minimum 9 square inches of reflective sheeting surface area.

CHEVRONS

DEVICE



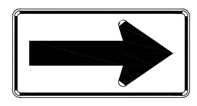
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE

1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. The Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTIONAL LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker backplates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation — Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-15

FILE: dom1-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10				

20A

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

Date: Jul 13, 2023, 3:54pm User ID: achamberlin
File: P:\126\16\04\Design\Civil\STD7126160 4.dwg

7/13/2023

REBECCA ANN CARROLL 92666 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

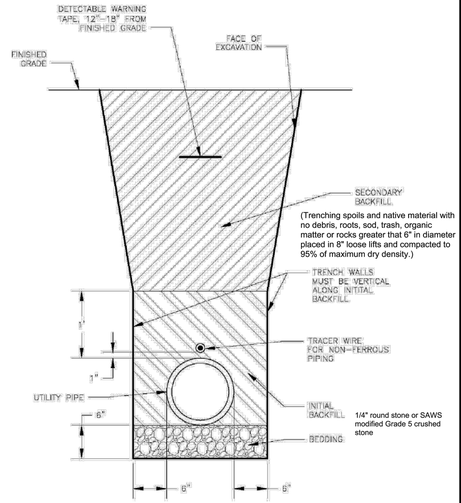
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

NO.	REVISION	DATE

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

TRAFFIC CONTROL DETAILS
SHEET 4 OF 4

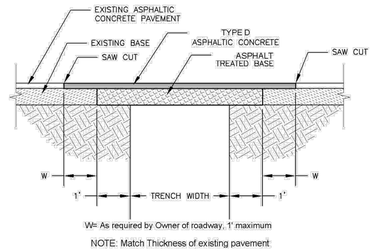
PLAT NO.
JOB NO. 12616-04
DATE JULY 2023
DESIGNER AC
CHECKED BC DRAWN AR
SHEET C12.08



NOTE:
THIS DETAIL APPLIES TO DOMESTIC AND RECYCLED WATER MAINS, LOW-PRESSURE SEWER MAINS AND FORCE MAINS.

TRENCH DETAIL

NOT-TO-SCALE

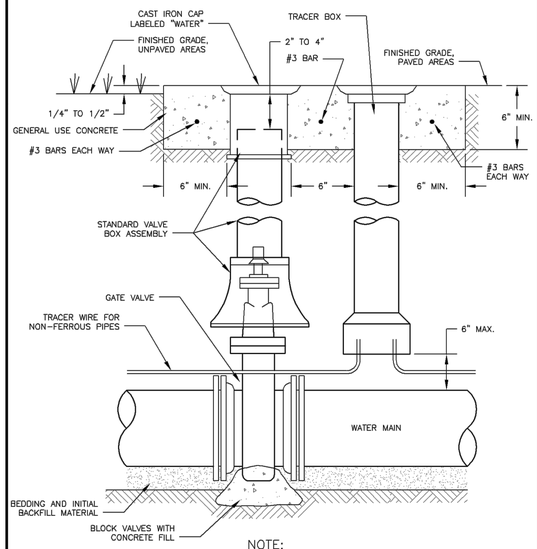


NOTE: Match Thickness of existing pavement

NOTE:
THIS DETAIL APPLIES TO DOMESTIC AND RECYCLED WATER MAINS.

