CIVIL PLANS

- C0.00 – GENERAL NOTES
- C0.01 – SUPPLEMENTAL NOTES

- C1.00 – STORM WATER POLLUTION PREVENTION PLAN

- C2.00 – EXISTING CONDITIONS AND DEMOLITION PLAN

- C3.00 – GRADING PLAN
- C3.01 – GRADING PLAN

- C4.00 – UTILITY LAYOUT PLAN
- C4.01 – UTILITY LAYOUT PLAN
- C4.02 – UTILITY LAYOUT PLAN

- C5.00 – SANITARY SEWER MASTER PLAN
- C5.01 – SANITARY SEWER MASTER PLAN
- C5.02 – SANITARY SEWER MASTER PLAN
- C5.03 – SANITARY SEWER PLAN & PROFILE – LINE A
- C5.04 – SANITARY SEWER PLAN & PROFILE – LINE B
- C5.05 – SANITARY SEWER PLAN & PROFILE – LINE C
- C5.06 – SANITARY SEWER PLAN & PROFILE – LINE C
- C5.07 – SANITARY SEWER PLAN & PROFILE – LINE D & E
- C5.08 – SANITARY SEWER PLAN & PROFILE – LINE F,G & J
- C5.D1 – SANITARY SEWER GENERAL NOTES
- C5.D2 – SEWER STANDARD DETAILS

- C6.00 – WATER DISTRIBUTION PLAN
- C6.01 – WATER DISTRIBUTION PLAN
- C6.D1 – WATER STANDARD DETAILS
- C6.D2 – WATER STANDARD DETAILS
- C6.D3 – WATER STANDARD DETAILS AND GENERAL NOTES

- C7.00 – OVERALL DRAINAGE MASTER PLAN – PROPOSED CONDITIONS
- C7.01 – OVERALL DRAINAGE MASTER PLAN – ULTIMATE CONDITIONS
- C7.02 – DRAIN PLAN & PROFILE – DRAIN 'A'
- C7.03 – DRAIN PLAN & PROFILE – DRAIN 'A'
- C7.04 – DRAIN PLAN & PROFILE – DRAIN 'B'
- C7.05 – DRAIN PLAN & PROFILE – DRAIN 'C'
- C7.06 – DRAIN PLAN & PROFILE – DRAIN 'D'
- C7.07 – DRAIN PLAN & PROFILE – DRAIN 'E'
- C7.08 – DRAIN PLAN & PROFILE – DRAIN 'F'
- C7.09 – DRAIN PLAN & PROFILE – DRAIN 'F'
- C7.10 – DRAIN PLAN & PROFILE – DRAIN 'H'
- C7.11 – DRAIN PLAN & PROFILE – DRAIN 'H'
- C7.12 – DRAIN PLAN & PROFILE – DRAIN 'J'
- C7.13 – DRAIN PLAN & PROFILE – DRAIN 'G'
- C7.14 – DRAIN PLAN & PROFILE – CLOMR CHANNEL
- C7.D1 – DRAINAGE DETAILS
- C7.D2 – DRAINAGE DETAILS
- C7.D3 – DRAINAGE DETAILS
- C7.D4 – DRAINAGE DETAILS

- C8.00 – STREET PLAN & PROFILE – CLOUDWAY BLVD
- C8.01 – STREET PLAN & PROFILE – CLOUDWAY BLVD
- C8.02 – STREET PLAN & PROFILE – FLY OVER
- C8.03 – STREET PLAN & PROFILE – FLY OVER
- C8.04 – STREET PLAN & PROFILE – BUDAKON
- C8.05 – STREET PLAN & PROFILE – GOLDROCK LANE & ICEFIELD STREET
- C8.06 – STREET PLAN & PROFILE – ICEVIEW DRIVE
- C8.07 – STREET PLAN & PROFILE – OUTERWAY AVE & STORMFRONT ROAD
- C8.D1 – STANDARD STREET DETAILS
- C8.D2 – STREET DETAILS
- C8.D3 – STREET DETAILS

- C9.00 – TRAFFIC SIGNAGE PLAN
- C9.01 – TRAFFIC SIGNAGE PLAN

- C10.00 – OFFSITE WATER DISTRIBUTION PLAN
- C10.01 – OFFSITE WATER DISTRIBUTION PLAN
- C10.02 – OFFSITE WATER DISTRIBUTION PLAN
- C10.03 – OFFSITE WATER – EROSION & SEDIMENT CONTROL PLAN

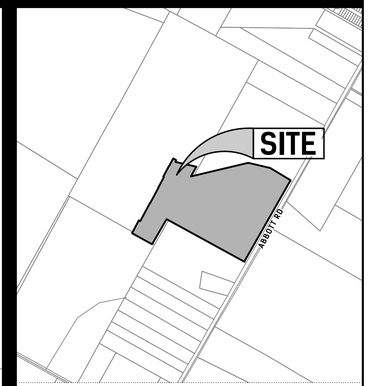
- C11.00 – CLOMR IMPROVEMENT PLAN
- C11.01 – CLOMR IMPROVEMENT PLAN
- C11.02 – CLOMR GRADING PLAN
- C11.03 – CLOMR GRADING PLAN
- C11.04 – CLOMR GRADING PLAN
- C11.05 – EROSION & SEDIMENT CONTROL PLAN
- C11.06 – EROSION & SEDIMENT CONTROL PLAN
- C11.D1 – CLOMR DETAILS

CUDEENGINEERS.COM

CONSTRUCTION DOCUMENTS FOR

ZIGMOND TRACT UNIT 1

VICINITY MAP
N.T.S.



LOCATION MAP
SCALE: 1" = 1000'

EST. 1980 CUDE ENGINEERS

SAN ANTONIO | AUSTIN | SAN MARCOS

4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TEXAS 78231
P:(210) 681.2951 F:(210) 523.7112
TBPE FIRM NO. 455
TBPLS FIRM NO. 10048500
SBE CERTIFIED FIRM

DEVELOPER:
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO, TX 78229

N W E S

MDP NUMBER:
MDP-XX-XXXXXXXX

PLAT NUMBER:
PLAT-XX-XXXXXXXX

PROJECT NUMBER:
04408.001

10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

I HAVE REVIEWED THIS PLAN SET FOR QUALITY ASSURANCE AND QUALITY CONTROL PURPOSES.

THIS PLAN SET HAS BEEN PREPARED, DESIGNED AND REVIEWED UNDER MY DIRECT SUPERVISION.

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P:\04408.001\2-ENGG\3-Plans\06_Arch\Dwg 2025.10.13 12:40pm Hana

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION JUNE 2008, OR LATEST.
2. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS, BUT NOT INCLUDED IN THE BID PROPOSAL. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED IN THE PAY ITEM TO WHICH IT RELATES.
3. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CONCRETE ISLANDS, STREET PAVING, CURBS, SHRUBS, BUSHES OR DRIVEWAYS. (NO SEPARATE PAY ITEM).
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". THE CITY'S CONSTRUCTION INSPECTOR AND TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED.
6. IF THE NEED ARISES, ADDITIONAL BARRICADES AND DIRECTIONAL DEVICES MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.171 C.P.S. MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
8. CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR TWENTY FOUR (24) HOURS PRIOR TO BACKFILL OF ANY UTILITY TRENCHES TO SCHEDULE FOR DENSITY TEST AS REQUIRED.
9. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
10. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY THE FOLLOWING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION OPERATION:

SAN ANTONIO WATER SYSTEM (SAWS)	233-2010
BEXAR METROPOLITAN WATER DISTRICT (BEXAR MET)	354-6538 / 357-5741
COSA DRAINAGE	207-8048
COSA SIGNAL OPERATIONS	207-7720 / 207-7765
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-344-8377

- CITY PUBLIC SERVICE ENERGY
- TIME WARNER
- AT&T
- MCI

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

TREE PROTECTION AND PRESERVATION GENERAL NOTES

1. NO UTILITY OR STREET EXCAVATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
2. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION. DURING CONSTRUCTION ACTIVITY, AT LEAST A SIX-INCH LAYER OF COARSE MULCH SHALL BE PLACED AND MAINTAINED OVER THE ROOT PROTECTION ZONE (NO SEPARATE PAY ITEM).
3. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR FOR GUIDANCE.
4. ROOTS WILL BE CUT WITH A ROCK SAW OR BY HAND, NOT BY AN EXCAVATOR OR OTHER ROAD CONSTRUCTION EQUIPMENT.
5. ALL CURB AND SIDEWALK WORK SHALL USE ALTERNATIVE CONSTRUCTION METHODS TO MINIMIZE EXTENSIVE ROOT DAMAGE TO TREES (REFER TO DETAILS).
6. EXPOSED ROOTS SHALL BE COVERED AT THE END OF THE DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH, OR WET BURLAP.
7. NO EQUIPMENT, VEHICLES OR MATERIALS SHALL OPERATE OR BE STORED WITHIN THE ROOT PROTECTION ZONE OF ANY TREE NEAR THE PROJECT. ROOT PROTECTION ZONE IS 1 FOOT OF RADIUS PER INCH OF TREE'S DIAMETER. A 10-INCH DIAMETER TREE WOULD HAVE A 10 FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. OAK WOUNDS SHALL BE PAINTED OVER WITHIN 30 MINUTES TO PREVENT OAK WILT.
8. SAPLINGS, SHRUBS OR BUSHES TO BE CLEARED FROM THE PROTECTED ROOT ZONE AREA OF A LARGE TREE SHALL BE REMOVED BY HAND AS DESIGNATED BY THE INSPECTOR.
9. NO WIRES, NAILS OR OTHER MATERIAL MAY BE ATTACHED TO PROTECTED TREES.
10. TREES, TREE LIMBS, BUSHES AND SHRUBS LOCATED IN THE CITY STREET OR ALLEY RIGHT-OF-WAY OR PERMANENT EASEMENTS WHICH INTERFERE WITH PROPOSED CONSTRUCTION ACTIVITIES SHALL BE PROPERLY PRUNED FOLLOWING THE ANSI A-300 STANDARDS FOR PRUNING. ALL TREE PRUNING SHALL BE COMPLETED BY A CITY OF SAN ANTONIO TREE MAINTENANCE LICENSED CONTRACTOR (ARTICLE 21-171, CITY CODE) ONLY AFTER APPROVAL FROM THE CAPITAL PROJECTS MANAGEMENT THROUGH THE INSPECTOR.
11. NO EXCESSIVE TREE TRIMMING WILL BE PERMITTED.
12. ALL DEBRIS GENERATED BY THE PRUNING AND TRIMMING OF THE TREES AND /OR BUSHES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY (NO SEPARATE PAY ITEM).
13. TREES MUST BE MAINTAINED IN GOOD HEALTH THROUGHOUT THE CONSTRUCTION PROCESS. MAINTENANCE MAY INCLUDE, BUT NOT LIMITED TO: WATERING THE ROOT PROTECTION ZONE, WASHING FOLIAGE, FERTILIZATION, PRUNING, ADDITIONAL MULCH APPLICATIONS AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT.
14. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST. (207-8053)
15. TREES WHICH ARE DAMAGED OR LOST DUE TO THE CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE CITY'S SATISFACTION.
16. TREE PLANTING FOR MITIGATION OR ENHANCEMENT: ALL PLANTED TREES SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATION, FERTILIZING, PRUNING AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT. TREES THAT DIE WITHIN TWELVE (12) MONTHS SHALL BE REPLACED WITH A TREE OF EQUAL SIZE AND SPECIES.

ACCESSIBILITY REQUIREMENTS

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

PROP. TOP OF DRAIN

NOTE TO CONSULTANT

DO NOT MODIFY, DELETE OR ADD TO THE CITY OF SAN ANTONIO'S GENERAL NOTES STANDARD SHEET. IF MODIFICATIONS ARE REQUIRED, FOLLOW THE INSTRUCTIONS ON THE "SUPPLEMENTAL GENERAL NOTES" SHEET.

DECEMBER 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

CITY OF SAN ANTONIO
GENERAL NOTES

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

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

ZIGMOND TRACT UNIT 1

GENERAL NOTES

08/06/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

PLAT NO.
XX-XXXXXXXX

C0.00

P:\Jobs\2021\21-2060\Plans\Civil\GENERAL NOTES.dwg 8/5/2025 8:56:42 AM 1:2 Sean.mcfarland

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

GENERAL NOTES

1. ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE FOLLOWING REGULATIONS AND SPECIFICATIONS. THE FIRST LISTED WILL HAVE PRIORITY OF THOSE LIST BELOW: PERMITS ISSUED FOR PROJECT BY ANY REGULATORY AGENCIES, CITY OF SAN ANTONIO CONSTRUCTION STANDARDS, PLANS FOR THIS PROJECT

2. VERIFY EXACT LOCATION OF UNDER GROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON PLANS OR NOT.
   WATER/WASTEWATER S.A.W.S. (210) 704-7107
   ELECTRIC CITY PUBLIC SERVICE (210) 978-3500
   GAS CITY PUBLIC SERVICE (210) 978-3500
   TELEPHONE AT&T (800) 288-2020
   FIRE MARSHALL CITY OF SAN ANTONIO (210) 207-8410
   BUILDING OFFICIAL CITY OF SAN ANTONIO (210) 207-1111

3. TRENCH EXCAVATION PROTECTION SHALL BE ACCOMPLISHED AS REQUIRED BY THE PROVISIONS OF PART 1926, SUBPART P-EXCAVATION, TRENCHING AND SHORING OF THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS AND INTERPRETATIONS, THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS INCLUDED IN ITEM 700, TRENCH EXCAVATION PROTECTION, CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

4. ALL CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO PROPERTY OWNED BY THE DEVELOPER OR PUBLIC RIGHT-OF-WAY AND EASEMENT UNLESS WRITTEN PERMISSION IS OBTAINED BY THE CONTRACTOR FROM THE PROPERTY OWNER AFFECTED.

5. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS.

6. IN ACCORDANCE WITH THE LAWS OF THE STATE OF THE TEXAS AND THE U.S. OCCUPATION SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ALL TRENCHES OVER 5FEET IN DEPTH IN EITHER HARD OR STABLE OR SOFT AND UNSTABLE SOIL SHALL BE SLOPED, SHORED, SHEETED, BRACED OR OTHERWISE SUPPORTED. FURTHERMORE, ALL TRENCHES LESS THAN 5 FEET IN DEPTH SHALL ALSO BE EFFECTIVELY PROTECTED WHEN HAZARDOUS GROUND MARKET MAY BE EXPECTED. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT SHALL BE PROVIDED BY THE CONTRACTOR.

7. 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.

8. IN ACCORDANCE WITH THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATION, WHEN EMPLYEES ARE REQUIRED TO BE IN TRENCHES 4 FEET DEEP OR MORE, ADEQUATE MEANS OF EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE TO MORE THAT 25 FEET OF LATERAL TRAVEL.

9. PRIOR TO THE BEGINNING OF CONSTRUCTION, THE DEVELOPER SHALL ARRANGE A PRE-CONSTRUCTION CONFERENCE AT THE CITY SAN ANTONIO. REPRESENTATIVES FROM THE FOLLOWING ORGANIZATIONS SHALL BE INVITED:
   CITY OF SAN ANTONIO STAFF, INCLUDING THE DIRECTOR OF PUBLIC WORKS
   CITY ENGINEER AND THE PUBLIC WORKS INSPECTOR.
   CONTRACTOR DESIGN ENGINEER ELECTRIC, GAS, PHONE AND CABLE UTILITY REPRESENTATIVES, IF APPROPRIATE.

10. IMPROVEMENTS AND ELEVATIONS SHOWN ARE EXISTING ON THE DATE OF THIS SURVEY AND MAY BE SUBJECT TO SUBSEQUENT CHANGES.

11. IF CONTRACTOR FINDS A DISCREPANCY WITH THE TOPOGRAPHICAL INFORMATION ON THESE PLANS, HE/SHE SHALL CONTACT THE CONSTRUCTION MANAGER/SUPERVISOR AND CIVIL ENGINEER IMMEDIATELY.

12. CONTRACTOR TO PROTECT ALL BENCHMARKS AND PROPERTY MONUMENTATION AND SHALL REPLACE OR REPAIR, AT HIS OR HER OWN EXPENSE, BENCHMARKS AND MONUMENTATION DISTURBED DURING CONSTRUCTION.

13. IF CONTRACTOR RELOCATES OR SETS NEW BENCHMARKS, THE VERTICAL ELEVATIONS OF THE BENCHMARKS SHALL BE SET TO A TOLERANCE OF 0.010 FT.

14. TREES SHOWN FOR REFERENCE ONLY, TREE REMOVAL, PROTECTION, AND TRANSPLANTING SHALL BE ACCORDING TO PROJECT TREE PRESERVATION PLAN AND LANDSCAPE PLANS AS APPLICABLE.

15. ALL STORMWATER POLLUTION PREVENTION PERMITS, BMP'S TO BE IN PLACE PRIOR TO COMMENCEMENT OF ANY WORK.

16. NO EDWARDS AQUIFER RECHARGE/CONTRIBUTING ZONE REQUIREMENTS FOR THIS SITE.

17. THE INFORMATION CONTAINED ON THESE DRAWINGS IN REGARDS TO EXISTING UTILITIES, TOPOGRAPHY, CONTOURS, OR SUBSURFACE CONDITIONS IS FURNISHED SOLELY AS THE BEST INFORMATION AVAILABLE AT THIS TIME. ITS ACCURACY IS NOT GUARANTEED AND ITS USE IN NO WAY RELIEVES THE CONTRACTOR OF ANY RESPONSIBILITY FOR LOSSES FOR TO ANY INACCURACIES.

18. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN BASED UPON RECORD INFORMATION AND SURVEY INFORMATION FOR UTILITIES VISIBLE AT THE TIME OF SURVEY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT EACH INDIVIDUAL UTILITY, FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION. THE CONTRACTOR IS TO MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES.

PROP. TOP OF DRAIN

19. ALL REQUIRED RELOCATION'S OR ALTERATIONS OF TELEPHONE POLES, UNDERGROUND CONDUIT, POWER POLES AND ANY OTHER FACILITIES SHALL BE DONE BY THIS CONTRACTOR, UNLESS NOTED AS "BY OTHERS". THIS CONTRACTOR SHALL SCHEDULE AND COORDINATE HIS WORK WITH THAT OF OTHER CONTRACTORS AND UTILITY COMPANIES SO AS NOT TO DELAY THE PROJECT.

20. CONTRACTOR SHALL SECURE ALL PERMITS REQUIRED FOR CONSTRUCTION AND SHALL NOTIFY ALL RESPECTIVE GOVERNMENTAL OR UTILITY AGENCIES AFFECTED BY CONSTRUCTION PRIOR TO STARTING CONSTRUCTION.

21. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION.

22. CONTRACTOR OR THE DEIGN ENGINEER SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND CUT SHEETS FOR PIPE LINES LAID ON GRADE AND ROAD CONSTRUCTION. CUT SHEETS SHALL BE DELIVERED TO THE CITY INSPECTOR 36 HOURS PRIOR TO CONSTRUCTION.

23. CONTRACTOR SHALL GIVE THE CITY A MINIMUM O F48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.

24. CONTRACTOR SHALL GIVE THE CITY INSPECTOR 36 HOURS NOTICE OF THE NEED FOR MATERIALS TESTING. ALL TESTING WILL BE ARRANGED AND PAID FOR BY THE CONTRACTOR. THE CITY SHALL RECEIVE A COPY OF TEST RESULTS.

25. CONTRACTOR IS RESPONSIBLE FOR TAKING (AND INCLUDING IN BID) ALL OF THE APPROPRIATE SECURITY MEASURES AT THE SITE, FOR THE DURATION OF THE CONSTRUCTION PERIOD.

26. CONTRACTOR IS TO PROVIDE "AS BUILTS" ON ALL UTILITY AND DRAINAGE IMPROVEMENTS, PUBLIC OR PRIVATE.
27. PERMANENT EROSION CONTROL/VEGETATION WILL BE COMPLETED BY CONTRACTOR.

28. CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE CITY OF SAN ANTONIO FOR THE USE OF ALL WATER FOR CONSTRUCTION.

SITE CLEARING NOTES:

1. CONDUCT SITE CLEARING OPERATIONS TO THE EXTENT SHOWN ON THE DRAWINGS, INCLUDING BUT NOT LIMITED TO: REMOVAL OF TREES AND OTHER VEGETATION, TOPSOIL, STRIPPING. CLEARING AND GRUBBING, AND REMOVAL OF ALL IMPROVEMENTS ABOVE OR BELOW GRADE. REFER TO THE GEOTECHNICAL REPORT FOR THIS PROJECT FOR ADDITIONAL SITE PREPARATION REQUIREMENTS.

2. EXECUTION:
   A. SITE CLEARING OPERATIONS SHALL NOT DAMAGE OR INTERFERE WITH THE PUBLIC USE OF ROADS, WALKS, ADJACENT LAND OR FACILITIES AND EXISTING IMPROVEMENTS INTENDED TO REMAIN.
   B. EXISTING TREES TO REMAIN SHALL BE PROTECTED IN COMPLIANCE WITH - TREE PRESERVATION PLAN AND/OR LANDSCAPE PLANS.
   C. CONTRACTOR SHALL REMOVE TREES, SHRUBS, GRASS AND OTHER VEGETATION, IMPROVEMENTS OR OBSTRUCTIONS INTERFERING WITH THE INSTALLATION OF NEW CONSTRUCTION OR AS SHOWN ON PLANS. CLEARING OPERATIONS SHALL INCLUDE REMOVAL OF STUMPS AND ROOTS.
   D. CONTRACTOR SHALL STRIP TOPSOIL IN A MANNER APPROPRIATE TO SEGREGATE FROM UNDERLYING SUBSOIL. TOPSOIL STRIPPING NEAR TREES INTENDED TO REMAIN SHALL BE COMPLETED IN COMPLIANCE LANDSCAPE PLANS.

3. SPOIL SHALL BE STORED ONLY IN AREAS SHOWN ON THE PLANS AND SHALL BE MAINTAINED IN ACCORDANCE WITH APPLICABLE POLLUTION PREVENTION PLANS OR PERMITS.

4. WASTE MATERIAL OR EXCESS TOPSOIL GENERATED AS A RESULT OF CLEARING AND GRADING OPERATIONS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. APPROPRIATE DISPOSAL OF ALL SPOIL MATERIAL SHALL BE AT THE CONTRACTOR'S EXPENSE. BURNING ON THE OWNER'S PROPERTY IS NOT PERMITTED.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS/APPROVALS BEFORE BEGINNING DEMOLITION.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING FROM THE SITE AL L ITEMS SHOWN TO BE DEMOLISHED UNLESS OTHERWISE INDICATED. ALL MATERIALS SHALL BE DEMOLISHED AND REMOVED FROM SITE IN ACCORDANCE WITH ALL APPLICABLE, FEDERAL, STATE AND LOCAL REGULATIONS.

3. ALL EXISTING ITEMS NOT SPECIFICALLY NOTED TO BE DEMOLISHED SHALL REMAIN. CONTRACTOR IS RESPONSE FOR REPLACING EXISTING ITEMS REMOVED DURING DEMOLITION THAT WERE TO REMAIN.

4. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH ALL UTILITY COMPANIES REGARDING REMOVAL OF EXISTING SERVICES, POWER POLES TO BE REMOVED, VERIFYING UTILITIES ARE SHUT OFF OR DISCONNECTED, AND THAT ALL POSSIBLE SAFETY PRECAUTIONS HAVE BEEN ENACTED TO ENSURE THE SAFEST ENVIRONMENT FOR ALL PERSONNEL.

5. LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ON ARE APPROXIMATE ONLY . ACTUAL LOCATIONS AN DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE CONSTRUCTION AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, THROUGHOUT ALL PHASES OF CONSTRUCTION.

6. ALL NECESSARY EROSION CONTROL MEASUR3ES ARE TO BE IN PLACE PRIOR TO CONSTRUCTION. EROSION CONTROL MEASURES ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

7. CONTRACTOR SHALL CONFIRM WITH THE OWNER OF HIS DESIGNATE WHETHER TO SALVAGE AND MAKE ARRANGEMENTS TO STORE TRANSPLANTABLE TREES PRIOR TO REMOVAL.

8. FOR TREES SHOWN TO REMAIN, THE CONTRACTOR SHALL INSTALL TREE PROTECTION IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL NOT REMOVE OR DAMAGE ANY TREES WITHOUT A PERMIT TO DO SO.

9. NO PARKING AND/OR STORAGE SHALL BE ALLOWED WITHIN THE DRIP LINE OF THE TREES TO REMAIN.

10. THE CONTRACTOR SHALL SAW CUT EXISTING PAVEMENT, CURBS AND SIDEWALKS AT THE NEW PAVEMENT, CURB AND SIDEWALK JUNCTURES, NO JAGGED OR IRREGULAR CUTS WILL BE ACCEPTED.

11. THE CONTRACTOR SHALL PROTECT ALL PROPERTY PINS, BENCH MARKS, CONSTRUCTION STAKES, HUBS, OR OTHER KEY CONTROL POINTS. THE CONTRACTOR SHALL BE RESPONSIBLE TO RE-ESTABLISH ANY SUCH POINTS AT THEIR OWN EXPENSE.

12. DEMOLITION CONTRACTOR IS RESPONSE FOR CLEARING THE SITE OF ALL OBSTRUCTIONS THAT EXIST ON THIS SITE PRIOR TO THE START OF CONSTRUCTION OR DURING THE CONSTRUCTION SO AS TO NOT IMPEDE THE BUILDING CONSTRUCTION CONTRACTOR.

13. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO IDENTIFY ANY MATERIAL OR EQUIPMENT SCHEDULED FOR REMOVAL TO BE SALVAGED AND/OR REUSED. CONTRACTOR SHALL REPLACE AT HIS EXPENSE ANY DESTROYED MATERIAL OR EQUIPMENT THAT WAS MARKED FOR SALVAGE.

14. NO EXISTING ASPHALT OR CONCRETE PAVING SCHEDULED FOR REMOVAL SHALL REMAIN ON-SITE OR BE USED AS FILL MATERIAL. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL HAZARDOUS MATERIAL OFFSITE FOLLOWING ALL APPLICABLE DISPOSABLE REGULATIONS.

15. CONTRACTOR SHALL ADJUST IRRIGATION LATERALS TO ALLOW PROPER FUNCTION OF ZONES AT COMPLETIONS OF CONSTRUCTION. WORK TO BE COORDINATED WITH THE OWNER.

16. CONTRACTOR SHALL NOT DEMOLISH ANY PUBLIC WATER OR SANITARY SEWER LINES WITHOUT APPROVAL. EXISTING WATER AND SANITARY SEWER SERVICES SHALL REMAIN OPERATIONAL UNTIL NEW SERVICE IS COMPLETE. CUT AND CAP ANY ABANDONED SANITARY SEWER AND WATER SERVICES AT THE EXISTING MAIN. NO ABANDONED SERVICES SHALL REMAIN CONNECTED TO THE PUBLIC MAIN.

17. THE USE OF EXPLOSIVES WILL NOT BE PROHIBITED.

18. ALL WASTE MATERIAL REMAINING AFTER THE OWNER SALVAGE IS COMPLETE AND RESULTING FROM DEMOTION OPERATIONS BECOMES THE PROPERTY OF THE CONTRACTOR. APPROPRIATE DISPOSAL OF WASTE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AT HIS OWN EXPENSE. OWNER WILL PROVIDE LIST OF ITEMS TO BE SALVAGED.

19. THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDED BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE, FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, 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 THE CONTRACTORS SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

20. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A CLEAN AND ORDERLY MANNER.

21. THE CONTRACTOR SHALL MEET ALL LOCAL, STATE, AND FEDERAL REGULATIONS FOR DUST CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE AT THEIR OWN EXPENSE FOR ANY FUGITIVE DUST ON ADJOINING PROPERTIES.

UTILITY NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL FOLLOW THE CITY OF SAN ANTONIO (COSA) TO COMPLY WITH THE FOLLOWING AS APPLICABLE:
   A. CURRENT SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR CONSTRUCTION
   B. CURRENT SAN ANTONIO WATER SYSTEM UTILITY SERVICE REGULATIONS.
   C. CURRENT CPS UTILITY SERVICE REQUIREMENTS.
   D. CURRENT INTERNATIONAL BUILDING, PLUMBING & FIRE CODE.

2. UTILITIES SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR SHALL UNCOVER KNOWN EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM THE PLANS, OR UPON THE DISCOVERY OF ADDITIONAL UTILITIES NOT SHOWN ON THE PLANS, PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE OWNER AND THE ENGINEER.

3. ALL UTILITY CONNECTIONS SHALL BE COORDINATED WITH THE ENGINEER.

4. CONTRACTOR SHALL PROVIDE FOR THE SAFE PASSAGE OF PEDESTRIAN AND VEHICULAR TRAFFIC DURING UTILITY CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY PER CITY OF SAN ANTONIO AND TEXAS DEPARTMENT OF TRANSPORTATION REQUIREMENTS.

5. NO WATER JETTING WILL BE ALLOWED ON THIS PROJECT.

6. THE CONTRACTOR SHALL PROVIDE PLAN OF RECORD DRAWING(S), WITH FINAL MEASUREMENTS, TYPE OF PIPE, FITTINGS, AND APPURTENANCES TO THE OWNER PRIOR TO FINAL ACCEPTANCE OF ALL UTILITY SYSTEMS. PLAN(S) SHALL BE DIMENSIONED TO ACCURATELY LOCATE BURIED FITTINGS.

7. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED TO PROCEED WITH THE CONSTRUCTION OF ANY UTILITIES, BOTH UNDERGROUND AND OVERHEAD, UNTIL EVERYTHING HAS BEEN COORDINATED AND ALL PERMITS AND APPROVALS BY ALL GOVERNING AGENCIES ARE IN ORDER.

8. THE CONTRACTOR SHALL COMPLY WITH ALL NECESSARY GOVERNMENTAL REGULATIONS AND SHALL OBTAIN ALL REQUIRED PERMITS AND BEAR COST FOR THE SAME.

9. CONTRACTOR TO SUPPORT AND KEEP INTACT STORM DRAINS AND INLET STRUCTURES, EXISTING DRAINAGE PATTERNS AND FACILITIES ARE TO BE MAINTAINED THROUGHOUT PROJECT DURATION. ANY DAMAGES INCURRED WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

10. AFTER CONSTRUCTION IS COMPLETED, THE CONTRACTOR SHALL STABILIZE ALL DISTURBED SOIL AREAS IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN AND RE-SOD DISTURBED SOIL AREAS IN COMPLIANCE WITH LANDSCAPE PLANS OR WITH BERMUDA SODDING OR HYDROMULCH TO MATCH CONDITIONS PRIOR TO CONSTRUCTION.

11. THE CONTRACTOR SHALL BE REQUIRED TO COMMENCE CONSTRUCTION AND LAYING OF PIPE AT THE DOWNSTREAM END OF THE GRAVITY FLOW OUTFALL LINE AND PROCEED NON-STOP IN A FORWARD UPSTREAM DIRECTION. NO PIPE SHALL BE LAID WITHIN TEN FEET (10') OF ANY POINT WHERE EXCAVATION IS IN PROGRESS. PIPE LAYING SHALL PROCEED UPGRADE WITH THE TONGUE OR SPIGOT POINTING IN THE DIRECTION OF FLOW. PIPE SHALL BE LOWERED INTO THE TRENCH WITHOUT DISTURBING THE PREPARED FOUNDATION OR THE TRENCH SIDES.

12. ALL EXCAVATION SHALL BE UNCLASSIFIED AND SHALL INCLUDE ALL MATERIAL ENCOUNTERED REGARDLESS OF THEIR NATURE OR THE MANNER IN WHICH THEY ARE REMOVED.

13. ADJUST ALL EXISTING VALVES, UTILITY MANHOLES, METER BOXES, PULL BOXES, VALVE BOXES, ETC. TO REMAIN TO FINAL GRADE, UNLESS NOTED OTHERWISE. REFERENCE GRADING PLAN.

14. WHEN PRESSURE UTILITY SYSTEMS ARE IN VERTICAL CONFLICT WITH GRAVITY UTILITY SYSTEMS THE CONTRACTOR SHALL REROUTE PRESSURE UTILITY SYSTEMS VERTICAL AS NECESSARY FOR PROPOSED CONSTRUCTION.

15. NO OTHER UTILITY SERVICE/APPURTENANCES SHALL BE PLACED NEAR THE PROPERTY LINE, OR OTHER ASSIGNED LOCATION DESIGNATED FOR WATER AND WASTEWATER UTILITY SERVICE THAT WOULD INTERFERE WITH THE WATER AND WASTEWATER SERVICES.

16. CONTRACTOR SHALL FURNISH ALL UTILITY PIPE FITTINGS, MATERIALS, EQUIPMENT, ETC. AS NECESSARY FOR PROPOSED CONSTRUCTION.

17. FOR PRESSURE TAPS, FURNISH, INSTALL AND AIR TEST THE SLEEVE AND VALVE. CONCRETE BLOCKING SHALL BE PLACED BEHIND AND UNDER ALL TAP SLEEVES TWENTY-FOUR (24) HOURS PRIOR TO MAKING THE WET TAP.

18. JOINT RESTRAINTS SHALL BE IN ACCORDANCE WITH SAWS REQUIREMENTS.

19. CONTRACTOR SHALL INSTALL ALL GRAVITY LINES FROM DOWNSTREAM END TO UPSTREAM END.

20. REFER TO LANDSCAPE PLANS FOR IRRIGATION SERVICE.

21. ALL PROPOSED ELECTRIC, GAS, PHONE, AND CABLE UTILITIES SHOWN FOR REFERENCE ONLY. CONTRACTOR TO VERIFY AND COORDINATE WITH UTILITY COMPANIES AND/OR ENGINEER.

22. IF REQUIRED, ALL WORK ASSOCIATED WITH PROVIDING NATURAL GAS INCLUDING TRENCHING, CONDUIT INSTALLATION, PAVEMENT REPLACEMENT/BACKFILL AND METER INSTALLATION AS DESCRIBED ON THESE PLANS SHALL BE COORDINATED WITH NATURAL GAS PROVIDER.

23. ALL PROPOSED ELECTRIC, PHONE AND CABLE CONDUITS SHALL BE PROVIDED WITH PULL STRINGS.

24. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CITY PUBLIC SERVICE BOARD (C.P.S.B.) MUST MAINTAIN ACCESS TO ALL GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

SOIL STABILIZATION PROCEDURE:

1. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASE IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 21 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE. IN AREAS EXPERIENCING DROUGHTS WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SEASONAL ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.

SITE PLAN NOTES:

1. ALL IMPROVEMENTS SHALL BE MADE IN ACCORDANCE WITH THE APPROVED PLANS. ANY ADDITIONAL IMPROVEMENTS WILL REQUIRE PLAN REVISIONS AND APPROVAL OF THE CITY OF SAN ANTONIO.

2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO BEGINNING CONSTRUCTION.

3. ALL DIMENSIONS SHOWN ARE TO FACE OF CURB, BUILDING FACE OF MATERIAL, AND FACE OF WALLS, UNLESS OTHERWISE NOTED.

4. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER HARMLESS FROM ANY AND ALL LIABILITY IN CONNECTION WITH THE WORK PERFORMED ON THIS PROJECT EXCEPT FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

5. CONTRACTOR AND SUBCONTRACTORS SHALL CONTRACT WITH A SURVEYOR AS REQUIRED TO VERIFY PROJECT ELEVATIONS AND BENCHMARK ELEVATION(S) PRIOR TO CONSTRUCTION. "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY BOTH VERTICAL AND HORIZONTAL ALIGNMENT. ALL FINISHED EARTHEN GRADES SHALL NOT EXCEED 3:1 (H:V) SLOPE.

6. BARRICADES, WARNING SIGNS & LIGHTS SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ARE GENERALLY LOCATED TO AFFORD MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT AND TO ASSURE AN EXPEDITIOUS TRAFFIC FLOW AT ALL TIMES. DURING THE PROGRESS OF WORK, THE CONTRACTOR SHALL PROVIDE ACCESS FOR LOCAL TRAFFIC.

PAVEMENT NOTES:

1. DESIGN MIX SUBMITTALS SHALL BE PROVIDED FOR REVIEW BY THE GEOTECHNICAL AND/OR CIVIL ENGINEER AT LEAST 7 DAYS PRIOR TO PLACEMENT.

2. DO NOT UNLOAD OR USE ANY HEAVY CONSTRUCTION EQUIPMENT ON NEW CONCRETE FOR AT LEAST 7 DAYS AFTER CONCRETE IS POURED.

3. GENERAL CONTRACTOR OR APPLICABLE SUB-CONTRACTOR IS RESPONSIBLE FOR COORDINATING WORK SUCH THAT UTILITIES ARE INSTALLED PRIOR TO PAVEMENT BASE BEING INSTALLED OR ELSE LOCATE AND PLACE LINES FOR PROPOSED UNDERGROUND UTILITIES. LOCATE AND PLACE LINES OR SLEEVES FOR UNDERGROUND UTILITIES PRIOR TO PLACEMENT OF PAVEMENT BASE.

5. JOINTS SHALL BE PLACED IN ANY PROPOSED CONCRETE PAVEMENT AND CURBING AS RECOMMENDED IN THE APPLICABLE GEOTECHNICAL STUDY FOR THIS PROJECT. IF A GEOTECHNICAL STUDY WAS NOT PERFORMED OR IF DESIGN IS NOT INCLUDED IN CIVIL PLANS, THE JOINT LAYOUT AND DESIGN SHALL CONFORM TO THE AMERICAN CONCRETE PAVEMENT ASSOCIATION (ACPA) TECHNICAL PUBLICATION 150 61.01P, TABLE Z AND FIGURE 13.

6. ALL CONCRETE PAVING AND FLATWORK SHALL BE CURED IN CONFORMANCE WITH CURRENT AMERICAN CONCRETE PAVEMENT ASSOCIATION GUIDELINES.

7. ALL CONCRETE WORK SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF ACI 330. FLY ASH CAN BE USED IN MIX DESIGNS WHERE SUITABLE.

8. ALL EXPOSED CORNERS FOR CONCRETE WORK SHALL BE CHAMFERED 1"

PAVEMENT MARKING NOTES:

1. UNLESS OTHERWISE NOTED, THE PAVEMENT MARKING PAINT TO BE USED ON THIS PROJECT WILL BE WHITE OR YELLOW ACRYLIC-LATEX PAINT. ALL PAVEMENT MARKINGS WITHIN PUBLIC ROW SHALL BE THERMOPLASTIC.

2. SURFACE PREPARATION: SURFACES WILL BE CLEAN, DRY AND FREE FROM LOOSE OR PEELING SURFACES. DO NOT APPLY WHEN AIR TEMPERATURES ARE BELOW 50° F. OR WHEN THE RELATIVE HUMIDITY EXCEEDS 85%, OR WHEN THE TEMPERATURE FALLS BELOW THE DEW POINT. IT IS RECOMMENDED TO PLACE AN INCONSPICUOUS TEST STRIP TO DETERMINE IF THE NEW PAVEMENT SURFACES HAVE CURED SUFFICIENTLY TO PAINT. WAIT 24 HOURS AFTER ANY RAIN TO PAINT ASPHALT SURFACES.

3. APPLICATION RATES: APPLY PAINT AT FILM THICKNESS AND SPREADING RATE AS RECOMMENDED BY THE PAINT SUPPLIER. ALL NEW STRIPING IN PARKING LOTS WILL BE PAINTED WITH TWO (2) COATS OF 15.0 MILS WET, 8.0 MILS DRY. THE FIRST COAT MUST BE COMPLETELY DRY BEFORE THE SECOND COAT IS APPLIED. WAIT A MINIMUM OF 10 DAYS BETWEEN THE ASPHALT SEAL COAT APPLICATION AND THE PERMANENT TRAFFIC STRIPING AND MARKINGS.

4. CLOSE AREAS TO TRAFFIC FOR DURATION OF DRYING TIME, WHICH SHALL BE NO LESS THAN THE MINIMUM RECOMMENDED BY THE PAINT MANUFACTURER.

5. MINIMUM LINE WIDTH IS 4 INCHES. PAVEMENT MARKINGS MUST COMPLY WITH LOCAL FIRE STANDARDS AND CURRENT ACCESSIBILITY CODE.

EARTHWORK NOTES:

1. SITE PREPARATION AND GRADING, FOUNDATION EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND CONCURRENTLY WITH THESE PLANS.

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

3. ALL EXCAVATION, BACKFILL AND COMPACTION SHALL BE PERFORMED AS SHOWN IN THE PLANS AND GEOTECHNICAL REPORT FOR THE SITE.

4. OWNER WILL ENGAGE, AT THE OWNER'S COST, SOIL TESTING AND INSPECTION SERVICE IN ACCORDANCE WITH MATERIAL TESTING SPECIFICATION TO VERIFY COMPLIANCE WITH THE PLANS & SPECIFICATIONS. REPLACEMENT AND RETESTING OF DEFICIENT WORK SHALL BE DONE BY THE CONTRACTOR AT NO ADDITIONAL COMPENSATION.

5. IF DATA ON SUBSURFACE CONDITIONS IS AVAILABLE TO THE CONTRACTOR. THE OWNER MAKES NO WARRANTY AS TO THE CORRECTIVENESS OF THESE REPORTS. THE CONTRACTOR MAY, AT HIS OWN EXPENSE, PERFORM ADDITIONAL TEST BORINGS.

6. THE EXCAVATION IS UNCLASSIFIED, AND CONTRACTOR SHALL PERFORM EXCAVATION TO THE ELEVATIONS INDICATED IN THE PLANS, REGARDLESS OF CHARACTER OF MATERIAL, WITH NO ADDITIONAL COMPENSATION FROM THE OWNER.

7. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ADJACENT FACILITIES FROM DAMAGE.

8. EARTHWORK SHALL BE PERFORMED IN COMPLIANCE WITH LANDSCAPE PROTECTION.

9. OVER-EXCAVATION IS UNCOMPENSATED, AND SHALL BE BACKFILLED AND COMPACTED AS DIRECTED BY THE ENGINEER OR GEOTECH REPORT AT NO ADDITIONAL COST TO THE OWNER.

10. EARTHWORK SHALL BE PERFORMED TO THE TOLERANCES SHOWN IN THE PLANS AND/OR SPECIFIED IN THE GEOTECHNICAL REPORT FOR THE PROJECT.

11. TRENCHES SHALL BE BACKFILLED ONLY AFTER INSPECTION AND APPROVAL OF THE ENGINEER. BACKFILL MATERIAL AND PROCEDURES FOR TRENCHES (WITHIN THE TxDOT ROW) SHALL BE IN COMPLIANCE WITH THE TEXAS DEPARTMENT OF TRANSPORTATION 2014 STANDARD SPECIFICATION FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES, ITEM 400 - EXCAVATION AND BACKFILL FOR STRUCTURES AMD/OR THE DETAIL SPECIFICATIONS PROVIDED HEREIN. TRENCHES SHALL ALSO COMPLY WITH SAWS STANDARDS WHERE APPLICABLE.

GRADING NOTES:

1. CONTRACTOR IS REQUIRED TO SET AND VERIFY ALL PROJECT ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY THE SAME MATERIALS AS WELL AS VERTICAL AND HORIZONTAL ALIGNMENT.

2. GENERAL CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSION & GRADE CONDITIONS (BOTH NEW AND EXISTING). CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER AND PROJECT ARCHITECT BEFORE PROCEEDING WITH ANY PHASE OF THE WORK AS HE WILL BE RESPONSIBLE FOR ALL WORK AS INTENDED BY THE DRAWINGS AND SPECIFICATIONS. MINOR ADJUSTMENTS TO FINISHED GRADE TO ACCOMPLISH SPOT DRAINAGE IS ACCEPTABLE, IF NECESSARY, UPON APPROVAL OF THE ENGINEER.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CURBS, CONCRETE DRIVEWAYS, SIDEWALK STRUCTURES, PAVEMENT, ETC. THAT ARE NOT INDICATED TO BE REMOVED. AN INVENTORY OF EXISTING CONDITIONS SHALL BE CONDUCTED WITH CONTRACTOR AND PROJECT ARCHITECT PRIOR TO CONSTRUCTION.

4. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED AND GRADED TO DRAIN.

5. NOTIFY OWNER, HOMEOWNER'S ASSOCIATION, AND UTILITY PURVEYOR (IF APPLICABLE) A MINIMUM OF 72 HOURS IN ADVANCE OF ANY UTILITY SHUTDOWN.

6. MATCH GRADE AT PROPERTY LINE UNLESS OTHERWISE NOTED.

7. ACHIEVE GRADE CHANGES WITH SMOOTH TRANSITIONS. REFER TO DETAIL SHEETS.

GEOTECHNICAL RECOMMENDATIONS:

1. CONTRACTOR IS TO REFER TO THE GEOTECHNICAL ENGINEERING REPORT, DATED SEPTEMBER 21, 2022, PREPARED BY TTL, INC (PROJECT NO. 00210903465.02) FOR ALL PROPOSED PAVEMENTS AND SUBGRADES.

EXISTING FOUNDATIONS

EXISTING FOUNDATIONS AT THE PROJECT SITE SHOULD BE COMPLETELY REMOVED PRIOR TO COMMENCEMENT OF MASS GRADING OR CONSTRUCTION OF PAVEMENTS OR NEW FOUNDATIONS. UPON DEMOLITION OF THE EXISTING FOUNDATIONS AND THE REMOVAL OF ALL DEBRIS, THE AREA SHOULD BE RESTORED TO THE DESIRED GRADE BY THE BACKFILLING THE HOLE WITH LEAN CLAY SELECT FILL MEETING THE SPECIFICATION PROVIDED IN THE SECTION 4.2 OF THIS REPORT. THE LEAN CLAY SELECT FILL SHOULD BE PLACED IN LIFTS AND COMPACTED AS SPECIFIED IN THE SECTION 4.2 OF THIS REPORT. IN LIEU OF THE PLACEMENT OF A LEAN CLAY SELECT FILL, THE GRADE MAY BE RESTORED WITH FLOWABLE FILL MEETING THE SPECIFICATION OF 2014 TXDOT ITEM 401 AND HAVING A MINIMUM STRENGTH OF 100 PSI AT 28 DAYS. ALL OLD UTILITIES SHOULD BE REMOVED AND BACKFILLED WITH FLOWABLE FILL.

EXISTING UTILITIES NOTES:

1. THE CONTRACTOR SHALL BE AWARE THAT SANITARY SEWER, WATER, OVERHEAD ELECTRIC AND OVERHEAD/UNDERGROUND CABLE AND TELEPHONE LINES EXIST WITHIN THE LIMITS OF THIS PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR. THE POSITION AND DEPTH OF ALL UTILITIES LOCATED IN THE VICINITY OF THE PROPOSED WORK SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. UTILITY CONFLICTS THAT ARE DISCOVERED SHALL BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. DAMAGE TO EXISTING UTILITIES, WETHER SHOWN ON THESE PLANS OR NOT, SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT THE CONTRACTOR'S OWN EXPENSE.
4. NOTIFY OWNER 72 HOURS IN ADVANCE OF UTILITY SHUTDOWN.
5. ONE CALL NOTE - CONTRACTOR MUST CALL CITY OF SAN ANTONIO (811 OR 2111-353-2970) FOR LOCATION OF CITY UTILITIES.

CUDEENGINEERS.COM

CUDE ENGINEERS — EST. 1980

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

ZIGMOND TRACT UNIT 1

SUPPLEMENTAL NOTES

DATE	08/06/2025
PROJECT NO.	04408.001
DRAWN BY	DAF/SG/JW
CHECKED BY	SPM

REVISIONS
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08/06/2025

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

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P:\04408\001\2-DWG\4-Plans\C0.01 SUPPLEMENTAL NOTES.dwg 2025/08/06 2:35pm rmata

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

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

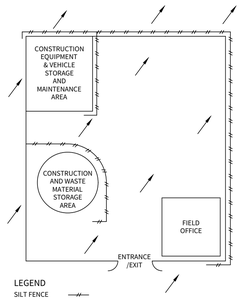
CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

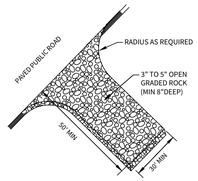
LEGEND

- PROPERTY LINE
- EXISTING CONTOURS — 930 —
- BMP ITEM NUMBER [1]
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- SILT FENCE — SF —
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- LIMITS OF CONSTRUCTION
- ROCK BERM
- PHASE II SILT FENCE
- ULTIMATE LIMITS PER CLOMR PREPARED BY RESPEC

*GRADING SHOWN OUTSIDE LIMITS OF CONSTRUCTION IS COVERED BY SEPARATE PERMIT



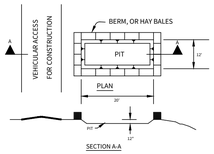
TYP. CONSTRUCTION STAGING AREA [1]
N.T.S.



STABILIZED CONSTRUCTION EXIT NOTES:

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

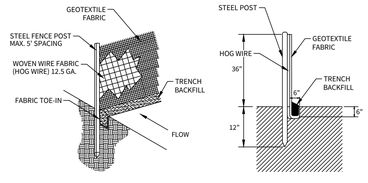
TEMPORARY CONSTRUCTION ENTRANCE/EXIT [2]
N.T.S.



GENERAL NOTES:

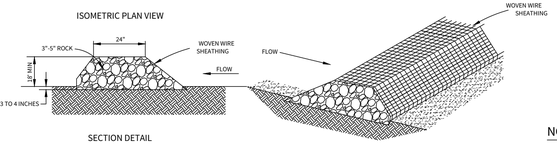
- DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY USE.
- IF HAY BALES ARE USED, THEY SHALL BE PLACED IN ACCORDANCE WITH DETAILS SHOWN ON EXHIBIT FOR HAY BALES.
- WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
- WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORMWATER RUNOFF.
- WASHOUT PIT SHALL BE LINED WITH A 10-MIL THICK POLYETHLENE SHEETING FREE OF HOLES, TEARS AND OTHER DEFECTS.

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



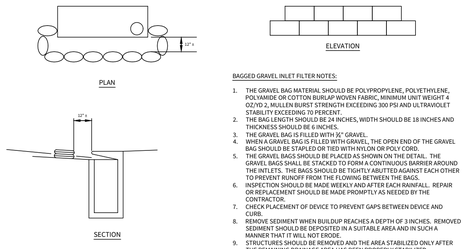
SILT FENCE DETAIL — SECTION DETAIL

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



SECTION DETAIL

ROCK BERM [5]
N.T.S.