PAVEMENT REPAIR DETAIL

NOT-TO-SCALE

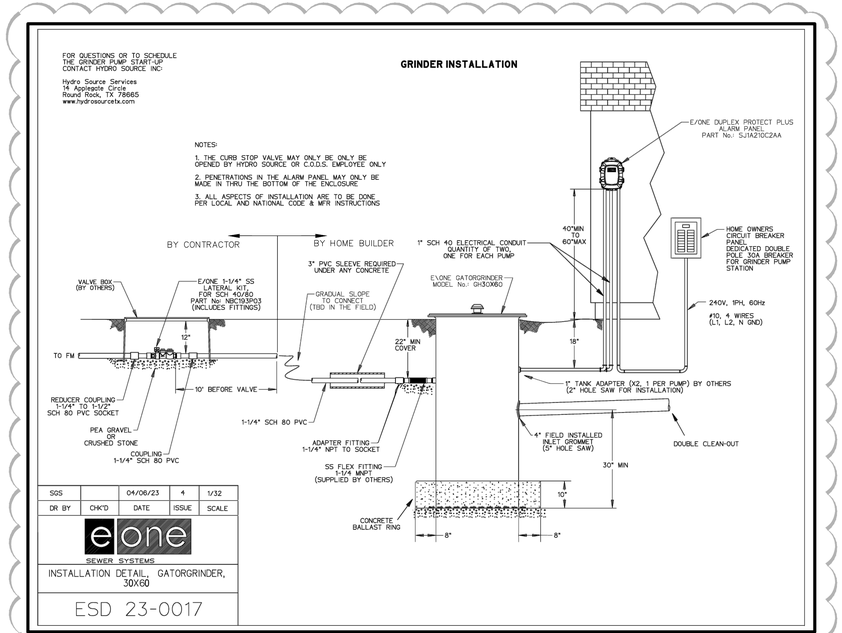


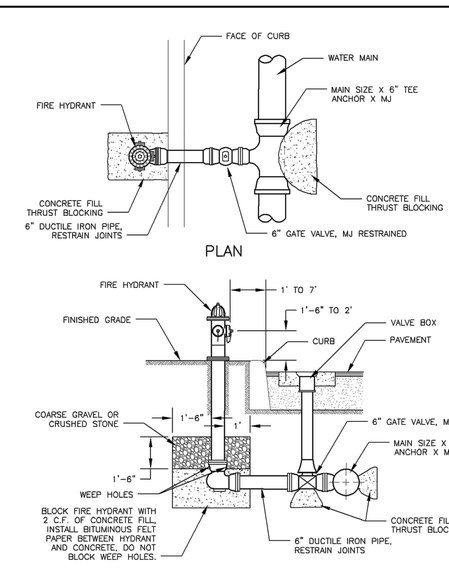
NOTE:
ENCASE VALVES IN POLYETHYLENE.

NOTE:
THIS DETAIL APPLIES TO DOMESTIC AND RECYCLED WATER MAINS.

WATER GATE VALVE AND VALVE BOX DETAIL

NOT-TO-SCALE



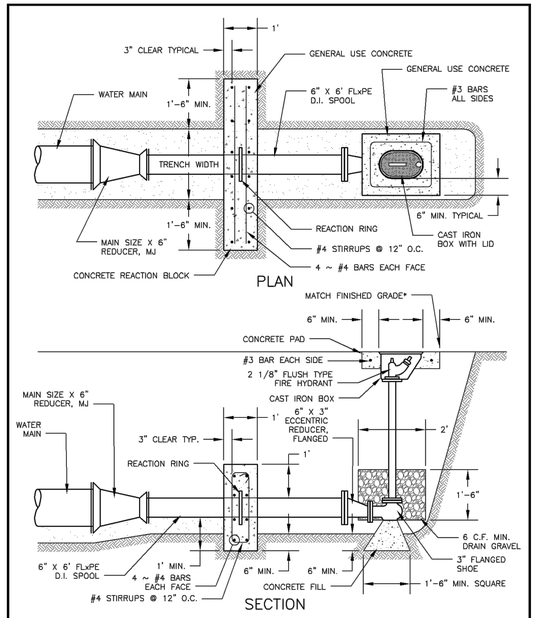


NOTES:

1. PRIOR APPROVAL OF THE CITY OF BOERNE REQUIRED TO USE THIS DETAIL.
2. POLY WRAP ALL DUCTILE IRON BELOW GRADE.
3. RESTRAIN ALL JOINTS.

FIRE HYDRANT ASSEMBLY DETAIL

NOT-TO-SCALE



*MATCH FLUSH IN PAVED AREAS. SET BOX AND CONCRETE 1" ±1/2" ABOVE FINISHED GRADE IN UNPAVED AREAS.

NOTE:
THIS DETAIL APPLIES TO DOMESTIC AND RECYCLED WATER MAINS.

BLOWOFF DETAIL

NOT-TO-SCALE

NO.	REVISION	DATE
1	REVISED UNIT NUMBERING	11/2/22
2	REVISED DETAILS	3/21/23
3	ADDED DETAIL	4/19/23

4/19/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

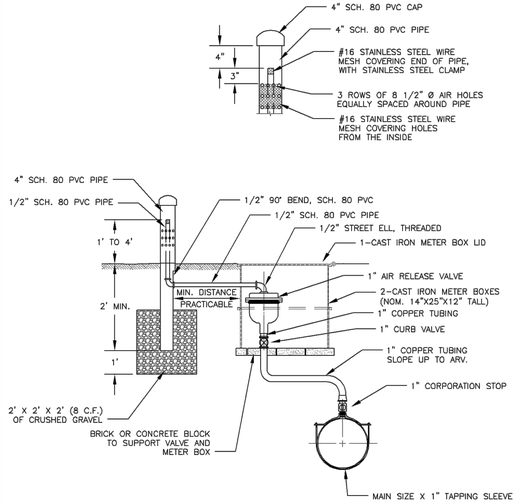
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3

KENDALL COUNTY, TEXAS

UTILITY DETAILS
SHEET 1 OF 2

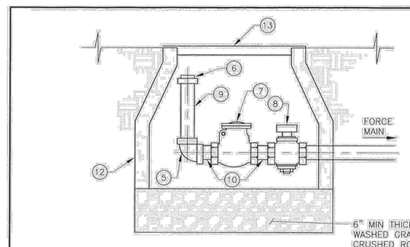
PLAT NO.
JOB NO. 12616-04
DATE APRIL 2023
DESIGNER AC
CHECKED DRAWN AC
SHEET C12.11



NOTE:
THIS DETAIL APPLIES TO DOMESTIC AND RECYCLED WATER MAINS.

1 IN AIR RELEASE VALVE FOR WATER MAINS

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-1.4	1/4" round stone or

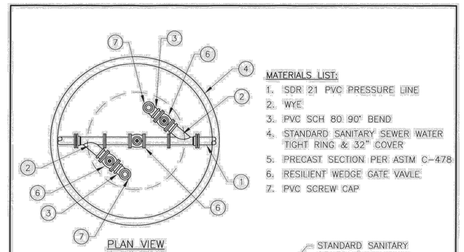


ITEM NO	NO. REQ'D	SIZE AND DESCRIPTION	MATERIAL SPEC'S
1	1	MAIN SIZE X 2" REDUCER (WHEN REQ'D)	PVC SLIP JOINT
2	1	2" – 90° ELBOW	PVC SLIP JOINT
3	1	2" X SLIP & THREAD ADAPTOR	SCH. 80 PVC
4	1	2" X REQ'D LENGTH RISER	SCH. 80 PVC
5	2	2" – 90° SCRD. ELL	SCH. 80 PVC
6	1	2" SCRD. CAP	SCH. 80 PVC
7	1	2" SCRD. SWING CHECK VALVE	M & H NO. 59
8	1	2" RES. WEDGE GATE VLV.	MUELLER H-10203
9	1	2" X 10" NIPPLE	SCH. 80 PVC
10	3	2" SHORT NIPPLES	SCH. 80 PVC
11	1	METER BOX	BROOK SERIES 66 OR APPROVED EQUAL
12	1	PRECAST SECTION	ASTM C-478 OR APPROVED EQUAL
13	1	WATER TIGHT RING & 32" COVER	PER CITY OF AUSTIN STANDARD

NOTE:
FLUSHING ASSEMBLY SHALL NOT BE INSTALLED IN PAVEMENT

NOTE:
THIS DETAIL APPLIES TO LOW-PRESSURE SEWER MAINS.