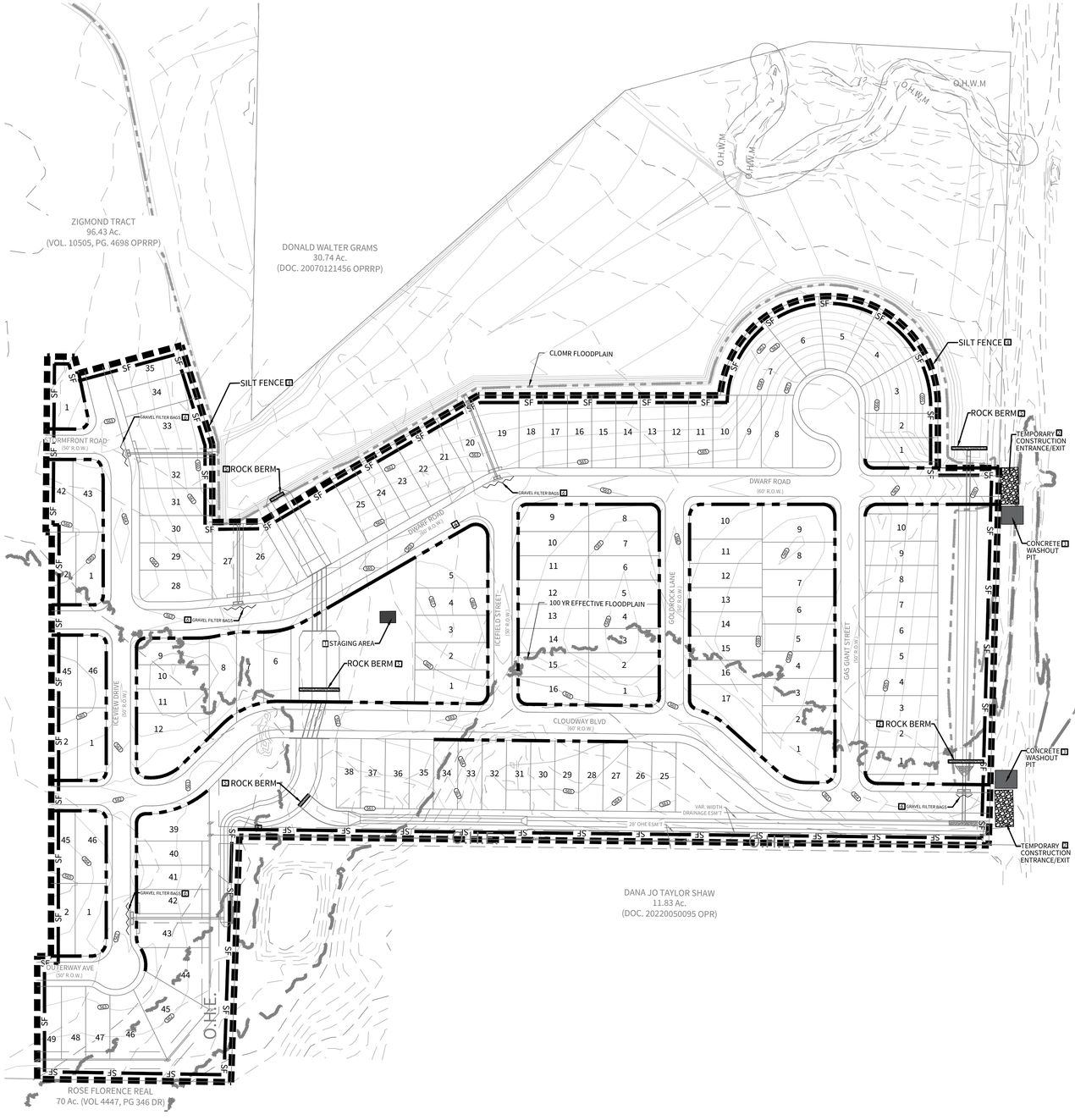
BAGGED GRAVEL INLET FILTER NOTES:

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

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

NOTE:

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. CONTRACTOR TO PROVIDE SILT FENCE ALONG BACK OF CURB POST-CONSTRUCTION OF STREET RIGHT-OF-WAY AND PRIOR TO COMMENCEMENT OF HOME CONSTRUCTION.
3. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, UTILITY EASEMENTS & LOTS.
4. THE CITY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.
5. INSTALL SILT FENCE "J" HOOKS AS NECESSARY AT AN INTERVAL NO GREATER THAN 50' TO COMPLETE INSTALLATION.
6. ALL SWPPP PERMITS AND TEMPORARY CONTROLS TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
7. THE SWPPP PLAN AND BMP'S SHOWN ARE INTENDED TO BE PLACED BY THE CONTRACTOR PRIOR TO THE RESPECTIVE WORK TO BE PERFORMED. THE CONTRACTOR WILL BE REQUIRED TO PERFORM ROUTINE INSPECTIONS, MAINTAIN/ADJUST ALL BMP'S, AND LIKEWISE PROVIDE ADDITIONAL BMP'S IF ANY PROVE TO BE INEFFECTIVE AS REQUIRED BY TPDES CONSTRUCTION GENERAL PERMIT TXR150000.



SCALE: 1"=100'
100 50 0 100

CUDEENGINEERS.COM

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San Antonio, Texas 78231
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ZIGMOND TRACT UNIT 1

STORM WATER POLLUTION PREVENTION PLAN

DATE
07/01/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
1.
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10.

07/02/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C1.00

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

LOCATION MAP
N.T.S.

LEGEND

- PROPERTY LINE
- 901 — EXISTING MINOR CONTOUR
- 900 — EXISTING MAJOR CONTOUR
- EXISTING EASEMENT
- SS — EXISTING SANITARY SEWER MAIN
- W — EXISTING WATER MAIN
- OHE — EXISTING OVERHEAD ELECTRIC
- EXIST. FIRE HYDRANT
- EXIST. WATER VALVE
- EXIST. SANITARY SEWER MANHOLE
- EXIST. UTILITY POLE
- EXIST. SIGN
- PROPERTY CORNER
- SANITARY SEWER FLOW
- EXISTING SANITARY SEWER MANHOLE
- OHE GUY WIRE

DEMOLITION KEYNOTES:

1. EXISTING BARBED WIRE FENCE TO BE REMOVED.
2. EXISTING WATER METER TO BE REMOVE. CONTRACTOR TO COORDINATE WITH ECSUD PRIOR TO DEMO.
3. EXISTING GATE TO BE REMOVED.
4. EXISTING GRAVEL DRIVEWAY TO BE REMOVED.
5. DEMO EXISTING BUILDING.
6. EXISTING CONCRETE SIDEWALK TO BE REMOVED.
7. EXISTING SEPTIC TANK AND ALL APPRUTENANCES TO BE REMOVED
8. EXISTING ELECTRICAL BOX TO BE REMOVED.
9. EXISTING OHE POLES AND SERVICE TO REMAIN AND BE PROTECTED.
10. EXISTING GATE TO REMAIN.
11. EXISTING 1" PVC AND FAUCET TO BE REMOVED.
12. EXISTING 8 - 2" IRON PIPE TO BE REMOVED.

PLAT:

ZIGMOND UNIT 1 (PLAT NO. 25-4486)

BENCHMARKS / CONTROL POINT DATA:

ELEVATIONS SHOWN HEREON ARE NAVD 88.

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	13711589.72	2212197.40	559.49	1/2" IRON ROD (CUDE)

NOTE:
CONTRACTOR TO RUN LEVEL LOOP THROUGH BM'S PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

LEGAL DESCRIPTION:

127.91 ACRES OF LAND LOCATED IN THE FRANCISCO CARDINAS SURVEY, ABSTRACT 128, COUNTY BLOCK 5087, BEXAR COUNTY, TEXAS, BEING A PORTION OF A CALLED 32.27 ACRE TRACT RECORDED IN VOLUME 6654, PAGE 1065 OF THE OFFICIAL PUBLIC RECORDS OF REAL PROPERTY BEXAR COUNTY, TEXAS AND A PORTION OF A CALLED 96.43 ACRE TRACT RECORDED IN VOLUME 10505, PAGE 498 OF THE OFFICIAL PUBLIC RECORDS OF REAL PROPERTY BEXAR COUNTY, TEXAS.

SCALE: 1"=100'
0 100 200

OWNER/DEVELOPER:

KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:

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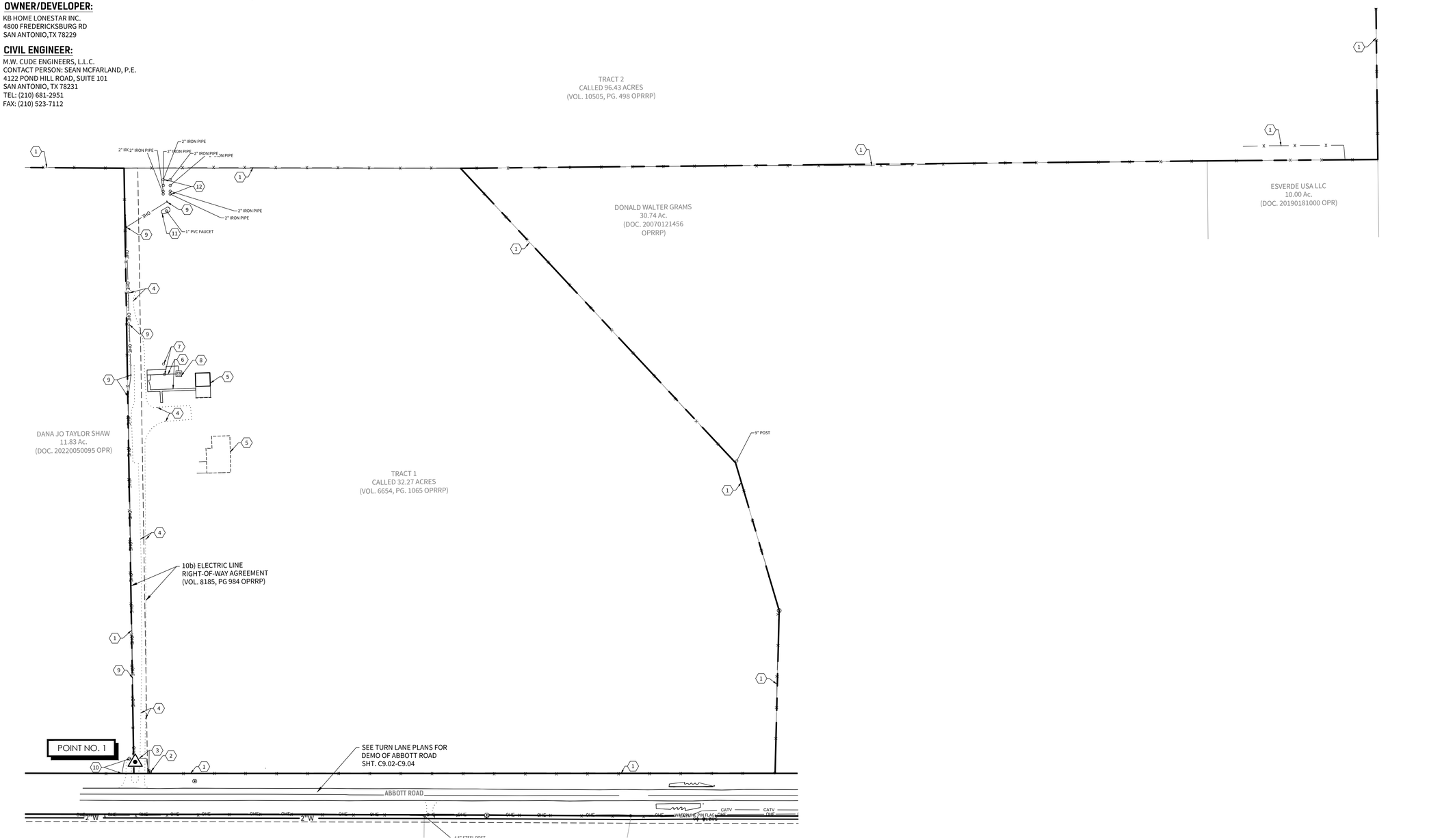

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ZIGMOND TRACT UNIT 1

EXISTING CONDITIONS & DEMOLITION PLAN

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
1.
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8.
9.
10.

10/10/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C2.00

P:\04408\001\2-DWG\4-Plans\C2.00 EXISTING CONDITIONS & DEMOLITION.dwg 2025/10/10 7:44am mattshs

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LOCATION MAP
N.T.S.

LEGEND

PROPOSED CONTOUR 1000
EXISTING CONTOUR 1000
PROPOSED ELEVATION 297.58
EXISTING ELEVATION 672.00E
GRADE BREAK GRADE BREAK
BUILDING SETBACK
SWALE
LOMR FLOODPLAIN
CLOMR FLOODPLAIN

SCALE: 1"=50'
0 50 100

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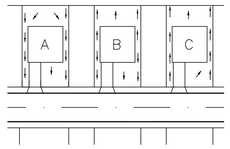
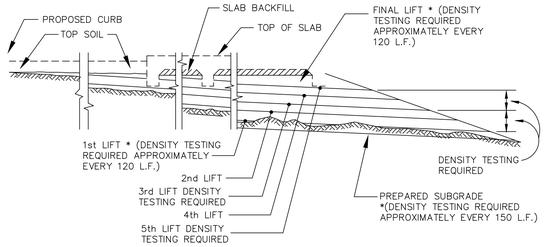


TYPICAL LOT SITE PLAN
N.T.S.



DENSITY TEST FREQUENCY
NOT TO SCALE

NOTE:

LOT GRADING BASED ON SLABS BEING 20' BEHIND FRONT PROPERTY LINE.

MINIMUM SLAB EXPOSURE IS 1.0'.

ALL ELEVATIONS AT FRONT PROPERTY LINE ARE 0.22' ABOVE CURB ELEVATION ON LOCAL TYPE "A" STREETS.

TYPICAL PAD SIZES ARE 80' x 40' ON LOCAL TYPE "A" STREETS.

CONTRACTOR TO REFERENCE TREE PRESERVATION PLAN.

CONTOURS SHOWN ON STREET ARE TOP OF STREET.

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. General Description

This item shall consist of all clearing and grubbing, demolition, preparation of land to be filled, filling of the land, spreading, compaction testing and inspection of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades and slopes as shown on the approved plans.

ALL LOT GRADING MUST MEET REQUIREMENTS OF FHA/HUD HANDBOOK 4140.3, SPECIFICATIONS FOR LAND DEVELOPMENTS ON CONTROLLED EARTHWORK, DATASHEET 79g. HUD 79g REQUIREMENTS FOR FILL MATERIAL OF 6 INCHES AND MORE WILL BE CONDUCTED. ALL CUT AREAS WILL ALSO MEET THE REQUIREMENTS FOR HUD 79g COMPACTION TESTING. IN ADDITION, ENGINEERS MUST PROVIDED VERIFICATION OF ALL AREAS WHICH DO NOT REQUIRE HUD 79g.

2. Clearing the Area to be Filled

All timber, logs, trees, brush and rubbish shall be removed from the site.

3. Scarifying the Area to be Filled

All organic matter shall be removed from the surface upon which the fill is to be placed, and the surface shall then be disked or scarified to a minimum depth of six inches (6"), all surface ruts or other uneven features will be leveled prior to field density testing.

4. Compacting the Area to be Filled

Following the clearing and disking or scarifying of the fill area, it shall be bladed until it is uniform and free from large clods. The area shall be brought to the adequate moisture content and compacted (typically) to not less than ninety percent (90%) of maximum density in accordance with the current ASTM D 1557 Compaction Procedure, or 95% of maximum density in accordance with the current THD–TEX–113–E Compaction Procedure.

5. Fill Materials

The materials used shall be free from organic matter and other deleterious substances, such as trees, brush and rubbish.

6. Depth and Mixing of Fill Layers

The selected fill material shall be placed in level, uniform layers which, when compacted, shall have a density conforming to that stipulated above. Each layer shall be thoroughly mixed during the spreading to ensure uniformity of material in each layer. Compacted layer thickness may vary depending on the compaction equipment of demonstrated capability. The maximum loose depth for any material shall not exceed twelve inches (12"). For testing requirements of fill material, see density testing.

7. Rock

When fill material includes rock, the maximum rock size shall be as approved by the Geotechnical Engineer. No large rocks shall be allowed to nest and all voids must be filled with small stones or soil and adequately compacted. No large rocks will be permitted within eighteen inches (18") of the finished grade.

8. Compaction of Fill Layer

Compaction equipment shall be capable of compacting the fill to the specified density. Compaction shall be accomplished while the fill material is at or near the appropriate moisture content. Compaction of each layer shall be continuous over the entire structural area (beneath proposed structures).

9. Compaction of Slopes

The faces of fill slopes shall be compacted. Compacting operations shall be continued until the slope faces are stable but not too dense for planting on the slopes. Compaction of the slope faces may be done progressively in increments of three to five feet (3' to 5') in fill height as this fill progresses or after the fill has been brought to its total height.

10. Moisture Content

The fill material shall be compacted at the appropriate moisture content specified for the soils being used. Appropriate moisture content is defined, typically, as optimum moisture content; however, for expansive soils it may be greater than optimum moisture content, and other moisture contents may be necessary to produce the desired results with certain soils.

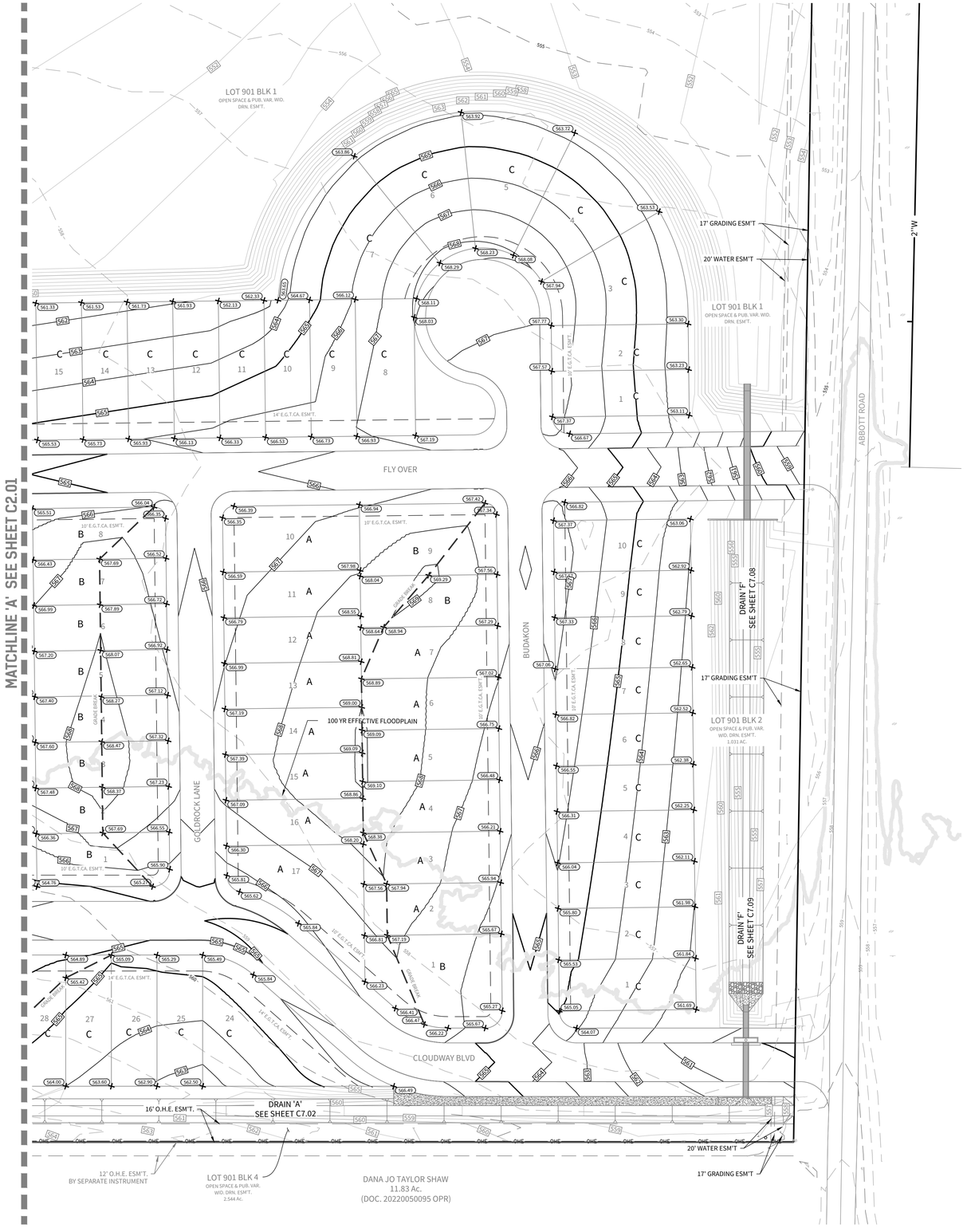
11. Density Tests

Field density tests shall be performed on layers of fill when the fill is being placed as directed by the Geotechnical Engineer. The maximum fill height between density testing shall be eighteen inches (18"). All testing shall be requested by the contractor to meet the contractor's construction schedule. Notification by the contractor to conduct tests shall be at least the day before. This notification shall include the fill area location (Lot and Block), the lift or height of fill and approximate desired time of testing. When these tests indicate that the density of any layer of fill or portion thereof is below the required density, the particular layer or portion shall be reworked and retested at the expense of the contractor unless the contractor can show evidence that circumstances beyond his control required the retesting. Generally, the specific testing will be as follows and conducted by Geotechnical Engineer.

1. The land to be filled (prepared subgrade) shall be prepared and tested at a frequency as determined by the Geotechnical Engineer.
2. The first lift of compacted fill (generally 8 to 12-in.) shall be tested as determined by the Geotechnical Engineer. Any areas supporting the proposed structures requiring fill shall be tested for density compliance.
3. Fills shall be tested a maximum of each eighteen inches (18") of fill.
4. Test results will be provided by the field technician to the contractor when possible; however, all test results are to be reviewed by the Geotechnical Engineer for compliance. The engineer will notify the contractor of all the test results.

12. Cut/Fill Lots

Areas involving cut on one portion and fill on another portion of a specific lot shall be prepared to a minimum depth of 6-in. and will be the same material classification at the same compaction and moisture content. A minimum of two (2) field density tests shall be required on each cut/fill lot for the purpose of determining uniformity of the area supporting the proposed structures.



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

ZIGMOND TRACT UNIT 1

GRADING PLAN

DATE
08/06/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10.

08/06/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C3.00

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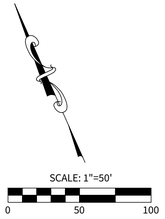
LOCATION MAP
N.T.S.



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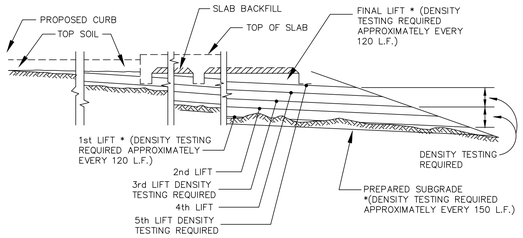
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND

PROPOSED CONTOUR	1000
EXISTING CONTOUR	1000
PROPOSED ELEVATION	297.50
EXISTING ELEVATION	872.00E
GRADE BREAK	GRADE BREAK
BUILDING SETBACK	
SWALE	
LOMR FLOODPLAIN	
CLOMR FLOODPLAIN	



DENSITY TEST FREQUENCY
NOT TO SCALE

NOTE:

LOT GRADING BASED ON SLABS BEING 20' BEHIND FRONT PROPERTY LINE.

MINIMUM SLAB EXPOSURE IS 1.0'.

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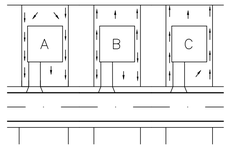
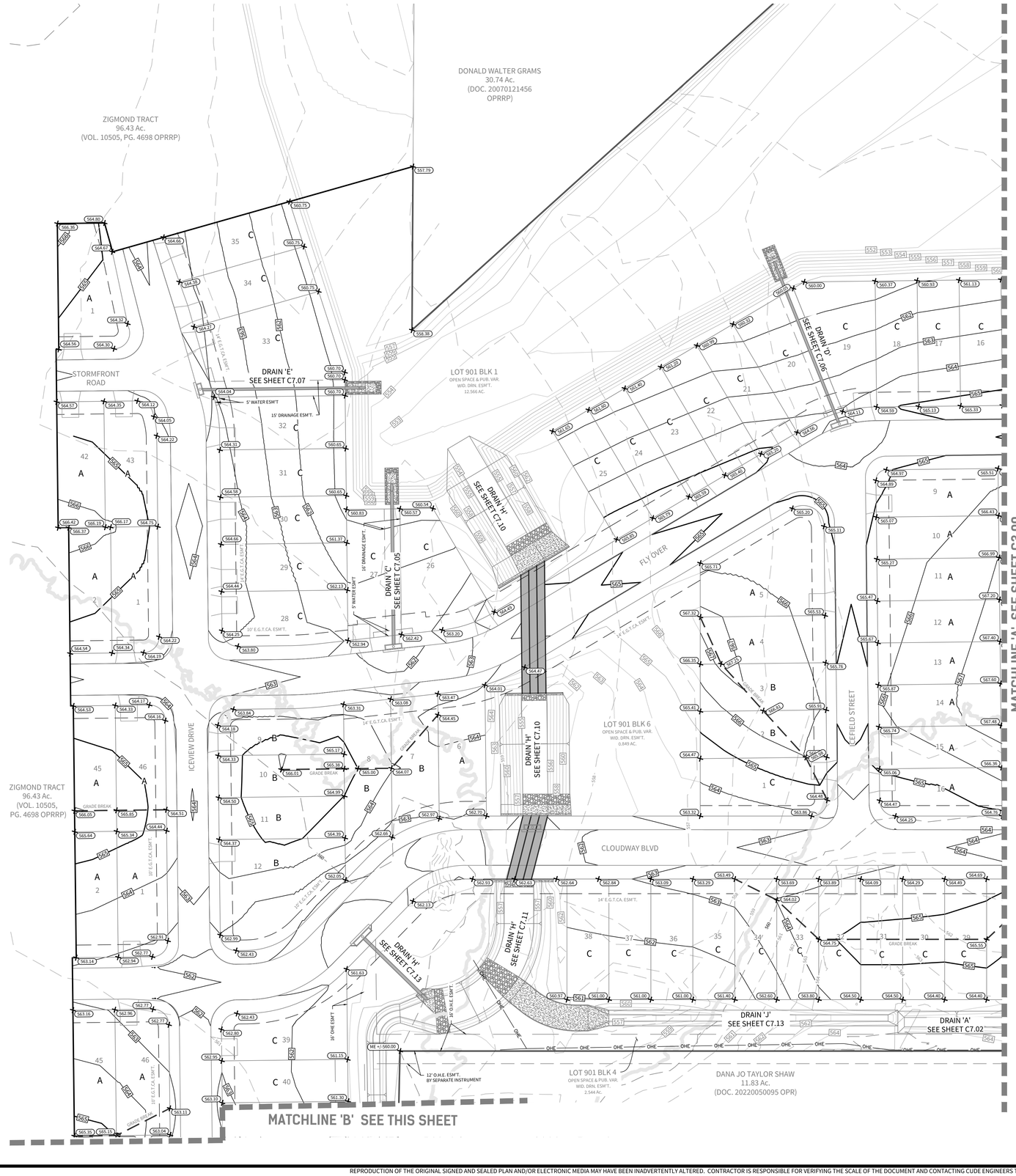
TYPICAL PAD SIZES ARE 80' x 35' ON LOCAL TYPE "A" STREETS.

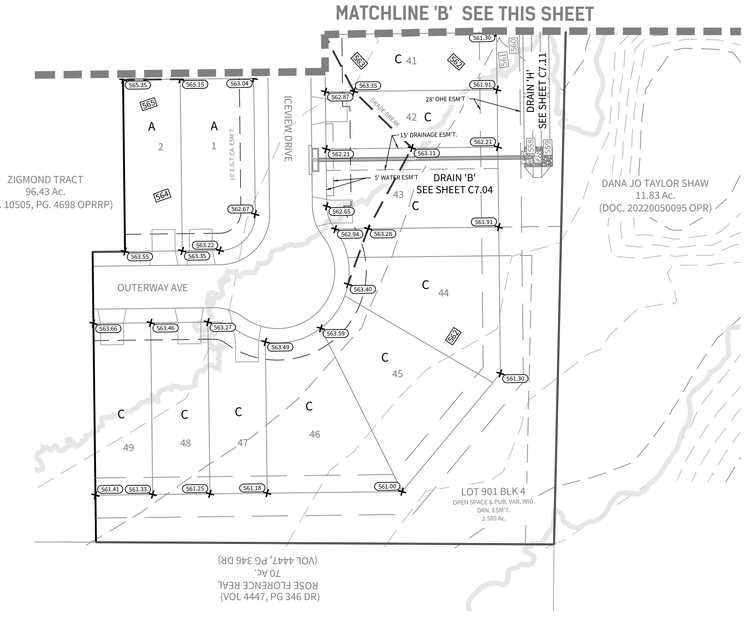
CONTRACTOR TO REFERENCE TREE PRESERVATION PLAN.

CONTOURS SHOWN ON STREET ARE TOP OF STREET.



TYPICAL LOT SITE PLAN
N.T.S.





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ZIGMOND TRACT UNIT 1

GRADING PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

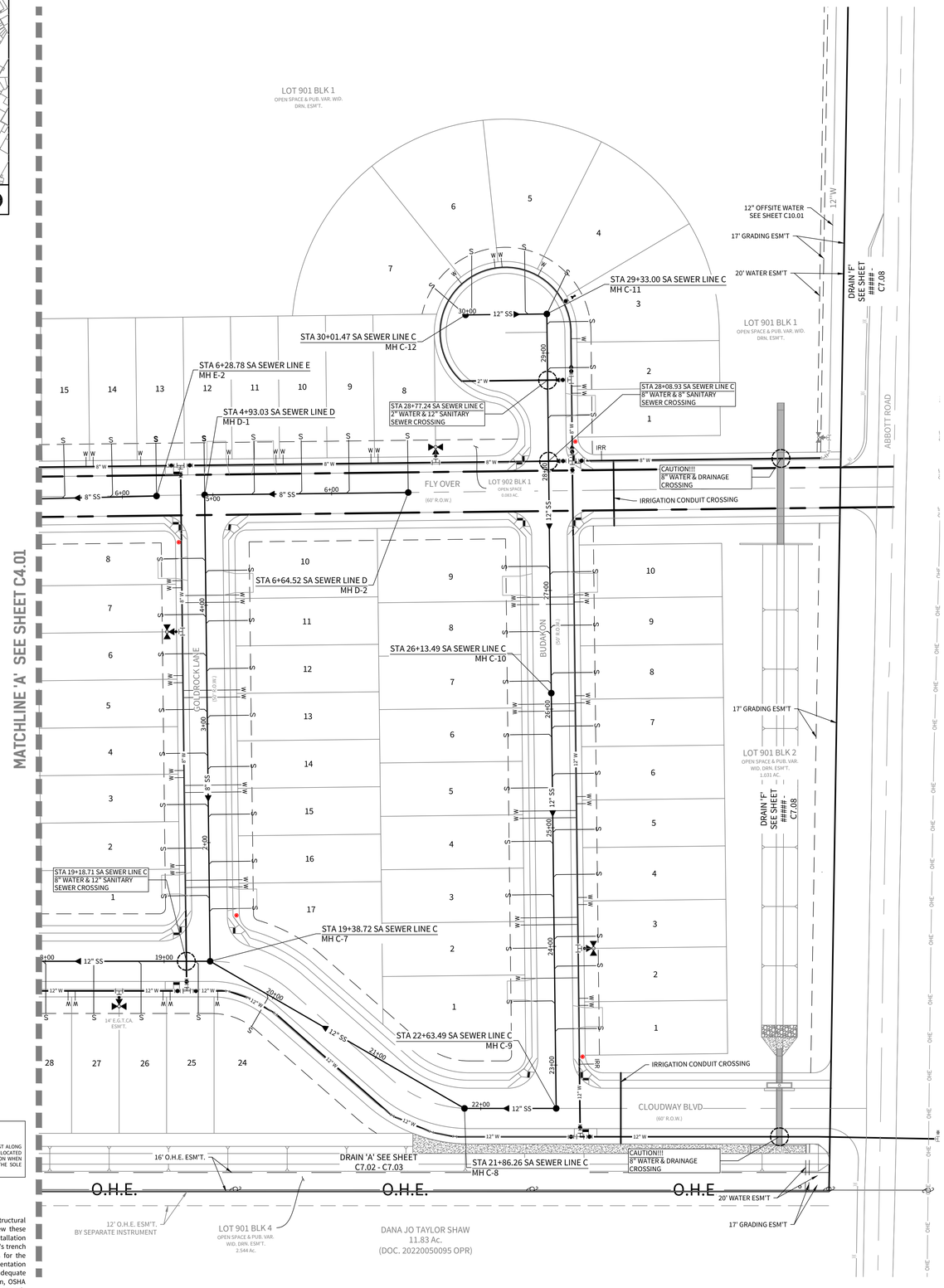
C3.01

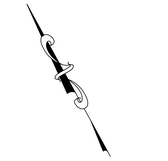
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112





SCALE: 1"=50'
0 50 100

LEGEND

EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING WATER MAIN	EX.8"W
PROPOSED WATER MAIN	8"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
EXISTING STANDARD GATE VALVE	
PROPOSED STANDARD GATE VALVE	
EXISTING PERMANENT BLOWOFF	
PROPOSED PERMANENT BLOWOFF	
EXISTING OVERHEAD ELECTRIC	EX. OHE
PROPOSED OVERHEAD ELECTRIC	OHE
EXISTING GAS MAIN	EX.2"GAS
PROPOSED GAS MAIN	2"GAS
EXISTING POWER POLE	
PROPOSED POWER POLE	
PROPOSED LIGHT POLE	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.C.A. ESM'T
BUILDING SETBACK LINE	B.S.L.
LANDSCAPE	L.S.
UTILITY CONDUIT CROSSING	UTIL
IRRIGATION CONDUIT CROSSING	IRR

CAUTION!!!

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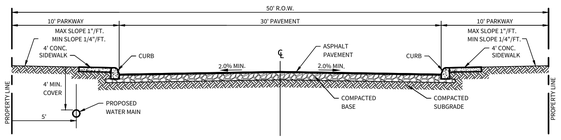
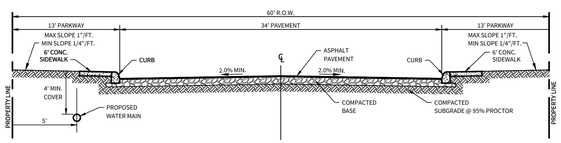
TRENCH EXCAVATION SAFETY PROTECTION

Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical information and the anticipated installation site(s) within the project work area in order to implement Contractor's trench excavation safety protection systems, programs and/or procedures for the project described in the contract documents. the Contractor's implementation of these systems, programs and/or procedures shall provide for adequate trench excavation safety protection that comply with as a minimum, OSHA standards for trench excavations. specifically, Contractor and/or Contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA standards governing the presence and activities of individuals working in and around trench excavation.



TYPICAL LOCAL "A" STREET CROSS-SECTION



TYPICAL LOCAL TYPE "B" STREET CROSS-SECTION

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

ZIGMOND TRACT UNIT 1

UTILITY LAYOUT PLAN

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/10/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C4.00

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LOCATION MAP
N.T.S.

CAUTION!!!

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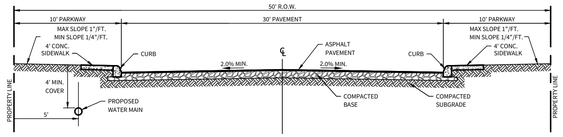
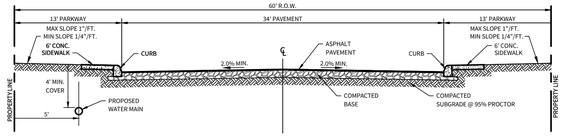
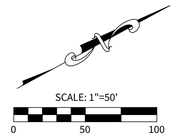


TYPICAL LOCAL "A" STREET CROSS-SECTION



TYPICAL LOCAL TYPE "B" STREET CROSS-SECTION



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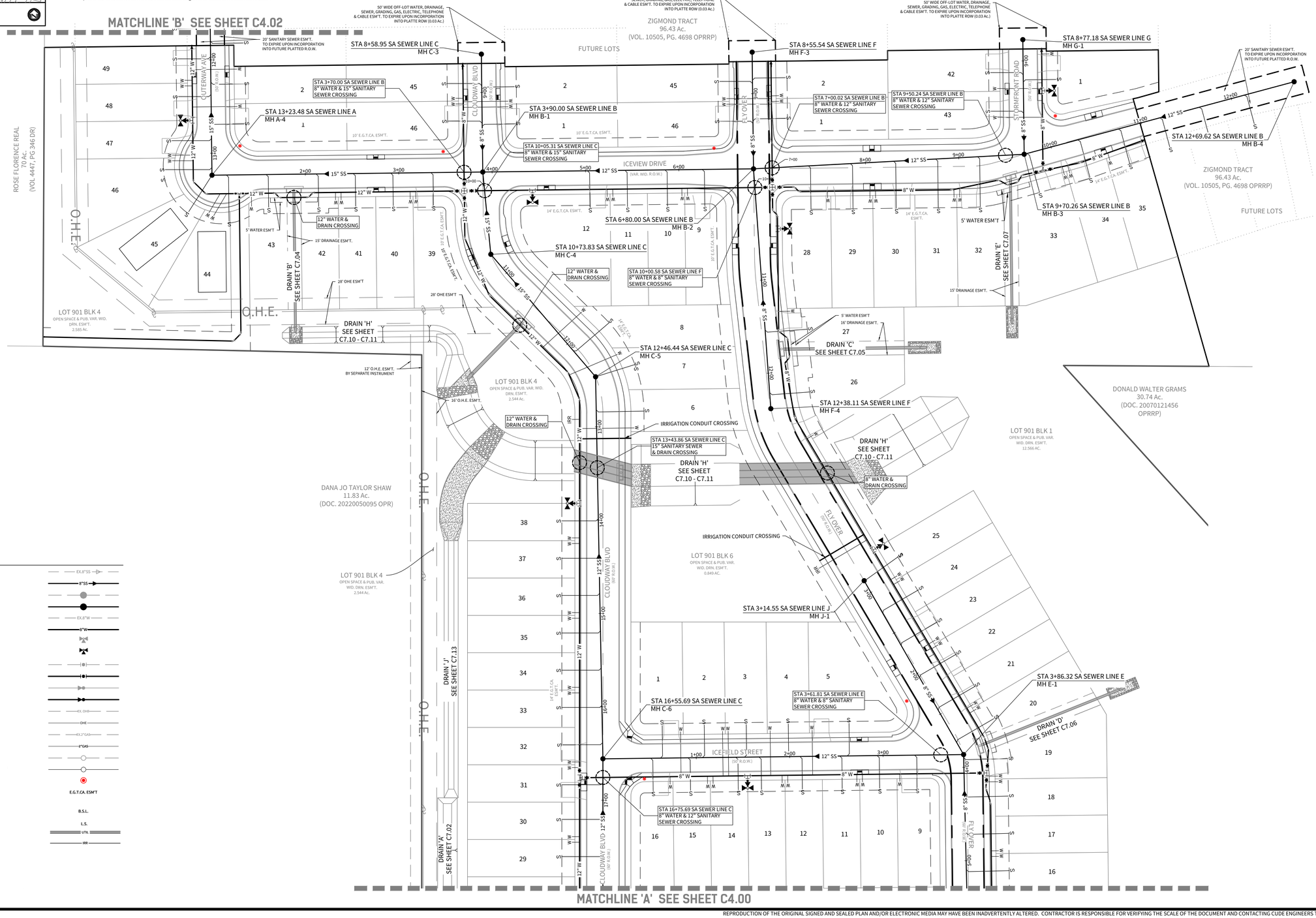

LEGEND

EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
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PROPOSED STANDARD FIRE HYDRANT	
EXISTING STANDARD GATE VALVE	
PROPOSED STANDARD GATE VALVE	
EXISTING PERMANENT BLOWOFF	
PROPOSED PERMANENT BLOWOFF	
EXISTING OVERHEAD ELECTRIC	EX. OHE
PROPOSED OVERHEAD ELECTRIC	OHE
EXISTING GAS MAIN	EX.2"GAS
PROPOSED GAS MAIN	2"GAS
EXISTING POWER POLE	
PROPOSED POWER POLE	
PROPOSED LIGHT POLE	
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BUILDING SETBACK LINE	B.S.L.
LANDSCAPE	L.S.
UTILITY CONDUIT CROSSING	UTL
IRRIGATION CONDUIT CROSSING	IRR

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EST. 1980 CUDE ENGINEERS
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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

ZIGMOND TRACT UNIT 1

UTILITY LAYOUT PLAN

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/10/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C4.01

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LOCATION MAP

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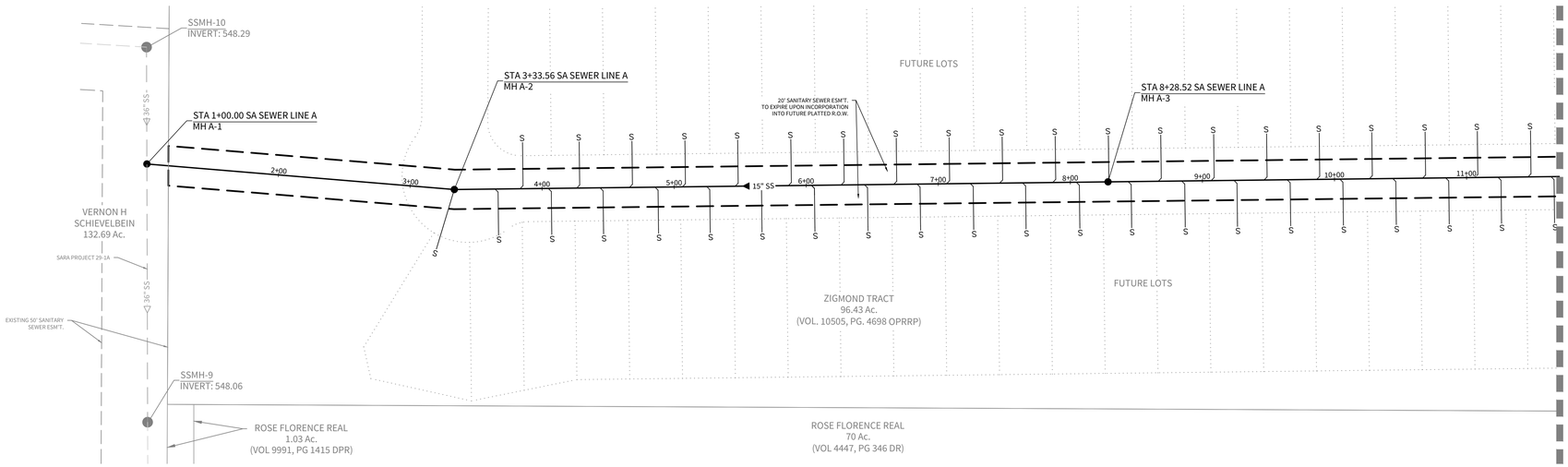

SCALE: 1"=50'

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LEGEND

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BUILDING SETBACK LINE	B.S.L.
LANDSCAPE	L.S.
UTILITY CONDUIT CROSSING	UTIL
IRRIGATION CONDUIT CROSSING	IRR

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

UTILITY LAYOUT PLAN

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS

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10/10/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C4.02

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

I:\SA\04408\13-SDWG\4-Plan\SG\11 UTILITY LAYOUT PLAN.dwg 2025/10/10 10:53am jwatkins

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:

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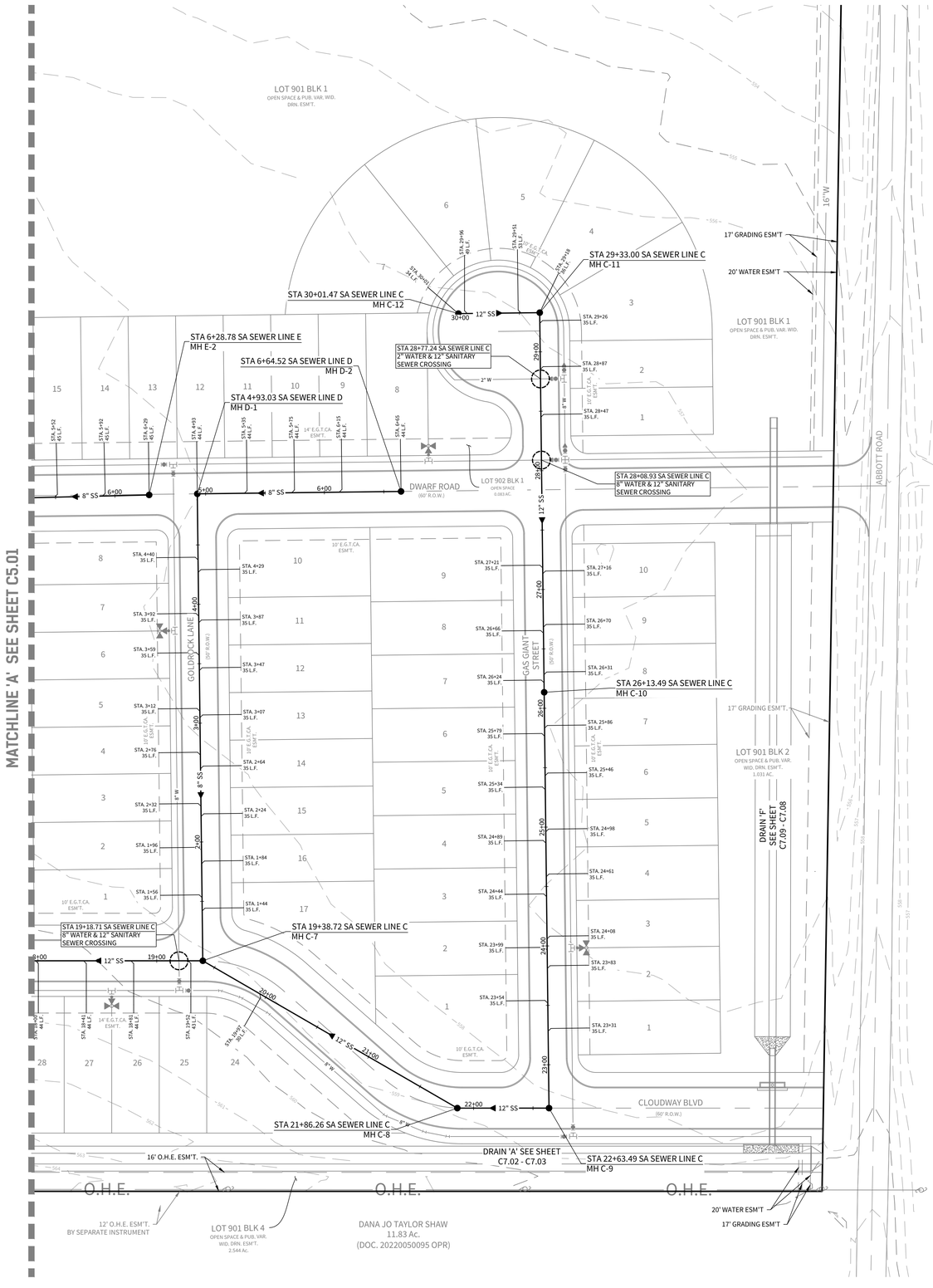
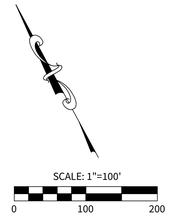
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

SEWER/WATER LINE CROSSINGS	
LINE	STATION
C	19+18.71
C	19+55.65
C	22+88.49
C	27+58.93
C	28+77.24
D	4+68.03





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

ZIGMOND TRACT UNIT 1

SANITARY SEWER MASTER PLAN

DATE
07/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

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07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C5.00

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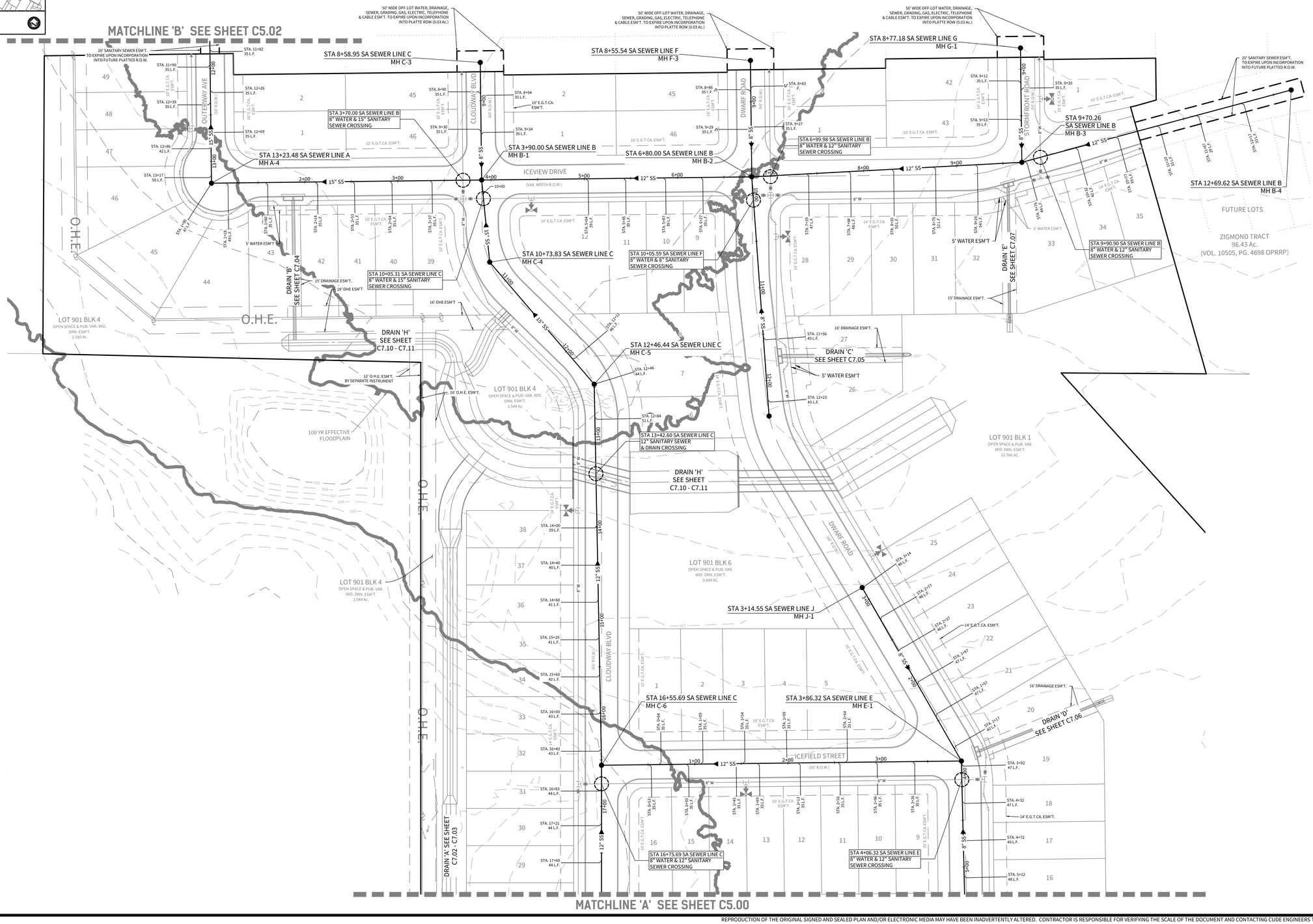
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

SEWER/WATER LINE CROSSINGS	
LINE	STATION
B	3+70.00
B	6+55.00
B	9+90.90
C	10+05.31
C	16+75.69
E	3+61.81
F	10+05.59

SEWER/DRAIN CROSSINGS	
LINE	STATION
C	13+43.86



SCALE: 1"=50'
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ZIGMOND TRACT UNIT 1

SANITARY SEWER MASTER PLAN

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STATE OF TEXAS
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CUDE ENGINEERS
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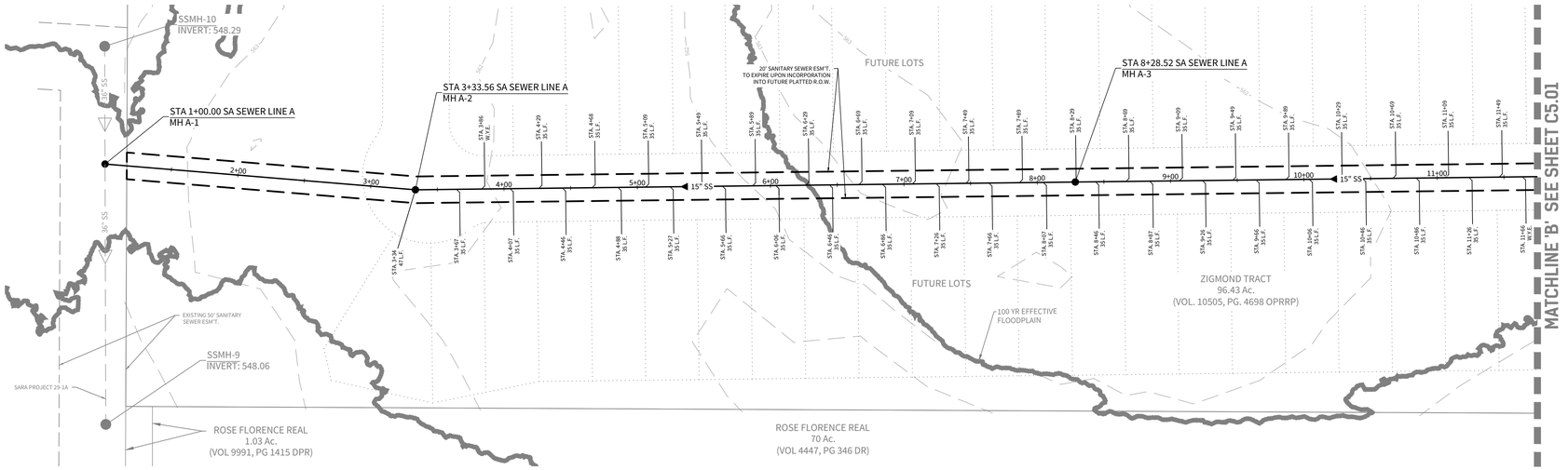

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ZIGMOND TRACT
UNIT 1

SANITARY SEWER MASTER PLAN

DATE
07/08/2025

PROJECT NO.
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C5.02

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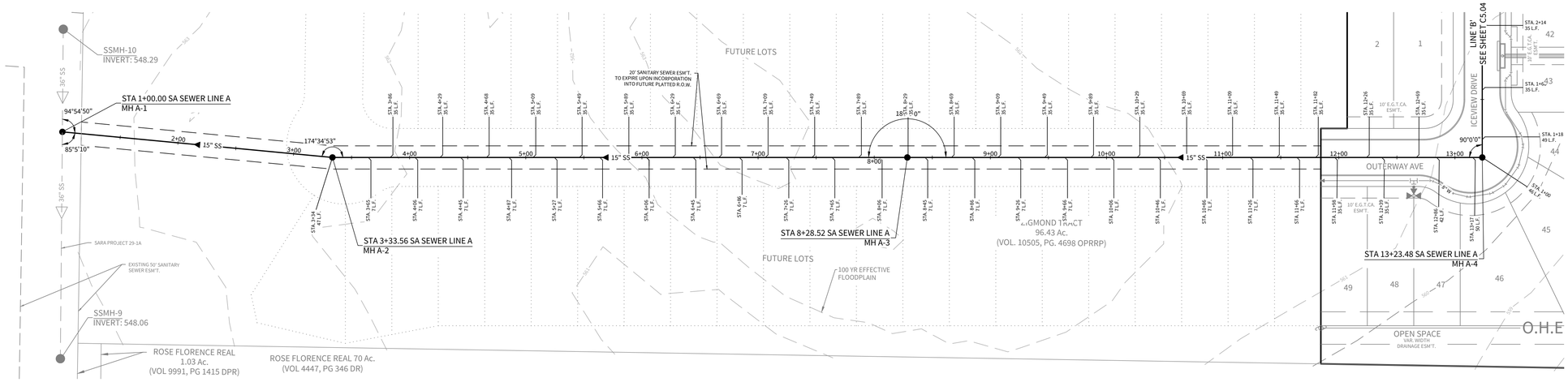
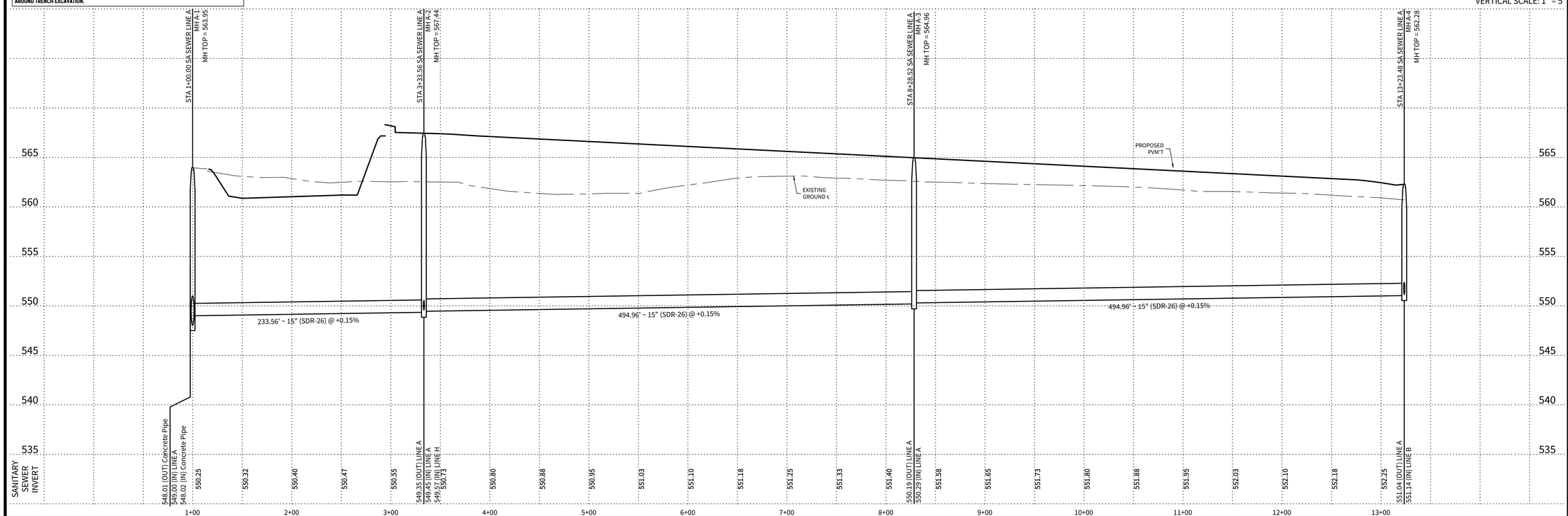


SA SEWER LINE A

STA. 1+00.00 TO STA. 13+23.48

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



TRENCH EXCAVATION PROTECTION

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

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

ZIGMOND TRACT UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE A

DATE
07/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

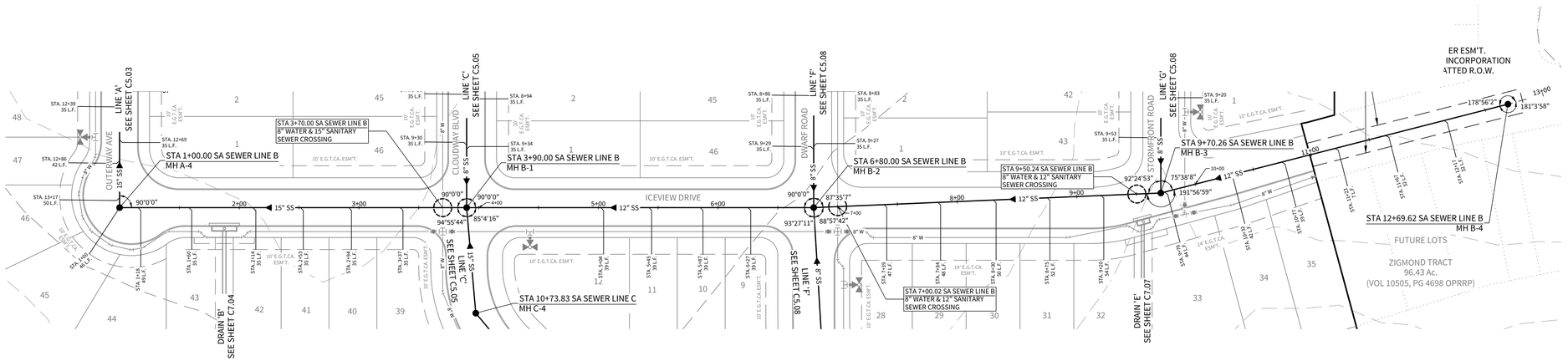
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C5.03

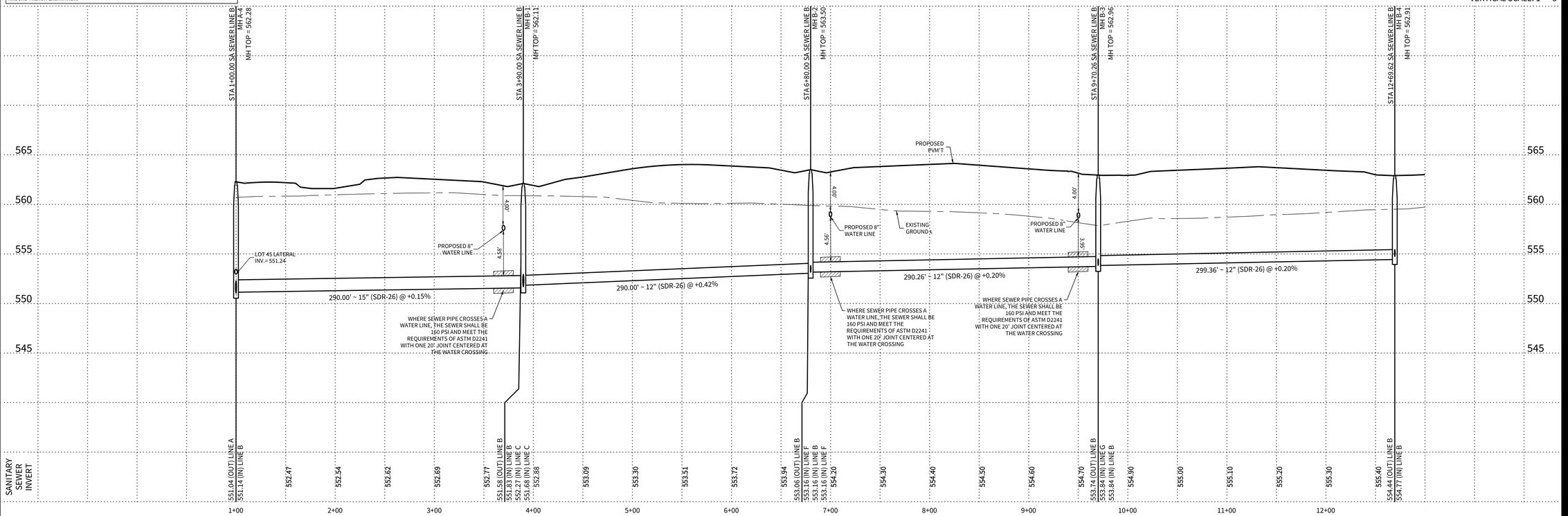
P:\04408\2025\2-DWG\4-Plans\CAD\SANITARY SEWER PLAN & PROFILE - LINE "A".dwg 2025/07/09 3:16pm rmata

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



SA SEWER LINE B

STA. 1+00.00 TO STA. 12+69.62



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

TRENCH EXCAVATION PROTECTION

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

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

ZIGMOND TRACT
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE B

DATE
07/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

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07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

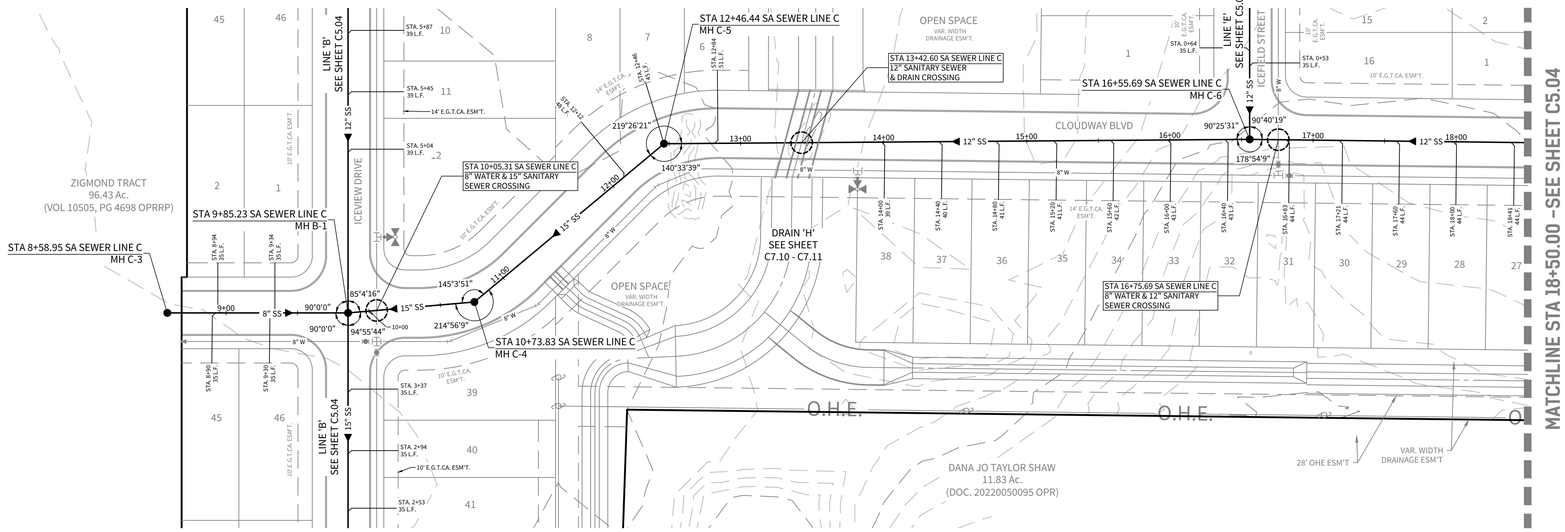
CUDE ENGINEERS
TBPELS No. 10048500

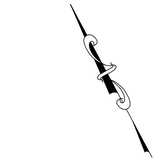
PLAT NO.
XX-XXXXXXXX

C5.04

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

C:\DAMMRON\13-SOMOS PHASE\C5.04 SANITARY SEWER PLAN & PROFILE - LINE 'B'.dwg 2025/07/09 3:18pm mmata





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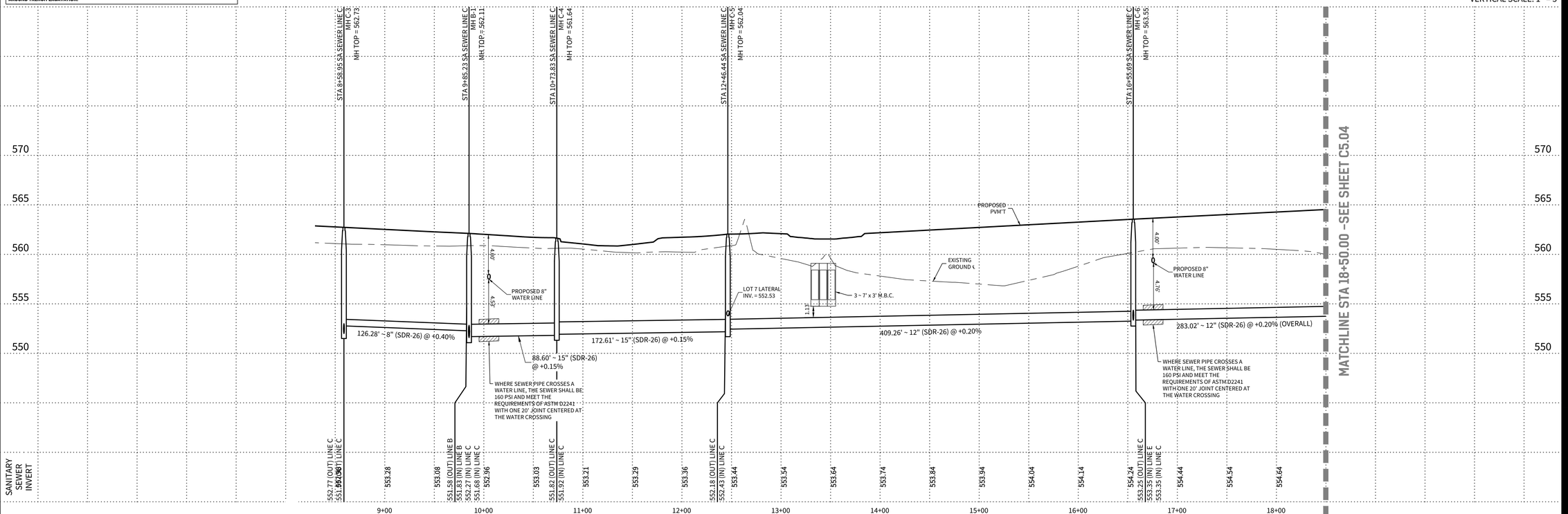
SA SEWER LINE C

STA. 8+58.95 TO STA. 18+50.00

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



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ZIGMOND TRACT
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SANITARY SEWER PLAN & PROFILE - LINE C

DATE
07/08/2025

PROJECT NO.
04408.001

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SPM

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07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

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TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C5.05

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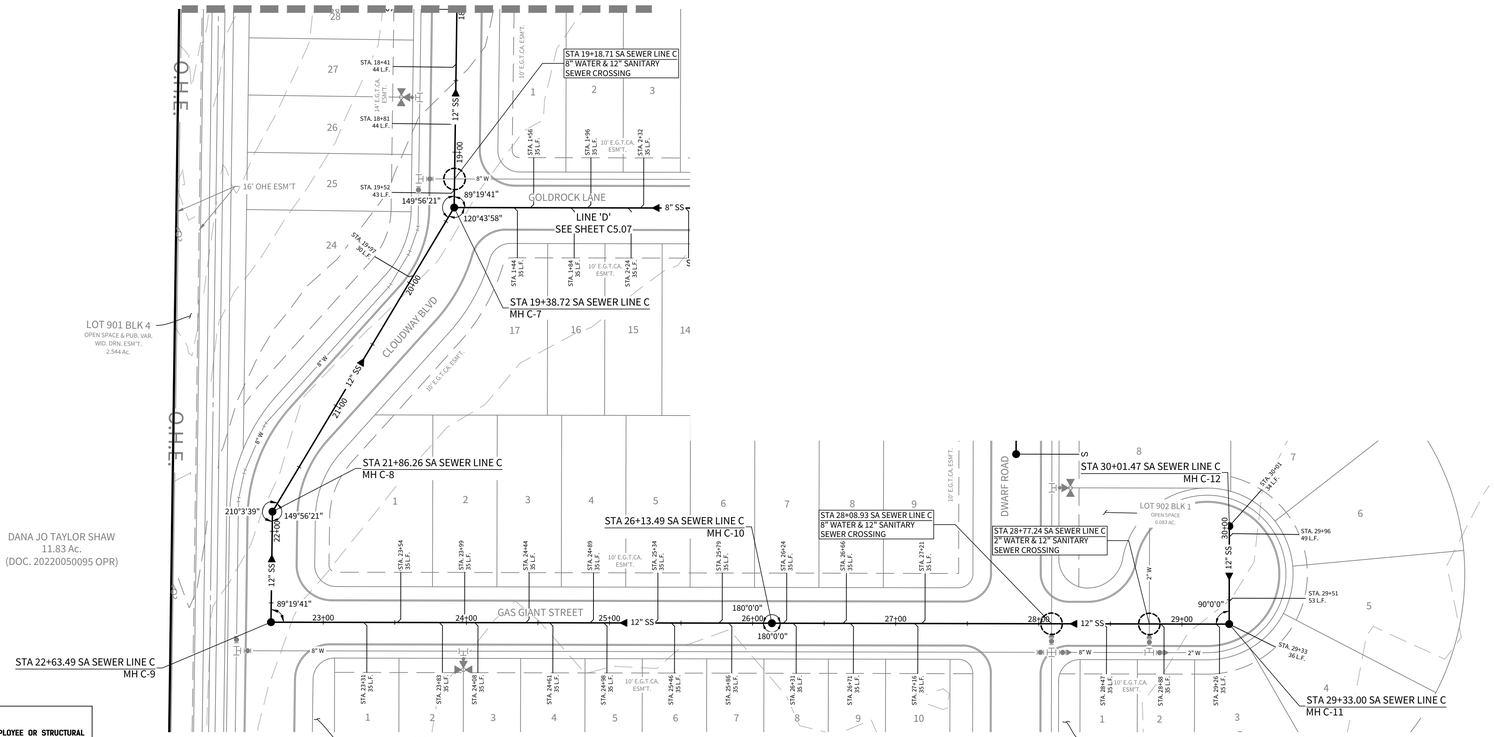
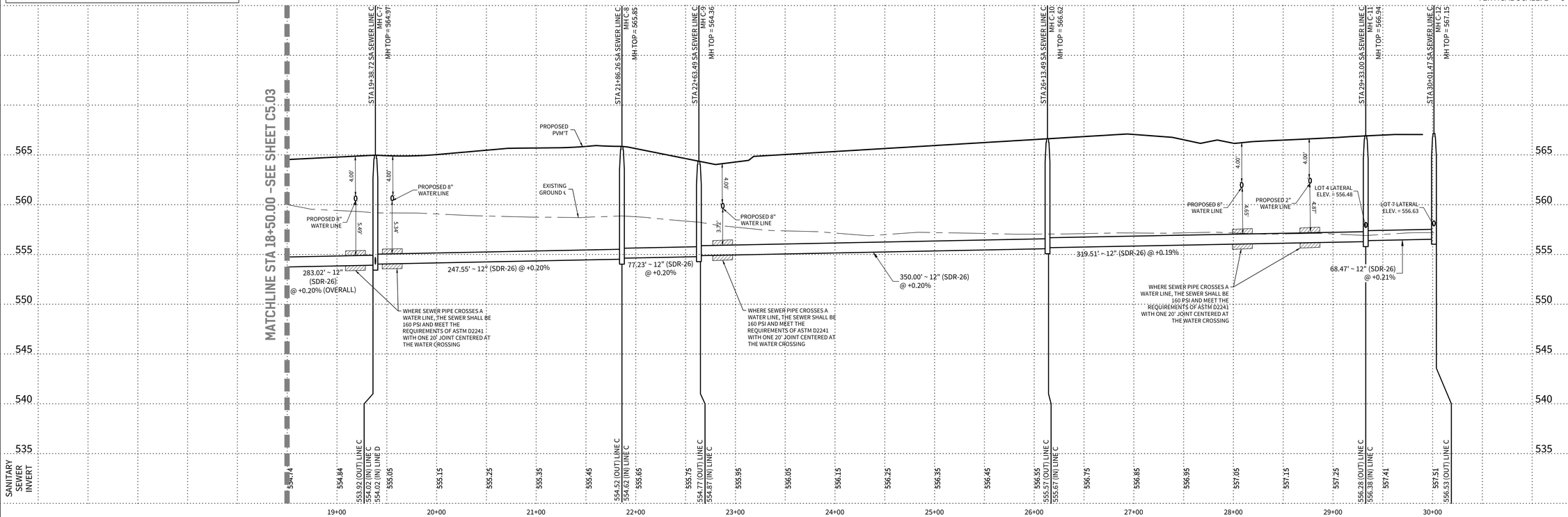


SA SEWER LINE C

STA. 18+50.00 TO STA. 29+17.91

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



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SCALE: 1"=50'
0 50 100

ZIGMOND TRACT UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE C

DATE
07/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

SAWS JOB NO.
XX-XXXX

C5.06

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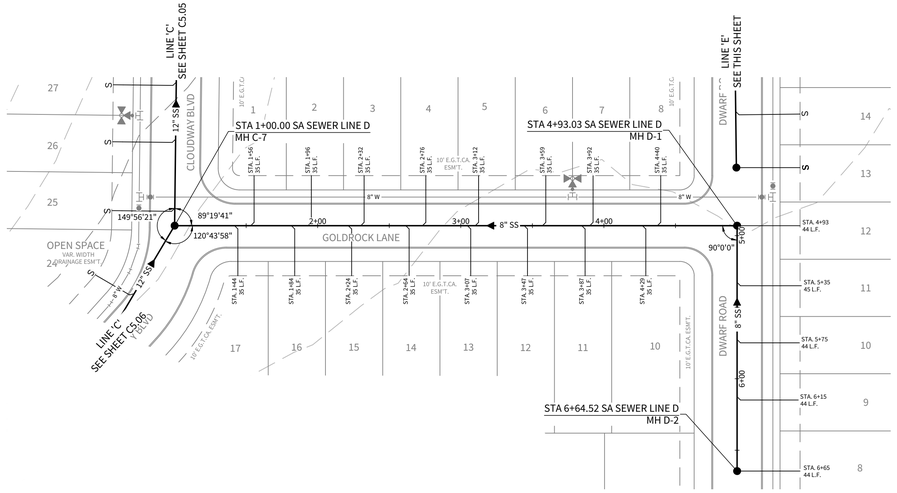
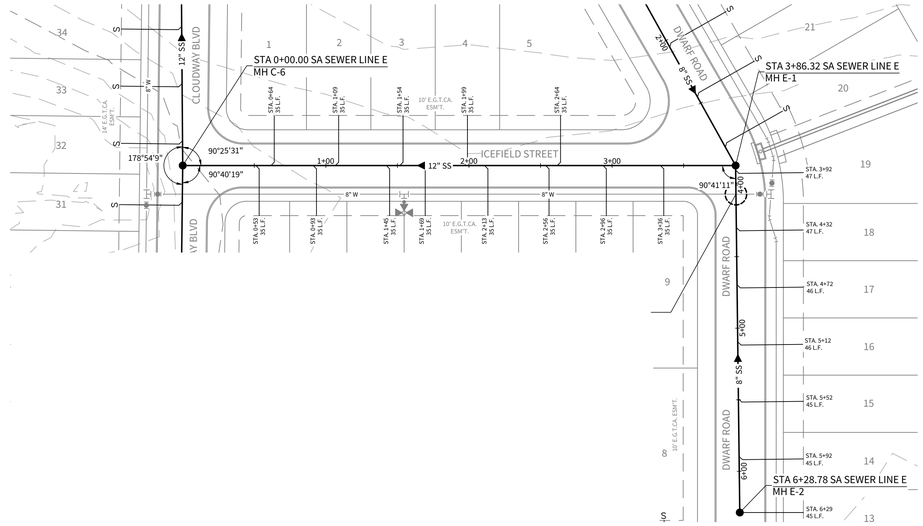
J:\DAN\DWG\13-DWGS\2 PSHEETS\C5A SANITARY SEWER PLAN & PROFILE - LINE 'C'.dwg, 2025/07/08 3:33pm, mtoda





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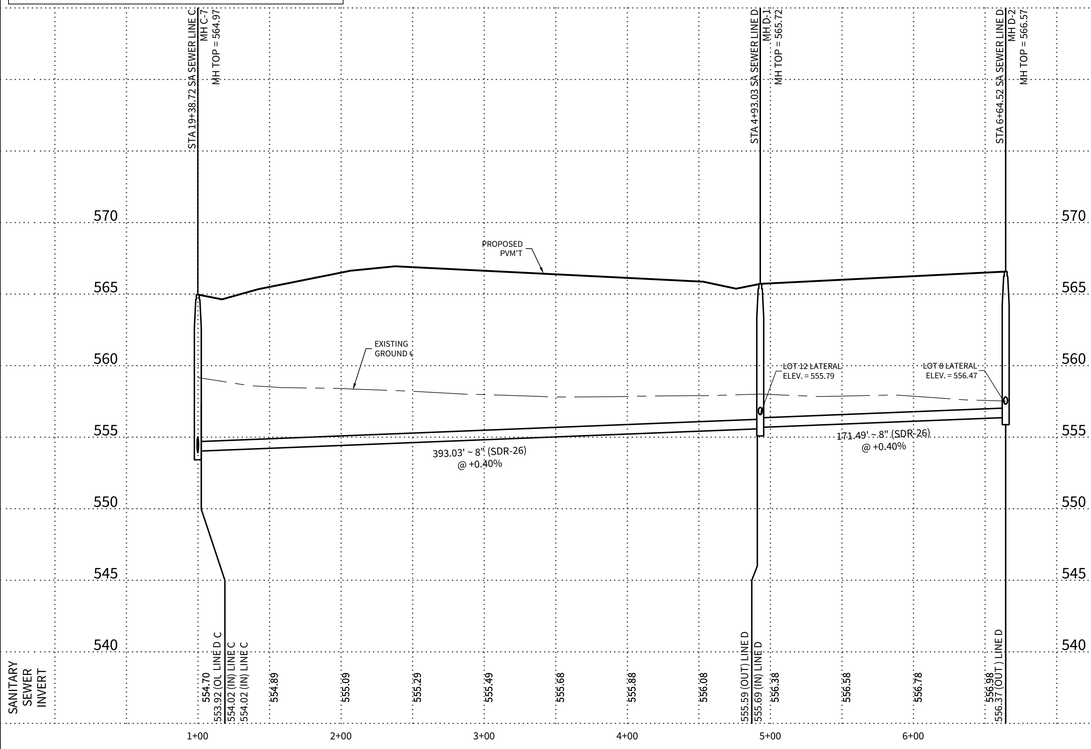
SA SEWER LINE D

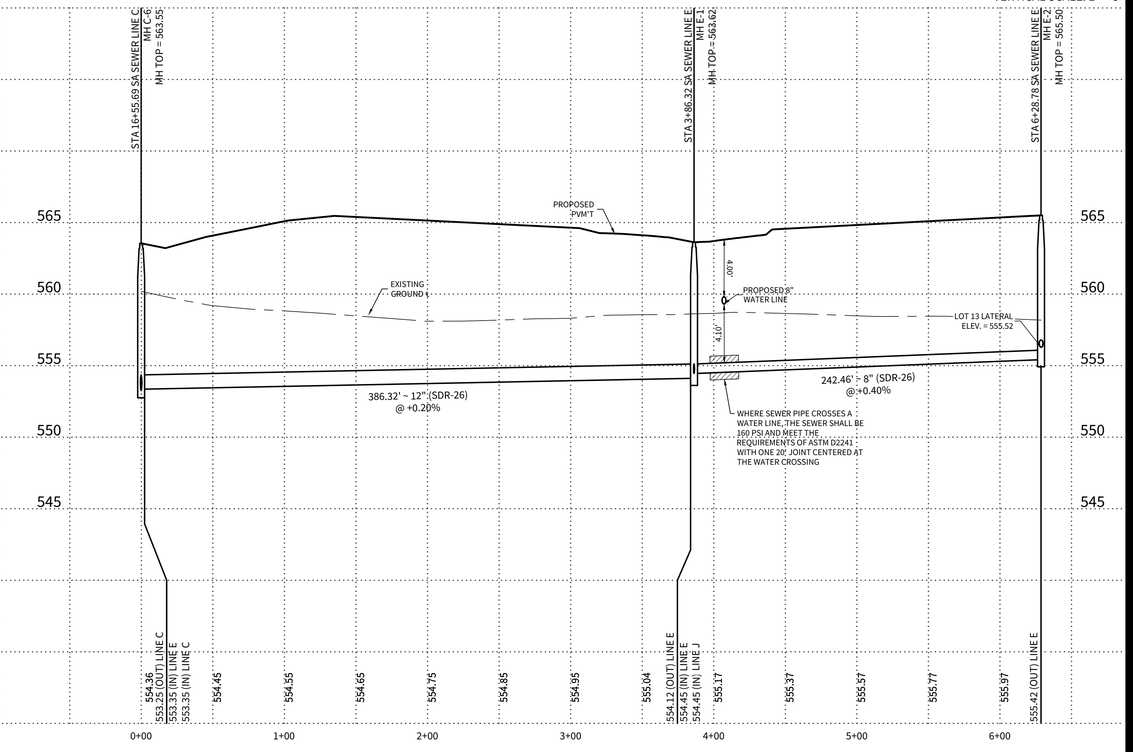
STA. 1+00.00 TO STA. 6+64.52

SA SEWER LINE E

STA. 00+00.00 TO STA. 6+28.78

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





SCALE: 1"=50'
0 50 100

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ZIGMOND TRACT
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE D & E

DATE
07/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

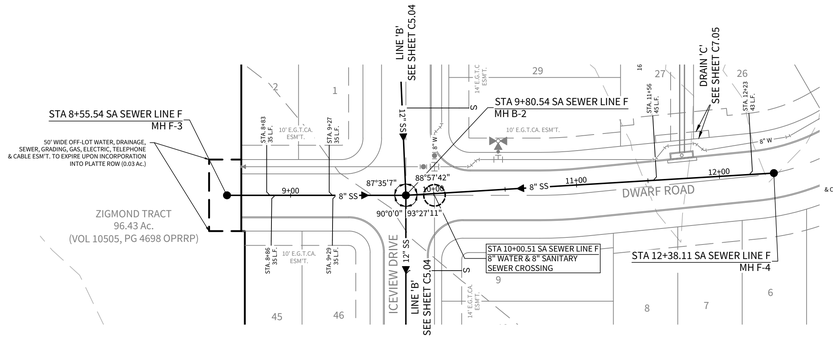
PLAT NO.
XX-XXXXXXXX

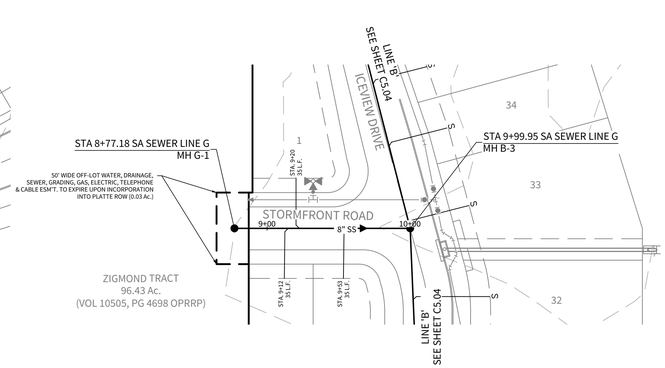
SAWS JOB NO.
XX-XXXX

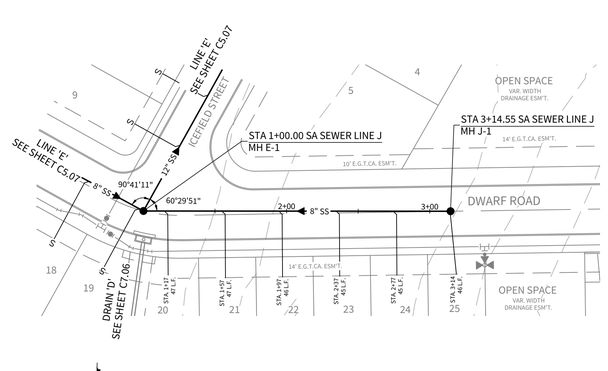
C5.07

P:\04408\DGN\LD-DWG\L4-Sheets\C4.07 SANITARY SEWER PLAN & PROFILE - LINE 'D' & 'E'.dwg, 2025/07/08 3:39pm, mwala

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







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SA SEWER LINE F

STA. 8+55.54 TO STA. 12+38.11

SA SEWER LINE G

STA. 8+77.18 TO STA. 9+99.95

SA SEWER LINE J

STA. 1+00.00 TO STA. 3+14.55

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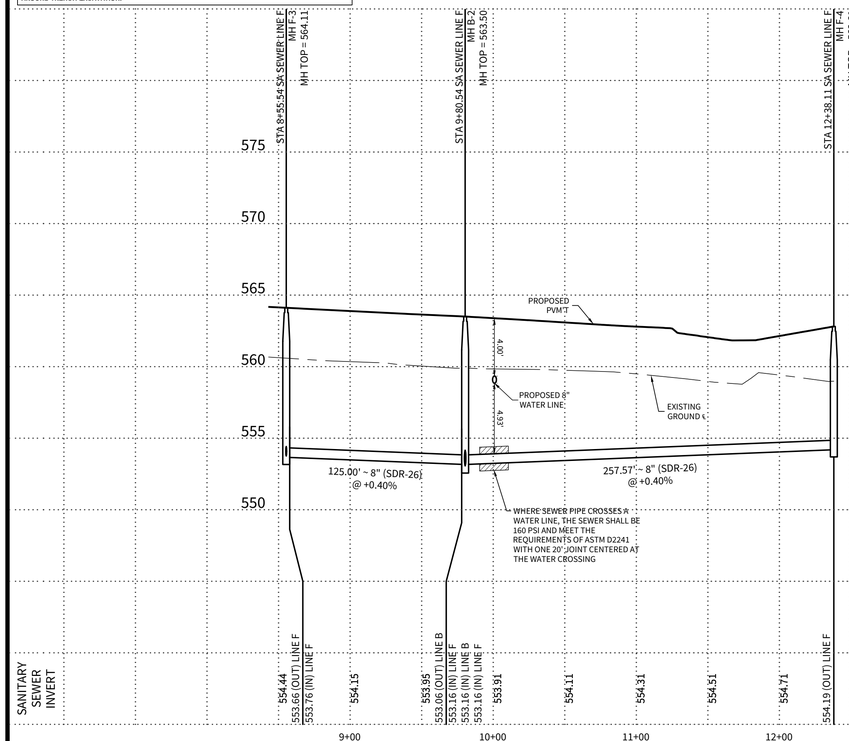
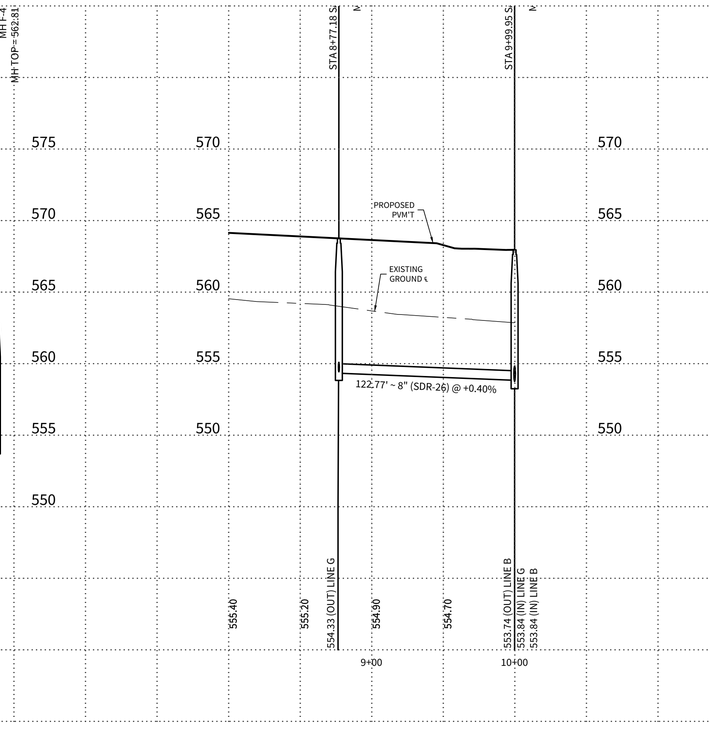
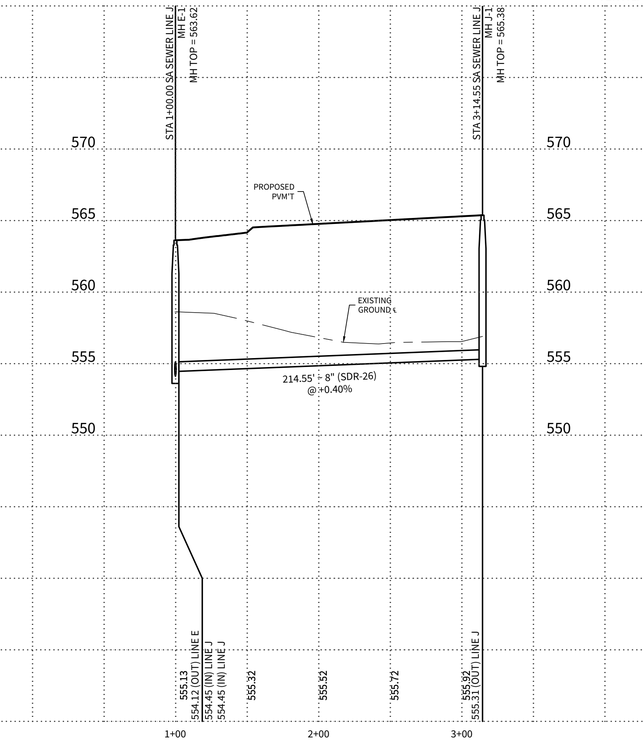
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'







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EST. 1980

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San Antonio, Texas 78231
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ZIGMOND TRACT UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE F,G & J

DATE
07/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
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LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

SAWS JOB NO.
XX-XXXX

C5.08

P:\04408\2025\2-SWD\4-Plans\CAD\SANITARY SEWER PLANS & PROFILE - LINE 'F & J'.dwg 2025/07/08 3:51pm mseda

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

GENERAL NOTES:

1. SAN ANTONIO RIVER AUTHORITY (RIVER AUTHORITY) STANDARD SPECIFICATIONS AND STANDARD DETAILS ARE PROVIDED FOR DESIGN AND CONSTRUCTION OF SEWER COLLECTION SYSTEMS MANAGED BY THE RIVER AUTHORITY.

2. AT ANY TIME, THESE STANDARD SPECIFICATIONS AND DETAILS MAY BE ALTERED OR SUPERSEDED BY THE GENERAL CONDITIONS, SUPPLEMENTAL CONDITIONS, PLANS OR PROJECT SPECIFICATIONS WITHIN THE CONTRACT DOCUMENT PER DIRECTION FROM THE RIVER AUTHORITY.

3. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY RIVER AUTHORITY AND COMPLY WITH THE CONTRACT DOCUMENTS AND THE FOLLOWING AS APPLICABLE:

   3.1. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM", TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30, PART 1, CHAPTER 217.

   3.2. CURRENT TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT), "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE".

   3.3. CURRENT RIVER AUTHORITY "STANDARD SPECIFICATIONS FOR SANITARY SEWER CONSTRUCTION".

   3.4. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION". CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL".

4. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE RIVER AUTHORITY INSPECTIONS DIVISION AT (210) 302-4200 FORTY EIGHT (48) HOURS PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL ALSO PROVIDE PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO ANY EXCAVATION OR CONSTRUCTION. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD BEFORE START OF PROJECT.

5. WORK SHALL NOT BE PERFORMED ON SATURDAYS, SUNDAYS, FEDERAL HOLIDAYS, RIVER AUTHORITY HOLIDAYS, BEFORE 7:30 AM, OR AFTER 4:30 PM, UNLESS PRIOR APPROVAL IS GRANTED BY THE RIVER AUTHORITY ENGINEER. REQUEST TO PERFORM WORK DURING THESE TIMES MUST BE EMAILED 48 HOURS IN ADVANCE TO UTILITIESDEVELOPMENT@SARIVERAUTHORITY.ORG.

6. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR IN THE PLANS BUT NOT INCLUDED IN THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM WHICH IT RELATES TO.

7. WORK COMPLETED BY CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF RIVER AUTHORITY WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTOR.

8. LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 48 HOURS PRIOR TO CONSTRUCTION REGARDLESS OF ILLUSTRATION ON THE PLANS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO RIVER AUTHORITY. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING UTILITIES AND REPAIRS WILL BE AT CONTRACTOR'S EXPENSE.

9. CERTAIN PORTIONS OF THE PROJECT MAY PARALLEL AND/OR CROSS EXISTING UTILITIES, AND CONTRACTOR IS REQUIRED TO PROTECT THESE UTILITIES. ADDITIONAL SUPPORTIVE SHORING MAY BE REQUIRED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL PERSONNEL ON SITE, EXISTING UTILITIES, AND FINISHED WORK THROUGHOUT THE PROJECT. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGES, AND REPAIRS WILL BE AT CONTRACTOR'S FULL EXPENSE.

10. WHERE WATER LINES AND NEW SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE LESS THAN 9 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 AND 30 TAC 290.

11. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.161, CPS MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND VALVES THAT ARE IN THE PROJECT AREAS.

12. A SAFE OVERHEAD CLEARANCE MUST BE MAINTAINED BETWEEN ALL OVERHEAD EQUIPMENT AND PERSONNEL. THE CONTRACTOR SHALL NOTIFY CPS AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION IN THE VICINITY OF CPS OVERHEAD LINES. CONTRACTOR SHALL MAINTAIN CPS RECOMMENDED CLEARANCE REQUIREMENTS.

13. ALL WORK IN THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) RIGHT-OF-WAY SHALL PROCEED DURING WORKING HOURS AGREED UPON BY RIVER AUTHORITY AND TXDOT INSPECTORS.

14. BEFORE THE START OF ANY CONSTRUCTION, CONTRACTOR SHALL FULLY DOCUMENT THE SITE WITH PHOTOS AND DIGITAL VIDEO WITH ONE COPY SUBMITTED TO RIVER AUTHORITY PRIOR TO STARTING WORK. THE PRE-CON SITE VIDEO SHALL PROVIDE ACCURATE DOCUMENTATION OF EXISTING CONDITIONS.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ORIGINAL OR BETTER CONDITION AS A RESULT OF DAMAGE DONE DURING THE PROJECT CONSTRUCTION.

16. ANY AND ALL FENCING, INCLUDING ELECTRIC FENCE, WHETHER OR NOT IDENTIFIED ON THE PLANS, MUST BE MAINTAINED AT ALL TIMES. ANY AND ALL DAMAGES DIRECTLY ATTRIBUTED TO THE CONTRACTOR MUST BE REPLACED TO EQUAL OR BETTER CONDITIONS AT THE CONTRACTOR'S EXPENSE AND AS APPROVED BY THE RIVER AUTHORITY INSPECTOR. GATES, OR GAPS IN THE FENCING IF APPROVED, MUST BE PROVIDED AT ALL LOCATIONS WHERE THE SEWER LINE EASEMENT CROSSES FENCING. FENCING REQUIRED TO MAINTAIN LIVESTOCK MUST BE MAINTAINED AT ALL TIMES. ALL GATES SHALL BE APPROVED PRIOR TO INSTALLATION.

17. CONTRACTOR MUST AVOID DAMAGE TO ADJACENT LAND OUTSIDE THE IDENTIFIED CONSTRUCTION LIMITS OR EASEMENTS. ANY CLAIMS DIRECTLY ATTRIBUTED TO THE CONTRACTOR RESULTING FROM STRAYING BEYOND THE CONSTRUCTION LIMITS MUST BE SETTLED BY THE CONTRACTOR TO THE SATISFACTION OF RIVER AUTHORITY AND THE APPROPRIATE LANDOWNER.

18. CONTRACTOR MUST MAINTAIN ACCESS FOR PRIVATE INDIVIDUALS AND BUSINESSES AT ALL TIMES. IF NORMAL ACCESS IS DAMAGED DURING CONSTRUCTION, THE CONTRACTOR MUST REPLACE THE ACCESS TO EQUAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE AND AS APPROVED BY RIVER AUTHORITY.

19. CONTRACTOR MUST COMPLY WITH TEXAS GOVERNMENT CODE SECTION 2166.303 UNIFORM TRENCH SAFETY CONDITIONS.

20. CONTRACTOR SHALL NOT BACKFILL ANY TRENCHES UNTIL INSPECTION CAN BE CONDUCTED BY THE RIVER AUTHORITY. NO OPEN TRENCHES SHALL BE PERMITTED OVERNIGHT. ALL ENDS OF OPEN PIPE SHALL BE PLUGGED OVERNIGHT.

21. CONTRACTOR SHALL HAVE THE LATEST APPROVED COPY OF PLANS AND SPECIFICATIONS ON SITE AT ALL TIMES FOR REFERENCE.

22. NO TREES SHALL BE REMOVED AS PART OF THIS PROJECT UNLESS OTHERWISE SPECIFIED IN THE PLANS.

23. FOR PORTIONS OF THE CONSTRUCTION THAT ARE WITHIN THE LIMITS OF THE 100-YEAR FLOODPLAIN, THE CONTRACTOR IS REQUIRED TO KEEP THE CHANNEL CLEAR OF POTENTIAL OBSTRUCTIONS TO FLOOD FLOWS. POTENTIAL OBSTRUCTIONS INCLUDE HEAVY CONSTRUCTION EQUIPMENT, TEMPORARY ROADS ACROSS CHANNEL, EXCAVATED MATERIAL, STOCKPILED DEBRIS, AND ALL OTHER ITEMS DEEMED UNACCEPTABLE BY RIVER AUTHORITY. UNDER THREATENING WEATHER CONDITIONS AND WHERE FLOODING IS LIKELY, OBSTRUCTIONS SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO RIVER AUTHORITY. THE CONTRACTOR ASSUMES ALL RISK FOR UNFINISHED WORK. NO EQUIPMENT OR MATERIALS SHALL BE STOCKPILED IN THE 100-YEAR FLOODPLAIN OVERNIGHT.

24. NO WASTE MATERIAL SHALL BE PLACED IN EXISTING DRAINAGE AREAS THAT WILL BLOCK OR ALTER FLOW LIMITS OR NATURAL DRAINAGE.

25. IF A THREATENED OR ENDANGERED PLANT OR ANIMAL SPECIES AND/OR CULTURAL/ARCHAEOLOGICAL RESOURCES ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY THE APPROPRIATE PERSONNEL.

SEWER NOTES:

26. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO SANITARY SEWER OVERFLOW (SSO) OCCURS AS A RESULT OF THE WORK. ALL PERSONNEL RESPONSIBLE FOR SSO PREVENTION AND CONTROL SHALL BE TRAINED ON THE PROPER RESPONSE. SHOULD AN SSO OCCUR, THE CONTRACTOR SHALL:

   26.1. IDENTIFY THE SOURCE OF THE SSO AND ATTEMPT TO ELIMINATE ANY ADDITIONAL SPILLAGE.
   26.2. NOTIFY RIVER AUTHORITY CONSTRUCTION INSPECTIONS DIVISION AT (210) 302-4200 AND ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.
   26.3. CONTAIN SEWAGE FROM THE SSO TO PREVENT CONTAMINATION OF WATERWAYS.
   26.4. CLEAN UP THE SPILL AREA AND REMOVE CONTAMINATED MATERIALS.
   26.5. DISINFECT THE AREA OF THE SPILL THE PROPER MIXTURE OF HTH CHLORINE AND WATER.
   26.6. CLEAN THE AFFECTED SEWER LINE AND REMOVE ANY DEBRIS.
   26.7. IDENTIFY AND TRAIN PERSONNEL RESPONSIBLE FOR SPILLAGE PREVENTION AND CONTROL.
   26.8. NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TCEQ AND RIVER AUTHORITY.

27. THE CONTRACTOR SHALL PROVIDE BYPASS PUMPING OF SEWAGE AROUND EACH SEGMENT OF PIPE TO BE REPLACED. CONTRACTOR SHALL HAVE STANDBY PUMPS AVAILABLE TO BYPASS FLOW IN CASE PRIMARY PUMP FAILS. THE CONTRACTOR SHALL PROVIDE A SEQUENCE OF BYPASS PUMPING FOR REVIEW AND APPROVAL BY RIVER AUTHORITY. THE CONTRACTOR SHALL ALSO PROVIDE A DETAILED SKETCH SHOWING THE LOCATION OF BYPASS PUMPING; SPECIFICATIONS FOR THE PUMPING EQUIPMENT; AND TYPE, SIZE, CAPACITY AND NUMBER OF PUMPS REQUIRED TO HANDLE THE PEAK WET WEATHER FLOW.

28. CONTRACTOR WILL MAINTAIN SERVICE TO ALL EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR WILL CLEAN ALL DEBRIS, GRAVEL, DIRT, ETC. OUT OF MANHOLES AND FIX ANY STOPPAGES CAUSED BY DEBRIS DURING CONSTRUCTION AT CONTRACTOR'S EXPENSE. ANY DAMAGE TO EXISTING MANHOLES OR SEWER MAIN WILL BE CORRECTED AT CONTRACTOR'S EXPENSE. CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING OR NEW RINGS, COVERS, OR CONES FROM EQUIPMENT AND MATERIALS USED OR TAKEN THROUGH THE WORK AREA. IF AN EXISTING OR NEW MANHOLE COVER, RING, OR CONE IS DAMAGED BY THE CONTRACTOR, IT SHALL BE REPLACED AS DIRECTED BY THE RIVER AUTHORITY INSPECTOR. MANHOLES WILL NEED TO BE RESEALED WITH RIVER AUTHORITY APPROVED SEALANT. IF SEAL COATING IS COMPROMISED, CONTRACTOR WILL HAVE MANHOLE RECOATED AND RESEAL ALL LEAKS AT CONTRACTOR EXPENSE.

29. CONTRACTOR TO ENSURE ALL PLUGS USED TO PLUG SEWER LINES WHILE TESTING THE PROJECT ARE LABELED, MARKED OR TAGGED. THE CONTRACTOR SHALL RECORD HOW MANY PLUGS ARE BEING USED, AS WELL AS THE LOCATION AND IDENTIFICATION OF EACH PLUG. CONTRACTOR WILL REPORT TO PROJECT INSPECTOR OF ANY LOST OR UNRESTRAINED PLUGS. CONTRACTOR SHALL ONLY BE ALLOWED TO USE SCREW TYPE PLUG ON PROJECT.

30. CONTRACTOR WILL BE HELD LIABLE FOR ANY DAMAGE TO SEWER COLLECTION SYSTEM, WASTEWATER TREATMENT EQUIPMENT, STOPPAGES, OVER-FLOWS, OR BACKUPS INTO HOMES CAUSED BY LOST OR RUNAWAY SEWER PLUGS.

31. RIVER AUTHORITY IS NOT RESPONSIBLE FOR ANY ABNORMALITIES ON STUB OUT, INVERT, GRADE OR SLOPE FOR ANY EXISTING MANHOLE TIE-IN OR SERVICE LATERALS. CONTRACTOR SHALL BE RESPONSIBLE FOR RE-CONSTRUCTION, IF NECESSARY.

MANHOLE NOTES:

32. ALL MANHOLES SHALL BE CONSTRUCTED PER LATEST DETAILED DRAWINGS AND SPECIFICATIONS, UNLESS AN EXCEPTION IS NOTED.

33. PENETRATION INTO THE MANHOLE WILL BE CORE DRILLED. ANY DAMAGE TO EXISTING MANHOLE WILL BE REPAIRED AT CONTRACTOR'S EXPENSE. IF EXISTING SEWER MANHOLE SEAL COATING IS COMPROMISED, ALL OF THE MANHOLE WILL BE RESEALED AND RECOATED PER CURRENT SPECIFICATIONS AND APPROVED PRODUCT LIST.

34. IF ANY EXISTING MANHOLES CONNECTED WITH THIS PROJECT ARE FOUND TO HAVE INFILTRATION, THE MANHOLES SHALL BE SEALED AND TESTED AT CONTRACTORS EXPENSE.

35. UPON REQUEST FROM THE RIVER AUTHORITY, CONTRACTOR SHALL PROVIDE SAMPLE VERIFYING PROPER INSTALLATION OF FLOWABLE BACKFILL, INCLUDING, BUT NOT LIMITED TO CORE SAMPLES.

SANITARY SEWER PIPING:

36. THE TYPE AND DESCRIPTION OF THE PIPE IS SHOWN ON THE PLANS. REFER TO RIVER AUTHORITY SPECIFICATIONS AND APPROVED PRODUCT LIST FOR MATERIALS, STIFFNESS, AND TYPE.