(Trenching spoils and native material with no debris, stones, rocks, or clods greater than 6" in diameter (max) in 9" loose lifts and compacted to 95% OPT maximum dry density.)	KENDALL WEST UTILITY, LLC STANDARD DETAILS	PRESSURE MAIN FLUSHING ASSEMBLY (END OF LINE)	
	ADOPTED: NOVEMBER 2012	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. 02221-1

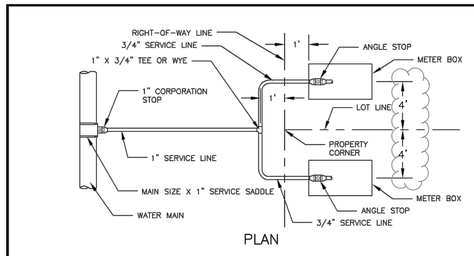


MATERIALS LIST:
1. SDR 21 PVC PRESSURE LINE
2. WYE
3. PVC SCH 80 90° BEND
4. STANDARD SANITARY SEWER WATER TIGHT RING & 32" COVER
5. PRECAST SECTION PER ASTM C-478
6. RESILIENT WEDGE GATE VAVLE
7. PVC SCREW CAP

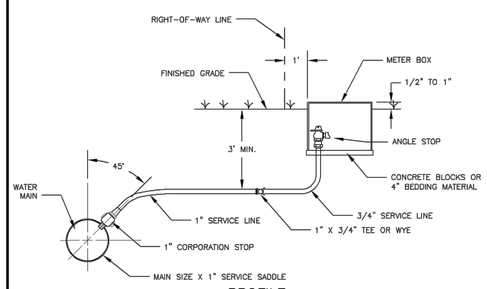
NOTE:
1. ALL CLEAN-OUT VAULTS IN ROADWAY SHALL BE INSTALLED FLUSH TO MATCH ROAD SURFACE.

NOTE:
THIS DETAIL APPLIES TO LOW-PRESSURE SEWER MAINS.

1/4" round stone or SAWS modified Grade 5 crushed stone	KENDALL WEST UTILITY, LLC STANDARD DETAILS	PRESSURE MAIN FLUSHING ASSEMBLY (MAIN LINE)	
	ADOPTED: DECEMBER 2012	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. LPFM3



PLAN

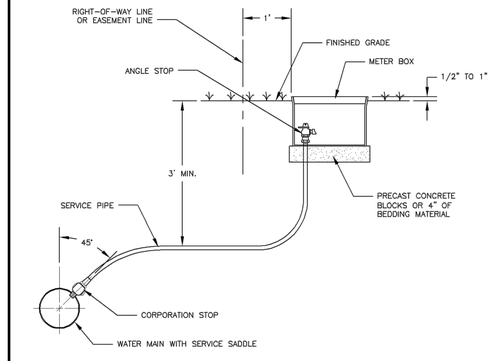


PROFILE

NOTE:
THIS DETAIL APPLIES TO DOMESTIC AND RECYCLED WATER SERVICES/METERS.

DUAL 3/4 IN WATER SERVICES

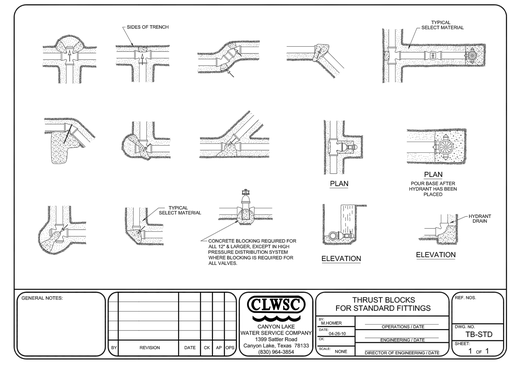
SCALE:	DRAWING No.	DATE:
N.T.S.	02660-1.7	1/4" round stone or



NOTE:
THIS DETAIL APPLIES TO DOMESTIC AND RECYCLED WATER SERVICES/METERS.