37. SIZES AND GRADES FOR SANITARY SEWER SHALL BE AS REQUIRED BY THE RIVER AUTHORITY ENGINEER.

38. NO SANITARY SEWERS, OTHER THAN LATERALS AND FORCE MAINS, SHALL BE LESS THAN EIGHT (8) INCH IN DIAMETER.

SEWER SERVICE LATERALS:

39. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN PROVIDED, THE CONNECTION MUST BE CONDUCTED PER THE LATEST RIVER AUTHORITY STANDARD DETAILS AND APPROVED PRODUCT LIST. REFER TO THE RIVER AUTHORITY APPROVED PRODUCTS LIST FOR ACCEPTABLE FITTINGS AND CONNECTIONS.

40. ALL RESIDENTIAL SERVICE LATERALS SHALL BE SDR 26 PVC WITH RATING OF 115 PSI OR 160 PSI, DETERMINED BY RIVER AUTHORITY SPECIFICATION. LINE SHALL BE EXTENDED TO THE PROPERTY LINE AND CAPPED AND SEALED. ATTACH SEWER BURIAL TAPE TO THE END OF ALL SEWER LATERALS AND BRING UP TO THE GROUND LEVEL FOR MARKER (GREEN). (SEE HOUSE LATERALS DETAILS).

41. UPON REQUEST FROM THE SAN ANTONIO RIVER AUTHORITY, CONTRACTOR SHALL PROVIDE SAMPLE VERIFYING PROPER INSTALLATION OF FLOWABLE BACKFILL, INCLUDING, BUT NOT LIMITED TO CORE SAMPLES.

SANITARY SEWER PIPING:

42. THE TYPE AND DESCRIPTION OF THE PIPE IS SHOWN ON THE PLANS. REFER TO LATEST RIVER AUTHORITY SPECIFICATIONS AND APPROVED PRODUCT LIST FOR MATERIALS, STIFFNESS, AND TYPE.

43. SIZES AND GRADES FOR SANITARY SEWER SHALL BE AS REQUIRED BY THE RIVER AUTHORITY ENGINEER.

44. NO SANITARY SEWERS, OTHER THAN LATERALS AND FORCE MAINS, SHALL BE LESS THAN EIGHT (8) INCH IN DIAMETER.

SANITARY SEWER TESTING:

45. TESTING SHALL NOT BE CONDUCTED UNTIL ALL OTHER UTILITIES WITHIN THE VICINITY OF SANITARY SEWER ARE FULLY INSTALLED.

46. TESTING SHALL BE CONDUCTED PER LATEST RIVER AUTHORITY SPECIFICATIONS AND SHALL NOT BEGIN WITHOUT 48 HOURS NOTICE TO RIVER AUTHORITY INSPECTOR.

47. A COPY OF ALL TESTING REPORTS, INCLUDING BACKFILL COMPACTION, SHALL BE FORWARDED TO THE RIVER AUTHORITY IMMEDIATELY.

48. DENSITY TESTING WILL BE REQUIRED ON ALL SANITARY SEWER TRENCHES INCLUDING SERVICE LATERALS. TESTING FOR SERVICE LATERALS TO BE IDENTIFIED BY RIVER AUTHORITY INSPECTOR AT RANDOM. DENSITY TESTING FOR SERVICE LATERALS SHALL NOT EXCEED 25% OF TOTAL NUMBER OF LATERALS.

EXCAVATION:

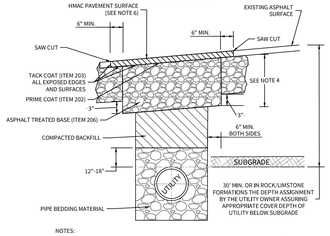
49. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/ EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTORS 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. SPECIALLY, CONTRACTOR AND/OR CONTRACTORS 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.

50. IF A SAFETY VIOLATION IS NOTED BY A RIVER AUTHORITY INSPECTOR, THE RIVER AUTHORITY RESERVES THE RIGHT TO STOP WORK.

51. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION.

52. CONTRACTOR IS RESPONSIBLE FOR UPDATING AND MAINTAINING ALL FIELD UTILITY MARKINGS.

TRENCH REPAIRS IN EXISTING FLEXIBLE PAVEMENTS N.T.S.
STANDARD DRAWING NO.: 8-4



NOTES:
1. THE EXISTING PAVING SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE A MINIMUM OF 12" WIDER THAN UNDISTURBED SIDES OF THE TRENCH SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
2. ANY CONCRETE PAVING SHALL BE SAW CUT 6" WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT PAVEMENT SURFACE WITH COLD MIX ASPHALT PAVEMENT PATCH MIXTURE MEMO.
4. LOCAL STREETS SHALL BE 10" AND MAJOR/MINOR STREETS SHALL BE 12".
5. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH A BASE THICKNESS OF 10" OR A THICKNESS MATCHING EXISTING, WHICHEVER IS GREATER.
6. REPLACEMENT AC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION:
   A) MIN. 2" HMAC TYPE "D" FOR TENCH REPAIR IN LOCAL/RESIDENTIAL STREETS.
   B) MIN. 2" HMAC TYPE "C" MODIFIED FOR TRENCH REPAIR IN COLLECTOR/ARTERIAL STREETS.
   SEE ITEM 340, SECTION 403.2.2.
7. CLASS "A" PCC CONCRETE (ITEM 403) OR CONTROLLED LOW STRENGTH MATERIAL (CLSM) MAY BE SUBSTITUTED IN THESE REPAIRS FOR THE FLOWABLE BASE AND COMPACTED BACKFILL. PCC CONCRETE GREATER THAN A 2 SACK MIX WILL NOT BE ALLOWED.

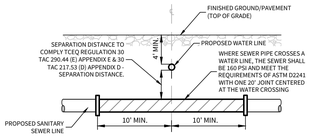
CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT AN 8" SANITARY SEWER LINE EXIST ALONG _____. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

TRENCH EXCAVATION PROTECTION

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

NOTES:
1. **CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.**
2. **ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.**



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

SAN ANTONIO RIVER AUTHORITY
100 E. GUENTHER STREET
SAN ANTONIO, TEXAS 78283

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
DATE:
FILE:

NO.	REVISION	DATE	BY

REVISED 3/31/2024

GENERAL NOTES

SHEET 1 OF 1

CUDEENGINEERS.COM

ZIGMOND TRACT
UNIT 1

SANITARY SEWER GENERAL NOTES

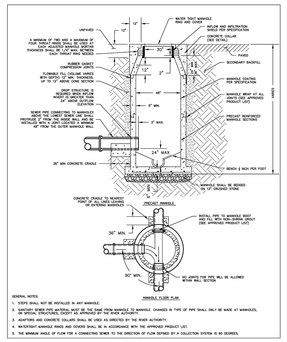
07/09/2025

PLAT NO.
XX-XXXXXXXX

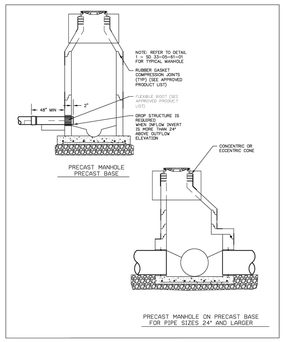
SAWS JOB NO.
XX-XXXX

C5.D1

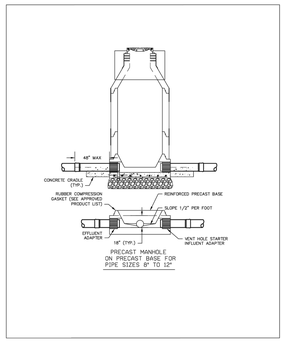
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



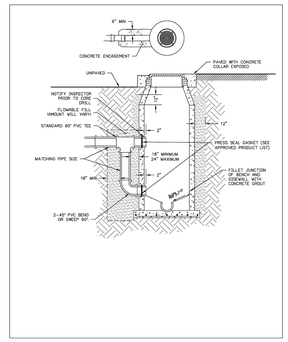
PRECAST MANHOLE TYPICAL DETAIL — APRIL 2012 — MAY 2024 — SD 33-05-61-01 — 1 OF 28



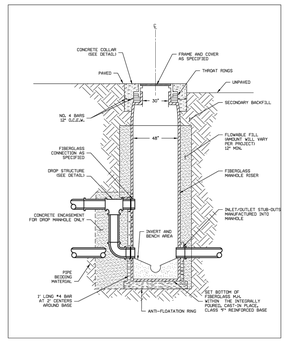
2 OF 28



2 OF 28



APRIL 2012 — MAY 2024 — SD 33-05-61-03 — 3 OF 28



APRIL 2012 — MAY 2024 — SD 33-05-61-04 — 4 OF 28

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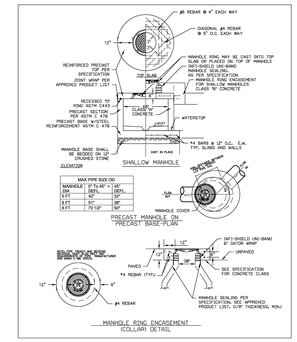
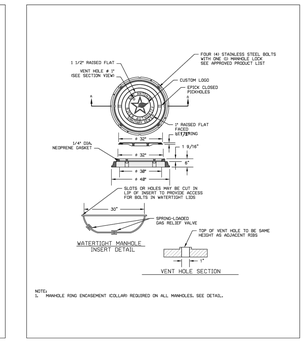


MISCELLANEOUS MANHOLE DETAILS — MAY 2024 — SD 33-05-61-05 — 5 OF 28



VENTED MANHOLE RING AND COVER — MAY 2024 — SD 33-05-61-06 — 6 OF 28

MAY 2024 — SD 33-05-07-01 — 7 OF 28

MAY 2024 — SD 33-06-08-01 — 8 OF 28

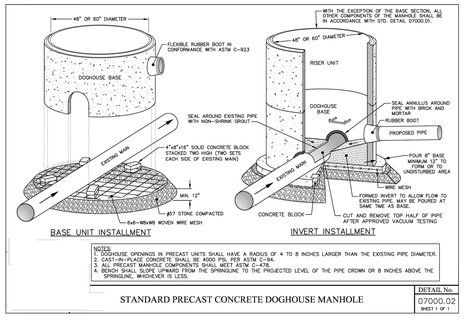
MAY 2024 — SD 33-05-05-01 — 9 OF 28

APRIL 2012 — MAY 2024 — SD 33-31-00-15 — 25 OF 28

MAY 2024 — SD 33-31-00-16 — 26 OF 28

MAY 2024 — SD 33-31-00-17 — 27 OF 28

STANDARD CLEANOUT DETAIL — MAY 2024 — SD 33-05-61-01 — 28 OF 28



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CUDE ENGINEERS — EST. 1980

ZIGMOND TRACT
UNIT 1

SEWER STANDARD DETAILS

07/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

PLAT NO.
XX-XXXXXXXX

SAWS JOB NO.
XX-XXXX

C5.D2

P:\24400\SD\13 DWG\4 Sheets\C4.D1 SEWER STANDARD DETAILS.dwg, 7/9/2025 11:23:24 AM, mirata

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

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

KEYNOTES:

1 CONTRACTOR TO FOLLOW HTH METHOD FOR DISINFECTION OF NEW PIPE SEE ECSUD GENERAL NOTE 33.

AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 8" WATER MAIN INTO EXIST. 8" WATER MAIN WITH ±5 L.F. OF 8" WATER MAIN. CUT AS REQUIRED.

8" VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE

1 - 8" SOLID SLEEVE, M.J.

1 - 2" BLOWOFF ASSEMBLY (TEMP.)
1 - 8" M.J. X 2" THR. DI. ECCENTRIC REDUCER (TEMP.)
SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2) SHT C6.D3

2 1 - STD FIRE HYDRANT ASSEMBLY (SEE E.C.S.U.D. STD. DWG DET-834-01 SHT C6.D1)
1 - 8" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J. (FIRE HYDRANT SIDE)
1 - 6" VALVE BOX, COMPLETE
1 - 6" D.I. PIPE, CUT AS REQ'D.

3 1 - 2" BLOWOFF ASSEMBLY (PERM.)
1 - 2" X 2" TEE, M.J. ANCHOR
SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2) SHT C6.D3

4 1 - STD FIRE HYDRANT ASSEMBLY
SEE E.C.S.U.D. STD. DWG DET-834-01 SHT C6.D2
1 - 12" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J. (FIRE HYDRANT SIDE)
1 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQ'D.

5 CONTRACTOR TO INSTALL SAMPLING STATION
SEE ECSUD DETAL 824-04 SHEET C6.01
(COORDINATE LOCATION WITH OWNER AND LANDSCAPE PLANS)

LEGEND

- PROPOSED WATER MAIN (C-900) — W
- EXISTING STANDARD FIRE HYDRANT
- PROPOSED STANDARD FIRE HYDRANT
- EXISTING WATER MAIN — W
- PROPOSED STANDARD GATE VALVE
- PROPOSED PERMANENT BLOWOFF
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED WATER EASMENT
- RESTRAINED LENGTH OF PIPE — X
- 1 " IRRIGATION SERVICE — IRR
- 1 " DOMESTIC SERVICE (REFER TO ECSUD DTL 824-05) — W

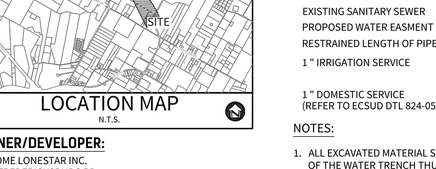
NOTES:

1. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE WATER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
2. THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES, INCLUDING SERVICE LATERALS AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.

EAST CENTRAL SUD	210-649-2383
BEXAR COUNTY PUBLIC WORKS	210-207-2800
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
CITY PUBLIC SERVICE	"
AT&T	"
TIME WARNER	"

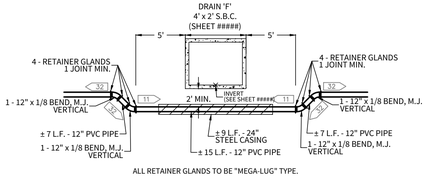
JOINT RESTRAINT DIMENSION TABLE

TYPE	MAIN SIZES	RESTRAINT LENGTH(S)
TEE	8" x 6"	59' ALONG BRANCH OF TEE
TEE	8" x 8"	77' ALONG BRANCH OF TEE
TEE	12" x 6"	59' ALONG BRANCH OF TEE
TEE	12" x 8"	77' ALONG BRANCH OF TEE
TEE	12" x 12"	109' ALONG BRANCH OF TEE
CROSS	12" x 12"	109' ALONG BRANCH OF CROSS
REDUCER	12" x 8"	58'
DEAD END / IN-LINE VALVE	6"	59'
DEAD END / IN-LINE VALVE	8"	77'
HORIZONTAL OFFSET	8" x 1/8 BEND	12' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	8" x 1/16 BEND	6' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	8" x 1/32 BEND	3' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	12" x 1/4 BEND	43' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	12" x 1/8 BEND	18' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	12" x 1/16 BEND	8' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	12" x 1/32 BEND	4' ON BOTH SIDES OF BEND



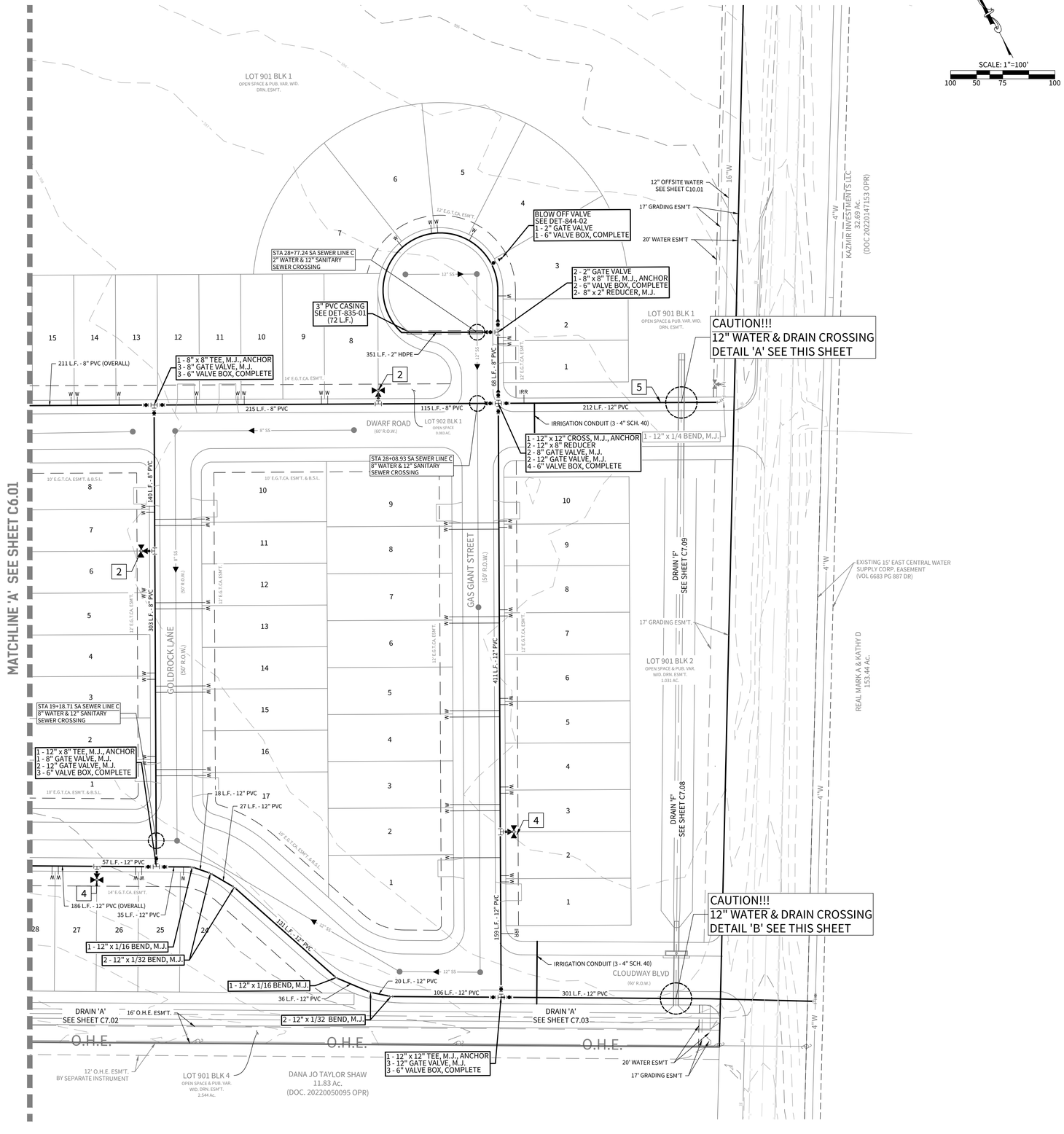
ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

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



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

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



CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

ZIGMOND TRACT UNIT 1

WATER DISTRIBUTION PLAN

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
1.
2.
3.
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5.
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7.
8.
9.
10.

10/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

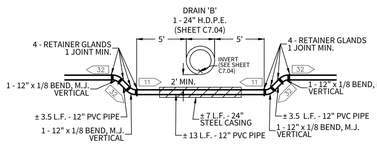
C6.00

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

LOCATION MAP
N.T.S.

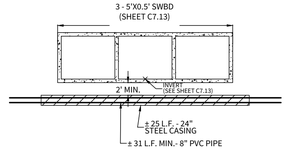
LEGEND

- PROPOSED WATER MAIN (C-900) — W
- EXISTING STANDARD FIRE HYDRANT
- PROPOSED STANDARD FIRE HYDRANT
- EXISTING WATER MAIN — W
- PROPOSED STANDARD GATE VALVE
- PROPOSED PERMANENT BLOWOFF
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER — EX.8"SS
- PROPOSED WATER EASMENT
- RESTRAINED LENGTH OF PIPE — X
- 1 " IRRIGATION SERVICE — IRR
- 1 " DOMESTIC SERVICE — W

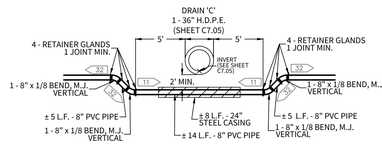


ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

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

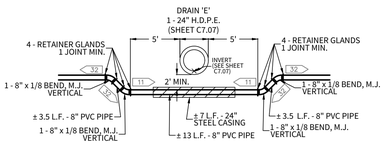


DETAIL 'D': DRAIN 'K' / WATER CROSSING
SIDE VIEW N.T.S.



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

DETAIL 'E': DRAIN 'C' / WATER CROSSING
SIDE VIEW N.T.S.



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

DETAIL 'F': DRAIN 'E' / WATER CROSSING
SIDE VIEW N.T.S.

OWNER/DEVELOPER:
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

KEYNOTES:

1. CONTRACTOR TO FOLLOW HTH METHOD FOR DISINFECTION OF NEW PIPE. SEE ECSUD GENERAL NOTE 33.
   AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 8" WATER MAIN INTO EXIST. 8" WATER MAIN WITH ±5 L.F. OF 8" WATER MAIN. CUT AS REQUIRED.
   8" VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE
   1 - 8" SOLID SLEEVE, M.J.
   1 - 2" BLOWOFF ASSEMBLY (TEMP.)
   1 - 8" M.J. X 2" THR. DI. ECCENTRIC REDUCER (TEMP.)
   SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2) SHT C6.D3
2. 1 - STD FIRE HYDRANT ASSEMBLY (SEE E.C.S.U.D. STD. DWG DET-834-01 SHT C6.D1)
   1 - 8" x 6" TEE, M.J., ANCHOR
   1 - 6" x 1/4 BEND, M.J.
   1 - 6" GATE VALVE, M.J. (FIRE HYDRANT SIDE)
   1 - 6" VALVE BOX, COMPLETE
   1 - 6" D.I. PIPE, CUT AS REQ'D.
3. 1 - 2" BLOWOFF ASSEMBLY (PERM.)
   1 - 2" X 2" TEE, M.J. ANCHOR
   SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2) SHT C6.D3
4. 1 - STD FIRE HYDRANT ASSEMBLY
   SEE E.C.S.U.D. STD. DWG DET-834-01 SHT C6.D1
   1 - 12" x 6" TEE, M.J., ANCHOR
   1 - 6" x 1/4 BEND, M.J.
   1 - 6" GATE VALVE, M.J. (FIRE HYDRANT SIDE)
   1 - 6" VALVE BOX, COMPLETE
   1 - STD. FIRE HYDRANT
   1 - 6" D.I. PIPE, CUT AS REQ'D.

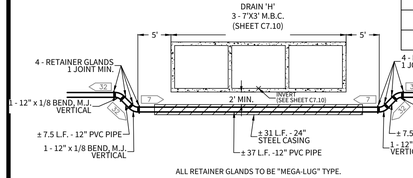
NOTES:

1. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE WATER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
2. THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES, INCLUDING SERVICE LATERALS AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.

EAST CENTRAL SUD	210-649-2383
BEXAR COUNTY PUBLIC WORKS	210-207-2800
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
CITY PUBLIC SERVICE	"
AT&T	"
TIME WARNER	"

JOINT RESTRAINT DIMENSION TABLE

TYPE	MAIN SIZES	RESTRAINT LENGTH(S)
TEE	8" x 6"	59' ALONG BRANCH OF TEE
TEE	8" x 8"	77' ALONG BRANCH OF TEE
TEE	12" x 12"	109' ALONG BRANCH OF TEE
CROSS	8" x 8"	77' ALONG BRANCH OF CROSS
DEAD END / IN-LINE VALVE	6"	59'
DEAD END / IN-LINE VALVE	8"	77'
HORIZONTAL OFFSET	8" x 1/8 BEND	12' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	8" x 1/16 BEND	6' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	8" x 1/32 BEND	3' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	12" x 1/8 BEND	18' ON BOTH SIDES OF BEND
HORIZONTAL OFFSET	12" x 1/16 BEND	8' ON BOTH SIDES OF BEND

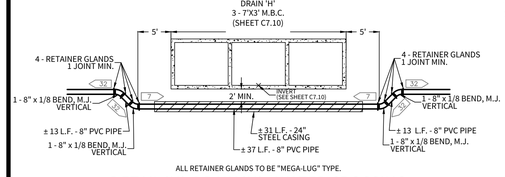


ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

DETAIL 'G': DRAIN 'H' / WATER CROSSING
SIDE VIEW N.T.S.

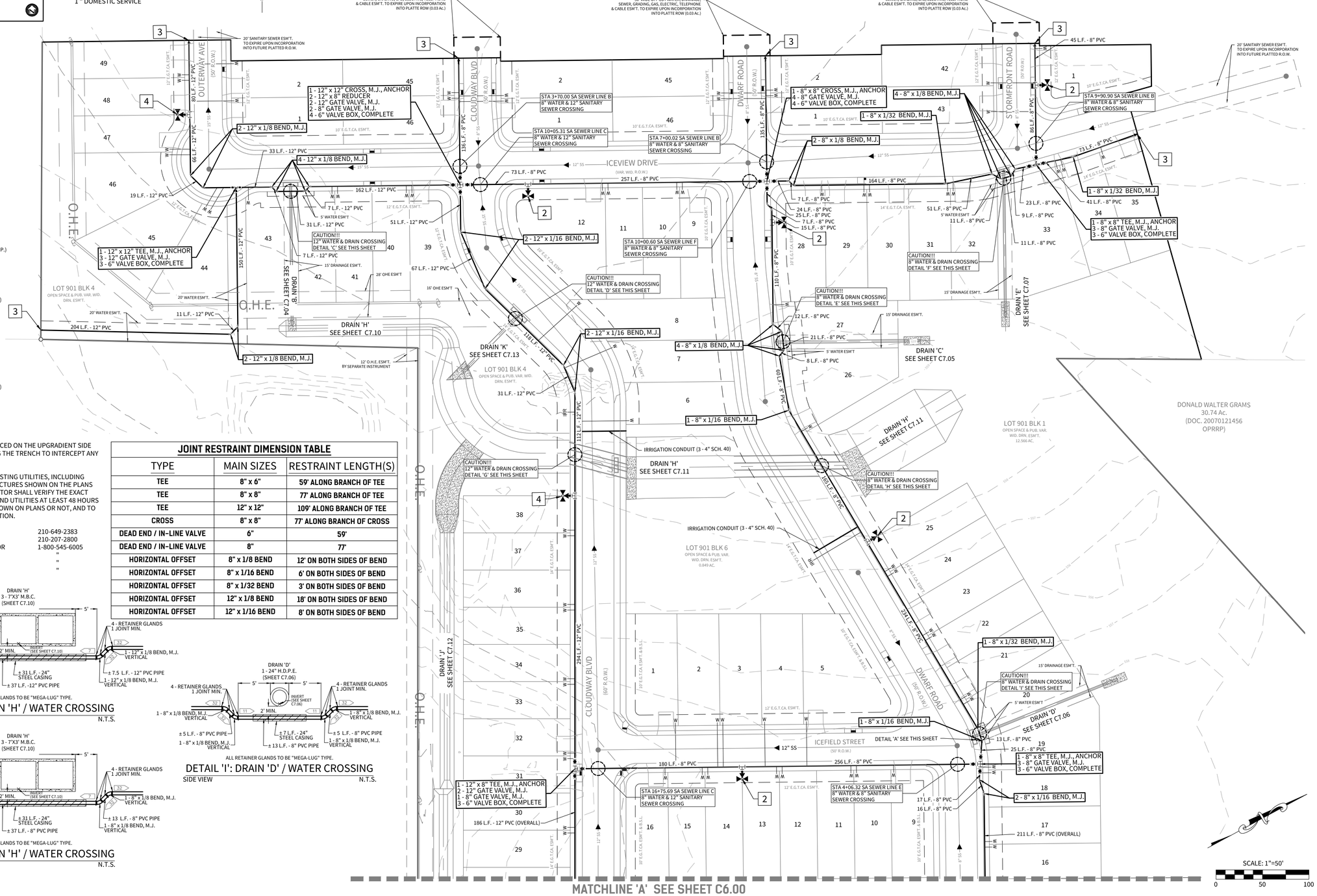
ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

DETAIL 'I': DRAIN 'D' / WATER CROSSING
SIDE VIEW N.T.S.



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

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



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

ZIGMOND TRACT UNIT 1

WATER DISTRIBUTION PLAN

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/09/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C6.01

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TESTING OF PRESSURE PIPELINES

1.0 DESCRIPTION

This item shall govern the furnishing of all labor, materials, tools, equipment and related items required to perform hydrostatic testing of Ductile Iron and Polyvinyl Chloride (PVC) pressure pipelines for integrity and leakage.

2.0 MATERIALS

Not applicable.

3.0 CONSTRUCTION METHODS

A. For Ductile Iron Pipe, make hydrostatic pressure and leakage tests on entire pipeline in accordance with AWWA Standard C600-99, Section 5.2.

B. For PVC Pipe, make hydrostatic pressure and leakage tests on entire pipeline in accordance with AWWA Standard C605-94, Section 7.3.

C. Furnish all labor equipment, including test pump with regulated by-pass meters and gauges required for conducting pipeline tests. Furnish equipment and necessary piping as required to transport water used in testing from source to test location.

D. Schedule time and sequence of testing, subject to observation and approval by the Owner or Owner's Representative. Provide adequate labor, tools and equipment to operate valves and to locate and repair leaks discovered during the initial filling of the pipeline prior to actual testing or during the course of the tests.

E. After the pipe has been laid and backfilled and the backfill has been jetted or otherwise consolidated, subject all newly laid pipe or valved section thereof to the hydrostatic pressure specified below for the particular type of pipe. The duration of each pressure test shall be at least four hours, unless otherwise specified or noted on the plans. Disconnect all meters, fixtures, devices or appliances which are connected to the pipeline system and which might be damaged if subjected to the specified test pressure. Cap or plug the ends of the branch lines during the testing procedures.

F. Fill each valved (capped or plugged) section of pipe slowly with water and expel all air. If permanent air vents are not located at all high points, install corporation or blow-off cocks at such points so that the air can be expelled as filling takes place. After verification that all air has been expelled, close the cocks and keep the pipe filled until tested. Examine uncovered pipe, fittings, valves, hydrants and joints while under test pressure. Visible leaks shall be stopped. Remove and replace cracked or defective pipe, fittings, valves or hydrants discovered during testing. Replacement shall be with sound material. Repeat the test until specified requirements are achieved.

G. Where any section of a pipeline is proved with concrete thrust blocking, do not make hydrostatic pressure test until at least five days have elapsed after installation of the blocking.

H. Pressure/Leakage Tests

1. The duration of the hydrostatic test shall be a minimum of four (4) hours.
2. The pipeline shall be tested so that the pressure at the highest point in the test section is not less than 200 psi.
3. The maximum allowable leakage is the number of gallons per hour as determined by the following formulas.
   a. For Ductile Iron Pipe:

$$L = \frac{SD\sqrt{P}}{133,200}$$

   Where:
   L = allowable leakage, in gallons per hour
   S = length of pipe tested, in feet
   D = nominal diameter of the pipe, in inches
   P = 200, in psig

   b. For PVC Pipe:

$$L = \frac{NDP^{\frac{1}{2}}}{7,400}$$

   Where:
   L = allowable leakage, in gallons per hour
   N = number of joints in the length of pipeline tested
   D = nominal diameter of the pipe, in inches
   P = 200, in psig

I. Final Acceptance

1. No pipe installation will be accepted until known leaks have been repaired, whether or not leakage is within allowable limits. Locate and repair leaks at no additional cost to the Owner.
2. The Contractor will certify that all required pressure and leakage tests have been successfully completed before the pipeline is accepted.

J. Special Project Requirements

Water Source. Obtaining water for testing purposes shall be the responsibility of the Contractor. The Contractor shall provide all equipment and labor required to transport water from the source to the test point.

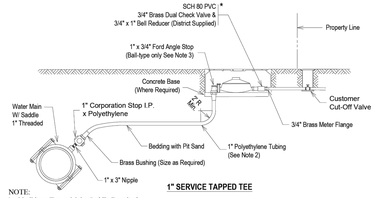
4.0 MEASUREMENT AND PAYMENT

No direct measurement or payment will be made for the work to be done or the equipment to be furnished under this item, but shall be considered subsidiary to the particular items of work for which unit prices are required in the proposal.

East Central SUD	TESTING FOR PRESSURE PIPELINES	APPROVED	REVISED
		JULY 2022	
		DET-100-Ø1	SHEET 1 OF 1

PIPE TAPPING SCHEDULE	
PIPE DIAMETER	SERVICE SIZE 1"
6" A.C.	Tap With Service Saddle
6" C.I. or D.I.	Tap With Service Saddle
8" A.C.	Tap With Service Saddle
8" C.I. or D.I.	Tap With Service Saddle
8" PVC	Tap With Service Saddle
10" A.C.	Tap With Service Saddle
10" C.I. or D.I.	Tap With Service Saddle
10" PVC	Tap With Service Saddle
12" A.C.	Tap With Service Saddle
12" C.I. or D.I.	Tap With Service Saddle
12" PVC	Tap With Service Saddle
16" A.C.	Tap With Service Saddle
16" C.I. or D.I.	Tap With Service Saddle

* Tailpieces Supplied by ECSUD w/ Cost of Meter



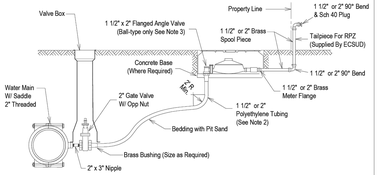
NOTE:
1. No Direct Tap to Main, Saddle Required
2. Polyethylene Shall be 250 psi Rated - Color Blue
3. FORD Angle Stop IIA43-342-3WNL
4. Meter Box Shall be DFW 36C
5. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)

1" SERVICE TAPPED TEE

FOR PERFERRED MANUFACTURERS SEE STANDARD SPECIFICATIONS

East Central SUD	1" SERVICE INSTALLATION TAPPING SCHEDULE	APPROVED	REVISED
		FEBRUARY 2025	
		DET-824-Ø1	SHEET 1 OF 1

PIPE TAPPING SCHEDULE		
PIPE DIAMETER	SERVICE SIZE 1 1/2"	2"
6" A.C.	Tap With Service Saddle	Tap With Service Saddle
6" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
8" A.C.	Tap With Service Saddle	Tap With Service Saddle
8" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
8" PVC	Tap With Service Saddle	Tap With Service Saddle
10" A.C.	Tap With Service Saddle	Tap With Service Saddle
10" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
10" PVC	Tap With Service Saddle	Tap With Service Saddle
12" A.C.	Tap With Service Saddle	Tap With Service Saddle
12" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle
12" PVC	Tap With Service Saddle	Tap With Service Saddle
16" A.C.	Tap With Service Saddle	Tap With Service Saddle
16" C.I. or D.I.	Tap With Service Saddle	Tap With Service Saddle

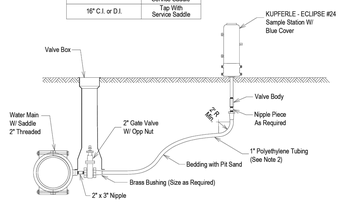


NOTE:
1. No Direct Tap to Main, Saddle Required
2. Polyethylene Shall be 250 psi Rated - Color Blue
3. Anything Greater Than 1 1/2" Will Use a Angle x Flange
4. Meter Box Shall be DFW 1324 C
5. Tracer wire to be Installed and Taped in 8' Intervals from Main to Meter Box. See DET-828-01

1 1/2" & 2" SERVICE TAPPED TEE

East Central SUD	1 1/2" & 2" SERVICE INSTALLATION TAPPING SCHEDULE	APPROVED	REVISED
		FEBRUARY 2025	
		DET-824-Ø2	SHEET 2 OF 2

PIPE TAPPING SCHEDULE	
PIPE DIAMETER	SERVICE SIZE 1"
6" A.C.	Tap With Service Saddle
6" C.I. or D.I.	Tap With Service Saddle
8" A.C.	Tap With Service Saddle
8" C.I. or D.I.	Tap With Service Saddle
8" PVC	Tap With Service Saddle
10" A.C.	Tap With Service Saddle
10" C.I. or D.I.	Tap With Service Saddle
10" PVC	Tap With Service Saddle
12" A.C.	Tap With Service Saddle
12" C.I. or D.I.	Tap With Service Saddle
12" PVC	Tap With Service Saddle
16" A.C.	Tap With Service Saddle
16" C.I. or D.I.	Tap With Service Saddle



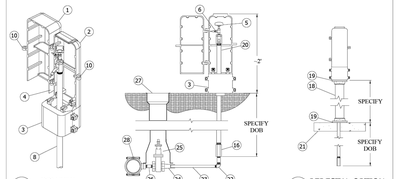
NOTE:
1. No Direct Tap to Main, Saddle Required
2. Polyethylene Shall be 250 psi Rated - Color Blue
3. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)

FOR PERFERRED MANUFACTURERS SEE STANDARD SPECIFICATIONS

4. Tracer wire to be Installed and Taped in 8' Intervals from Main to Sample Station. See DET-828-01

1" SERVICE TAPPED TEE FOR SAMPLE STATION

East Central SUD	1" SERVICE INSTALLATION TAPPING SCHEDULE FOR SAMPLE STATIONS ONLY	APPROVED	REVISED
		FEBRUARY 2025	
		DET-824-Ø3	SHEET 1 OF 1



GENERAL SPECIFICATIONS	
MAXIMUM OPERATING PRESSURE	
STATION MATERIALS	303, 304, 316, & 18-8 STAINLESS STEEL, BUNA-N
ENCLOSURE MATERIAL: ENCLOSURE COLOR	CAST 319 ALUMINUM BLUE
WETTED MATERIALS	BUNA-N RUBBER, 303, 304, 316 & 18-8 STAINLESS STEEL
DEPTH OF BURY: WEIGHT	SPECIFY 35 LBS @ 3' DOB
ADDITIONAL PEDESTAL WEIGHT	~38 LBS FOR 3' PEDESTAL
CUSTOM LOGO: NM CERT.	NOTE 5 NOTE 5

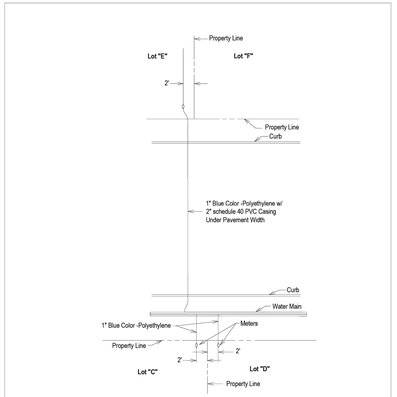
ITEM	DESCRIPTION	NOTES
1	(M) FRONT DOOR (COVER A)	
2	(M) REAR DOOR (COVER B)	
3	(M) BASE	2 PIECES
4	1/2" UNTHREADED NOZZLE	
5	OPERATING HANDLE	
6	DRAIN HOSE BARB	
7	DRAIN CAP	
8	1" B.S. BARREL	
9	B.S. OPERATING ROD	NOT SHOWN
10	LOCKING HOLE	
11	VALVE CORE	NOTE 5
12	VALVE SEAT CARRIER	NOTE 5
13	OPERATING SCREW	NOTE 5
14	SEAT O-RING	NOTE 5

ITEM	DESCRIPTION	NOTES	ITEM	DESCRIPTION	NOTES
15	WATER PATH		23	3/4" B.S. PIPE	AS REQ.
16	VALVE BODY		24	BRASS BUSHING	2" x 3"
17	INLET HOLES		25	2" GATE VALVE W/ OPP NUT	
18	PEDESTAL		26	2" x 3" NIPPLE	BRASS
19	PEDESTAL GASKET		27	VALVE BOX	
20	PACKING NUT		28	SADDLE CLAMP	2" THREAD
21	CONCRETE				
22	3/4" B.S. ELBOW				

Sampling Station shall be ____ ½ary, with a 1" FIP inlet, and 1/2" unthreaded blow off and sampling bibb.
Station shall be enclosed in a lockable, cast aluminum box with hinged openings.
When open, the station shall require no key for operation, and all water flow shall pass thru an all stainless steel waterway. All operational components shall be of stainless steel and serviceable / replaceable from above ground with no digging or excavation needed.
The operating screw shall be located underground and inside of the valve body. The operating screw, when turned via the handle, shall raise and lower a valve seat carrier, for controlling the flow of water through the hydrant. The station shall utilize an o-ring for sealing of the valve core to valve seat carrier to shut off the flow of water. The operating rod shall be supported on both ends, via the packing nut and the valve seat carrier to prevent the station from vibrating/pulsing under high pressures and to ensure a smooth sample stream.
When open, the water shall flow through the 6 openings of the valve seat carrier, up and around the valve core, up the round pipe and out through the nozzle.
The opening rod shall be hollow. A secondary drain port shall be located on the hollow operating rod, underneath the handle and when open shall allow for evacuation of any water remaining inside the station, via pump or compressed air blow off, to prevent freezing.
The station shall be model #24 as manufactured by Kupferle Water Solutions, St. Louis MO. 63102 or approved equal.

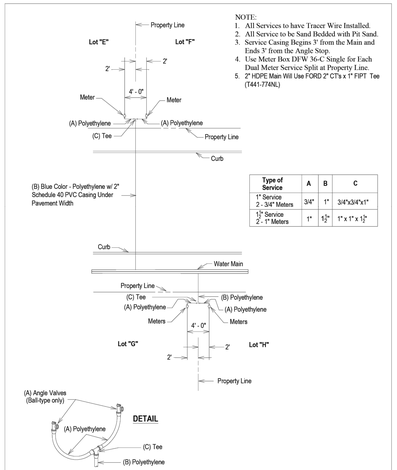
Notes:
1.) The color shall be Blue, check with the manufacturer for color options, and specify accordingly.
2.) When installed on or with concrete, Kupferle recommends the use of a gasket or barrier between the enclosure/pedestal and the concrete surface, when purchasing the station, if concrete install is specified on the order Kupferle will provide said gasket. the enclosure clamp on the bottom of the enclosure base will fit inside a 4" pvc pipe.
3.) Prolonged exposure to strong chlorides which can be present in concrete, cleaning agents, and sometime even potable water can lead to possible enclosure corrosion. regular maintenance and drying the station after use are the best methods for optimal station longevity.
4.) In corrosive solids the buried pipe should be prepped for additional resistance to corrosion. Kupferle recommends spraying all underground piping and fittings with bituminous spray tar, allowing proper time to dry, and then wrapping the parts.

East Central SUD	#24 SAMPLING STATION SPEC SHEET	APPROVED	REVISED
		FEBRUARY 2025	
		DET-824-Ø4	SHEET 1 OF 1



NOTE:
1. All Services to have Tracer Wire Installed.
2. All Service to be Sand Bedded with Pit Sand.
3. Service Casing Begins 3' from the Main and Ends 3' from the Angle Stop.
4. Use Meter Box DFW 36-C for Single Services
5. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)
6. All Service Lines to Meter Box shall be 1" Blue Polyethylene Pipe.

SINGLE SERVICE LINE - SINGLE METER

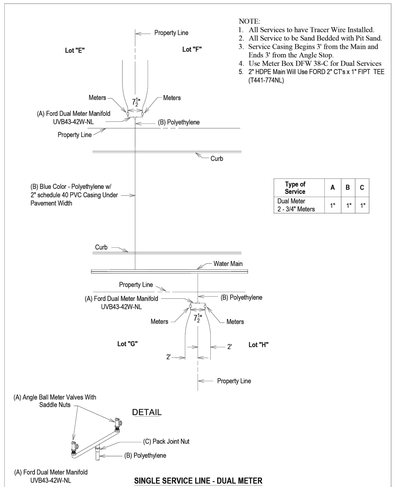


Type of Service	A	B	C
1" Service 2 - 3/4" Meters	3/4"	1"	3/4"x3/4"x1"
1 1/2" Service 2 - 1" Meters	1"	1 1/2"	1" x 1" x 1 1/2"

NOTE:
1. All Services to have Tracer Wire Installed.
2. All Service to be Sand Bedded with Pit Sand.
3. Service Casing Begins 3' from the Main and Ends 3' from the Angle Stop.
4. Use Meter Box DFW 36-C for Single Services
5. Use Meter Box DFW 38-C for Dual Services
6. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT TEE (T441-774NL)

SINGLE SERVICE LINE - DUAL METER

East Central SUD	TYPICAL RURAL SERVICE ARRANGEMENT	APPROVED	REVISED
		FEBRUARY 2025	
		DET-824-Ø5	SHEET 2 OF 4

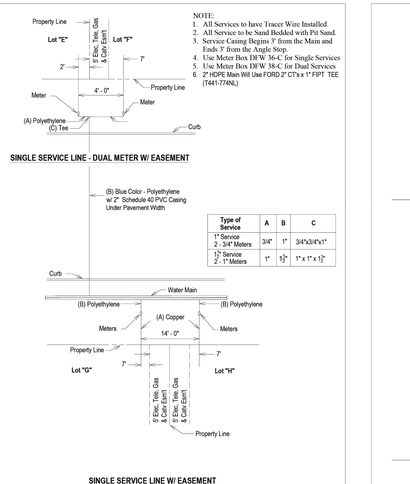


NOTE:
1. All Services to have Tracer Wire Installed.
2. All Service to be Sand Bedded with Pit Sand.
3. Service Casing Begins 3' from the Main and Ends 3' from the Angle Stop.
4. Use Meter Box DFW 36-C for Single Services
5. Use Meter Box DFW 38-C for Dual Services
6. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT TEE (T441-774NL)

Type of Service	A	B	C
Dual Meter 2 - 3/4" Meters	1"	1"	1"

SINGLE SERVICE LINE - DUAL METER

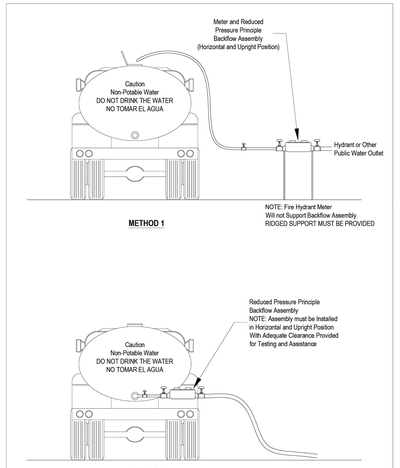
East Central SUD	TYPICAL HIGH DENSITY RESIDENTIAL SERVICE ARRANGEMENT	APPROVED	REVISED
		FEBRUARY 2025	
		DET-824-Ø5	SHEET 3 OF 4



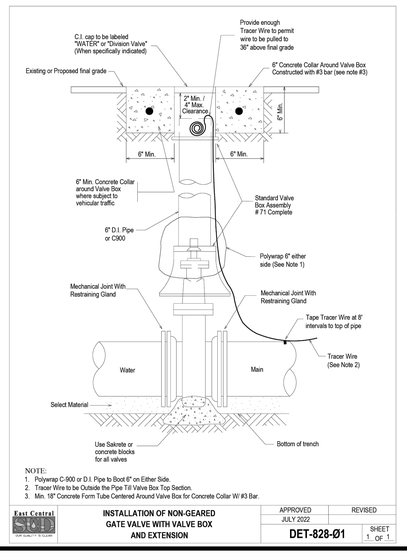
SINGLE SERVICE LINE W/ EASEMENT

Type of Service	A	B	C
1" Service 2 - 3/4" Meters	3/4"	1"	3/4"x3/4"x1"
1 1/2" Service 2 - 1" Meters	1"	1 1/2"	1" x 1" x 1 1/2"

East Central SUD	TYPICAL SERVICE ARRANGEMENT	APPROVED	REVISED
		FEBRUARY 2025	
		DET-824-Ø5	SHEET 4 OF 4



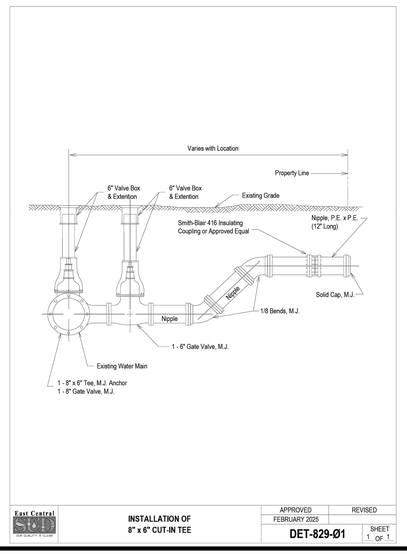
East Central SUD	BACKFLOW PREVENTION PREVENTION FOR WATER HAULING EQUIPMENT AND/OR MIXING TANKS	APPROVED	REVISED
		FEBRUARY 2025	
		DET-826-Ø1	SHEET 1 OF 1



NOTE:
1. Polywrap C-900 or D.I. Pipe to Boot 6" on Either Side.
2. Tracer Wire to be Outside the Pipe Till Valve Box Top Section.
3. Min. 18" Concrete Form Tube Centered Around Valve Box for Concrete Collar W/ #3 Bar.

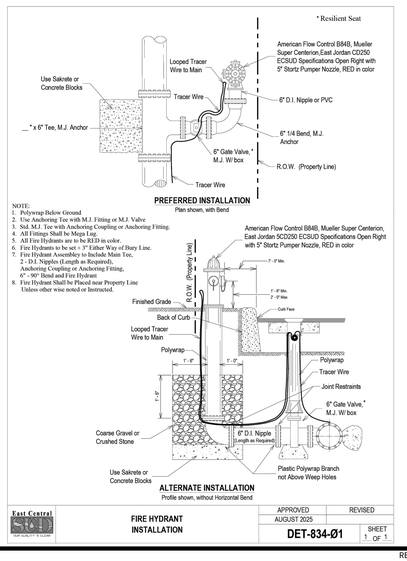
INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION

East Central SUD	INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION	APPROVED	REVISED
		JULY 2022	
		DET-828-Ø1	SHEET 1 OF 1



INSTALLATION OF 6" x 6" CUT-IN TEE

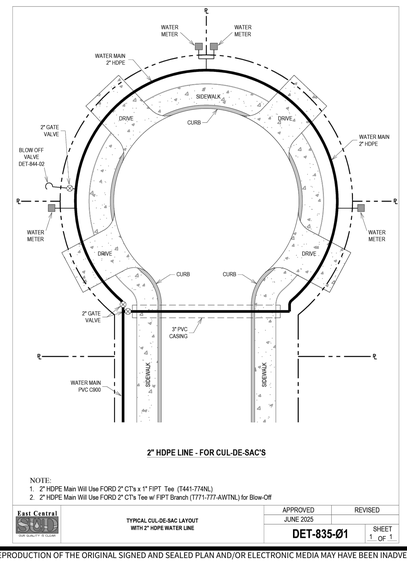
East Central SUD	INSTALLATION OF 6" x 6" CUT-IN TEE	APPROVED	REVISED
		FEBRUARY 2025	
		DET-829-Ø1	SHEET 1 OF 1



NOTE:
1. Polywrap Below Ground
2. Use Anchoring Tee with M.J. Fitting or M.J. Valve
3. Std. M.J. Tee with Anchoring Coupling or Anchoring Fitting.
4. All Fittings Shall be Mega Lug.
5. All Fire Hydrants are to be RED in color.
6. Fire Hydrants to be set = 3" Either Way of Bury Line.
7. Fire Hydrant Assembley to Include Main Tee,
   2 - D.I. Nipples (Length as Required),
   Anchoring Coupling or Anchoring Fitting,
   6" - 90° Bend and Fire Hydrant
8. Fire Hydrant Shall be Placed near Property Line
   Unless other wise noted or Instructed.

FIRE HYDRANT INSTALLATION

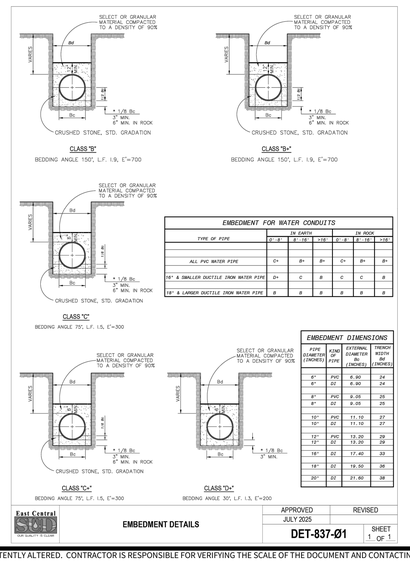
East Central SUD	FIRE HYDRANT INSTALLATION	APPROVED	REVISED
		AUGUST 2025	
		DET-834-Ø1	SHEET 1 OF 1



NOTE:
1. 2" HDPE Main Will Use FORD 2" CT's x 1" FIPT Tee (T441-774NL)
2. 2" HDPE Main Will Use FORD 2" CT's Tee w/ FIPT Branch (T771-777-AWTNL) for Blow-Off

2" HDPE LINE - FOR CUL-DE-SAC'S

East Central SUD	TYPICAL CUL-DE-SAC LAYOUT WITH 2" HDPE WATER LINE	APPROVED	REVISED
		JUNE 2025	
		DET-835-Ø1	SHEET 1 OF 1



EMBEDMENT FOR WATER CONDUITS

TYPE OF PIPE	IN EARTH			IN ROCK		
	4' - 8'	8' - 16'	>16'	0' - 8'	8' - 16'	>16'
ALL PVC WATER PIPE	D+	B+	B+	D+	B+	B+
16" & SMALLER DUCTILE IRON WATER PIPE	D+	C	B	C	C	B
18" & LARGER DUCTILE IRON WATER PIPE	B	B	B	B	B	B

EMBEDMENT DIMENSIONS

PIPE DIAMETER (INCHES)	TYPE	EXTERNAL DIAMETER (INCHES)	TRENCH WIDTH (INCHES)
6"	PVC	6.90	24
6"	DI	6.90	24
8"	PVC	9.05	25
8"	DI	9.05	25
10"	PVC	11.10	27
10"	DI	11.10	27
12"	PVC	13.20	29
12"	DI	13.20	29
16"	DI	17.40	33
18"	DI	19.50	36
20"	DI	21.60	38

East Central SUD	EMBEDMENT DETAILS	APPROVED	REVISED
		JULY 2025	
		DET-837-Ø1	SHEET 1 OF 1

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

ZIGMOND TRACT UNIT 1

WATER STANDARD DETAILS

DATE 10/08/2025

PROJECT NO. 04408.001

DRAWN BY DAF/SG/JW

CHECKED BY SPM

REVISIONS
1.
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10.

10/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

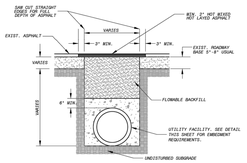
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 25-4486

SAWS JOB NO. XX-XXXX

C6.D1

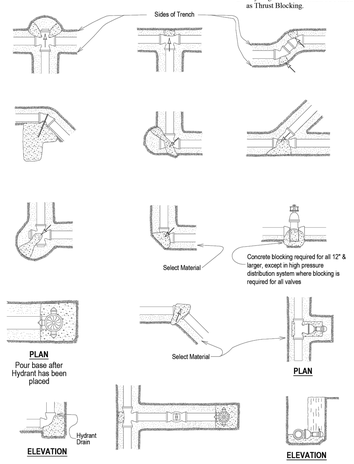
C:\JANABELLO\D.I.D\WOLF Ranch\C6.D1.WATER STANDARD DETAILS.dwg, 2025/10/09 5:02:3pm, janabello
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



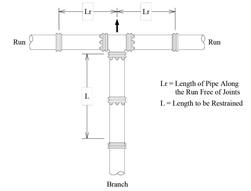
MIN. 3" HOT MIXED HOT LAYED ASPHALT

East Central	**BACKFILL AND ASPHALT PAVEMENT DETAIL**	APPROVED JULY 2025	REVISED
		DET-838-Ø1	SHEET 1 OF 1

NOTE:
1. All Fittings Shall be Mega Lug
2. Dry Bags of Sakrete Shall be Placed as Thrust Blocking.



East Central	**THRUST BLOCKS FOR FITTINGS (WATER ONLY)**	APPROVED FEBRUARY 2025	REVISED
		DET-839-Ø1	SHEET 1 OF 1



Lz = Length of Pipe Along the Run Free of Joints
L = Length to be Restrained

RESTRAINED LENGTH FOR TEES

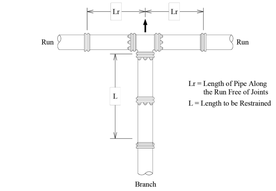
PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
6	4	0	42
6	4	5	7
6	4	10	1
6	6	0	59
6	6	5	35
6	6	10	11
8	4	0	42
8	4	5	1
8	6	0	59
8	6	5	28
8	6	10	1
8	8	0	77
8	8	5	53
8	8	10	30
8	8	15	6

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS FOR TEES INSTALLED ON 6" TO 8" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-02	SHEET 1 OF 4



Lz = Length of Pipe Along the Run Free of Joints
L = Length to be Restrained

RESTRAINED LENGTH FOR TEES

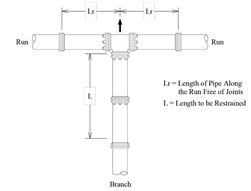
PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
12	4	0	42
12	4	5	1
12	6	0	59
12	6	5	13
12	6	10	1
12	8	0	77
12	8	5	42
12	8	10	7
12	8	15	1
12	12	0	109
12	12	5	86
12	12	10	63
12	12	15	39

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS FOR TEES INSTALLED ON 12" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-02	SHEET 2 OF 4



Lz = Length of Pipe Along the Run Free of Joints
L = Length to be Restrained

RESTRAINED LENGTH FOR TEES

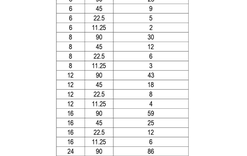
PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
16	6	0	50
16	6	5	2
16	6	10	1
16	6	15	1
16	8	0	64
16	8	5	28
16	8	10	1
16	8	15	1
16	12	0	94
16	12	5	69
16	12	10	45
16	12	15	21
16	16	0	117
16	16	5	97
16	16	10	78
16	16	15	59

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 Feet Max..

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS FOR TEES INSTALLED ON 16" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-02	SHEET 3 OF 4



Lz = Length of Pipe Along the Run Free of Joints
L = Length to be Restrained

RESTRAINED LENGTH FOR TEES

PIPE SIZE (Inch)	BRANCH SIZE (Inch)	LENGTH OF RUN (Feet)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
24	6	0	50
24	6	5	1
24	6	10	1
24	6	15	1
24	8	0	64
24	8	5	7
24	8	10	1
24	8	15	1
24	12	0	94
24	12	5	56
24	12	10	18
24	12	15	1
24	16	0	117
24	16	5	87
24	16	10	57
24	16	15	27
24	20	0	145
24	20	5	121
24	20	10	97
24	20	15	73
24	24	0	172
24	24	5	152
24	24	10	133
24	24	15	113

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS FOR TEES INSTALLED ON 24" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-02	SHEET 4 OF 4

L = Length to be Restrained

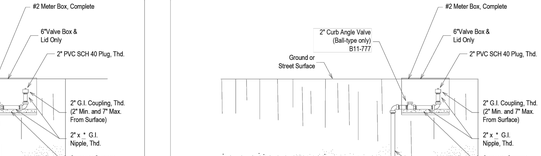
PIPE SIZE (Inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
6	59
8	77
10	93
12	109
16	117
20	145
24	172

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.

East Central	**RESTRAINED LENGTHS FOR DEAD ENDS / INLINE VALVES ON 6" THRU 24" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-03	SHEET 1 OF 1



PIPE SIZE (Inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi	LOWER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
6	45	5	24	8
6	22.5	5	12	4
6	11.25	5	6	2
6	45	10	24	5
6	22.5	10	12	2
6	11.25	10	6	1
8	45	5	32	11
8	22.5	5	15	5
8	11.25	5	8	3
8	45	10	32	7
8	22.5	10	15	3
8	11.25	10	8	2
12	45	5	45	16
12	22.5	5	22	7
12	11.25	5	11	4
12	45	10	45	10
12	22.5	10	22	5
12	11.25	10	11	2

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS VERTICAL OFFSETS INSTALLED ON 6" THRU 12" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-04	SHEET 1 OF 2

PIPE SIZE (Inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi	LOWER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
16	45	5	70	22
16	22.5	5	34	11
16	11.25	5	17	6
16	45	10	70	14
16	22.5	10	34	7
16	11.25	10	17	4
24	45	5	102	32
24	22.5	5	49	16
24	11.25	5	25	8
24	45	10	102	21
24	22.5	10	49	10
24	11.25	10	25	5

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS VERTICAL OFFSETS INSTALLED ON 16" THRU 24" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-04	SHEET 2 OF 2

L = Length to be Restrained on Both Sides of Fitting. When Restrained Lengths Overlap on the Diagonal Pipe, all Pipe Between Fittings Should be Restrained.

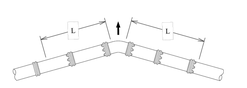
PIPE SIZE (Inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi	LOWER BEND RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
16	45	5	70	22
16	22.5	5	34	11
16	11.25	5	17	6
16	45	10	70	14
16	22.5	10	34	7
16	11.25	10	17	4
24	45	5	102	32
24	22.5	5	49	16
24	11.25	5	25	8
24	45	10	102	21
24	22.5	10	49	10
24	11.25	10	25	5

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 feet Max.

NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS VERTICAL OFFSETS INSTALLED ON 16" THRU 24" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-04	SHEET 2 OF 2



L = Length to be Restrained on Both Sides of Fitting

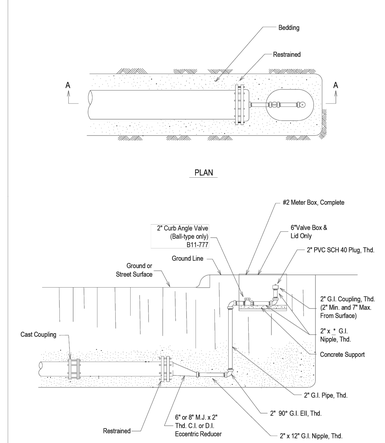
PIPE SIZE (Inch)	BEND ANGLE (deg)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE=200 psi
6	90	23
6	45	9
6	22.5	5
6	11.25	2
8	90	30
8	45	12
8	22.5	6
8	11.25	3
12	90	43
12	45	18
12	22.5	8
12	11.25	4
16	90	59
16	45	25
16	22.5	12
16	11.25	6
24	90	86
24	45	36
24	22.5	17
24	11.25	9

RESTRAINED LENGTH DESIGN

Restrained Length Calculations are for P.V.C. Pipe Bedded in Compacted Granular Material Extending to the Top of the Pipe. The Native Soil Material is Assumed to be Inorganic Clay of High Plasticity. Depth of Bury is Assumed to be 4 Feet Min. and 5 feet Max.

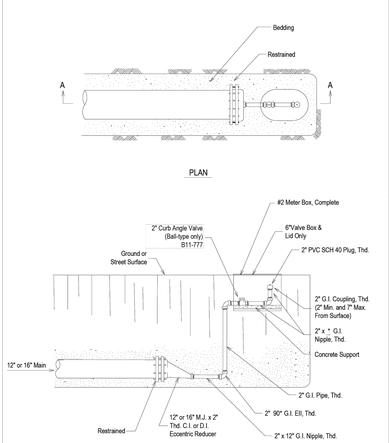
NOTE:
1. These Calculations are Provided for Reference. The Restrained Length Shall be Designed Based Upon the Conditions Encountered During Installation.
2. All joints within the calculated length must be restrained.
3. If your distance between fittings is less than or equal to the calculated restraint length, restrain all joints between those fittings.
4. When a valve is added see DET-893-03 for restrained length from a valve.

East Central	**RESTRAINED LENGTHS FOR HORIZONTAL BENDS ON 6" THRU 24" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-839-06	SHEET 1 OF 1



* Cut to Fit in Meter Box

East Central	**2" PERMANENT BLOW-OFF ASSEMBLY ON 6" AND 8" MAINS**	APPROVED JANUARY 2025	REVISED
		DET-844-02	SHEET 1 OF 2



* Cut to Fit in Meter Box

East Central	**2" PERMANENT BLOW-OFF ASSEMBLY ON 12" AND 16" MAINS**	APPROVED FEBRUARY 2025	REVISED
		DET-844-02	SHEET 2 OF 2

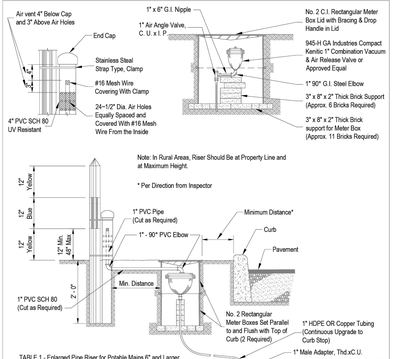
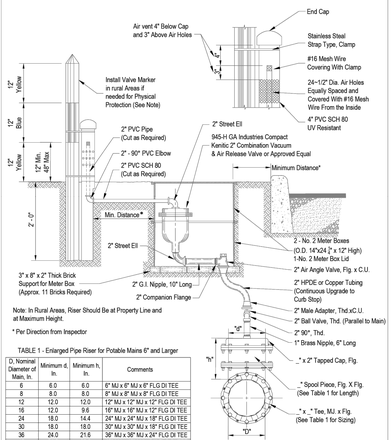


TABLE 1 - Enlarged Pipe Riser for Potable Mains 6" and Larger

D, Nominal Diameter of Main, In.	Minimum d, In.	Minimum h, In.	Comments
6	6.0	6.0	6" MJ x 6" MJ x 6" FLG DI TEE
8	8.0	8.0	8" MJ x 8" MJ x 8" FLG DI TEE
12	12.0	12.0	12" MJ x 12" MJ x 12" FLG DI TEE
16	12.0	9.6	16" MJ x 16" MJ x 12" FLG DI TEE
24	18.0	14.4	24" MJ x 24" MJ x 18" FLG DI TEE
30	18.0	18.0	30" MJ x 30" MJ x 18" FLG DI TEE
36	24.0	21.6	36" MJ x 36" MJ x 24" FLG DI TEE
42	24.0	25.2	42" MJ x 42" MJ x 24" FLG DI TEE
48	24.0	28.8	48" MJ x 48" MJ x 24" FLG DI TEE
54	30.0	32.4	Welded-on FLG Outlet
60	36.0	36.0	Welded-on FLG Outlet
66	24.0	23.1	Welded-on FLG Outlet
72	24.0	25.2	Welded-on FLG Outlet

Air Collection Traps in Air Valve Piping Notes:
1. Dimensions Derived from AWWA Manual 2nd Edition: Chapter 6 M51 Air Valves: Air-Release, Air/Vacuum & Combination

East Central	**INSTALLATION OF 1" AIR RELEASE VALVE**	APPROVED FEBRUARY 2025	REVISED
		DET-846-Ø1	SHEET 1 OF 1



Note: In Rural Areas, Riser Should Be at Property Line and at Maximum Height.
* Per Direction from Inspector

TABLE 1 - Enlarged Pipe Riser for Potable Mains 6" and Larger

D, Nominal Diameter of Main, In.	Minimum d, In.	Minimum h, In.	Comments
6	6.0	6.0	6" MJ x 6" MJ x 6" FLG DI TEE
8	8.0	8.0	8" MJ x 8" MJ x 8" FLG DI TEE
12	12.0	12.0	12" MJ x 12" MJ x 12" FLG DI TEE
16	12.0	9.6	16" MJ x 16" MJ x 12" FLG DI TEE
24	18.0	14.4	24" MJ x 24" MJ x 18" FLG DI TEE
30	18.0	18.0	30" MJ x 30" MJ x 18" FLG DI TEE
36	24.0	21.6	36" MJ x 36" MJ x 24" FLG DI TEE
42	24.0	25.2	42" MJ x 42" MJ x 24" FLG DI TEE
48	24.0	28.8	48" MJ x 48" MJ x 24" FLG DI TEE
54	30.0	32.4	Welded-on FLG Outlet
60	36.0	36.0	Welded-on FLG Outlet
66	24.0	23.1	Welded-on FLG Outlet
72	24.0	25.2	Welded-on FLG Outlet

Air Collection Traps in Air Valve Piping Notes:
1. Dimensions Derived from AWWA Manual 2nd Edition: Chapter 6 M51 Air Valves: Air-Release, Air/Vacuum & Combination

East Central	**INSTALLATION OF 2" AIR RELEASE VALVE**	APPROVED FEBRUARY 2025	REVISED
		DET-846-Ø2	SHEET 1 OF 1

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ZIGMOND TRACT UNIT 1

WATER STANDARD DETAILS

DATE
10/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10.

10/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

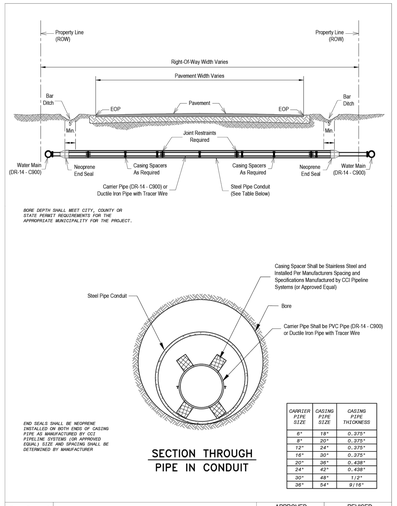
PLAT NO.
25-4486

SAWS JOB NO.
XX-XXXX

C6.D2

P:\04400\2025\2-DWG\4-Sheets\C6.D2 WATER STANDARD DETAILS.dwg, 2025/10/09 2:52pm, joelkirk

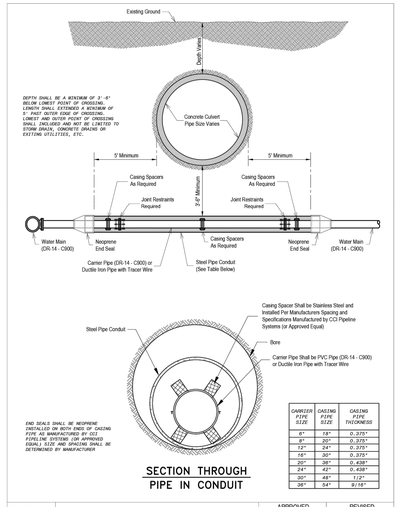
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



CARRIER PIPE SIZE	CASING PIPE SIZE	CASING PIPE THICKNESS
6"	18"	0.375"
8"	20"	0.375"
12"	24"	0.375"
16"	30"	0.375"
20"	36"	0.438"
24"	42"	0.438"
30"	48"	1/2"
36"	54"	9/16"

SECTION THROUGH
PIPE IN CONDUIT

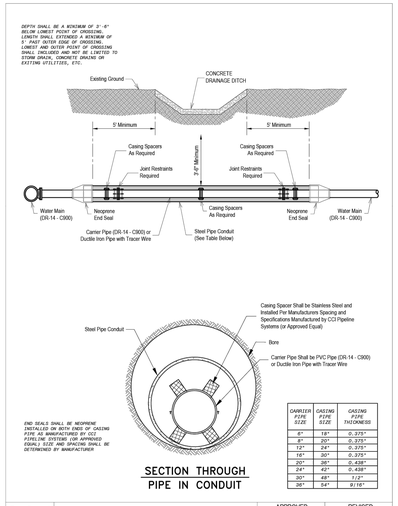
East Central Texas	TYPICAL ROAD BORE DETAIL	APPROVED / FEBRUARY 2025	REVISED
		DET-847-Ø1	SHEET 1 OF 3



CARRIER PIPE SIZE	CASING PIPE SIZE	CASING PIPE THICKNESS
6"	18"	0.375"
8"	20"	0.375"
12"	24"	0.375"
16"	30"	0.375"
20"	36"	0.438"
24"	42"	0.438"
30"	48"	1/2"
36"	54"	9/16"

SECTION THROUGH
PIPE IN CONDUIT

East Central Texas	TYPICAL BORE CROSSING UNDER CONCRETE CULVERT / STORM SEWER	APPROVED / FEBRUARY 2025	REVISED
		DET-847-Ø1	SHEET 2 OF 3



CARRIER PIPE SIZE	CASING PIPE SIZE	CASING PIPE THICKNESS
6"	18"	0.375"
8"	20"	0.375"
12"	24"	0.375"
16"	30"	0.375"
20"	36"	0.438"
24"	42"	0.438"
30"	48"	1/2"
36"	54"	9/16"

SECTION THROUGH
PIPE IN CONDUIT

East Central Texas	TYPICAL BORE CROSSING UNDER DITCH WITH CONCRETE BOTTOM	APPROVED / FEBRUARY 2025	REVISED
		DET-847-Ø1	SHEET 3 OF 3

CEMENT STABILIZED BACKFILL DETAIL

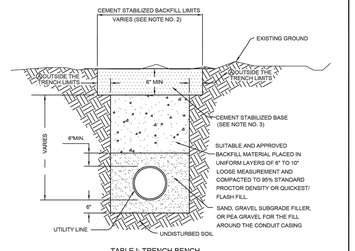


TABLE I: TRENCH BENCH

TRENCH WIDTH	ⓓ (FEET)'
≤ 3'	1
>3' - ≤8'	2
>8' - ≤9'	3
>9'	W/3**

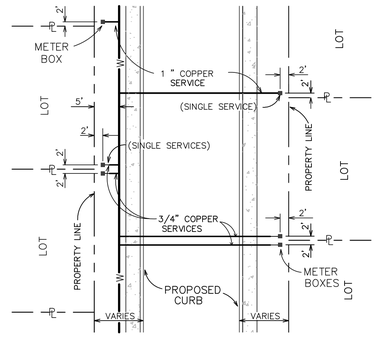
NOTES:

1. All UTILITIES WITHIN 2 FEET OF THE EDGE OF A PAVED SHOULDER, OR 4 FEET IF NO PAVED SHOULDER EXISTS, OR WHERE EXISTING SURFACE GRADE EXCEEDS 5%, SHALL BE REQUIRED TO BE CAPPED WITH CEMENT STABILIZED BASE OR APPROVED EQUIVALENT.

2. THE LIMITS CEMENT STABILIZED BACKFILL WILL BE DETERMINED AT THE TIME A PERMIT IS REVIEWED.

3. A 6" THICKNESS OF CEMENT STABILIZED BASE, BENCHED AS NOTED IN TABLE I ON EACH SIDE OF THE TRENCH WILL BE USED FOR THE FINAL LIFT OF THE TRENCH REPAIR.

PREPARED BY: BEXAR COUNTY PUBLIC WORKS — DECEMBER 2014



WATER METER BOX LOCATION
N.T.S.

GENERAL NOTES

1. ALL VALVES SHALL REMAIN CLOSED UNTIL MAINS HAVE BEEN DISINFECTED, FLUSHED, AND RELEASED FOR PUBLIC USE BY THE ENGINEER.

2. EXISTING UTILITIES SHOWN ARE TAKEN FROM VARIOUS UTILITY COMPANY RECORDS. CONTRACTORS SHALL VERIFY THE EXACT LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO BEGINNING CONSTRUCTION. CONTRACTORS SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES AND DRAINAGE STRUCTURES DURING CONSTRUCTION.

3. ALL EXCAVATION SHALL BE UNCLASSIFIED REGARDLESS OF MATERIAL ENCOUNTERED.

4. BIDDERS ARE NOTIFIED TO MAKE SUBSURFACE INVESTIGATIONS AS THEY DEEM NECESSARY. NO ADDITIONAL PAYMENT WILL BE MADE FOR WATER, SAND, GRAVEL OR OTHER UNSTABLE CONDITIONS ENCOUNTERED IN EXCAVATIONS.

5. DETOUR OF TRAFFIC AROUND WORK ACTIVITIES, MAINTENANCE OF TRAFFIC CONTROL SIGNS, AND FLAGMEN ARE THE CONTRACTOR'S RESPONSIBILITY. NO SEPARATE PAYMENT WILL BE MADE.

6. THE CONTRACTOR SHALL PROTECT ALL OPEN EXCAVATIONS AND EQUIPMENT FROM CHILDREN, PEDESTRIANS, AND VEHICLES IN THE AREA.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESTORATION OF ALL FENCES IN THE WORK AREA TO THEIR ORIGINAL CONDITION PRIOR TO COMPLETION OF THE CONTRACT. THIS SHALL APPLY TO ALL FENCES IN THE WORK AREA WHETHER THEY ARE SHOWN ON THE PLANS OR NOT.

8. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. ANY CONSTRUCTION STAKES, MARKS, ETC., DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

9. THE CONTRACTOR SHALL CONFER WITH EACH INDIVIDUAL PROPERTY OWNER AS TO THE LOCATION OF EACH INDIVIDUAL METER BOX.

10. CONTRACTOR SHALL DISINFECT ALL NEW WATER MAINS BEFORE TYING INTO EXISTING WATER MAINS.

11. ALL VALVES SHALL BE PERMANENTLY MARKED BY THE USE OF A VALVE MARKER. NO SEPARATE PAY ITEM.

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

13. CONTRACTOR SHALL MAINTAIN FENCING FOR THE CONTAINMENT OF LIVESTOCK DURING CONSTRUCTION. ALL FENCES REMOVED FOR CONSTRUCTION SHALL BE REPLACED. ALL REQUIRED FENCING SHALL BE INCIDENTAL TO CONSTRUCTION AND NOT A SEPARATE PAY ITEM.

14. ALL DRIVEWAYS, INCLUDING DRAIN PIPES, CULVERTS AND HEADWALLS, DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR TO EQUAL OR BETTER THAN PRECONSTRUCTION CONDITION. ASPHALT DRIVES ARE NOT ALLOWED TO BE CUT WITHOUT OWNERS PERMISSION. INSTALLATION OF WATER MAINS CROSSING CONCRETE DRIVES WILL BE BORED. ALL DRAIN PIPE, CULVERT AND HEADWALL REPAIR SHALL BE INCIDENTAL TO CONSTRUCTION AND NOT A SEPARATE PAY ITEM. DRIVEWAY PAVEMENT REPAIR SHALL BE PAID FOR AS PER ITEM NO. 02950, "CUTTING AND PATCHING ASPHALT PAVEMENT, ASPHALT DRIVES, CONCRETE DRIVES, OR GRAVEL ROADS AND DRIVES". PAYMENT FOR BORES UNDER CONCRETE DRIVES DRIVES SHALL BE PAID FOR AS PER ITEM 02445 "BORING AND CASING PIPE UNDER HIGHWAYS, RAILROADS, OR OTHER AREAS".

15. LOCATIONS OF COMBINATION AIR VALVES WHERE SHOWN ON PLANS ARE APPROXIMATE. FINAL LOCATIONS TO BE ADJUSTED IN FIELD AT TIME OF CONSTRUCTION AT THE DIRECTION OF THE ENGINEER.

16. ALL WORK SHALL BE SCHEDULED TO TAKE PLACE ON MONDAY THROUGH FRIDAY, DURING NORMAL WORK HOURS. CONTRACTOR SHALL NOTIFY ECSUD 48 HOURS PRIOR TO SERVICE SHUT OFF AFFECTING CUSTOMERS. SERVICE SHALL NOT BE SHUT OFF FOR MORE THAN EIGHT (8) HOURS AT A TIME.

17. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PROPERTY, INCLUDING, BUT NOT LIMITED TO, FENCES, PAVEMENT, DRIVEWAYS, LAWNS, CULVERTS, AND TREES, AT NO COST TO THE OWNER.

18. THE CONTRACTOR SHALL PROVIDE EROSION CONTROL AT ALL CULVERT, STREAM AND DRAINAGE SWALES CROSSINGS. EROSION CONTROL MEASURES SHALL INCLUDE AS A MINIMUM SILT FENCES. SILT FENCES SHALL BE INSTALLED PRIOR TO DISTURBANCE OF THE WORK AREAS AND SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION OF THE DISTURBED AREAS UPSTREAM. EROSION CONTROL SHALL BE COORDINATED WITH THE ENGINEER.

19. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY MAILBOXES, TRAFFIC OR ROAD SIGNS ENCOUNTERED. NO SEPARATE PAY ITEM.

20. CONTRACTOR SHALL SUBMIT TO ENGINEER PROPOSED CONSTRUCTION SEQUENCE PRIOR TO BEGINNING CONSTRUCTION.

21. ALL FITTINGS ARE TO BE DUCTILE IRON, MECHANICAL JOINT TYPE, UNLESS OTHERWISE NOTED ON PLANS.

22. ALL THRUST BLOCKS SHALL BE INSPECTED BY OWNER AND/OR ENGINEER PRIOR TO BACKFILLING.

23. ALL EXISTING VALVES SHOWN ON PLANS TO BE ABANDONED, SHALL HAVE BOXES REMOVED AND SHALL BE BACKFILLED ACCORDING TO SPECIFICATIONS. NO SEPARATE PAY ITEM.

24. CONTRACTOR SHALL CONTAIN ALL CONSTRUCTION AND STAGING WITHIN EXISTING UTILITY EASEMENTS, UNLESS OTHER ARRANGEMENTS ARE MADE WITH OWNER AND/OR TxDOT.

25. WHERE THE NEW WATER MAIN SHOWN ON THE PLANS REQUIRES CROSSING AN EXISTING WATER MAIN OR OTHER UTILITY, THE CONTRACTOR SHALL VERTICALLY DEFLECT THE PROPOSED WATER MAIN. DEFLECTION SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURE'S RECOMMENDATIONS. FITTINGS ARE NOT PERMISSIBLE, UNLESS OTHERWISE SHOWN ON THE PLANS. NO SEPARATE PAY ITEM.

26. WATER MAINS SHALL BE INSTALLED WITH 48" MINIMUM COVER OVER THE TOP OF THE PIPE AND A MAXIMUM DEPTH OF BURY OF 60", UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER.

27. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL CONCRETE FOUNDATIONS, VAULT BOXES AND OVERFLOW BOXES THROUGHOUT THE PROJECT SITE.

28. BUY AMERICAN STANDARDS SHALL BE ADHERED TO CONCERNING ALL STEEL OR IRON BASED MATERIALS.

29. ALL GATE VALVES SHALL "OPEN RIGHT".

30. AN AIR RELEASE VALVE SHALL BE INSTALLED AT THE HIGHEST ELEVATION POINT(S) OF THE WATER DISTRIBUTION SYSTEM LOCATED WITHIN A DEVELOPMENT. THE EXACT LOCATION SHALL BE COORDINATED IN THE FIELD AND VERIFIED AGAINST THE FINAL GRADING PLAN. INSTALLATION SHALL BE IN ACCORDANCE WITH THE ECSUD STANDARDS AND THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE A VALVE BOX OR APPROVED ENCLOSURE FOR ACCESS AND MAINTENANCE.

31. A MINIMUM OF ONE (1) WATER SAMPLE STATION SHALL BE INSTALLED WITHIN A DEVELOPMENT TO ALLOW FOR ROUTINE WATER QUALITY MONITORING. THE SAMPLE STATION SHALL BE LOCATED NEAR THE SUBDIVISION ENTRANCE OFF A WATER MAIN IN A PUBLICLY ACCESSIBLE AREA, OR AT A REPRESENTATIVE LOCATION APPROVED BY ECSUD. THE STATION SHALL BE INSTALLED PER ECSUD STANDARDS, MANUFACTURER'S SPECIFICATIONS AND IN COMPLIANCE WITH ALL APPLICABLE HEALTH AND SAFETY REGULATIONS. COORDINATE FINAL LOCATION WITH ECSUD PRIOR TO INSTALLATION. ALL COMPONENTS SHALL BE SUITABLE FOR POTABLE WATER USE, AND THE STATION SHALL BE PROTECTED FROM FREEZING, TAMPERING, AND OTHER ENVIRONMENTAL FACTORS.

32. WHEN INSTALLING A CUT-IN TEE TO TIE INTO AN EXISTING WATER MAIN, MECHANICAL BELL JOINT RESTRAINTS SHALL BE PROVIDED ON ALL ADJACENT EXISTING PIPE JOINTS TO PREVENT SEPARATION DUE TO THRUST FORCES. RESTRAINTS SHALL BE INSTALLED ON A MINIMUM OF ONE FULL LENGTH OF PIPE ON EACH SIDE OF THE NEW TEE, OR AS REQUIRED BY ECSUD STANDARDS. ALL RESTRAINT DEVICES SHALL BE COMPATIBLE WITH THE EXISTING PIPE MATERIAL AND PRESSURE CLASS, AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. COORDINATE WITH ECSUD FOR FINAL APPROVAL OF RESTRAINT TYPE AND EXTENT.

33. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE PERFORMED USING THE HIGH TEST HYPOCHLORITE (HTH) METHOD IN ACCORDANCE WITH AWWA C651 DISINFECTION PROCEDURES. THE HTH METHOD SHALL INVOLVE THE APPLICATION OF A CHLORINE SOLUTION DIRECTLY TO ALL INTERIOR SURFACES OF THE NEW FITTINGS, PIPE, AND APPURTENANCES IMMEDIATELY PRIOR TO INSTALLATION. THIS INCLUDES SWABBING OR SPRAYING WITH A MINIMUM 1% CHLORINE SOLUTION. NO OTHER DISINFECTION METHOD WILL BE ACCEPTED FOR TIE-INS. ALL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF ECSUD AND IN COMPLIANCE WITH THEIR STANDARDS. PROPER FLUSHING AND BACTERIOLOGICAL TESTING SHALL FOLLOW PRIOR TO PLACING THE MAIN INTO SERVICE.

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ZIGMOND TRACT UNIT 1

WATER STANDARD DETAILS AND GENERAL NOTES

DATE 10/10/2025

PROJECT NO. 04408.001

DRAWN BY DAF/SG/JW

CHECKED BY SPM

REVISIONS

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10/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 25-4486

SAWS JOB NO. XX-XXXX

C6.D3

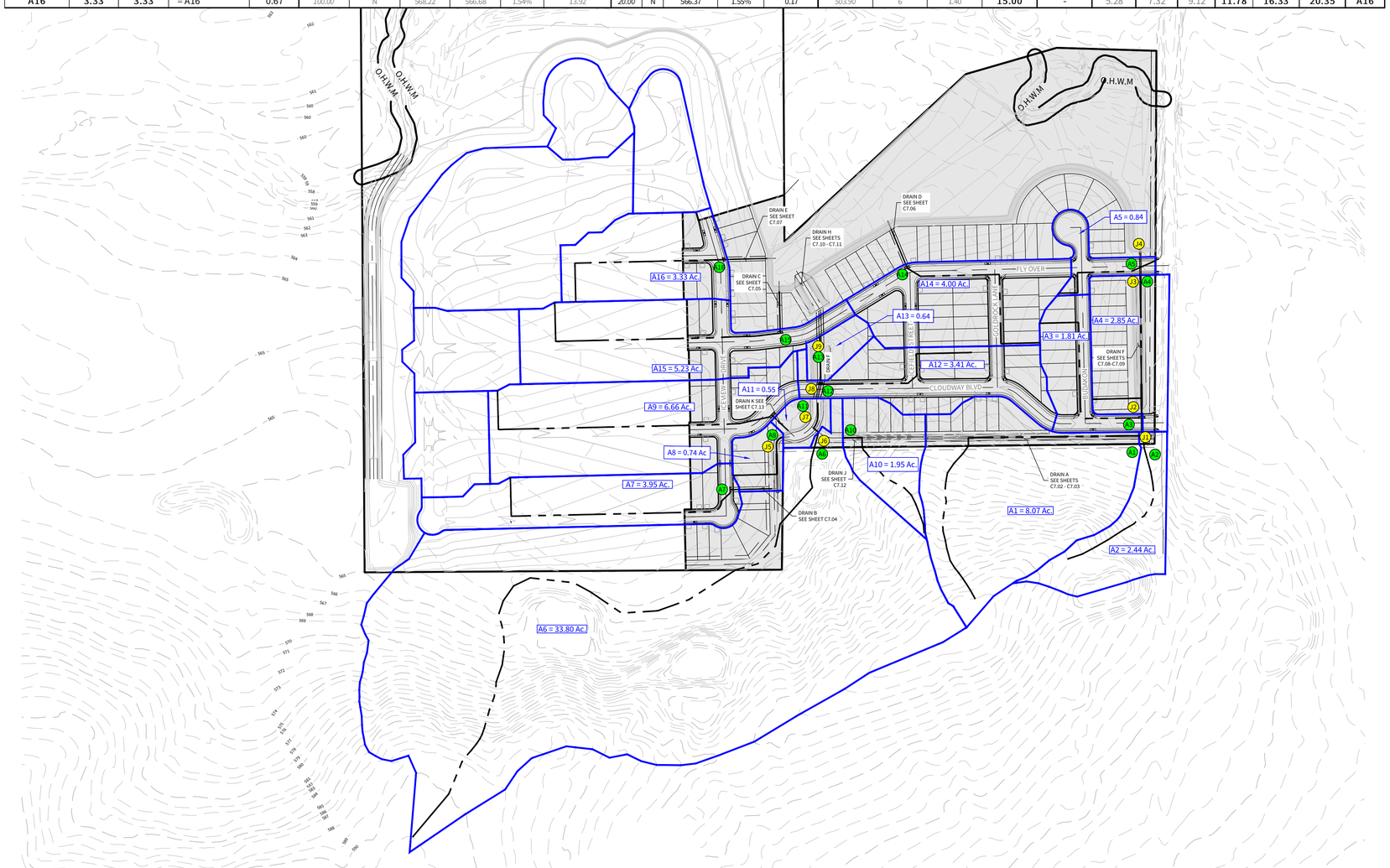
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

LOCATION MAP
N.T.S.

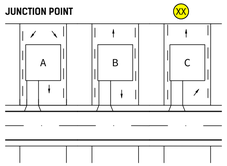
OWNER/DEVELOPER:
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

Drainage Shed	Shed Area (Ac.)	Total Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length < 100'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	Lag Time (0.6 x Tc) (hrs)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
A1	8.07	8.07	= A1	0.74	*100.00*	N	583.00	579.11	3.89%	11.11	*464.10*	N	563.91	3.28%	2.64	*511.92*	6	1.42	15.00	-	5.28	7.32	9.12	31.53	43.71	54.46	A1
A2	2.44	2.44	= A2	0.77	*100.00*	N	578.00	575.51	2.49%	12.02	*447.36*	N	559.61	3.55%	2.44	*43.47*	6	0.12	14.00	-	5.47	7.60	9.48	10.28	14.28	17.81	A2
J1	-	10.51	= A1+A2	0.75	*100.00*	N	583.00	579.11	3.89%	11.11	*464.10*	N	563.91	3.28%	2.64	*511.92*	6	1.42	15.00	-	5.28	7.32	9.12	41.62	57.70	71.89	J1
A3	1.81	1.81	= A3	0.77	*100.00*	N	568.89	567.34	1.55%	13.90	*534.23*	Y	560.62	1.26%	3.93				17.00	-	4.94	6.84	8.50	6.88	9.53	11.85	A3
J2	-	12.32	= J1 + A3	0.76	*100.00*	N	568.68	567.18	1.50%	14.00	*571.89*	Y	562.41	0.83%	5.18				19.00	-	4.66	6.45	8.00	43.63	60.39	74.91	J2
A4	2.85	2.85	= A4	0.71	*100.00*	N	565.48	563.17	2.31%	12.38	*20.00*	N	562.81	1.80%	0.15	*454.14*	6	1.26	13.00	-	5.66	7.89	9.85	11.45	15.97	19.93	A4
J3	-	15.17	= J2 + A4	0.76	*100.00*	N	568.68	567.18	1.50%	14.00	*571.89*	Y	562.41	0.83%	5.18	*462.69*	6	1.29	20.00	-	4.54	6.28	7.79	52.34	72.40	89.81	J3
A5	0.77	0.77	= A5	0.92	*100.00*	Y	569.04	567.18	1.86%	5.00	*299.30*	Y	558.73	2.82%	1.46				6.00	-	7.45	10.43	13.08	5.28	7.39	9.27	A5
J4	-	15.94	= J3 + A5	0.77	*100.00*	N	568.68	567.18	1.50%	14.00	*571.89*	Y	562.41	0.83%	5.18	*462.69*	6	1.29	20.00	-	4.54	6.28	7.79	55.72	77.08	95.61	J4
A6	33.80	33.80	= A6	0.75	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1076.21*	6	2.99	24.00	-	4.14	5.72	7.08	104.95	145.00	179.48	A6
A7	3.95	3.95	= A7	0.77	*100.00*	N	568.35	566.87	1.48%	14.04	*20.00*	N	566.55	1.60%	0.16	*770.76*	6	2.14	16.00		5.10	7.07	8.79	15.51	21.50	26.73	A7
A8	0.74	0.74	= A8	0.77	*100.00*	N	562.95	561.48	1.47%	14.06	*20.00*	N	561.15	1.65%	0.16	*163.23*	6	0.45	14.00		5.47	7.60	9.48	3.12	4.33	5.40	A8
J5	-	4.69	= A7 + A8	0.77	*100.00*	N	568.35	566.87	1.48%	14.04	*20.00*	N	566.55	1.60%	0.16	*770.76*	6	2.14	16.00	-	5.10	7.07	8.79	18.42	25.53	31.74	J5
A9	6.66	6.66	= A9	0.77	*100.00*	N	568.60	566.72	1.88%	13.24	*20.00*	N	566.34	1.90%	0.15	*915.97*	6	2.54	15.00	-	5.28	7.32	9.12	27.08	37.54	46.77	A9
A10	1.95	1.95	= A10	0.73	*100.00*	N	575.00	571.02	3.98%	11.02	*268.25*	N	559.66	4.23%	1.34	*95.12*	6	0.26	12.00	-	5.86	8.19	10.24	8.34	11.66	14.58	A10
A11	0.55	0.55	= A11	0.77	*100.00*	N	583.00	578.90	4.10%	11.00	*435.57*	N	559.00	4.57%	2.09	*247.34*	6	0.69	13.00	-	5.66	7.89	9.85	2.40	3.34	4.17	A11
J6	-	35.75	= A6 + A10	0.75	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*903.27*	6	2.51	24.00	-	4.14	5.72	7.08	111.00	153.37	189.83	J6
J7	-	47.65	= J5 + J6 + A9 + A11	0.76	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1516.79*	6	4.21	25.00	-	4.06	5.60	6.93	147.03	202.80	250.96	J7
A12	3.41	3.41	= A12	0.77	*100.00*	N	568.37	566.85	1.52%	13.96	*74.75*	N	565.75	1.47%	0.64	*415.84*	6	1.16	15.00	-	5.28	7.32	9.12	13.86	19.22	23.95	A12
J8	-	51.06	= J7 + A12	0.77	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1516.79*	6	4.21	25.00	-	4.06	5.60	6.93	159.62	220.17	272.46	J8
A13	0.64	0.64	= A13	0.67												*146.62*	6	0.41	10.00	-	6.30	8.82	11.05	2.70	3.78	4.74	A13
J9	-	51.70	= J8 + A13	0.77	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1663.41*	6	4.62	26.00	-	3.98	5.49	6.80	158.44	218.55	270.70	J9
A14	4.00	4.00	= A14	0.77	*100.00*	N	569.09	567.67	1.42%	14.16	*575.69*	Y	563.29	0.76%	5.45				19.00	-	4.66	6.45	8.00	14.35	19.87	24.64	A14
A15	5.23	5.23	= A15	0.77	*100.00*	N	568.57	567.06	1.51%	13.98	*20.00*	N	566.76	1.50%	0.17	*748.42*	6	2.08	16.00	-	5.10	7.07	8.79	20.54	28.47	35.40	A15
A16	3.33	3.33	= A16	0.67	*100.00*	N	568.22	566.68	1.54%	13.92	*20.00*	N	566.37	1.55%	0.17	*503.90*	6	1.40	15.00	-	5.28	7.32	9.12	11.78	16.33	20.35	A16



LEGEND
- SITE BOUNDARY
- 1% CHANCE ANNUAL FEMA F/P
- DRAINAGE AREA
- Tc FLOW PATH
- ACCUMULATION POINT (O)
- JUNCTION POINT (XX)



TYPICAL LOT SITE PLAN
N.T.S.

SCALE: 1"=200'
0 200 400

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

OVERALL DRAINAGE MASTER PLAN - PROPOSED CONDITIONS

DATE
10/11/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
1.
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10.

10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.00

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P:\04408\2025\2 DWG\4 Figures\C4.00 OVERALL DRAINAGE MASTER PLAN - PROPOSED CONDITIONS.dwg 2025/10/13 1:33:36pm jwatkins

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:
M.W. CUDE ENGINEERS, L.L.C.
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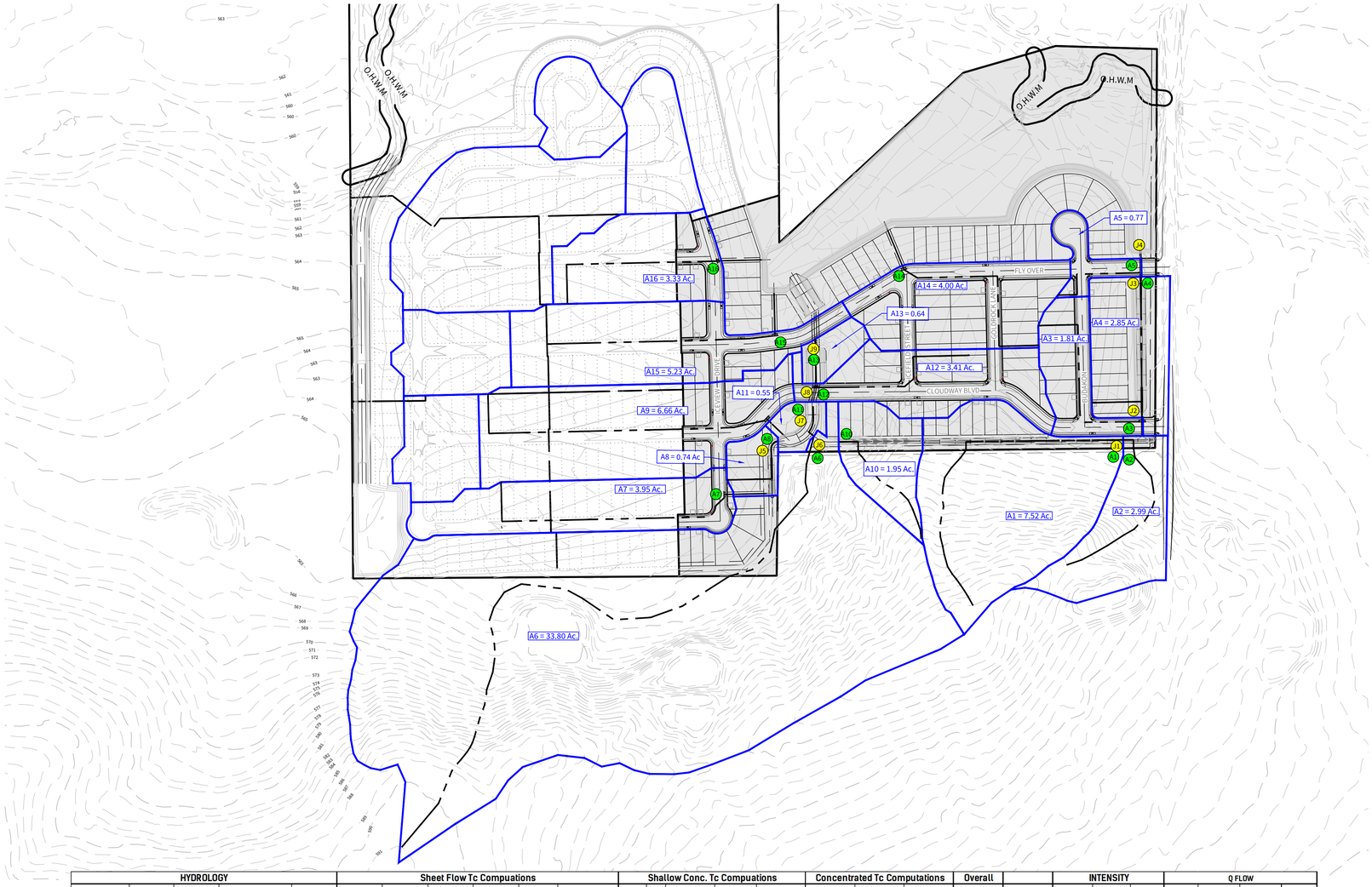
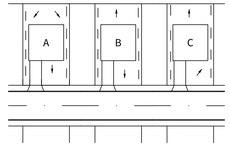


SCALE: 1"=200'
0 200 400

LEGEND
- SITE BOUNDARY
- 1% CHANCE ANNUAL FEMA F/P
- DRAINAGE AREA
- Tc FLOW PATH
- ACCUMULATION POINT (XX)
- JUNCTION POINT (XX)



TYPICAL LOT SITE PLAN
N.T.S.

HYDROLOGY					Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Concentrated Tc Computations			Overall		INTENSITY			Q FLOW			
Drainage Shed	Shed Area (Ac.)	Total Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length - 100'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	Lag Time (0.6 x Tc) (hrs)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
A1	8.07	8.07	= A1	0.74	*100.00*	N	583.00	579.11	3.89%	11.11	*464.10*	N	563.91	3.28%	2.64	*511.92*	6	1.42	15.00	-	5.28	7.32	9.12	31.53	43.71	54.46	A1
A2	2.44	2.44	= A2	0.77	*100.00*	N	578.00	575.51	2.49%	12.02	*447.36*	N	559.61	3.55%	2.44	*43.47*	6	0.12	14.00	-	5.47	7.60	9.48	10.28	14.28	17.81	A2
J1	-	10.51	= A1+A2	0.75	*100.00*	N	583.00	579.11	3.89%	11.11	*464.10*	N	563.91	3.28%	2.64	*511.92*	6	1.42	15.00	-	5.28	7.32	9.12	41.62	57.70	71.89	J1
A3	1.81	1.81	= A3	0.77	*100.00*	N	568.89	567.34	1.55%	13.90	*534.23*	Y	560.62	1.26%	3.93				17.00	-	4.94	6.84	8.50	6.88	9.53	11.85	A3
J2	-	12.32	= J1 + A3	0.76	*100.00*	N	568.68	567.18	1.50%	14.00	*571.89*	Y	562.41	0.83%	5.18				19.00	-	4.66	6.45	8.00	43.63	60.39	74.91	J2
A4	2.85	2.85	= A4	0.71	*100.00*	N	565.48	563.17	2.31%	12.38	*20.00*	N	562.81	1.80%	0.15	*454.14*	6	1.26	13.00	-	5.66	7.89	9.85	11.45	15.97	19.93	A4
J3	-	15.17	= J2 + A4	0.76	*100.00*	N	568.68	567.18	1.50%	14.00	*571.89*	Y	562.41	0.83%	5.18	*462.69*	6	1.29	20.00	-	4.54	6.28	7.79	52.34	72.40	89.81	J3
A5	0.77	0.77	= A5	0.92	*100.00*	Y	569.04	567.18	1.86%	5.00	*299.30*	Y	558.73	2.82%	1.46				6.00	-	7.45	10.43	13.08	5.28	7.39	9.27	A5
J4	-	15.94	= J3 + A5	0.77	*100.00*	N	568.68	567.18	1.50%	14.00	*571.89*	Y	562.41	0.83%	5.18	*462.69*	6	1.29	20.00	-	4.54	6.28	7.79	55.72	77.08	95.61	J4
A6	33.80	33.80	= A6	0.75	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1076.21*	6	2.99	24.00	-	4.14	5.72	7.08	104.95	145.00	179.48	A6
A7	3.95	3.95	= A7	0.77	*100.00*	N	568.35	566.87	1.48%	14.04	*20.00*	N	566.55	1.60%	0.16	*770.76*	6	2.14	16.00		5.10	7.07	8.79	15.51	21.50	26.73	A7
A8	0.74	0.74	= A8	0.77	*100.00*	N	562.95	561.48	1.47%	14.06	*20.00*	N	561.15	1.65%	0.16	*163.23*	6	0.45	14.00		5.47	7.60	9.48	3.12	4.33	5.40	A8
J5	-	4.69	= A7 + A8	0.77	*100.00*	N	568.35	566.87	1.48%	14.04	*20.00*	N	566.55	1.60%	0.16	*770.76*	6	2.14	16.00	-	5.10	7.07	8.79	18.42	25.53	31.74	J5
A9	6.66	6.66	= A9	0.77	*100.00*	N	568.60	566.72	1.88%	13.24	*20.00*	N	566.34	1.90%	0.15	*915.97*	6	2.54	15.00	-	5.28	7.32	9.12	27.08	37.54	46.77	A9
A10	1.95	1.95	= A10	0.73	*100.00*	N	575.00	571.02	3.98%	11.02	*268.25*	N	559.66	4.23%	1.34	*95.12*	6	0.26	12.00	-	5.86	8.19	10.24	8.34	11.66	14.58	A10
A11	0.55	0.55	= A11	0.77	*100.00*	N	583.00	578.90	4.10%	11.00	*435.57*	N	559.00	4.57%	2.09	*247.34*	6	0.69	13.00	-	5.66	7.89	9.85	2.40	3.34	4.17	A11
J6	-	35.75	= A6 + A10	0.75	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*903.27*	6	2.51	24.00	-	4.14	5.72	7.08	111.00	153.37	189.83	J6
J7	-	47.65	= J5 + J6 + A9 + A11	0.76	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1516.79*	6	4.21	25.00	-	4.06	5.60	6.93	147.03	202.80	250.96	J7
A12	3.41	3.41	= A12	0.77	*100.00*	N	568.37	566.85	1.52%	13.96	*74.75*	N	565.75	1.47%	0.64	*415.84*	6	1.16	15.00	-	5.28	7.32	9.12	13.86	19.22	23.95	A12
J8	-	51.06	= J7 + A12	0.77	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1516.79*	6	4.21	25.00	-	4.06	5.60	6.93	159.62	220.17	272.46	J8
A13	0.64	0.64	= A13	0.67												*146.62*	6	0.41	10.00	-	6.30	8.82	11.05	2.70	3.78	4.74	A13
J9	-	51.70	= J8 + A13	0.77	*100.00*	N	591.00	590.45	0.55%	17.00	*838.83*	N	561.00	3.51%	4.61	*1663.41*	6	4.62	26.00	-	3.98	5.49	6.80	158.44	218.55	270.70	J9
A14	4.00	4.00	= A14	0.77	*100.00*	N	569.09	567.67	1.42%	14.16	*575.69*	Y	563.29	0.76%	5.45				19.00	-	4.66	6.45	8.00	14.35	19.87	24.64	A14
A15	5.23	5.23	= A15	0.77	*100.00*	N	568.57	567.06	1.51%	13.98	*20.00*	N	566.76	1.50%	0.17	*748.42*	6	2.08	16.00	-	5.10	7.07	8.79	20.54	28.47	35.40	A15
A16	3.33	3.33	= A16	0.67	*100.00*	N	568.22	566.68	1.54%	13.92	*20.00*	N	566.37	1.55%	0.17	*503.90*	6	1.40	15.00	-	5.28	7.32	9.12	11.78	16.33	20.35	A16

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

OVERALL DRAINAGE MASTER PLAN - ULTIMATE CONDITIONS

DATE
10/11/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
1.
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10/13/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

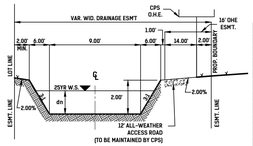
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.01

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

J:\04408\001\3-SHOP\PLANS\04408-001-DRAINAGE MASTER PLAN - ULTIMATE CONDITIONS.dwg 2025/10/13 10:37:09 jwalker



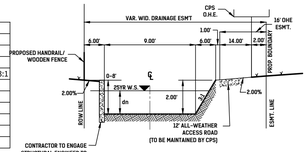
DRAIN "A-1" SECTION (N.T.S.)