3/4 TO 2 IN SINGLE WATER SERVICE

SCALE:	DRAWING No.	DATE:
N.T.S.	02660-1.6	1/4" round stone or



GENERAL NOTES:

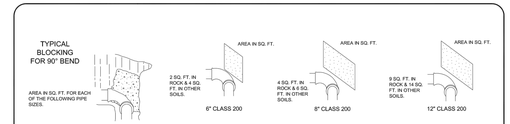
BY	REVISION	DATE	CK	AP	OPT

CLWSC
CANYON LAKE WATER SERVICE COMPANY
1399 Sattler Road
Canyon Lake, Texas 78133
(830) 964-3854

THRUST BLOCKS FOR STANDARD FITTINGS

BY: M.HOMER	OPERATIONS / DATE
DATE: 06-28-10	
CK:	ENGINEERING / DATE
APPROVED: NONE	DIRECTOR OF ENGINEERING / DATE

REF. NOS.
DWG. NO. TB-STD
SHEET 1 OF 1



SQUARE FEET OF BLOCKING REQUIRED FOR OTHER THAN ROCK EXCAVATION

PIPE SIZE	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

SQUARE FEET OF BLOCKING REQUIRED FOR ROCK EXCAVATION

PIPE SIZE	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

ON BASIS OF 200 PSI WATER PRESSURE USED FOR TESTS, THE BLOCKING REQUIRED FOR TWO TYPES OF SOILS ARE NOTED BELOW. IN ONE CASE, A SOIL WITH 1000 PSI BEARING ROCK OR EARTH IS USED. IN THE OTHER CASE, A SOFTER THAN ROCK A 3000 PSI BEARING SOIL PRESSURE IS USED. THE DISTRIBUTION SYSTEM IS DESIGNED TO OPERATE WITH A MAXIMUM WATER PRESSURE OF 175 PSI. ALL CALCULATIONS APPLY TO ALL TYPES OF PIPE APPROVED FOR USE BY CLWSC AND MEETING CLWSC SPECIFICATIONS AND STANDARDS.

TRANSIT 2500 PSI CONCRETE MIX SHALL BE USED HOWEVER FOR SMALL VOLUME REQUIREMENTS CONCRETE MIXED AT JOB SITE WILL BE ACCEPTABLE ONLY IF A CONCRETE MIXER IS USED, ALL AGGREGATE SHALL BE CLEAN AND THE FIELD MIX SHALL BE IN THE RATIO OF 1:3:4 AND CONTAIN NOT LESS THAN 4 SACKS OF CEMENT PER CUBIC YARD.

BLOCKING AREA FOR 200 PSI TESTS AND 175 PSI WORKING PRESSURE

GENERAL NOTES:

BY	REVISION	DATE	CK	AP	OPT

CLWSC
CANYON LAKE WATER SERVICE COMPANY
1399 Sattler Road
Canyon Lake, Texas 78133
(830) 964-3854

THRUST BLOCKING DETAIL

BY: M.HOMER	OPERATIONS / DATE
DATE: 06-28-10	
CK:	ENGINEERING / DATE
APPROVED: NONE	DIRECTOR OF ENGINEERING / DATE

REF. NOS.
DWG. NO. TB-HP
SHEET 1 OF 1

NO.	REVISION	DATE
1	REVISED UNIT NUMBERING	11/1/22
2	REVISED DETAILS	3/21/23
3	REVISED DETAILS	6/19/23

6/19/2023

STATE OF TEXAS
REBECCA ANN CARROLL
92666
LICENSED PROFESSIONAL ENGINEER

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

MIRALOMAS GARDEN HOMES - UNIT 3
KENDALL COUNTY, TEXAS

UTILITY DETAILS
SHEET 2 OF 2

PLAT NO.
JOB NO. 12616-04
DATE MARCH 2023
DESIGNER AC
CHECKED DRAWN AC
SHEET C12.12

Date: Jun 19, 2023, 9:26am User ID: ochamberlin
File: P:\1261604\Design\Civil\C12.11 UTILITY DETAILS.dwg