	"A-1"	"A-2"
Q_{25} (cfs)	43.71	43.71
h (ft)	2	2
B_W (ft)	9	9
z	3:1	VERTICAL/3:1
n	0.035	0.034
S (%)	0.97%	0.97%
d_n (ft)	1.02	1.07
V (fps)	3.55	3.85
Max Shear Stress 25yr	0.48	0.51
Shear Stress Class*	D	D

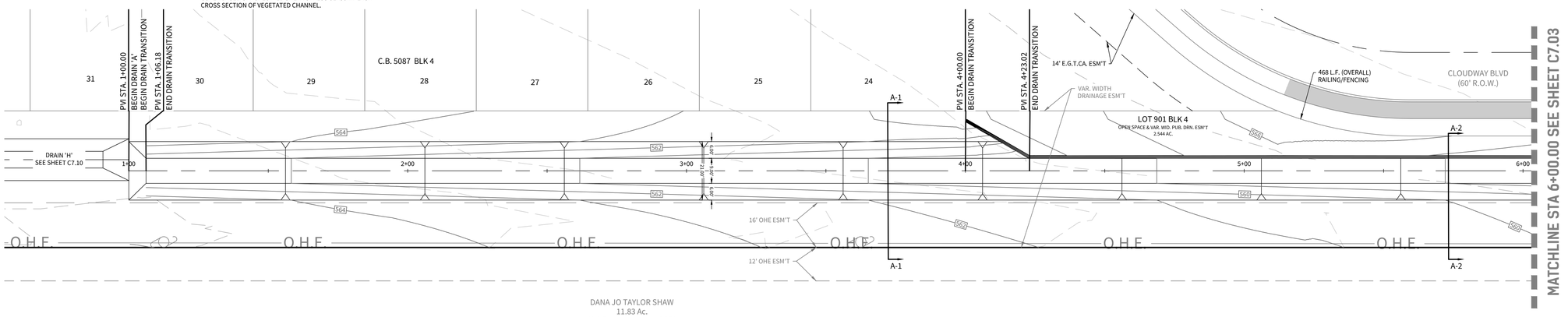
"A-1" STA. 01+06.18 TO STA. 05+12.00

"A-2" STA. 05+59.53 TO STA. 06+72.32

*CONTRACTOR IS TO REFER TO CoSA SWDCM FOR ACCEPTABLE COVER BASED OFF SPECIFIED SHEAR STRESS CLASS AT EACH CROSS SECTION OF VEGETATED CHANNEL.



DRAIN "A-2" SECTION (N.T.S.)



DANA JO TAYLOR SHAW
11.83 Ac.
(DOC. 20220050095 OPR)

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2. TURF REINFORCEMENT MAT (TRM) TO BE INSTALLED THROUGHOUT THE EARTHEN CHANNELS AS DENOTED WHERE VELOCITY OF STORM WATER RUNOFF IS GREATER THAN 6 FPS. IF ROCK SUBGRADE IS ENCOUNTERED DURING CONSTRUCTION, THEN ENGINEER SHALL DETERMINE IF VEGETATION CAN BE ESTABLISHED. IF IT IS DETERMINED BY THE ENGINEER THAT VEGETATION CAN NOT BE ESTABLISHED AND SUBGRAGE MATERIAL IS SUITABLE TO CONVEY STORM WATER FLOWS WITHOUT EROSION OR SCOUR, THEN TRM WILL NOT BE INSTALLED.

TRENCH EXCAVATION PROTECTION

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NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SAN ANTONIO.
5. ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.
6. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
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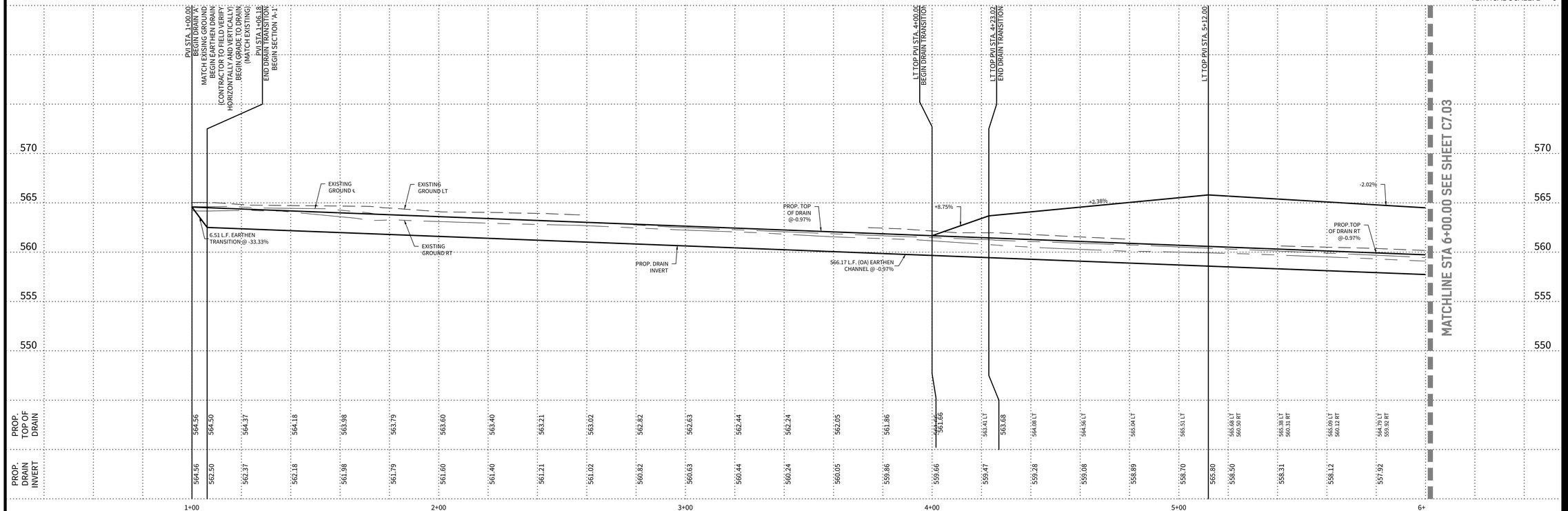
8. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.D1.
9. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

DRAIN A

STA. 1+00.00 TO STA. 6+00.00

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



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CUDE ENGINEERS

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

ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

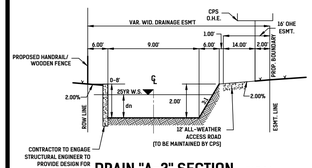
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.02

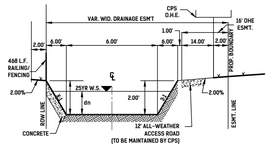
P:\04408\2025-12 DWG\4 Plans\CAD Sheets\PLAN & PROFILE - DRAIN A.dwg 10/13/2025 12:26pm jswhite

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



DRAIN "A-2" SECTION (N.T.S.)

DRAIN "A-3" SECTION



DRAIN "A-4" SECTION (N.T.S.)

	"A-2"	"A-3"	"A-4"
Q_{25} (cfs)	43.71	43.71	14.28
h (ft)	2	2	2
B_W (ft)	9	9	9
z	VERTICAL/3:1	VERTICAL/3:1	1.5:1 MAX/3:1
n	0.034	0.033	0.035
S (%)	0.97%	0.50%	6.21%
d_n (ft)	1.05	1.29	0.43
V (fps)	3.85	3.1	4.77
Max Shear Stress 25yr	0.51	0.31	1.43
Shear Stress Class*	D	D	ROCK RUBBLE

"A-2" STA. 05+59.53 TO STA. 06+72.32
"A-3" STA. 06+72.32 TO STA. 07+96.36
"A-4" STA. 08+30.22 TO STA. 08+55.46

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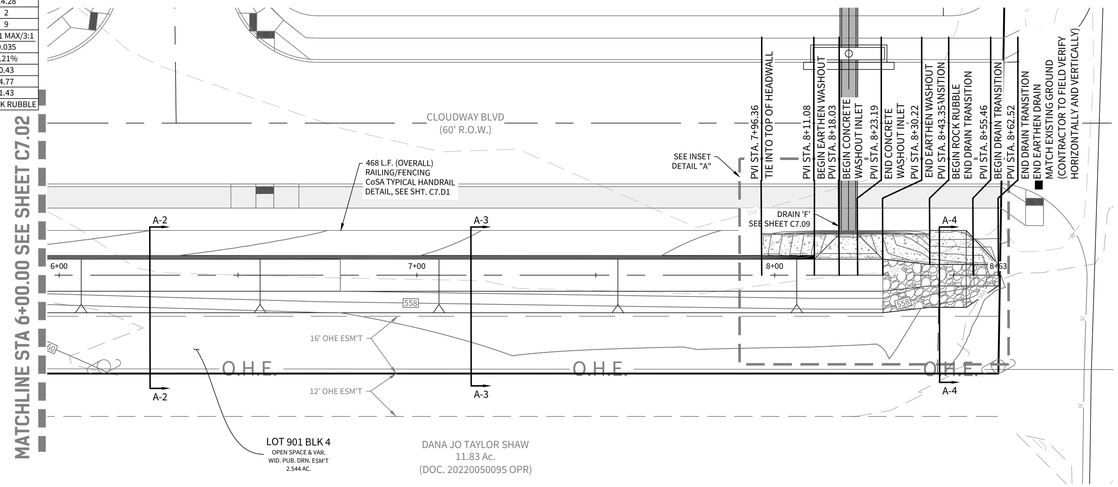

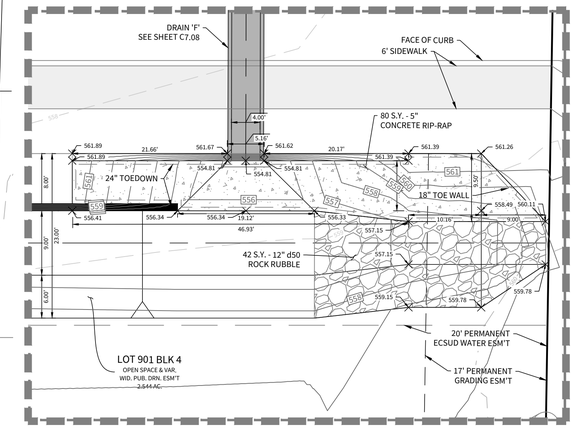

DETAIL "A"
(SCALE: 1" = 10')

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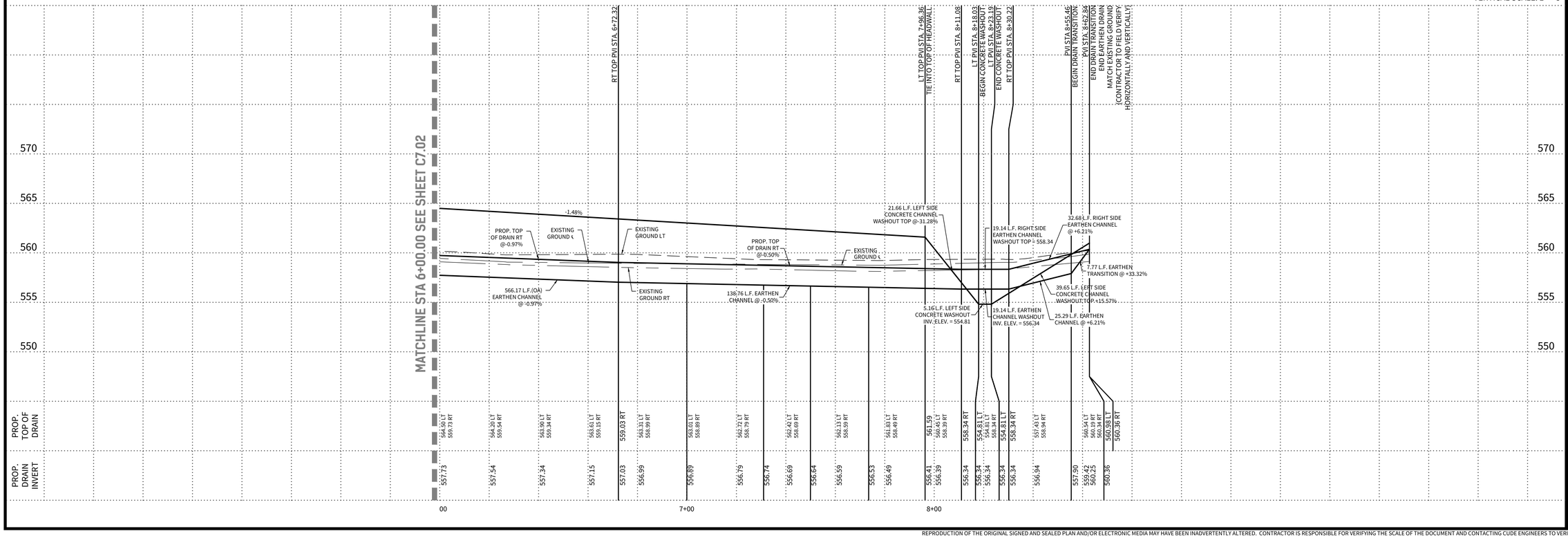
DRAIN 'A'

STA. 6+00.00 TO STA. 8+62.84

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



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ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.03

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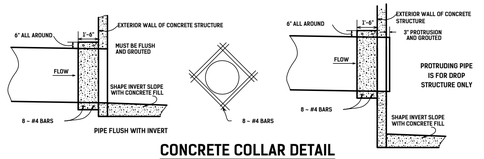
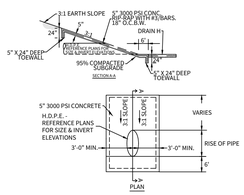
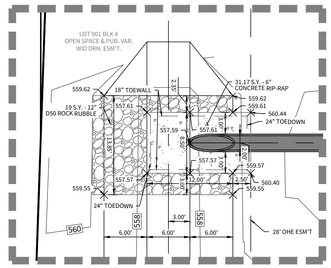


CONCRETE COLLAR DETAIL
(N.T.S.)



SLOPED END HEADWALL
(N.T.S.)



OUTFALL DETAIL
(SCALE 1" = 10')

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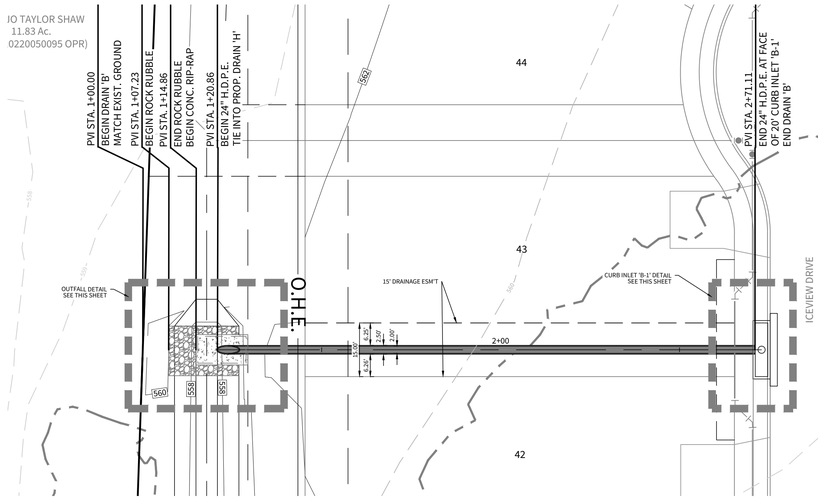

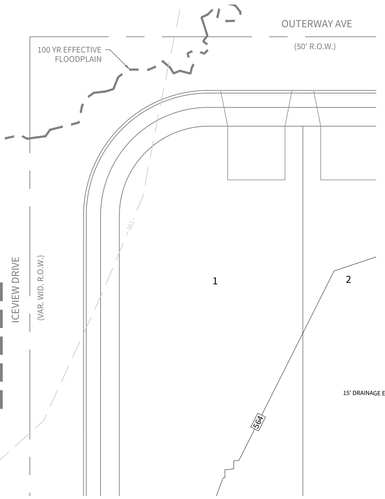

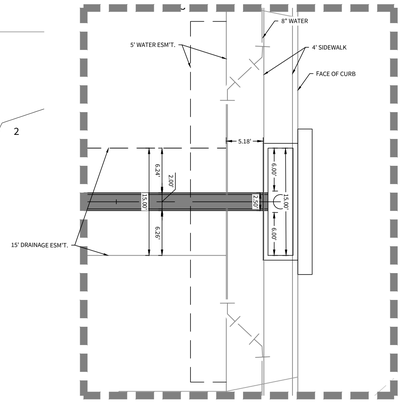

CURB INLET 'B-1' DETAIL
(SCALE 1" = 10')

NOTES:

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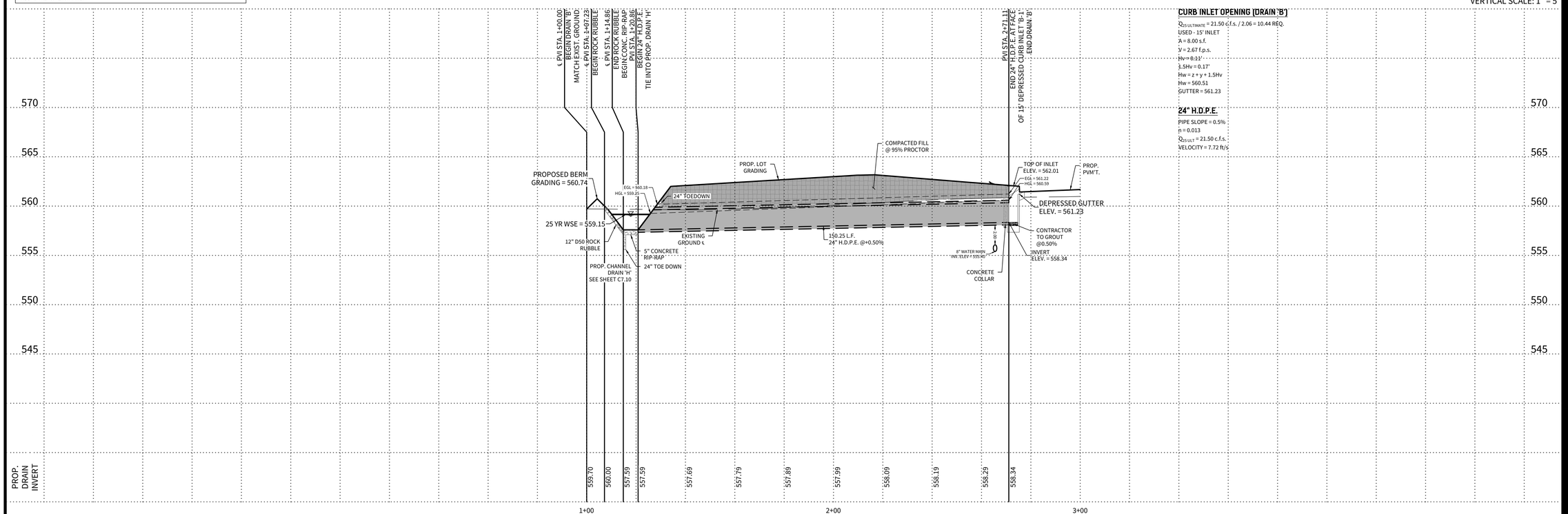
8. **REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.01.**
9. **CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.**

DRAIN B

STA. 1+20.86 TO STA. 2+71.11

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



CURB INLET OPENING (DRAIN 'B')

$Q_{25\,ULTIMATE}$ = 21.50 c.f.s. / 2.06 = 10.44 REQ.
USED - 15' INLET
A = 8.00 s.f.
V = 2.67 f.p.s.
Hv=v²/2g =
1.5Hv = 0.17'
Hw = z + y + 1.5Hv
Hw = 560.51
GUTTER = 561.23

24" H.D.P.E.

PIPE SLOPE = 0.5%
n = 0.013
$Q_{25\,ULT}$ = 21.50 c.f.s.
VELOCITY = 7.72 ft/s

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CUDE ENGINEERS

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

ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'B'

DATE
10/11/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.04

P:\04408\2025\2-DWG\4-Plans\CAD\Sheets\PLAN & PROFILE - DRAIN B.dwg 2025/10/11 11:53am jsanchez

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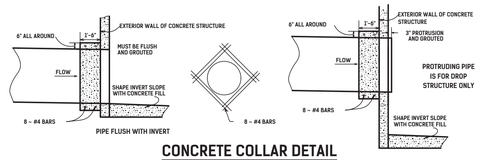
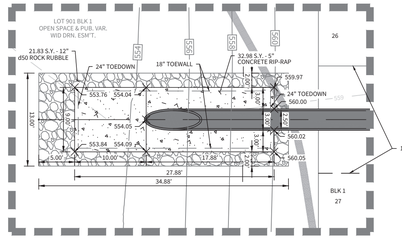
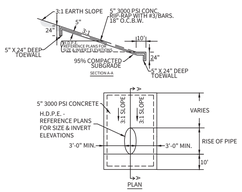


CONCRETE COLLAR DETAIL
(N.T.S.)



OUTFALL DETAIL
(SCALE 1" = 10')



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(N.T.S.)

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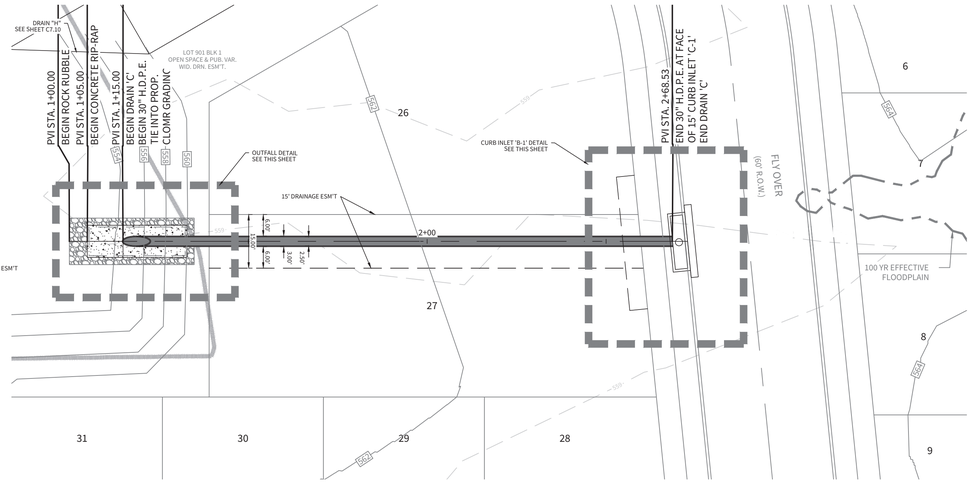
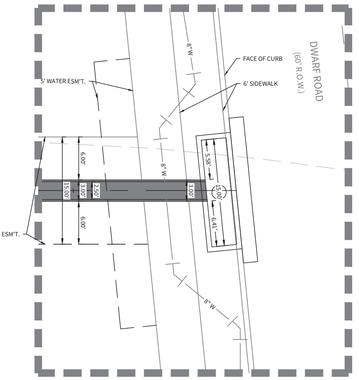
TRENCH EXCAVATION PROTECTION

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





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

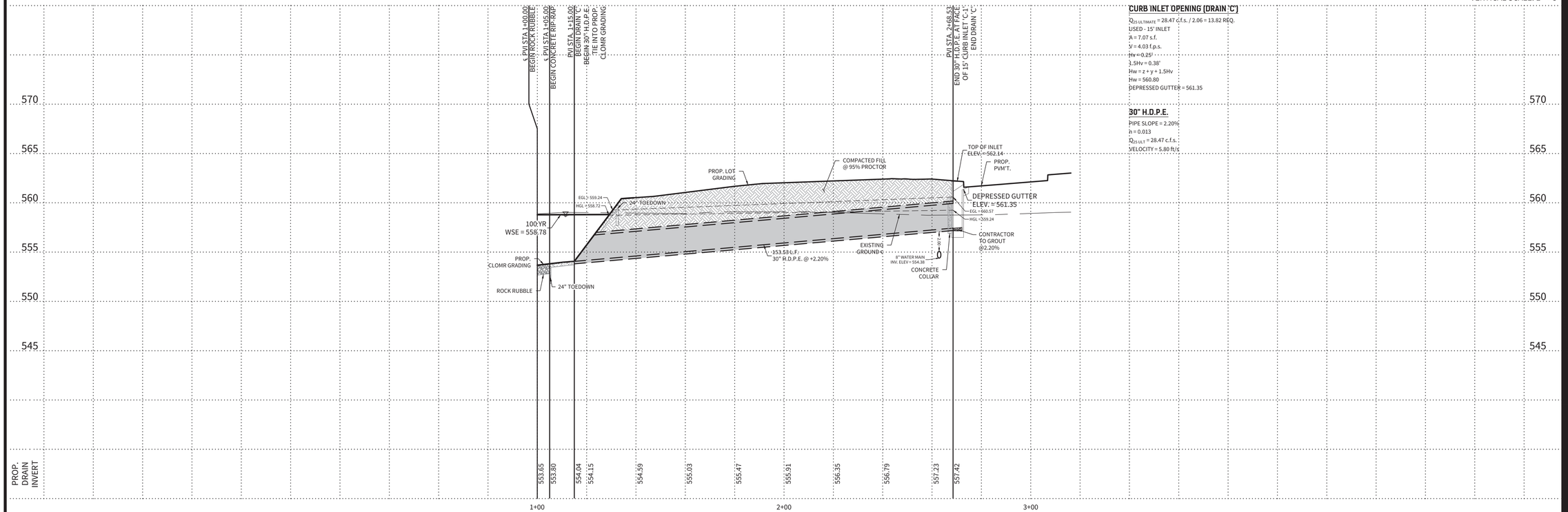
NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SAN ANTONIO.
5. ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.
6. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
7. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
8. REFERENCE TYPICAL CONCRETE CHANNEL RIP–RAP STANDARDS FOUND ON SHEET C7.01.
9. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

DRAIN C

STA. 1+00.00 TO STA. 2+68.53

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



CURB INLET OPENING (DRAIN 'C')

$Q_{25\ ULTIMATE}$ = 28.47 c.f.s. / 2.06 = 13.82 REQ.
USED - 15' INLET
A = 7.07 s.f.
V = 4.03 f.p.s.
Hv = 0.25'
1.5Hv = 0.38'
Hw = z + y + 1.5Hv
Hw = 560.80
DEPRESSED GUTTER = 561.35

30" H.D.P.E.

PIPE SLOPE = 2.20%
h = 0.013
$Q_{25\ ULT}$ = 28.47 c.f.s.
VELOCITY = 5.80 ft/s

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'C'

DATE
08/05/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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08/05/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

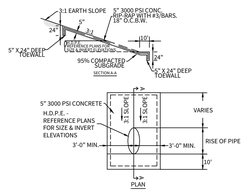
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

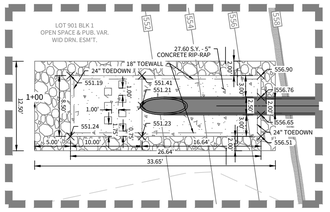
C7.05

P:\04408\2025\2-DWG\4-Plans\CAD Sheets\PLAN & PROFILE - DRAIN C.dwg 8/5/2025 8:55:33 AM jswilkins

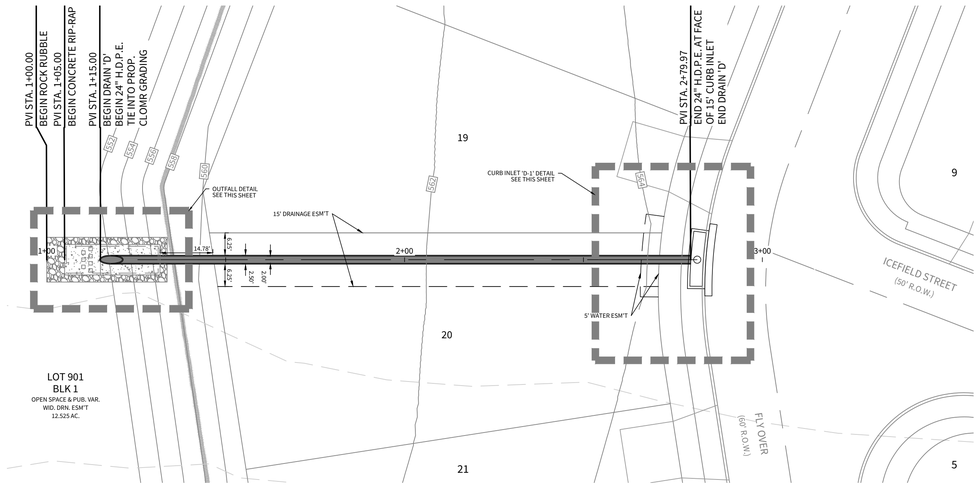
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

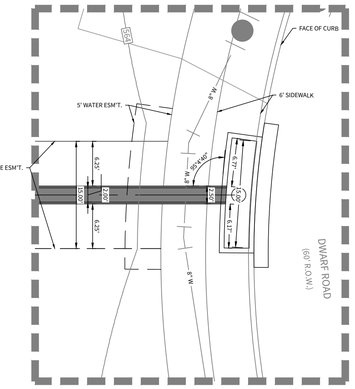


SLOPED END HEADWALL
(N.T.S.)



OUTFALL DETAIL
(SCALE 1" = 10')





CURB INLET 'D-1' DETAIL
(SCALE 1" = 10')

NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SAN ANTONIO.
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6. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
7. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
8. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.D1.
9. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

TRENCH EXCAVATION PROTECTION

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

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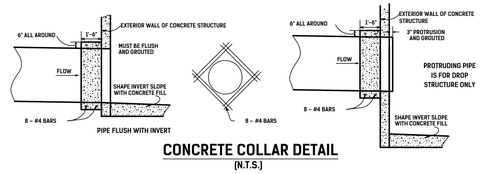
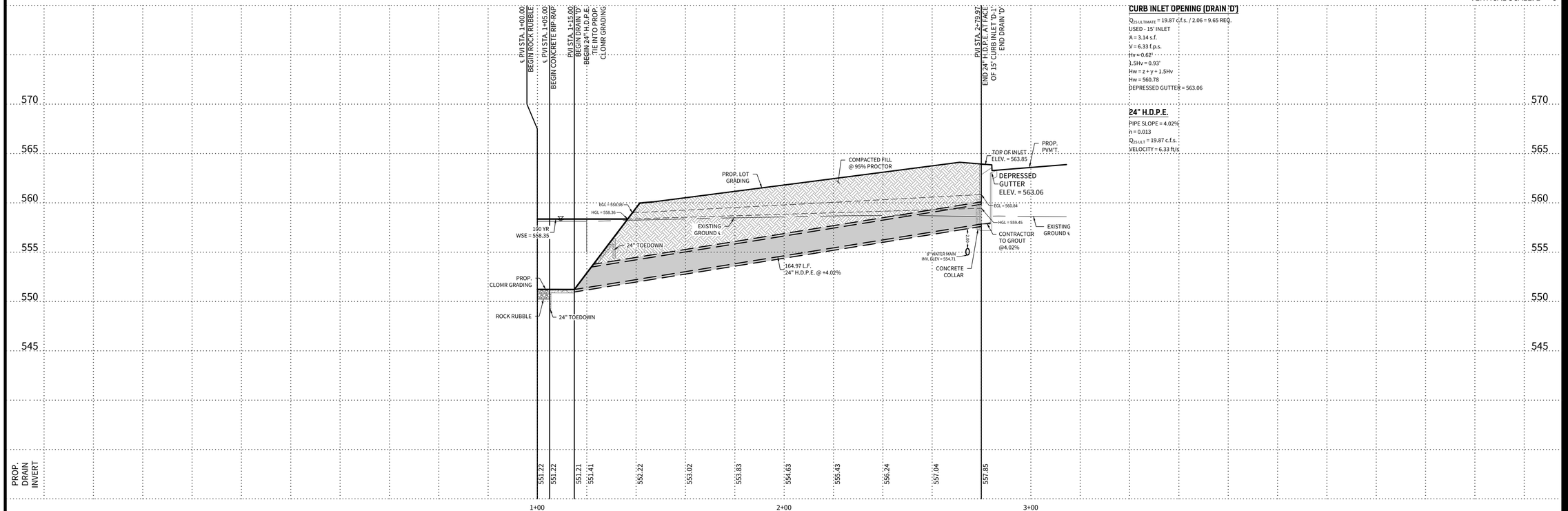


CONCRETE COLLAR DETAIL
(N.T.S.)

DRAIN D

STA. 1+00.00 TO STA. 2+79.97

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



CURB INLET OPENING (DRAIN 'D')

$Q_{25\ ULTIMATE}$ = 19.87 c.f.s. / 2.06 = 9.65 REQ.
USED - 15' INLET
A = 3.14 s.f.
V = 6.33 f.p.s.
Hv = 0.62'
1.5Hv = 0.93'
Hw = z + y + 1.5Hv
Hw = 560.78
DEPRESSED GUTTER = 563.06

24" H.D.P.E.

PIPE SLOPE = 4.02%
n = 0.013
$Q_{25\ ULT}$ = 19.87 c.f.s.
VELOCITY = 6.33 ft/s

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'D'

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

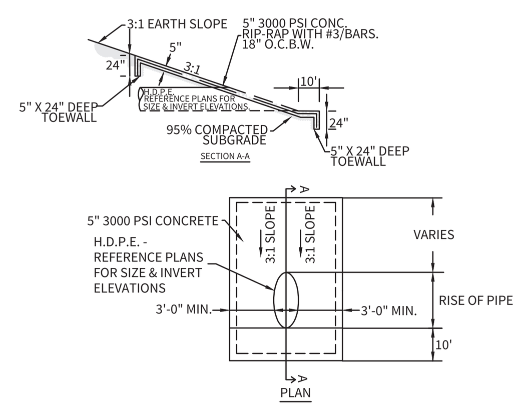
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.06

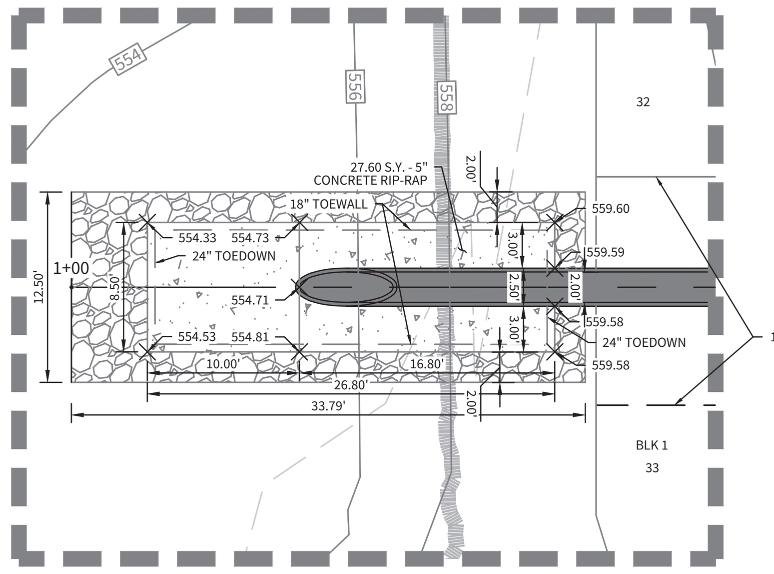
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\04408\2025\2-DWG\4-Plans\CAD\Drawn Plans\C7.06 DRAIN PLAN & PROFILE - DRAIN D.dwg 10/10/2025 3:30pm jswilkins



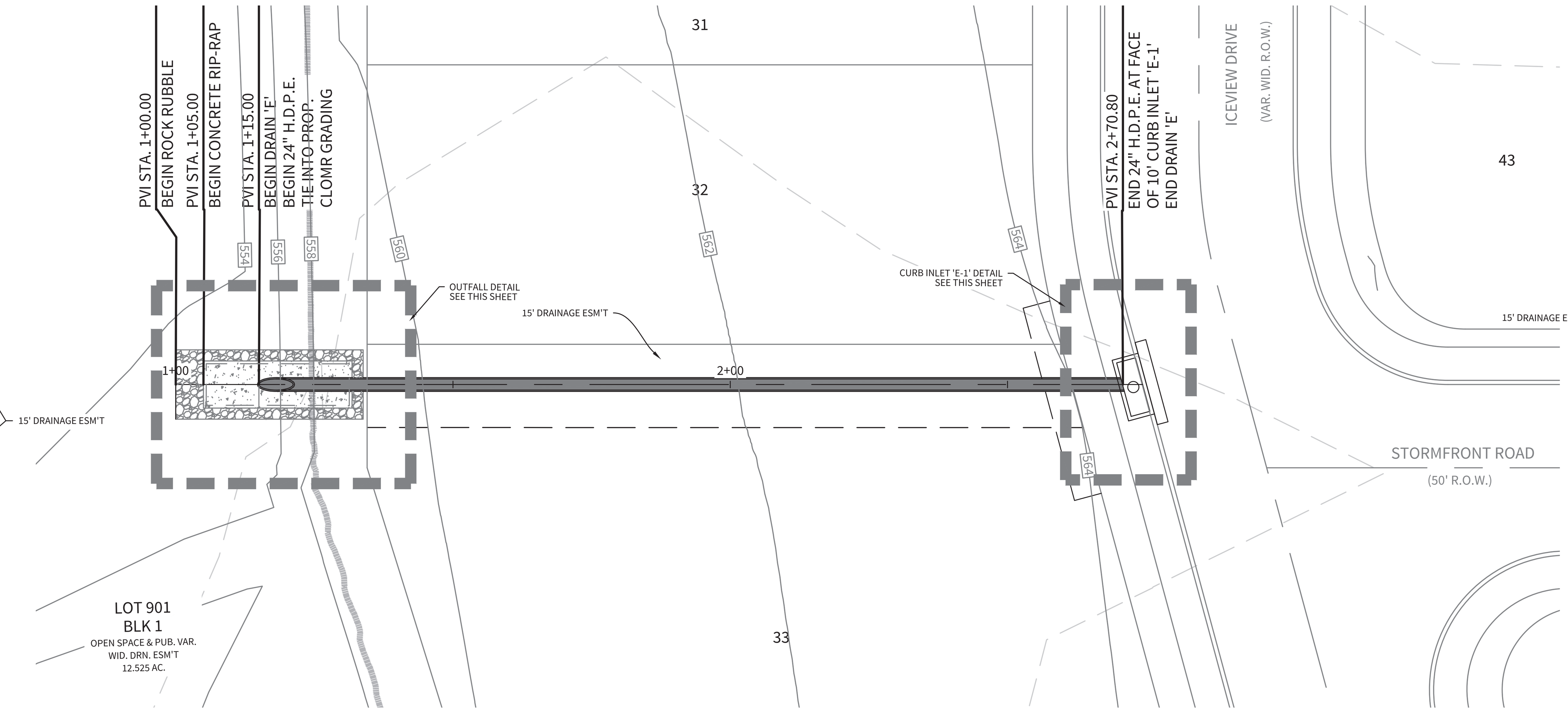
SLOPED END HEADWALL

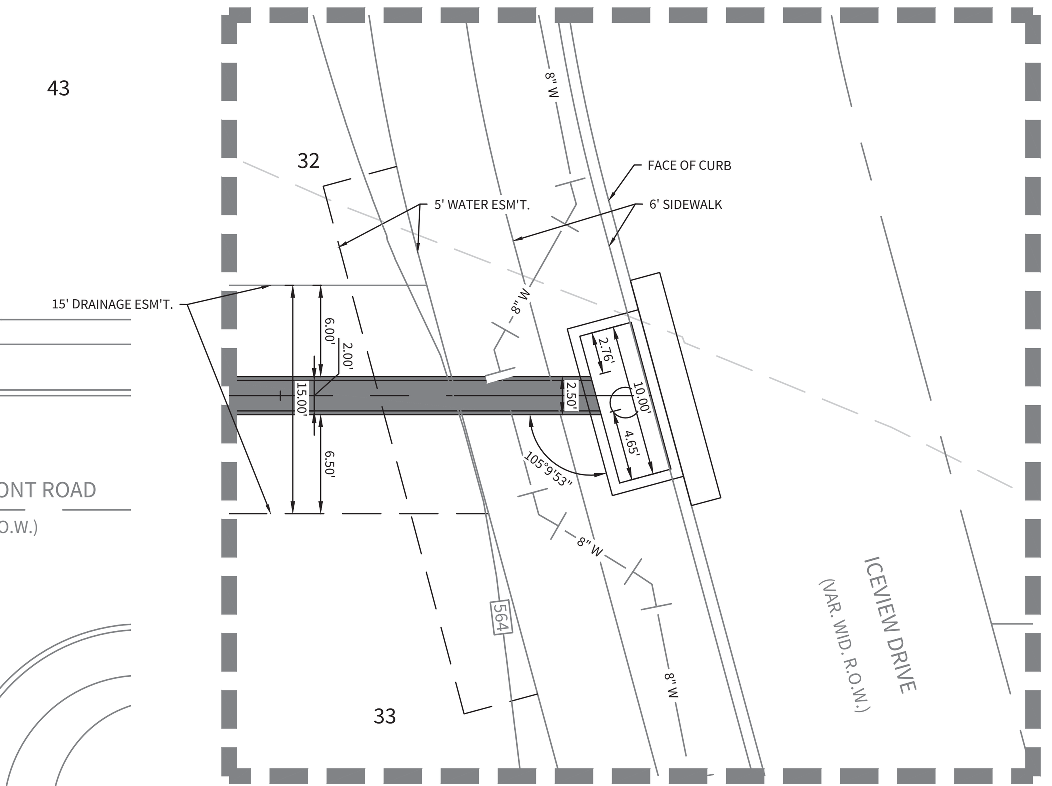
(N.T.S.)



OUTFALL DETAIL

(SCALE 1" = 10')





CURB INLET 'E-1' DETAIL

(SCALE 1" = 10')

NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SAN ANTONIO.
5. ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.
6. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
7. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
8. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.D1.
9. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

TRENCH EXCAVATION PROTECTION

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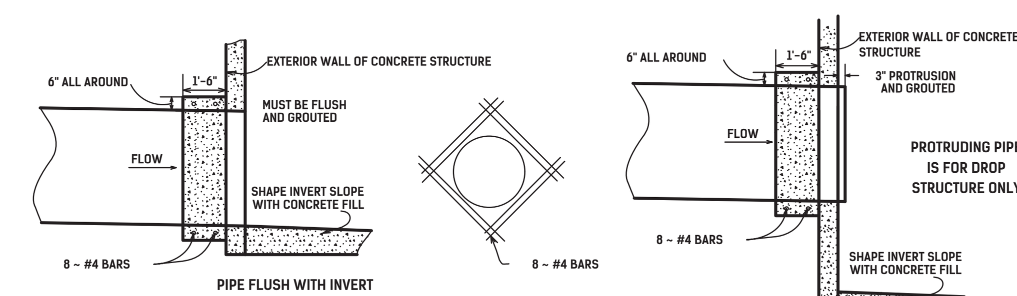


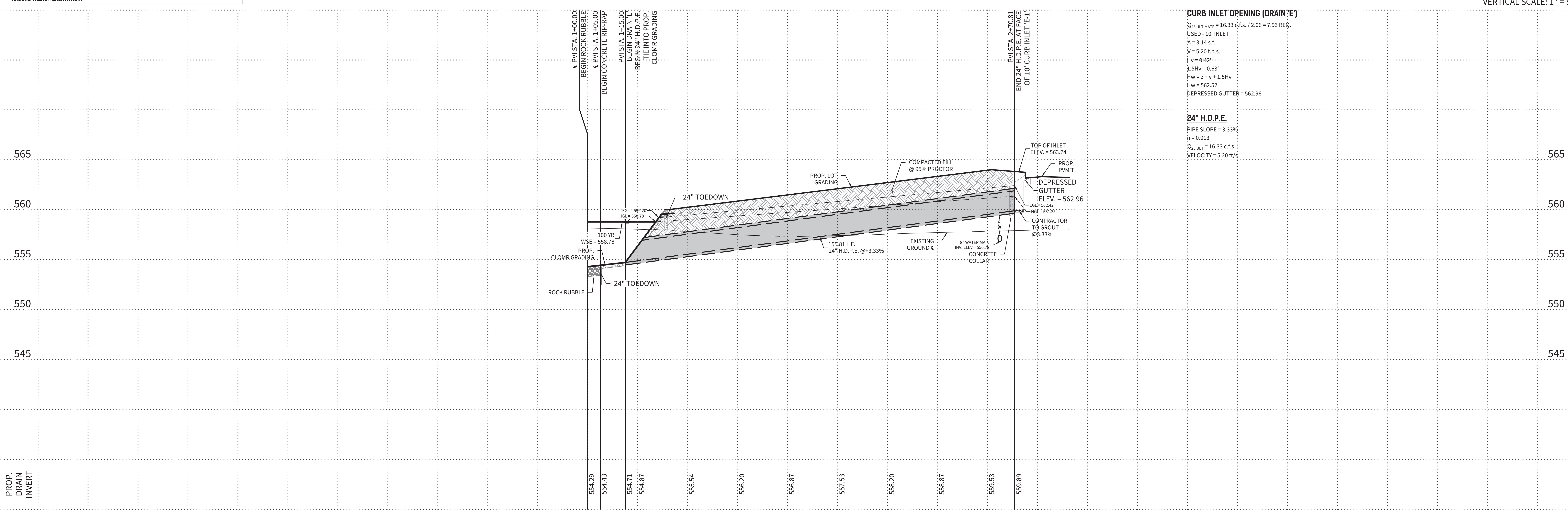
CONCRETE COLLAR DETAIL

(N.T.S.)

DRAIN E

STA. 1+00.00 TO STA. 2+70.81

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



CURB INLET OPENING (DRAIN 'E')

$Q_{25\ ULTIMATE}$ = 16.33 c.f.s. / 2.06 = 7.93 REQ.
USED - 10' INLET
A = 3.14 s.f.
V = 5.20 f.p.s.
Hv = 0.42'
1.5Hv = 0.63'
Hw = z + y + 1.5Hv
Hw = 562.52
DEPRESSED GUTTER = 562.96

24" H.D.P.E.

PIPE SLOPE = 3.33%
n = 0.013
$Q_{25\ ULT}$ = 16.33 c.f.s.
VELOCITY = 5.20 ft/s

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

ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'E'

DATE
08/05/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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08/05/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

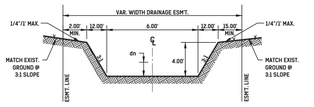
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C7.07

P:\04408\001\2-DWG\4-Plans\C6.08 DRAIN PLAN & PROFILE - DRAIN E.dwg 2025/08/05 2:36pm jwatkins

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

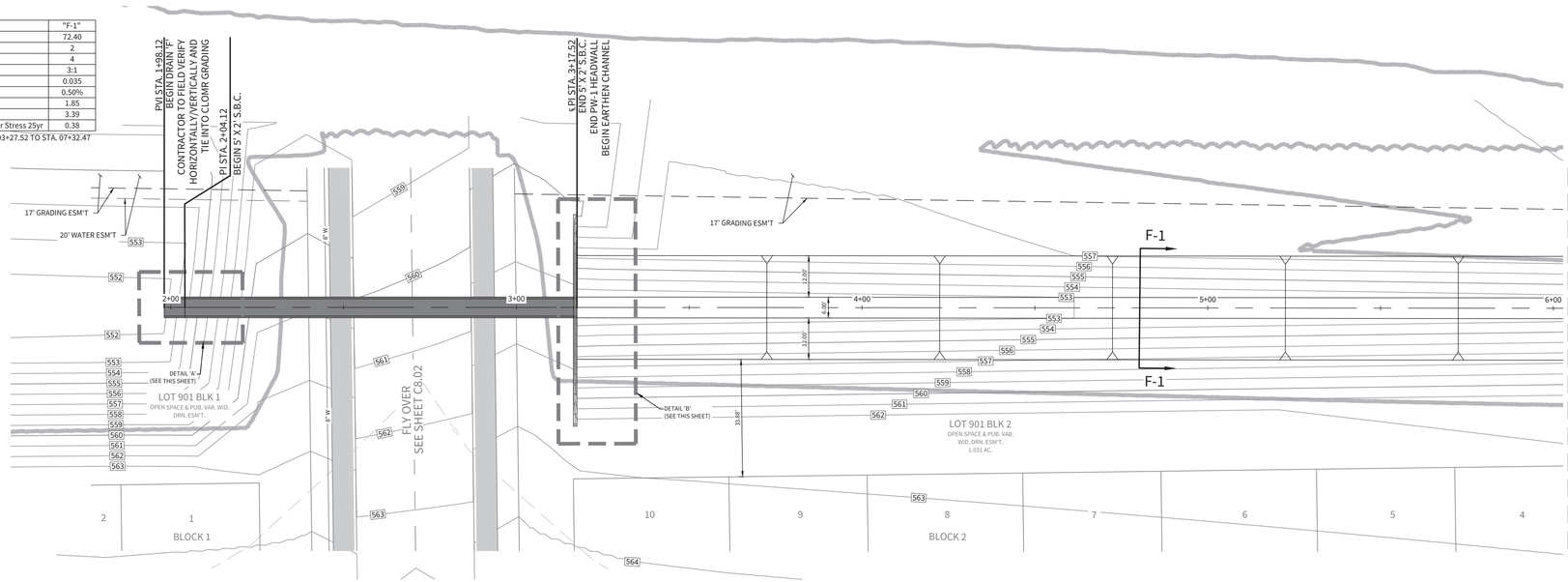


DRAIN "F-1" SECTION (N.T.S.)

"F-1" STA. 3+27.52 TO STA. 7+32.34

	"F-1"
Q_{25} (cfs)	72.40
h (ft)	2
B= (ft)	4
z	3:1
n	0.035
S (%)	0.50%
d_n (ft)	1.85
V (fps)	3.39
Max Shear Stress 25yr	0.38

"F-1" STA. 03+27.52 TO STA. 07+32.47



NOTES:

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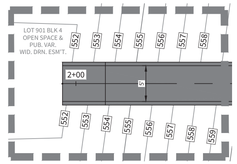
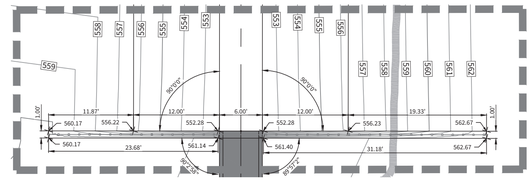
9. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

1. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
2. TURF REINFORCEMENT MAT (TRM) TO BE INSTALLED THROUGHOUT THE EARTHEN CHANNELS AS DENOTED WHERE VELOCITY OF STORM WATER RUNOFF IS GREATER THAN 6 FPS. IF ROCK SUBGRADE IS ENCOUNTERED DURING CONSTRUCTION, THEN ENGINEER SHALL DETERMINE IF VEGETATION CAN BE ESTABLISHED. IF IT IS DETERMINED BY THE ENGINEER THAT VEGETATION CAN NOT BE ESTABLISHED AND SUBGRAGE MATERIAL IS SUITABLE TO CONVEY STORM WATER FLOWS WITHOUT EROSION OR SCOUR, THEN TRM WILL NOT BE INSTALLED.



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

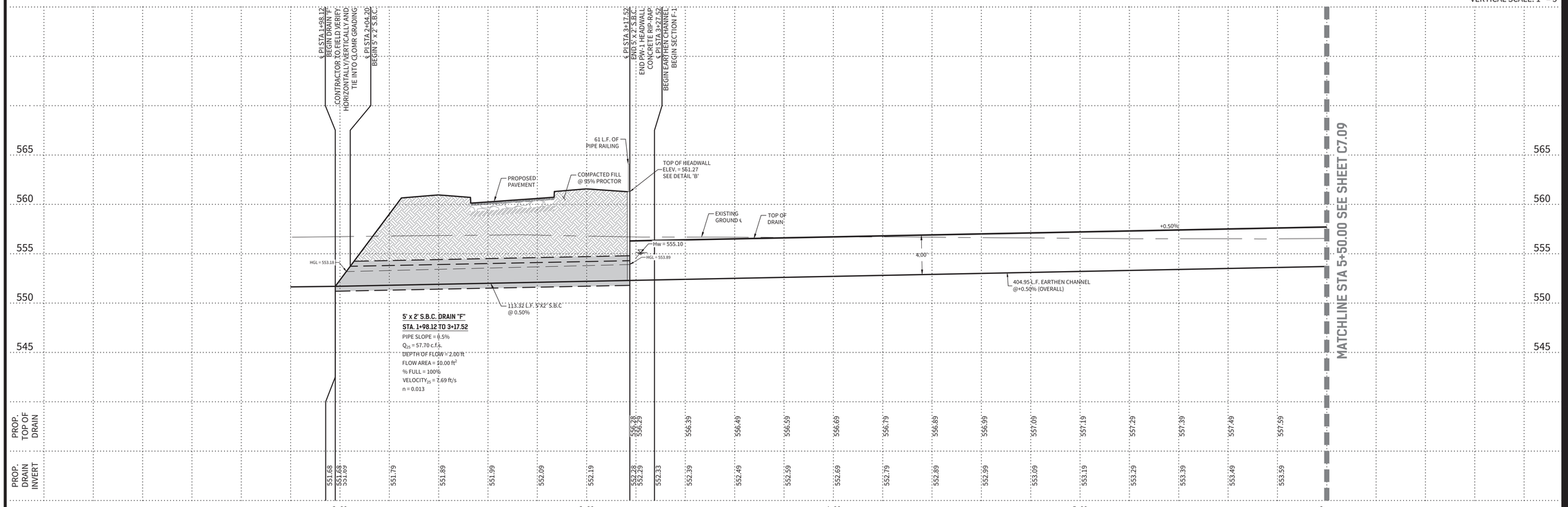


DETAIL 'B'
(SCALE: 1" = 10')

DRAIN 'F'

STA. 1+98.12 TO STA. 6+00.00

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



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

ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'F'

DATE
08/05/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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08/05/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

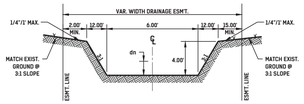
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C7.08

P:\04408\001\3-DWG\Plan\C8.02 DRAIN PLAN & PROFILE - DRAIN F.dwg 2025/08/05 2:36pm jwatkins

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



DRAIN "F-1" SECTION (N.T.S.)

"F-1" STA. 3+27.52 TO STA. 7+32.34

	"F-1"
Q_{25} (cfs)	72.40
h (ft)	2
B_W (ft)	4
z	3:1
n	0.035
S (%)	0.50%
d_n (ft)	1.85
V (fps)	3.39
Max Shear Stress 25yr	0.38

"F-1" STA. 03+27.52 TO STA. 07+32.47

NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SAN ANTONIO.
5. ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.
6. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
7. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
8. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.D1.
9. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.

1. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
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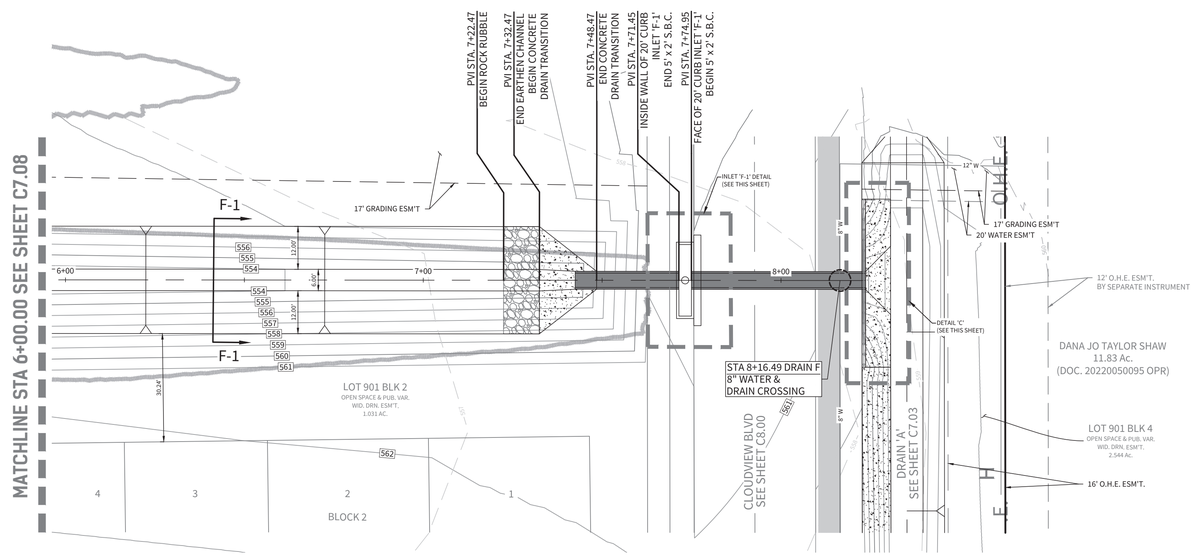
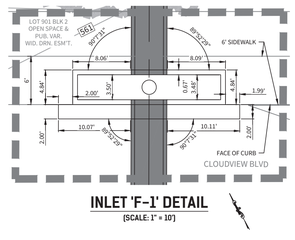
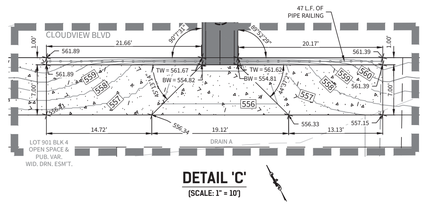




INLET 'F-1' DETAIL
(SCALE: 1" = 10')

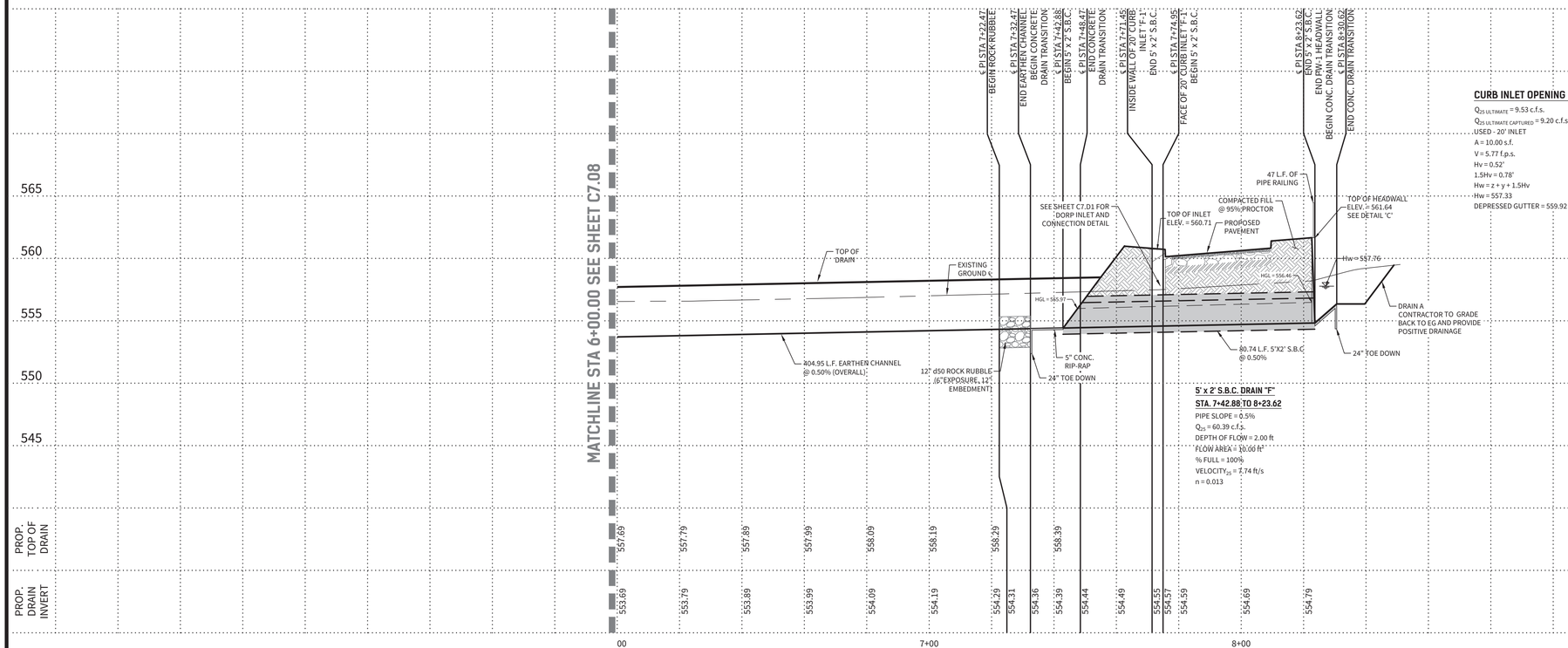


DETAIL 'C'
(SCALE: 1" = 10')

DRAIN 'F'

STA. 6+00.00 TO STA. 8+30.62

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



5' x 2' S.B.C. DRAIN "F"
STA. 7+42.88 TO 8+23.62
PIPE SLOPE = 0.5%
Q_{25} = 60.39 c.f.s.
DEPTH OF FLOW = 2.00 ft
FLOW AREA = 10.00 ft²
% FULL = 100%
$VELOCITY_{25}$ = 7.74 ft/s
n = 0.013

CURB INLET OPENING (DRAIN 'F')
$Q_{25\ ULTIMATE}$ = 9.53 c.f.s.
$Q_{25\ ULTIMATE\ CAPTURED}$ = 9.20 c.f.s.
USED - 20' INLET
A = 10.00 s.f.
V = 5.77 f.p.s.
Hv = 0.52'
1.5Hv = 0.78'
Hw = z + y + 1.5Hv
Hw = 557.33
DEPRESSED GUTTER = 559.92

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ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'F'

DATE
08/05/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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08/05/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

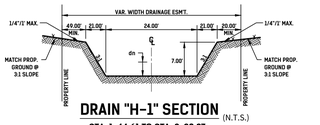
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

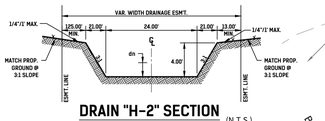
C7.09

P:\04408\001\3-SWG\4-Plans\CAD\DRAIN PLANS\ PROFILE - DRAIN F.dwg 2025/08/05 2:36pm jswilkins

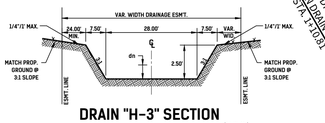
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



DRAIN "H-1" SECTION
STA. 1+44.61 TO STA. 2+29.27 (N.T.S.)



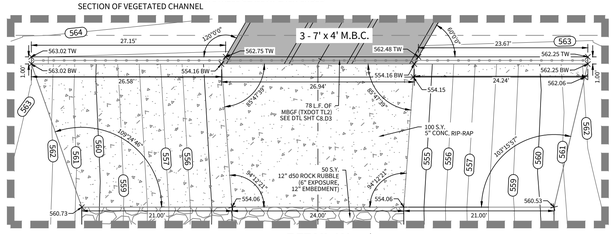
DRAIN "H-2" SECTION
STA. 3+80.00 TO STA. 4+65.36 (N.T.S.)



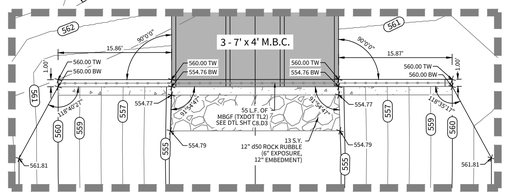
DRAIN "H-3" SECTION
STA. 5+59.35 TO STA. 6+36.62
STA. 6+57.24 TO STA. 7+17.92 (N.T.S.)

	"H-1"	"H-2"	"H-3"
Q_{100} (cfs)	218.55	218.55	202.80
B_W (ft)	24.00'	24.00'	28.00'
z	3:1	3:1	3:1
n	0.035	0.035	0.035
S (%)	0.50	0.50	0.50
d_N (ft)	1.86	1.86	1.64
V (fps)	3.97	3.97	3.76
Max Shear Stress 25yr	0.48	0.48	0.44
Shear Stress Class*	D	D	D

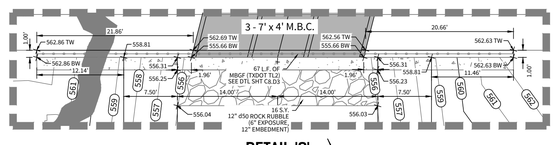
*CONTRACTOR IS TO REFER TO COSA SWDCM FOR ACCEPTABLE COVER BASED OFF SPECIFIED SHEAR STRESS CLASS AT EACH CROSS SECTION OF VEGETATED CHANNEL



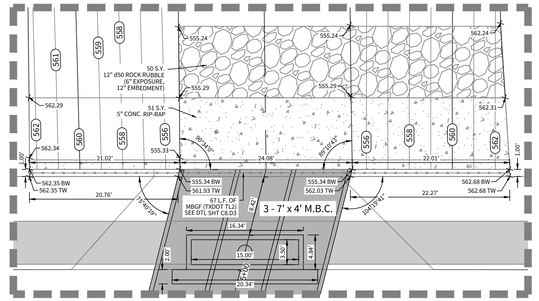
DETAIL 'A'
(SCALE 1" = 10')



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



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



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

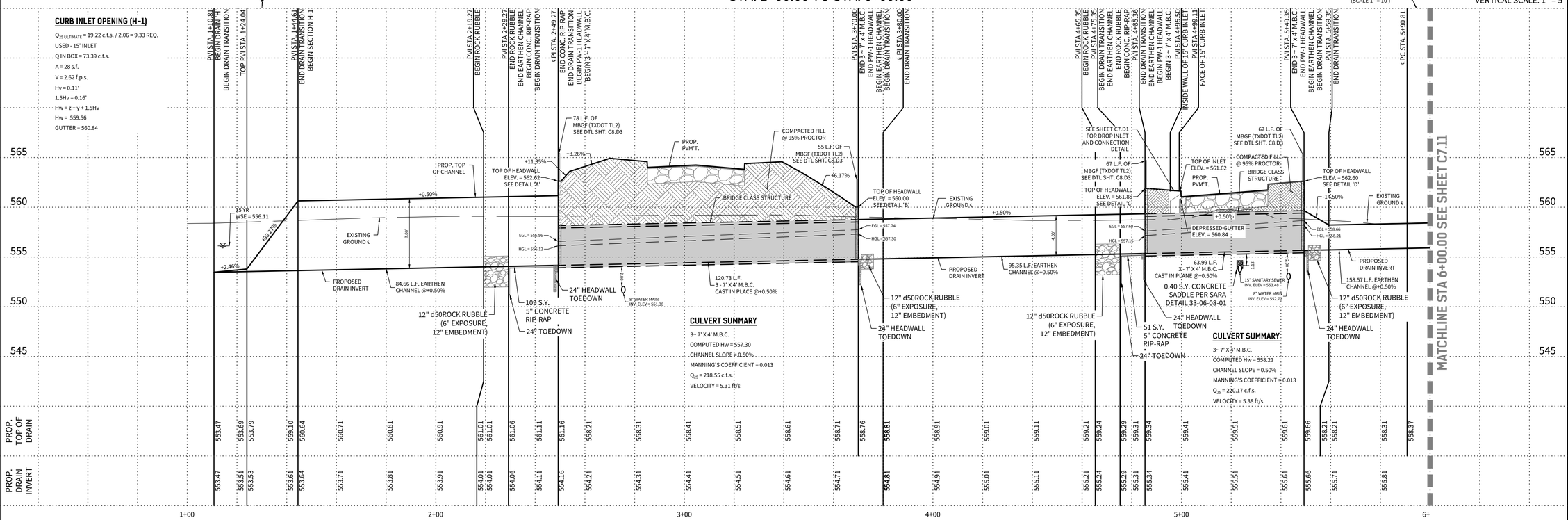
DRAIN 'H'

STA. 1+00.00 TO STA. 6+00.00

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

CURB INLET OPENING (H-1)

$Q_{25\ ULTIMATE}$ = 19.22 c.f.s. / 2.06 = 9.33 REQ.
USED - 15' INLET
Q IN BOX = 73.39 c.f.s.
A = 28 s.f.
V = 2.62 f.p.s.
Hv = 0.11'
1.5Hv = 0.16'
Hw = z + y + 1.5Hv
Hw = 559.56
GUTTER = 560.84



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ZIGMOND TRACT
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'H'

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

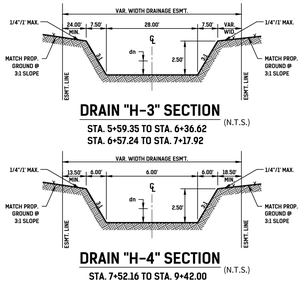
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.10

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



DRAIN "H-3" SECTION

STA. 5+59.35 TO STA. 6+36.62
STA. 6+57.24 TO STA. 7+17.92

(N.T.S.)

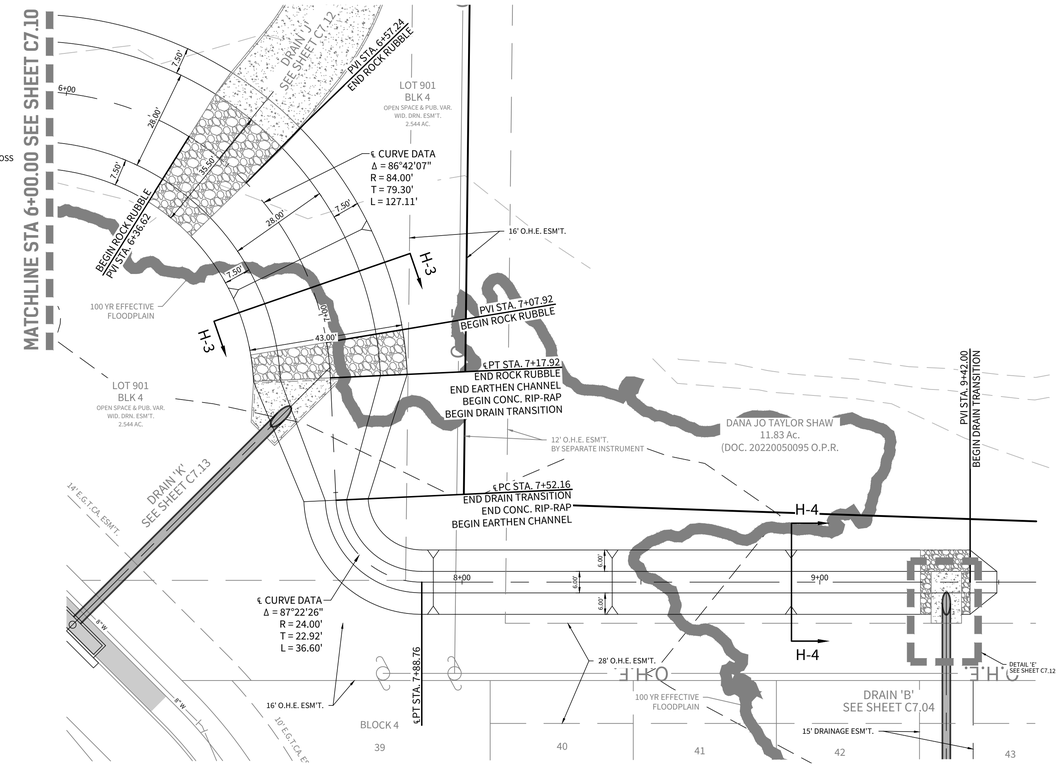
DRAIN "H-4" SECTION

STA. 7+52.16 TO STA. 9+42.00

(N.T.S.)

	"H-3"	"H-4"
$Q_{25yr,T}$ (cfs)	202.80	25.53
B_w (ft)	28.00'	6.00'
z	3:1	3:1
n	0.035	0.035
S (%)	0.50	0.50
d_n (ft)	1.64	1.09
V (fps)	3.76	2.53
Max Shear Stress 25yr	0.44	0.24
Shear Stress Class	D	D

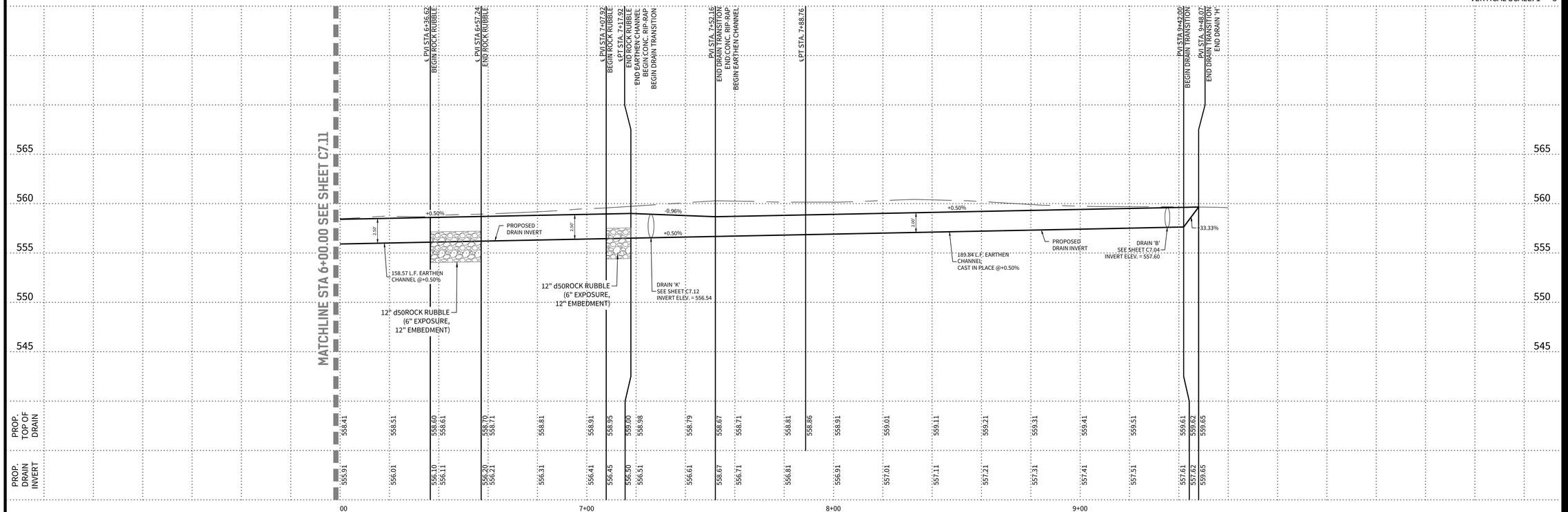
*CONTRACTOR IS TO REFER TO COSA SWDCM FOR ACCEPTABLE COVER BASED OFF SPECIFIED SHEAR STRESS CLASS AT EACH CROSS SECTION OF VEGETATED CHANNEL



DRAIN 'H'

STA. 6+00.00 TO STA. 9+48.07

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



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

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ZIGMOND TRACT UNIT 1

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DATE
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PROJECT NO.
04408.001

DRAWN BY
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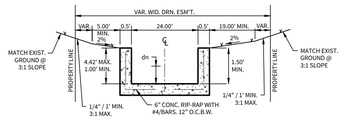
10/13/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

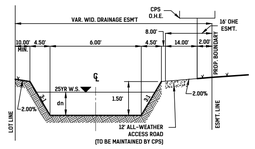
C7.11

P:\04408\2025-10\WDs Plans\C5.11 DRAIN PLANS & PROFILE - DRAIN H.dwg 2025/10/13 7:58pm jmartin



DRAIN 'J' SECTION (N.T.S.)

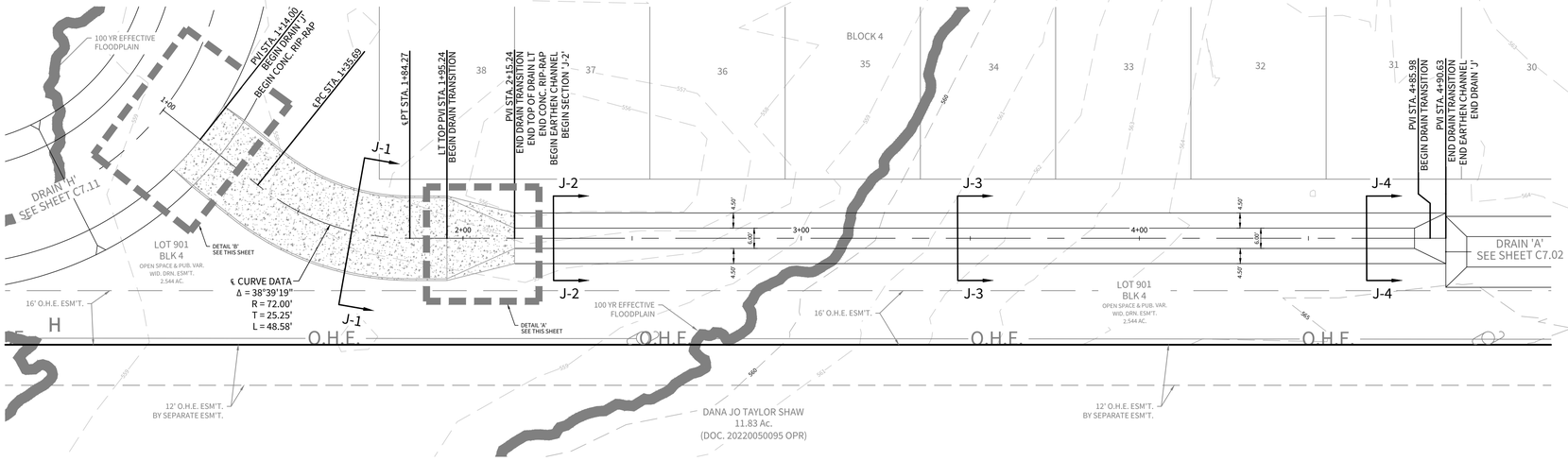
'J-1' STA. 1+21.50 TO STA. 2+15.24

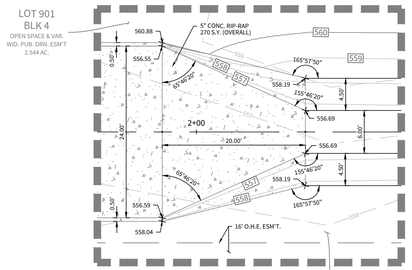


DRAIN 'J' SECTION (N.T.S.)

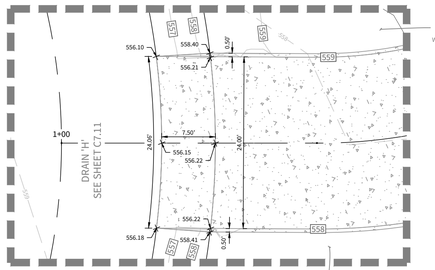
'J-2' STA. 2+15.24 TO STA. 2+56.66
'J-3' STA. 2+56.66 TO STA. 4+49.97
'J-4' STA. 4+49.97 TO STA. 4+85.98

	"J-1"	"J-2"	"J-3"	"J-4"
Q_{25} (cfs)	153.37	11.66	11.66	11.66
h (ft)	1.50	1.50	1.50	1.50
B_W (ft)	24.00	6.00	6.00	6.00
z	-	3:1	3:1	3:1
n	0.015	0.035	0.035	0.035
S (%)	0.50%	0.50%	3.00%	0.60%
d_N (ft)	0.98	0.72	0.44	0.68
V (fps)	6.52	1.98	3.62	2.13
Max Shear Stress 25yr	-	0.17	0.69	0.20





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

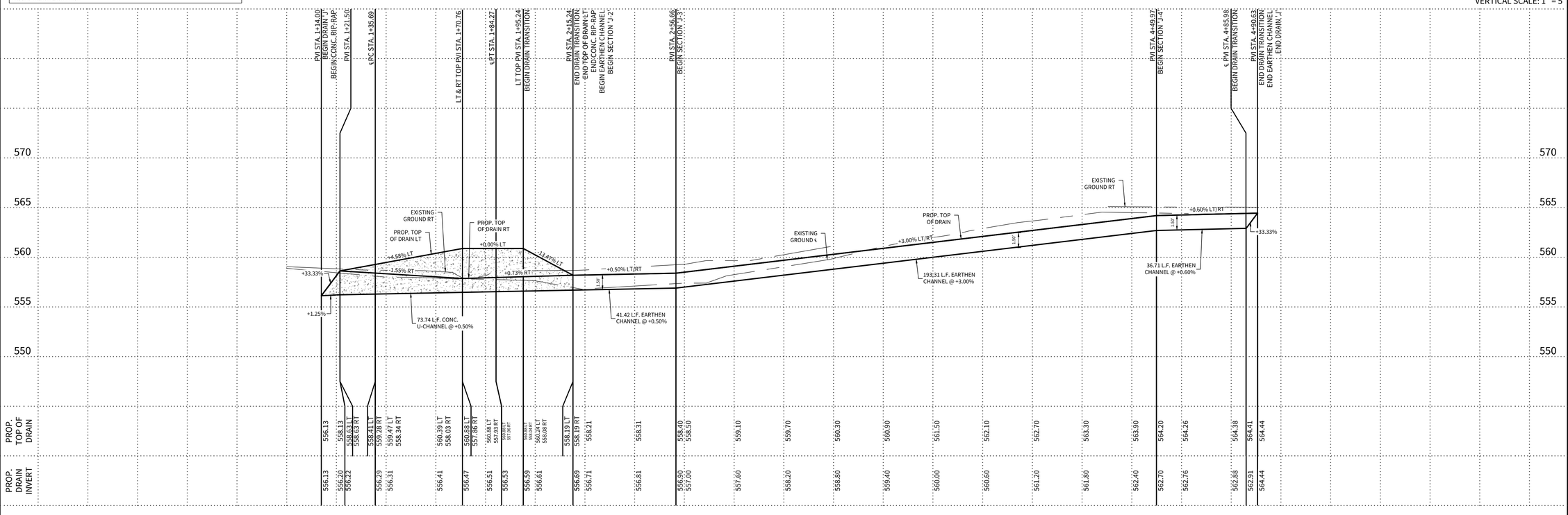


DETAIL 'B'
(SCALE 1" = 10')

DRAIN 'J'

STA. 1+14.00 TO STA. 4+90.63

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



NOTES:

1. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
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TRENCH EXCAVATION PROTECTION

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

NOTES:

1. **REFER TO GENERAL NOTES AND SPECIFICATIONS CO.00.**
2. **CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.**
3. **THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.**
4. **ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SAN ANTONIO.**
5. **ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.**
6. **ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.**
7. **85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY BEXAR COUNTY. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.**
8. **REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C7.01.**
9. **CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF STORM SEWER MANHOLES AND/OR CURB INLET AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.**

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'J'

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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8.
9.
10.

10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

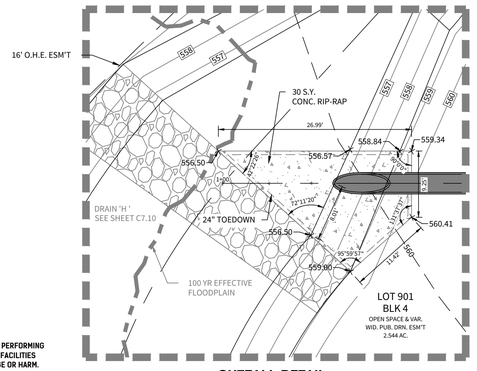
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

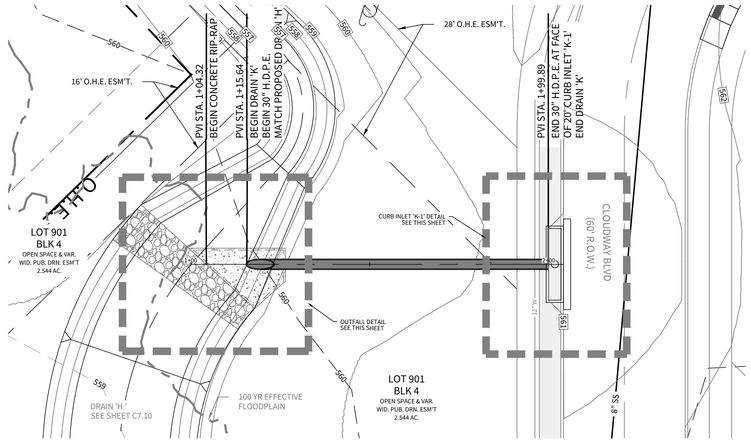
C7.12

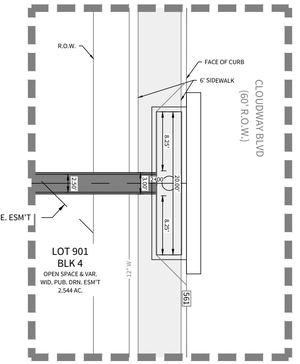
P:\04408\2025\2-DWG\4-Plans\DLA-1-DRAIN PLAN & PROFILE - DRAIN J - dwg 2025/10/10 7:32pm jwatkins

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

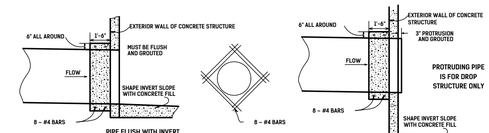


OUTFALL DETAIL
(SCALE 1" = 10')

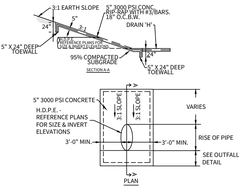




CURB INLET 'K-1' DETAIL
(SCALE 1" = 10')



CONCRETE COLLAR DETAIL
(N.T.S.)



SLOPED END HEADWALL
(N.T.S.)

NOTES:

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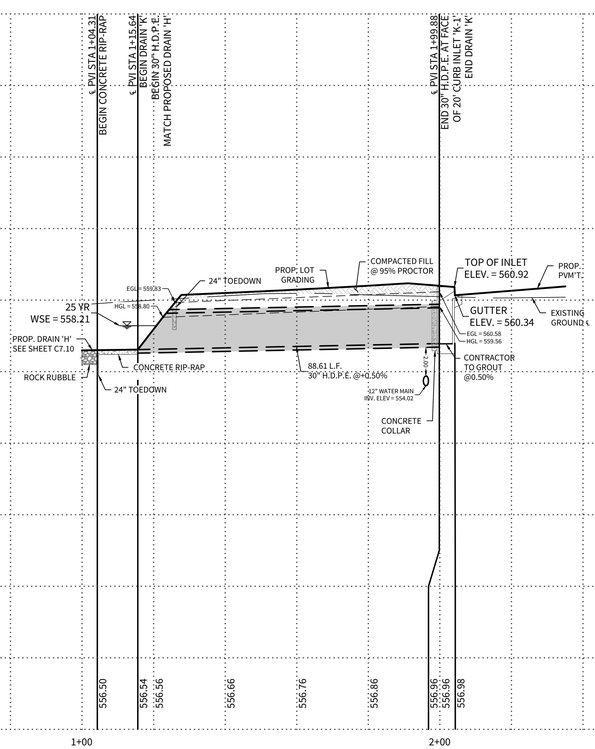
DRAIN 'K'

STA. 1+04.31 TO 1+99.89

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



CURB INLET OPENING (DRAIN 'K')
$Q_{25\ ULTIMATE}$ = 37.54 c.f.s. / 2.06 = 18.22 REQ.
USED - 20' INLET
v = 7.65 f.p.s.
Hw = 5659.56
GUTTER = 560.34

30" H.D.P.E.
PIPE SLOPE = 0.50%
n = 0.013
$Q_{25\ ULT}$ = 37.54 c.f.s.
VELOCITY = 7.65 ft/s

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ZIGMOND TRACT UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'K'

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

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STATE OF TEXAS
SEAN P. McFARLAND
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CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C7.13

P:\04408\2025\2-DWG\4-Plans\C6.13 DRAIN PLAN & PROFILE - DRAIN K.dwg 2025/10/13 2:34pm jwatkins

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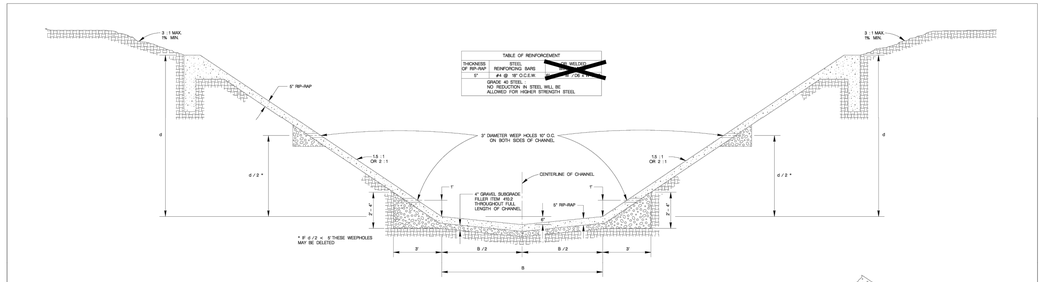
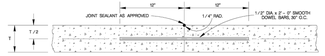
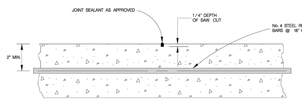


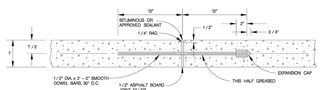
TYPICAL CHANNEL SECTION
LOOKING DOWNSTREAM
SCALE: 1" = 4'



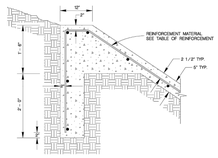
CONVERSE CONTRACTION
OR CONSTRUCTION JOINT
SCALE: 1" = 1'



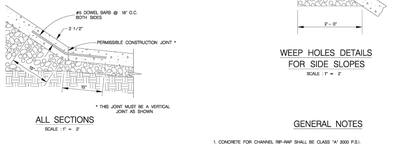
"SAW CUT" CONTRACTION JOINT
SCALE: 1" = 6"



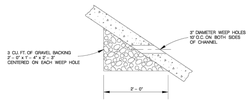
TRANSVERSE EXPANSION JOINT
SCALE: 1" = 1'



REINFORCEMENT DETAIL
TOE-DOWN
SCALE: 1" = 2'



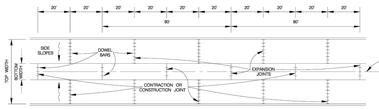
ALL SECTIONS
SCALE: 1" = 3'



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

GENERAL NOTES

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



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

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPICAL CONCRETE CHANNEL
RIP-RAP STANDARDS

% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY:	SHEET NO.:	OF:

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 completeness of this standard or any liability for loss or damages resulting therefrom in connection with its use."

DATE:
FILE:

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

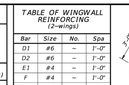
Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of Wing (2-wings) ② Reinf (Lb/Ft)	Conc (CY/Ft)	Estimated Quantities per ft of Toewall (1-toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-0"	2'-8"	1'-10"	8"	#5	1'-0"	#5	1'-0"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2-wings)

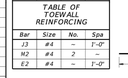
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2

WING DIMENSION FORMULAS:

(All values are in feet.)

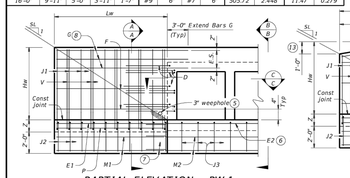
Hw = H + T + C
Lw = (Hw) (SL) + cosine (θ) for Type PW-1
= (Hw − 1') (SL) + cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw − 0.5') (SL) + cosine (θ) for Type PW-2 and Hw < 4'

For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (J) * cosine (θ)

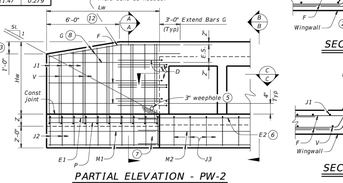
For precast culverts:
Ltw = ((N) (2 U + S) + (N − 1) (0.5)) * cosine (θ)
Total Wingwall Area (two wings − SF)
= (2)Hw(Lw) for Type PW-1
= (2)Hw(Lw) − 6 SF for Type PW-2 and Hw ≥ 4'
= (2)Hw(Lw) − 1.5 SF for Type PW-2 and Hw < 4'

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio (Horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

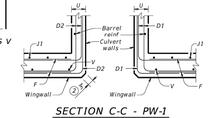
See applicable box culvert standard sheet for S, H, T, and U values.



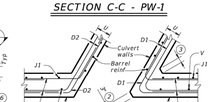
PARTIAL ELEVATION - PW-1



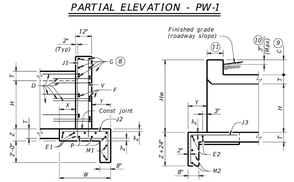
PARTIAL ELEVATION - PW-2



SECTION C-C - PW-1

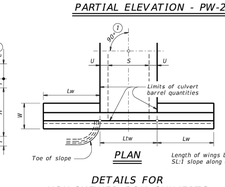


SECTION C-C - PW-2

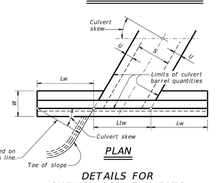


SECTION A-A
(Showing wing reinforcement.)

SECTION B-B
(Showing wing reinforcement.)



DETAILS FOR
NON-SKEWED BOX CULVERTS



DETAILS FOR
SKEWED BOX CULVERTS
(Showing 30° skew.)

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew − 1"
For 30° skew − 2"
For 45° skew − 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical, 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Excavation for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

Texas Department of Transportation | Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR
BOX CULVERTS
TYPES PW-1 AND PW-2

PW

File: CO-PW-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
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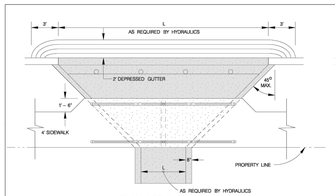
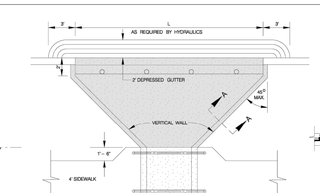
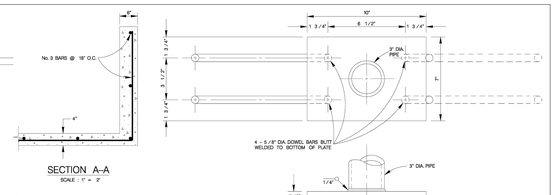
REVISIONS				
	DIST	COUNTY		SHEET NO.



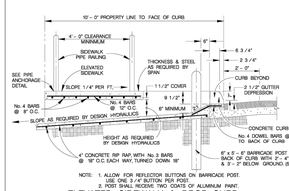
PLAN VIEW "A"
SCALE: 1" = 8'



PLAN VIEW "B"
SCALE: 1" = 8'

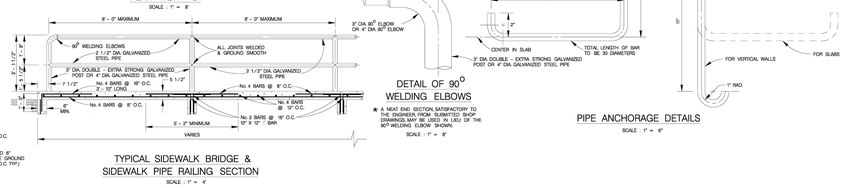


PIPE ANCHORAGE DETAILS
SCALE: 1" = 4'



NOTE: 1. ALLOW FOR REFLECTOR BUTTONS ON BARRICADE POST. USE ONE 3 / 4" BUTTON PER POST.
2. POST SHALL RECEIVE TWO COATS OF ALUMINUM PAINT.

ELEVATED SIDEWALK & DROP CURB
DETAILS FOR DRAINAGE CHANNELS
SCALE: 1" = 4'

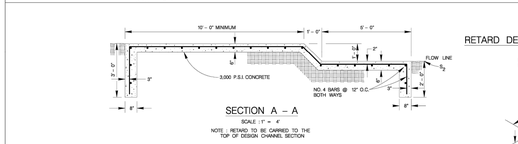


TYPICAL SIDEWALK BRIDGE &
SIDEWALK PIPE RAILING SECTION
SCALE: 1" = 4'

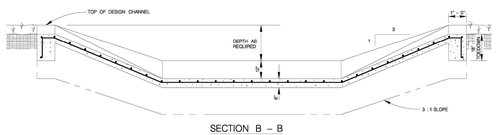
DETAIL OF 90° WELDING ELBOWS

★ A NEW END SECTION, SATISFACTORY TO THE ENGINEER, FROM SUBMITTED SHOP DRAWINGS, MAY BE USED IN LIEU OF THE 90° WELDING ELBOW SHOWN.

SCALE: 1" = 8'

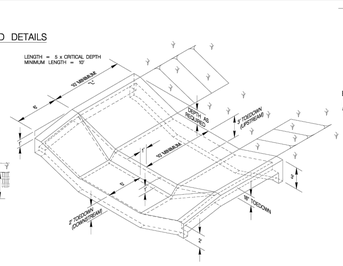


SECTION A – A
SCALE: 1" = 4'
NOTE: RETARD TO BE CARRIED TO THE TOP OF DESIGN CHANNEL SECTION

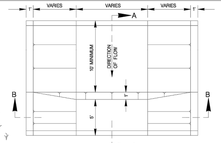


SECTION B – B
SCALE: 1" = 4'

RETARD DETAILS



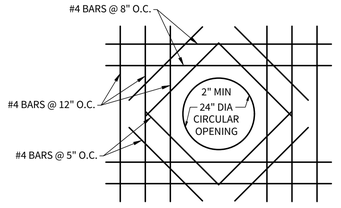
ISOMETRIC VIEW
SCALE: 1" = 10'



JANUARY 2005
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

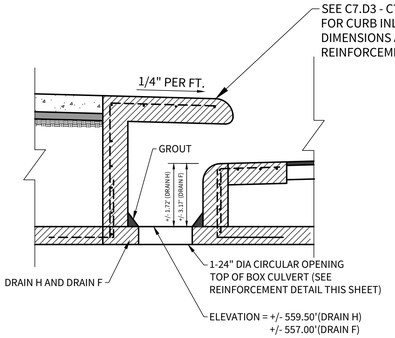
ELEVATED SIDEWALK & RETARD
STANDARDS

% SUBMITTAL	PROJECT NO.:	DATE:
DRAWN BY: V. VASQUEZ	DESIGN BY:	CHKD. BY:	SHEET NO.:	OF:



*SEE DETAIL "A"
CONCRETE LIMITS

CIRCULAR OPENING
REINFORCEMENT DETAIL
(NOT TO SCALE)



DROP CURB INLET DETAIL
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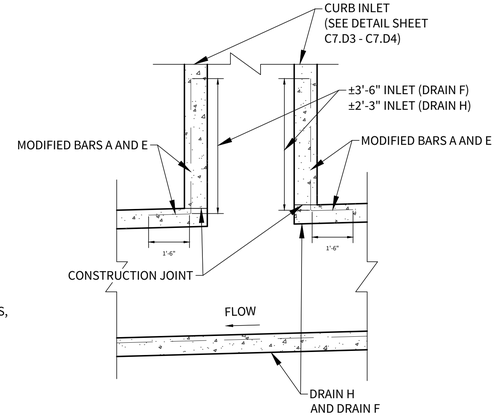

CURB INLET & M.B.C. CONNECTION DETAIL
(NOT TO SCALE)

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ZIGMOND TRACT
UNIT 1

DRAINAGE DETAILS

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
1.
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10.

10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

SAWS JOB NO.

C7.D1

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ZIGMOND TRACT UNIT 1

DRAINAGE DETAILS

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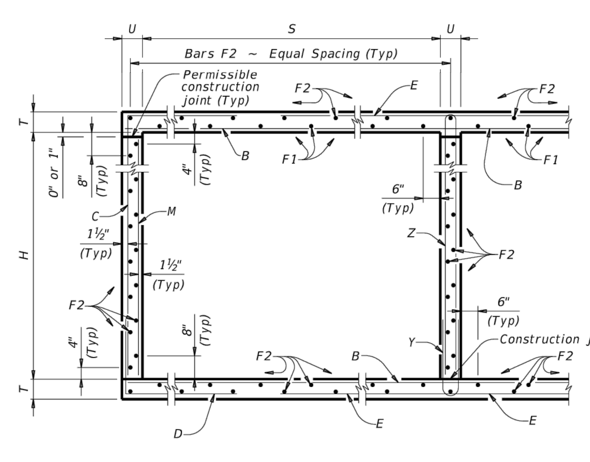
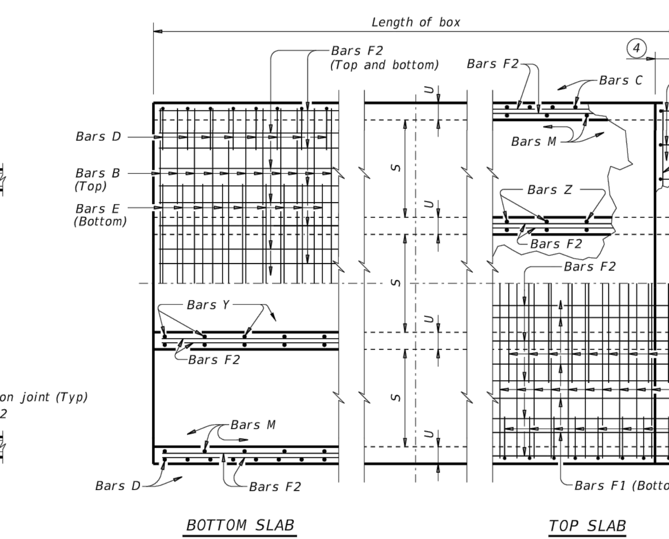
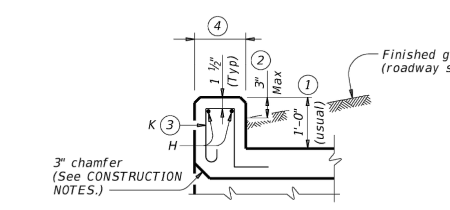


TYPICAL SECTION



BOTTOM SLAB TOP SLAB

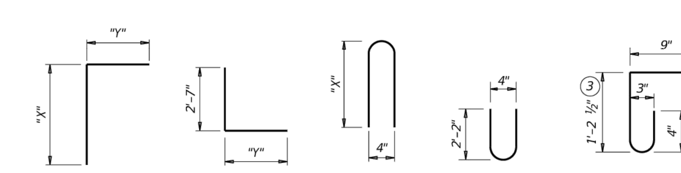
PART PLANS



SECTION THRU CURB

TABLE OF BAR DIMENSIONS

H	"X"	"Y"
3'-0"	3'-6 ½"	4'-5"
4'-0"	4'-6 ½"	4'-5"
5'-0"	5'-6 ½"	4'-5"
6'-0"	6'-6 ½"	4'-5"
7'-0"	7'-6 ½"	4'-5"



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

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

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

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

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

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

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

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

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

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb.
Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'-8" Min
- Uncoated or galvanized ~ #5 = 2'-1" Min
- Uncoated or galvanized ~ #6 = 2'-6" Min

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

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

MULTIPLE BOX CULVERTS
CAST-IN-PLACE
7'-0" SPAN
2' TO 16' FILL
MC-7-16

FILE: CD-MC716-20.dgn | DN: TBE | CK: BMP | DW: TxDOT | CK: TxDOT
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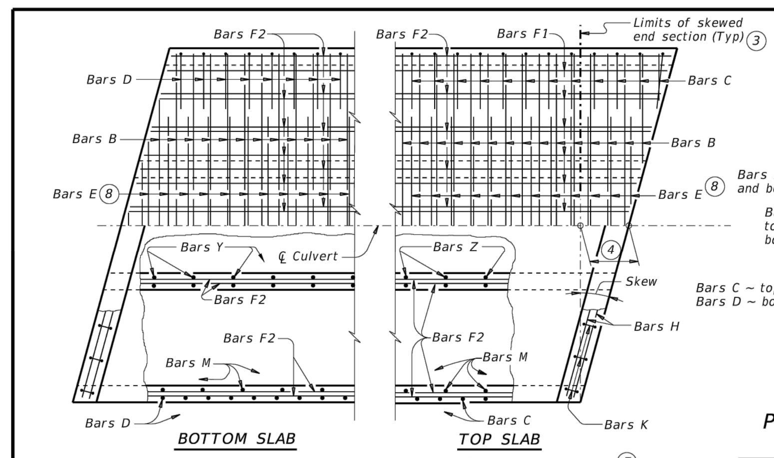
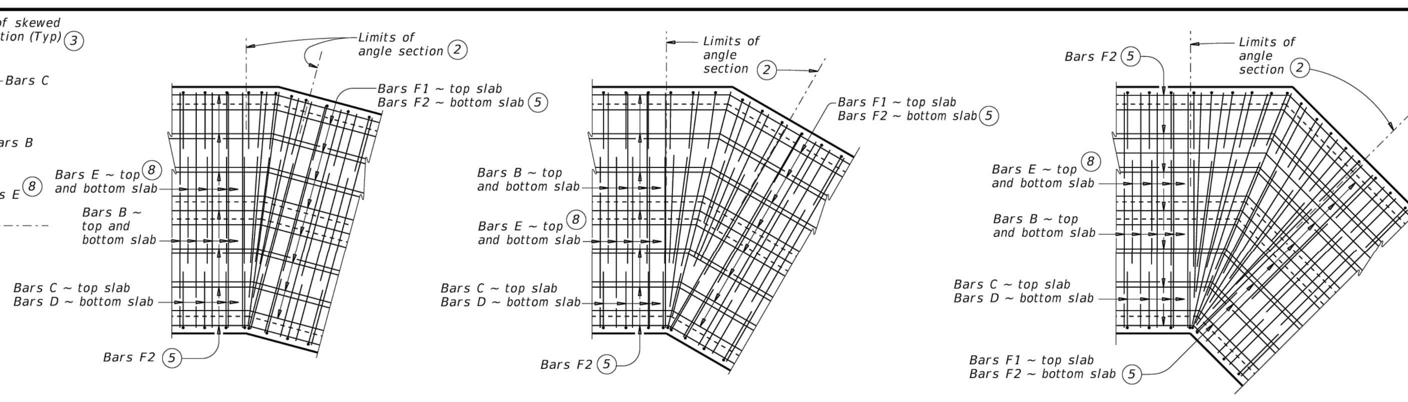


BOTTOM SLAB TOP SLAB

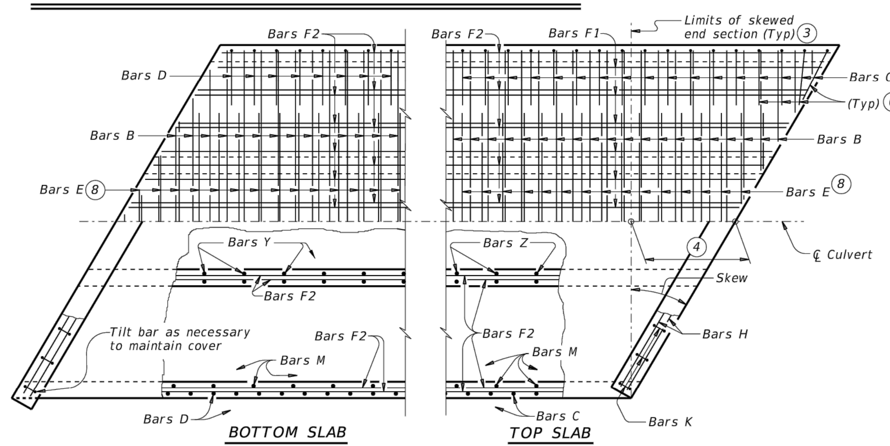
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° ⑦



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°

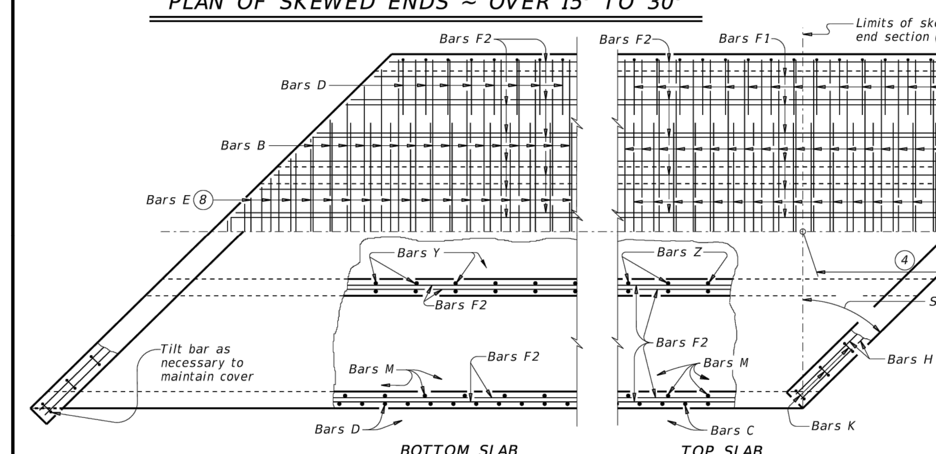
PLAN OF ANGLE SECTION ~ OVER 15° TO 30°

PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



BOTTOM SLAB TOP SLAB

PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



BOTTOM SLAB TOP SLAB

PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

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

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

③ The length of Bars B and Bars E will vary in the skewed end sections.

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

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

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

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

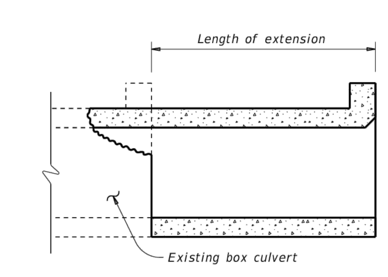
⑧ Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

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

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

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

Cover dimensions are clear dimensions, unless noted otherwise.



LENGTHENING DETAIL ①

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

MULTIPLE BOX CULVERTS
CAST-IN-PLACE
MISCELLANEOUS DETAILS
MC-MD

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REVISIONS | DIST | COUNTY | SHEET NO.

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

Number of Spans	Section Dimensions S	H	T	U	Bars B No.	Size	Spa	Length	Wt	Bars C & D No.	Size	Spa	Bars C Length	Bars C Wt	Bars D Length	Bars D Wt	Bars E No.	Size	Spa	Length	Wt
2	7' - 0"	3' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	7' - 5"	1,203
3	7' - 0"	3' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	14' - 5"	2,339
4	7' - 0"	3' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	21' - 5"	3,474
5	7' - 0"	3' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	28' - 5"	4,610
6	7' - 0"	3' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	7' - 11"	1,338	7' - 0"	1,183	108	#6	9"	35' - 5"	5,745
2	7' - 0"	4' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	7' - 5"	1,203
3	7' - 0"	4' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	14' - 5"	2,339
4	7' - 0"	4' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	21' - 5"	3,474
5	7' - 0"	4' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	28' - 5"	4,610
6	7' - 0"	4' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	8' - 11"	1,507	7' - 0"	1,183	108	#6	9"	35' - 5"	5,745
2	7' - 0"	5' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	7' - 5"	1,203
3	7' - 0"	5' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	14' - 5"	2,339
4	7' - 0"	5' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	21' - 5"	3,474
5	7' - 0"	5' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	28' - 5"	4,610
6	7' - 0"	5' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	9' - 11"	1,676	7' - 0"	1,183	108	#6	9"	35' - 5"	5,745
2	7' - 0"	6' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	7' - 5"	1,203
3	7' - 0"	6' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	14' - 5"	2,339
4	7' - 0"	6' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	21' - 5"	3,474
5	7' - 0"	6' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	28' - 5"	4,610
6	7' - 0"	6' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	10' - 11"	1,845	7' - 0"	1,183	108	#6	9"	35' - 5"	5,745
2	7' - 0"	7' - 0"	8"	7"	108	#6	9"	15' - 6"	2,514	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	7' - 5"	1,203
3	7' - 0"	7' - 0"	8"	7"	108	#6	9"	23' - 1"	3,744	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	14' - 5"	2,339
4	7' - 0"	7' - 0"	8"	7"	108	#6	9"	30' - 8"	4,975	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	21' - 5"	3,474
5	7' - 0"	7' - 0"	8"	7"	108	#6	9"	38' - 3"	6,205	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	28' - 5"	4,610
6	7' - 0"	7' - 0"	8"	7"	108	#6	9"	45' - 10"	7,435	162	#5	6"	11' - 11"	2,014	7' - 0"	1,183	108	#6	9"	35' - 5"	5,745

Number of Spans	H	Bars F1 ~ #4 No.	Spa	Length	Wt	Bars F2 ~ #4 No.	Spa	Length	Wt	Bars M ~ #4 No.	Spa	Length	Wt	Bars Y & Z ~ #4 No.	Spa	Bars Y Length	Bars Y Wt	Bars Z Length	Bars Z Wt	Bars H 4 ~ #4 Length	Wt	Bars K No.	Wt	Per Foot of Barrel Conc (CY)	Renf (Lb)	Curb Conc (CY)	Renf (Lb)	Total Conc (CY)	Renf (Lb)
2	3' - 0"	10	18"	39' - 9"	266	54	18"	39' - 9"	1,434	108	9"	3' - 0"	216	54	9"	4' - 7"	165	7' - 3"	262	15' - 6"	41	34	95	0.972	214.5	1.2	136	40.0	8,717
3	3' - 0"	15	18"	39' - 9"	398	77	18"	39' - 9"	2,045	108	9"	3' - 0"	216	108	9"	4' - 7"	331	7' - 3"	523	23' - 1"	62	50	139	1.412	302.9	1.7	201	58.2	12,318
4	3' - 0"	20	18"	39' - 9"	531	100	18"	39' - 9"	2,655	108	9"	3' - 0"	216	162	9"	4' - 7"	496	7' - 3"	785	30' - 8"	82	64	178	1.851	391.3	2.3	260	76.3	15,913
5	3' - 0"	25	18"	39' - 9"	664	123	18"	39' - 9"	3,266	108	9"	3' - 0"	216	216	9"	4' - 7"	661	7' - 3"	1,046	38' - 3"	102	80	223	2.290	479.7	2.8	325	94.4	19,514
6	3' - 0"	30	18"	39' - 9"	797	146	18"	39' - 9"	3,877	108	9"	3' - 0"	216	270	9"	4' - 7"	827	7' - 3"	1,308	45' - 10"	122	94	262	2.729	568.2	3.4	384	112.6	23,110
2	4' - 0"	10	18"	39' - 9"	266	54	18"	39' - 9"	1,434	108	9"	4' - 0"	289	54	9"	4' - 7"	165	9' - 3"	334	15' - 6"	41	34	95	1.037	222.4	1.2	136	42.6	9,031
3	4' - 0"	15	18"	39' - 9"	398	77	18"	39' - 9"	2,045	108	9"	4' - 0"	289	108	9"	4' - 7"	331	9' - 3"	667	23' - 1"	62	50	139	1.498	312.6	1.7	201	61.6	12,704
4	4' - 0"	20	18"	39' - 9"	531	100	18"	39' - 9"	2,655	108	9"	4' - 0"	289	162	9"	4' - 7"	496	9' - 3"	1,001	30' - 8"	82	64	178	1.959	402.8	2.3	260	80.6	16,371
5	4' - 0"	25	18"	39' - 9"	664	123	18"	39' - 9"	3,266	108	9"	4' - 0"	289	216	9"	4' - 7"	661	9' - 3"	1,335	38' - 3"	102	80	223	2.420	493.0	2.8	325	99.6	20,045
6	4' - 0"	30	18"	39' - 9"	797	146	18"	39' - 9"	3,877	108	9"	4' - 0"	289	270	9"	4' - 7"	827	9' - 3"	1,668	45' - 10"	122	94	262	2.881	583.2	3.4	384	118.6	23,712
2	5' - 0"	10	18"	39' - 9"	266	60	18"	39' - 9"	1,593	108	9"	5' - 0"	361	54	9"	4' - 7"	165	11' - 3"	406	15' - 6"	41	34	95	1.102	234.2	1.2	136	45.2	9,503
3	5' - 0"	15	18"	39' - 9"	398	85	18"	39' - 9"	2,257	108	9"	5' - 0"	361	108	9"	4' - 7"	331	11' - 3"	812	23' - 1"	62	50	139	1.584	327.5	1.7	201	65.1	13,302
4	5' - 0"	20	18"	39' - 9"	531	110	18"	39' - 9"	2,921	108	9"	5' - 0"	361	162	9"	4' - 7"	496	11' - 3"	1,217	30' - 8"	82	64	178	2.067	420.9	2.3	260	85.0	17,094
5	5' - 0"	25	18"	39' - 9"	664	135	18"	39' - 9"	3,585	108	9"	5' - 0"	361	216	9"	4' - 7"	661	11' - 3"	1,623	38' - 3"	102	80	223	2.549	514.2	2.8	325	104.8	20,893
6	5' - 0"	30	18"	39' - 9"	797	160	18"	39' - 9"	4,248	108	9"	5' - 0"	361	270	9"	4' - 7"	827	11' - 3"	2,029	45' - 10"	122	94	262	3.032	607.5	3.4	384	124.7	24,685
2	6' - 0"	10	18"	39' - 9"	266	66	18"	39' - 9"	1,752	108	9"	6' - 0"	433	54	9"	4' - 7"	165	13' - 3"	478	15' - 6"	41	34	95	1.167	246.0	1.2	136	47.8	9,975
3	6' - 0"	15	18"	39' - 9"	398	93	18"	39' - 9"	2,469	108	9"	6' - 0"	433	108	9"	4' - 7"	331	13' - 3"	956	23' - 1"	62	50	139	1.671	342.5	1.7	201	68.6	13,899
4	6' - 0"	20	18"	39' - 9"	531	120	18"	39' - 9"	3,186	108	9"	6' - 0"	433	162	9"	4' - 7"	496	13' - 3"	1,434	30' - 8"	82	64	178	2.175	438.9	2.3	260	89.3	17,817
5	6' - 0"	25	18"	39' - 9"	664	147	18"	39' - 9"	3,903	108	9"	6' - 0"	433	216	9"	4' - 7"	661	13' - 3"	1,912	38' - 3"	102	80	223	2.679	535.4	2.8	325	110.0	21,741
6	6' - 0"	30	18"	39' - 9"	797	174	18"	39' - 9"	4,620	108	9"	6' - 0"	433	270	9"	4' - 7"	827	13' - 3"	2,390	45' - 10"	122	94	262	3.183	631.9	3.4	384	130.7	25,659
2	7' - 0"	10	18"	39' - 9"	266	66	18"	39' - 9"	1,752	108	9"	7' - 0"	505	54	9"	4' - 7"	165	15' - 3"	550	15' - 6"	41	34	95	1.231	253.8	1.2	136	50.4	10,288
3	7' - 0"	15	18"	39' - 9"	398	93	18"	39' - 9"	2,469	108	9"	7' - 0"	505	108	9"	4' - 7"	331	15' - 3"	1,100	23' - 1"	62	50	139	1.757	352.1	1.7	201	72.0	14,284
4	7' - 0"	20	18"	39' - 9"	531	120	18"	39' - 9"	3,186	108	9"	7' - 0"	505	162	9"	4' - 7"	496	15' - 3"	1,650	30' - 8"	82	64	178	2.283	450.4	2.3	260	93.6	18,274
5	7' - 0"	25	18"	39' - 9"	664	147	18"	39' - 9"	3,903	108	9"	7' - 0"	505	216	9"	4' - 7"	661	15' - 3"	2,200	38' - 3"	102	80	223	2.809	548.6	2.8	325	115.2	22,270
6	7' - 0"	30	18"	39' - 9"	797	174	18"	39' - 9"	4,620	108	9"	7' - 0"	505	270	9"	4' - 7"	827	15' - 3"	2,750	45' - 10"	122	94	262	3.334	646.9	3.4	384	136.8	26,260

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

MULTIPLE BOX CULVERTS
CAST-IN-PLACE
7'-0" SPAN
2' TO 16' FILL
MC-7-16

FILE: CD-MC716-20.dgn | DN: TBE | CK: BMP | DW: TxDOT | CK: TxDOT
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REVISIONS | DIST | COUNTY | SHEET NO.

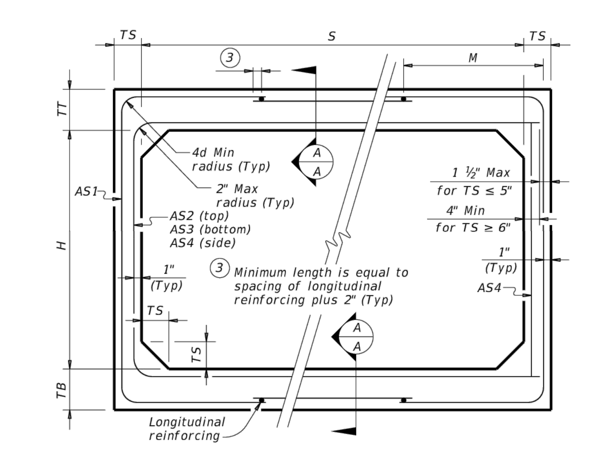
BOX DATA

S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	Fill Height (ft.)	M (Min) (in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	① Lift Weight (tons)
5	2	8	7	6	< 2	–	0.19	0.27	0.18	0.14	0.19	0.19	0.17	6.0
5	2	6	6	6	2 < 3	44	0.22	0.20	0.16	0.14	–	–	–	5.1
5	2	6	6	6	3 – 5	44	0.16	0.14	0.14	0.14	–	–	–	5.1
5	2	6	6	6	10	36	0.15	0.14	0.14	0.14	–	–	–	5.1
5	2	6	6	6	15	36	0.20	0.18	0.18	0.14	–	–	–	5.1
5	2	6	6	6	20	36	0.26	0.23	0.24	0.14	–	–	–	5.1
5	2	6	6	6	25	36	0.33	0.29	0.29	0.14	–	–	–	5.1
5	2	6	6	6	30	36	0.39	0.34	0.35	0.14	–	–	–	5.1
5	3	8	7	6	< 2	–	0.19	0.31	0.21	0.14	0.19	0.19	0.17	6.6
5	3	6	6	6	2 < 3	45	0.18	0.24	0.19	0.14	–	–	–	5.7
5	3	6	6	6	3 – 5	36	0.14	0.17	0.16	0.14	–	–	–	5.7
5	3	6	6	6	10	36	0.14	0.16	0.17	0.14	–	–	–	5.7
5	3	6	6	6	15	35	0.16	0.21	0.22	0.14	–	–	–	5.7
5	3	6	6	6	20	35	0.21	0.27	0.28	0.14	–	–	–	5.7
5	3	6	6	6	25	35	0.26	0.34	0.34	0.14	–	–	–	5.7
5	3	6	6	6	30	35	0.31	0.41	0.41	0.14	–	–	–	5.7
5	4	8	7	6	< 2	–	0.19	0.33	0.24	0.14	0.19	0.19	0.17	7.2
5	4	6	6	6	2 < 3	45	0.16	0.27	0.22	0.14	–	–	–	6.3
5	4	6	6	6	3 – 5	45	0.14	0.19	0.18	0.14	–	–	–	6.3
5	4	6	6	6	10	36	0.14	0.18	0.18	0.14	–	–	–	6.3
5	4	6	6	6	15	35	0.14	0.23	0.24	0.14	–	–	–	6.3
5	4	6	6	6	20	35	0.17	0.30	0.31	0.14	–	–	–	6.3
5	4	6	6	6	25	35	0.21	0.37	0.38	0.14	–	–	–	6.3
5	4	6	6	6	30	35	0.25	0.44	0.45	0.14	–	–	–	6.3
5	5	8	7	6	< 2	–	0.19	0.35	0.26	0.14	0.19	0.19	0.17	7.8
5	5	6	6	6	2 < 3	45	0.14	0.29	0.24	0.14	–	–	–	6.9
5	5	6	6	6	3 – 5	45	0.14	0.21	0.20	0.14	–	–	–	6.9
5	5	6	6	6	10	45	0.14	0.19	0.20	0.14	–	–	–	6.9
5	5	6	6	6	15	36	0.14	0.24	0.25	0.14	–	–	–	6.9
5	5	6	6	6	20	35	0.15	0.31	0.32	0.14	–	–	–	6.9
5	5	6	6	6	25	35	0.18	0.38	0.39	0.14	–	–	–	6.9
5	5	6	6	6	30	35	0.21	0.46	0.47	0.14	–	–	–	6.9

(Section Dimensions: S, H, TT, TB, TS; Reinforcing (sq. in. / ft.) ②: AS1–AS8)

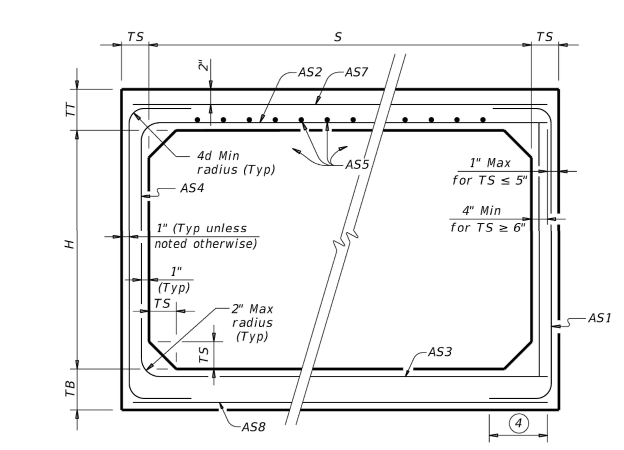
① For box length = 8'-0"

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



CORNER OPTION "A" CORNER OPTION "B"

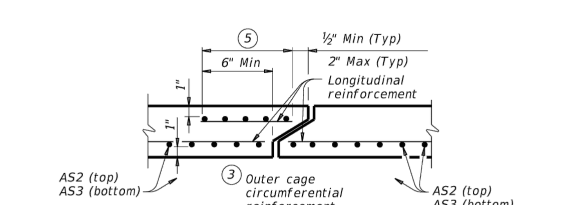
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A
(Showing top and bottom slab joint reinforcement.)

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

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

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS
PRECAST
5'-0" SPAN
SCP-5

FILE: CD-SCP05-20.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT
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REVISIONS | DIST | COUNTY | SHEET NO.

DATE
08/04/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10.

08/05/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

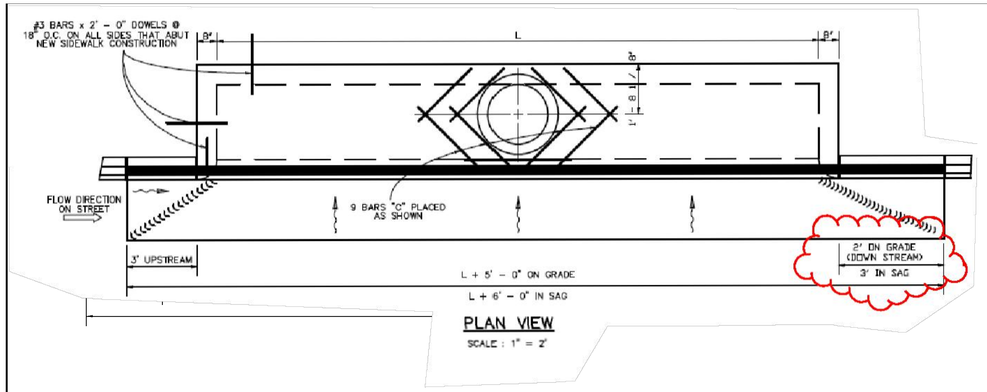
PLAT NO.
XX-XXXXXXXX

SAWS JOB NO.

C7.D2

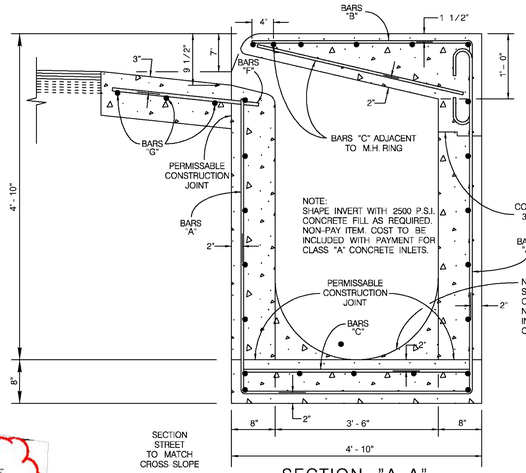
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\04408\001\2-DWG\4-Plans\C6.D2 DRAINAGE DETAILS.dwg 2025/08/04 9:49pm dfeigl



PLAN VIEW

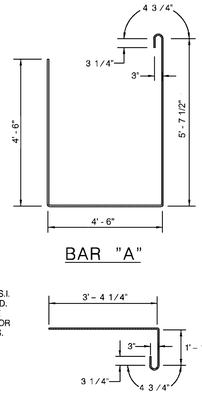
SCALE : 1" = 2'



SECTION STREET TO MATCH CROSS SLOPE

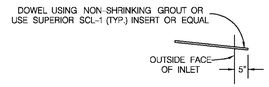
SECTION "A-A"

SCALE : 1" = 1'

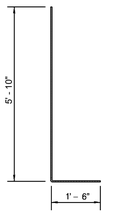


BAR "A"

BAR "B"



BAR "F"



BAR "E"

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "B"	A	39	4	5' o.c.	12' 9 1/2"	333.25
	B	39	4	5"	5' 1 3/4"	134.06
L= 15'	C	41	4	9"	4' 6"	123.25
DEPTH= 4'	D	22	4	10"	16' 1"	236.36
(CI B-1)	E	12	4	10 1/2"	5' 10"	46.76
	F	17	5	12"	2' 3"	39.89
	G	3	4	12"	19' 8"	39.41
	H	5	5	12"	1' 8"	8.69

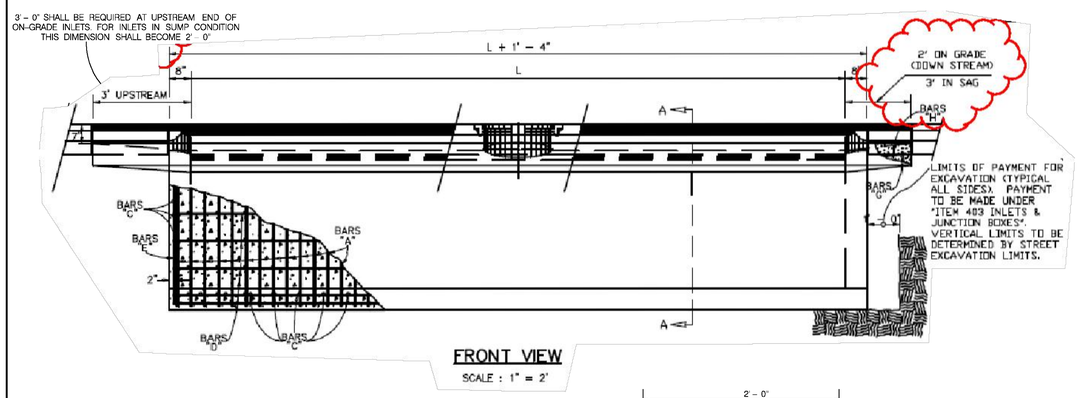
*Concrete Total = 7.72 C.Y. Manhole Casting = 260 lbs. Steel Total = 1221.67 lbs.

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "C"	A	39	4	5' o.c.	14' 9 1/2"	385.35
	B	39	4	5"	6' 1 3/4"	160.11
L= 15'	C	43	4	9"	4' 6"	129.26
DEPTH= 5'	D	24	4	10"	16' 1"	257.85
(CI C-1)	E	12	4	10 1/2"	6' 10"	54.78
	F	17	5	12"	2' 3"	39.89
	G	3	4	12"	19' 8"	39.41
	H	5	5	12"	1' 8"	8.69

*Concrete Total = 8.7 C.Y. Manhole Casting = 260 lbs. Steel Total = 1335.34 lbs.

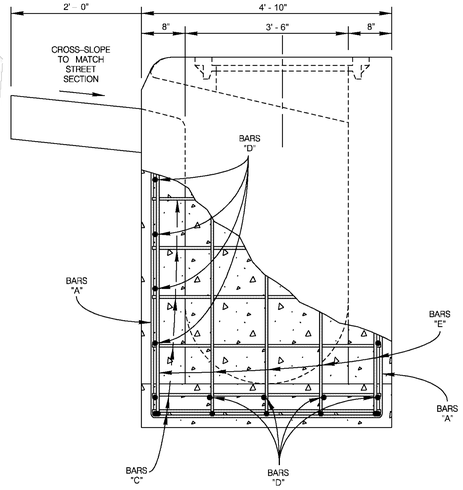
INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "D"	A	39	4	5' o.c.	16' 9 1/2"	437.46
	B	39	4	5"	7' 1 3/4"	186.16
L= 15'	C	39	4	9"	4' 6"	135.27
DEPTH= 6'	D	45	4	10"	16' 1"	279.34
(CI D-1)	E	26	4	10 1/2"	7' 10"	62.79
	F	12	5	12"	2' 3"	39.89
	G	17	4	12"	19' 8"	39.41
	H	3	5	12"	1' 8"	8.69

*Concrete Total = 9.68 C.Y. Manhole Casting = 260 lbs. Steel Total = 1449.02 lbs.



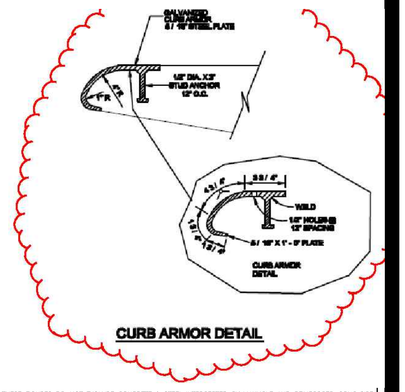
FRONT VIEW

SCALE : 1" = 2'



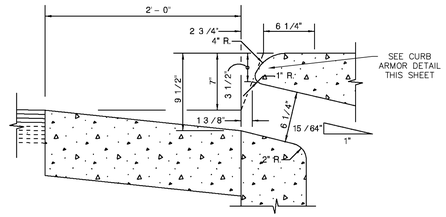
SIDE VIEW

SCALE : 1" = 1'



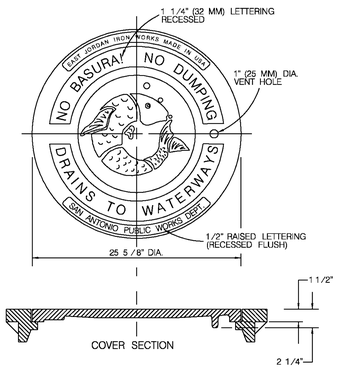
CURB ARMOR DETAIL

* 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.



OPENING DETAIL FOR CURB SECTION

SCALE : 1" = 6"



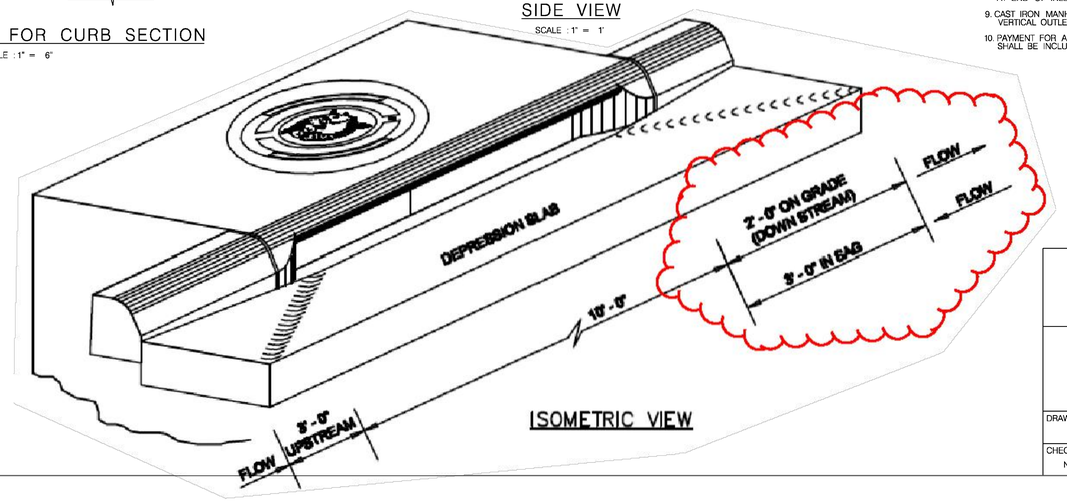
COVER SECTION

MANHOLE LID & RING DETAIL (ITEM 409)

SCALE : 1" = 8"

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.



ISOMETRIC VIEW

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 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".

JANUARY 2005

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

TYPE "C" INLET DETAILS

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

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

ZIGMOND TRACT UNIT 1

DRAINAGE DETAILS

DATE 08/04/2025

PROJECT NO. 04408.001

DRAWN BY DAF/SG/JW

CHECKED BY SPM

REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

08/05/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER
SURVEYOR

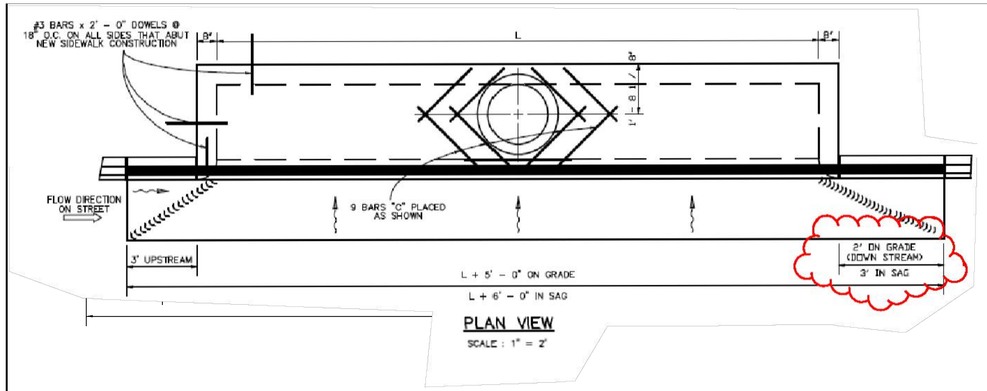
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. XX-XXXXXXXX

C7.D3

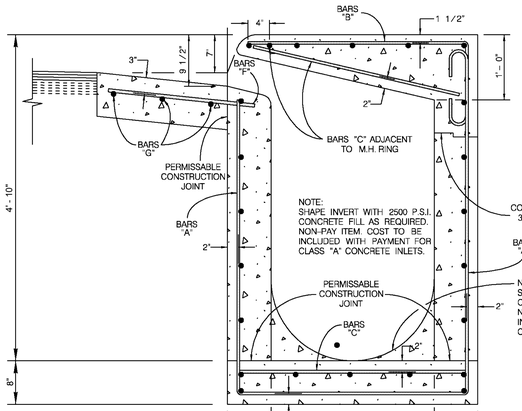
P:\04408\001\3-DWG\4-Plans\CAD\3-DRAINAGE DETAILS.dwg 2025-08-05 8:50pm (Sean Ring)

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



PLAN VIEW

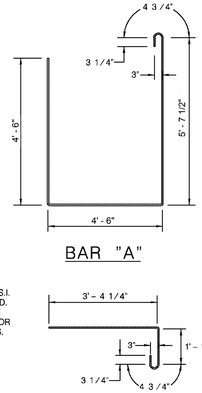
SCALE : 1" = 2'



SECTION STREET TO MATCH CROSS SLOPE

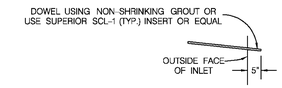
SECTION "A-A"

SCALE : 1" = 1'

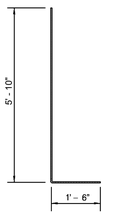


BAR "A"

BAR "B"



BAR "F"

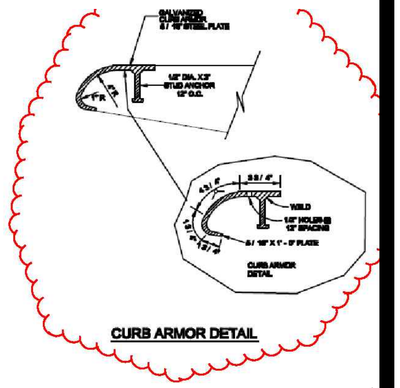


BAR "E"

INLET LENGTH		REINFORCING STEEL SCHEDULE					
		BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "E"		A	27	4	5' o.c.	12' 9 1/2"	230.71
		B	27	4	5"	5' 1 3/4"	92.81
L= 10'		C	35	4	9"	4' 6"	105.21
DEPTH= 4'		D	22	4	10"	11' 1"	162.88
(CI E-1)		E	12	4	10 1/2"	5' 10"	46.76
		F	12	5	12"	2' 3"	28.16
		G	3	4	12"	14' 8"	29.39
		H	5	5	12"	1' 8"	8.69
*Concrete Total = 5.52 C.Y.		Manhole Casting = 260 lbs.				Steel Total = 964.42 lbs.	

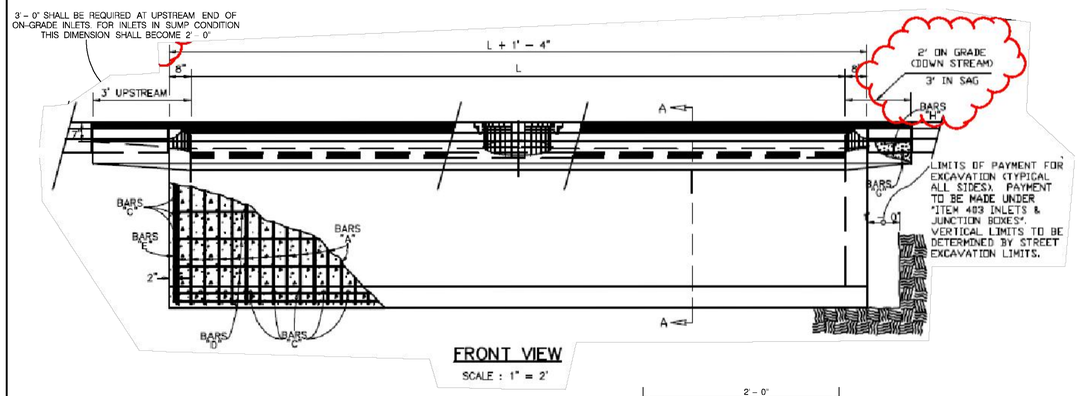
INLET LENGTH		REINFORCING STEEL SCHEDULE					
		BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "F"		A	51	4	5' o.c.	12' 9 1/2"	435.79
		B	51	4	5"	5' 1 3/4"	175.31
L= 20'		C	48	4	9"	4' 6"	144.29
DEPTH= 4'		D	22	4	10"	21' 1"	309.84
(CI F-1)		E	12	4	10 1/2"	5' 10"	46.76
		F	22	5	12"	2' 3"	51.63
		G	3	4	12"	24' 8"	49.43
		H	5	5	12"	1' 8"	8.69
*Concrete Total = 9.93 C.Y.		Manhole Casting = 260 lbs.				Steel Total = 1481.74 lbs.	

INLET LENGTH		REINFORCING STEEL SCHEDULE					
		BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "H"		A	39	4	5' o.c.	12' 9 1/2"	333.25
		B	39	4	5"	5' 1 3/4"	134.06
L= 15'		C	41	4	9"	4' 6"	123.25
DEPTH= 4'		D	22	4	10"	16' 1"	236.36
(CI H-1)		E	12	4	10 1/2"	5' 10"	46.76
		F	17	5	12"	2' 3"	39.89
		G	3	4	12"	19' 8"	39.41
		H	5	5	12"	1' 8"	8.69
*Concrete Total = 7.72 C.Y.		Manhole Casting = 260 lbs.				Steel Total = 1221.67 lbs.	



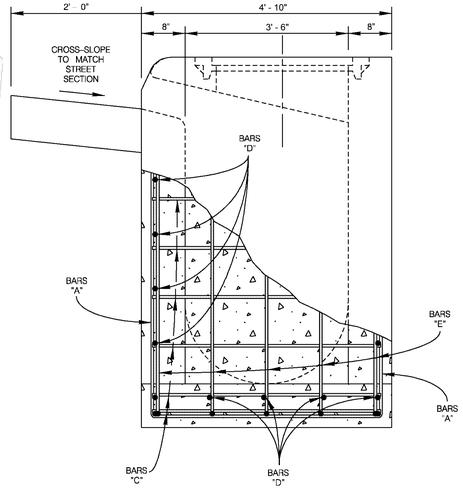
CURB ARMOR DETAIL

* 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.



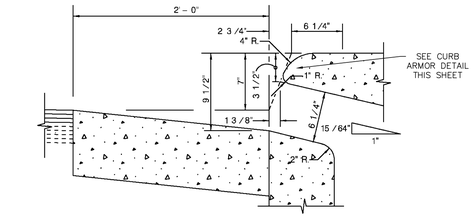
FRONT VIEW

SCALE : 1" = 2'



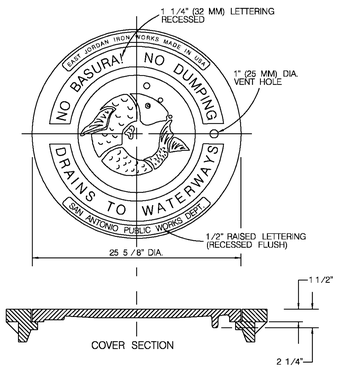
SIDE VIEW

SCALE : 1" = 1'



OPENING DETAIL FOR CURB SECTION

SCALE : 1" = 6"

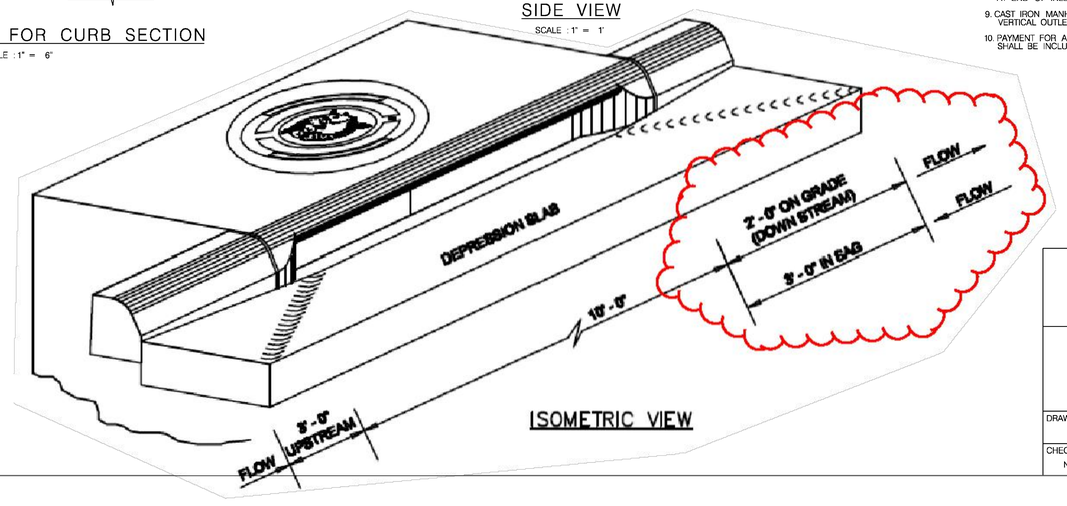


MANHOLE LID & RING DETAIL (ITEM 409)

SCALE : 1" = 8"

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.



ISOMETRIC VIEW

GENERAL NOTES

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 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".

INLET LENGTH		REINFORCING STEEL SCHEDULE					
		BAR	No.	Size	Spa.	Length	Weight lbs.
DRAIN "K"		A	51	4	5' o.c.	13' 9 1/2"	469.85
		B	51	4	5"	5' 7 3/4"	192.34
L= 20'		C	49	4	9"	4' 6"	147.29
DEPTH= 4.5'		D	23	4	10"	21' 1"	323.92
(CI K-1)		E	12	4	10 1/2"	6' 4"	50.77
		F	22	5	12"	2' 3"	51.63
		G	3	4	12"	24' 8"	49.43
		H	5	5	12"	1' 8"	8.69
*Concrete Total = 10.54 C.Y.		Manhole Casting = 260 lbs.				Steel Total = 1553.93 lbs.	

JANUARY 2005

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

TYPE "C" INLET DETAILS

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

CUDEENGINEERS.COM

CUDE ENGINEERS

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

ZIGMOND TRACT UNIT 1

DRAINAGE DETAILS

DATE
08/04/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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08/05/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER
ON

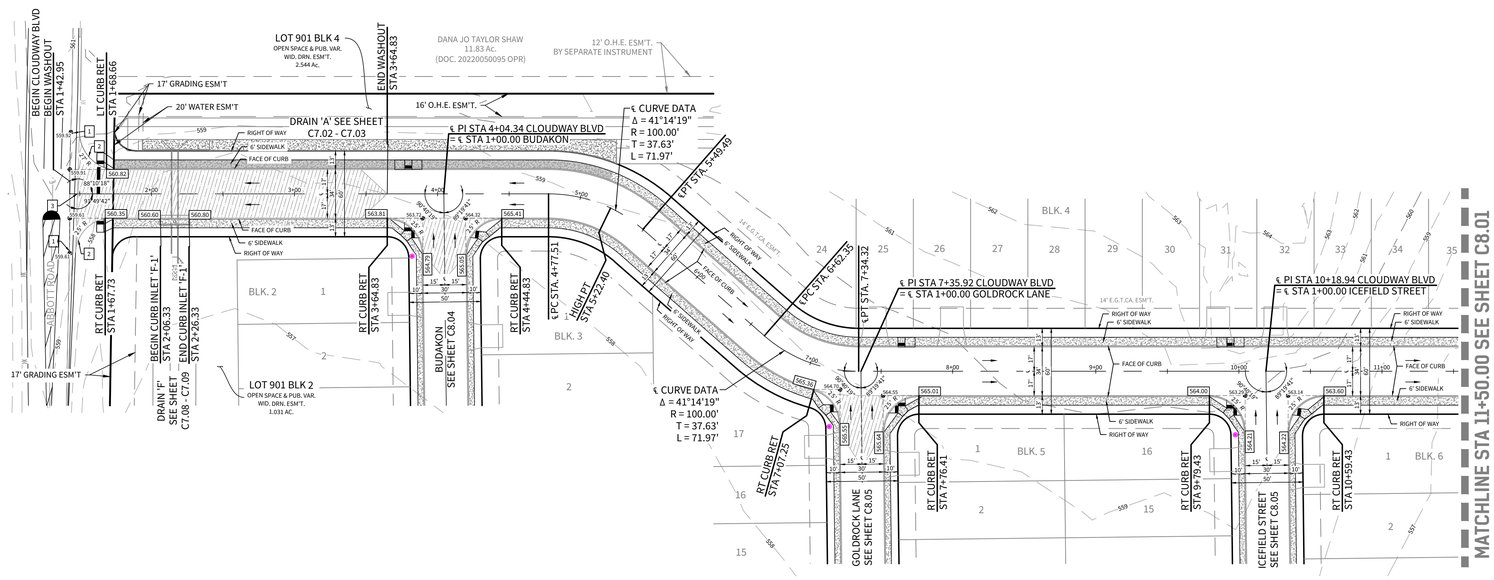
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXXX

C7.D4

P:\04408\001\3-DWG\4-Plans\C07\D4 DRAINAGE DETAILS.dwg, 2025/08/04 3:50pm, Ricoh

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



KEYNOTES:

1. CONTRACTOR TO TRANSITION FROM FULL DEPTH CURB TO FLUSH CURB.
2. FULL DEPTH CURB
3. CONTRACTOR TO TIE INTO EXISTING ABBOT ROAD VERTICALLY AND HORIZONTALLY, NOTIFY ENGINEER OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)

- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

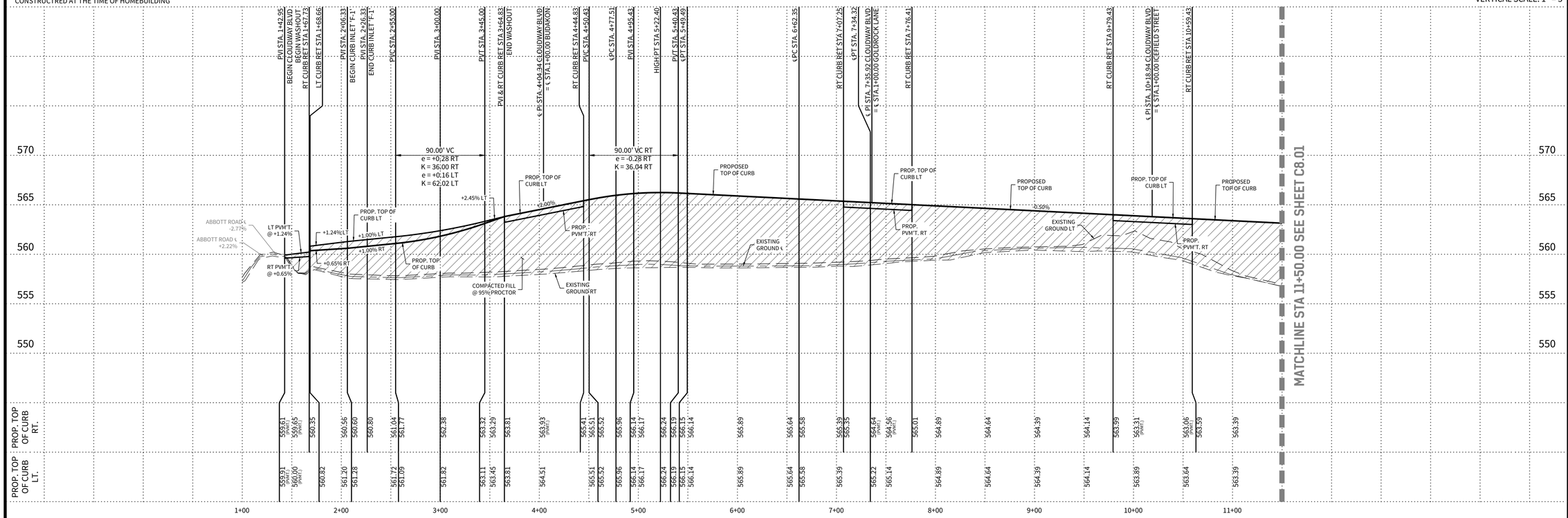
TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C8.D2)

TYPE "10" DIRECTIONAL WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C8.D1)

FOR ADA RAMPS AT SIDEWALK INTERSECTIONS . DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY. ADA RAMPS TO BE CONSTRUCTED WITH INFRASTRUCTURE. WHERE RESIDENTIAL LOT FRONTAGE DOES NOT EXIST, ALL ADA RAMPS ADJACENT TO A RESIDENTIAL LOT SHALL BE CONSTRUCTRED AT THE TIME OF HOMEBUILDING

CLOUDWAY BLVD

STA. 1+00.00 TO STA. 11+50.00



NOTE: A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT OF WAY

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

CUDEENGINEERS.COM

CUDE ENGINEERS

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

ZIGMOND TRACT UNIT 1

STREET PLAN & PROFILE - CLOUDWAY BLVD

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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9.
10.

10/13/2025

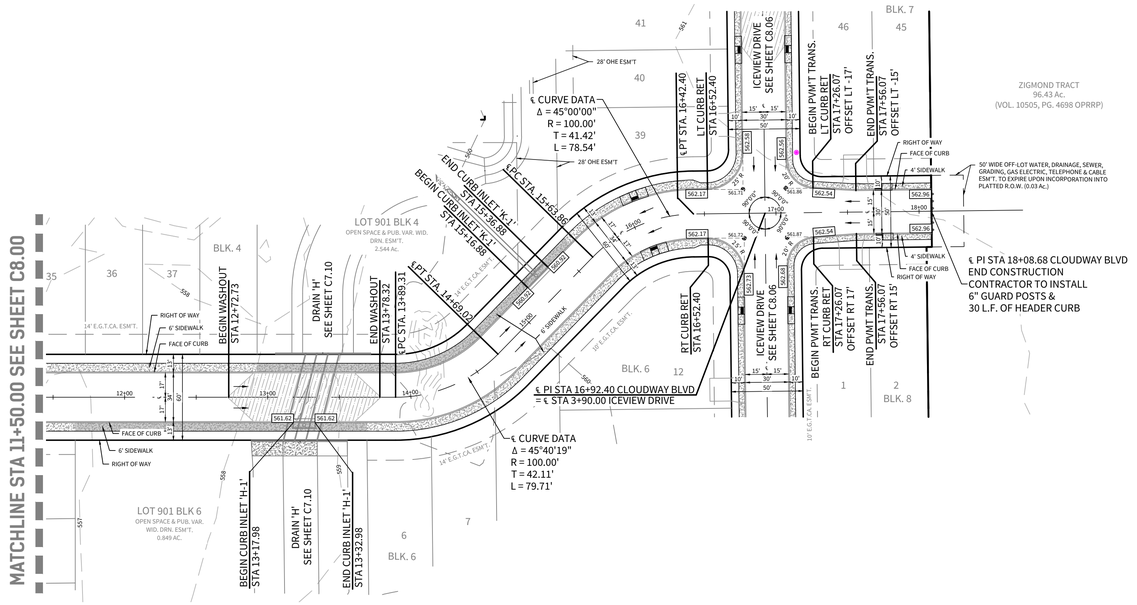
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

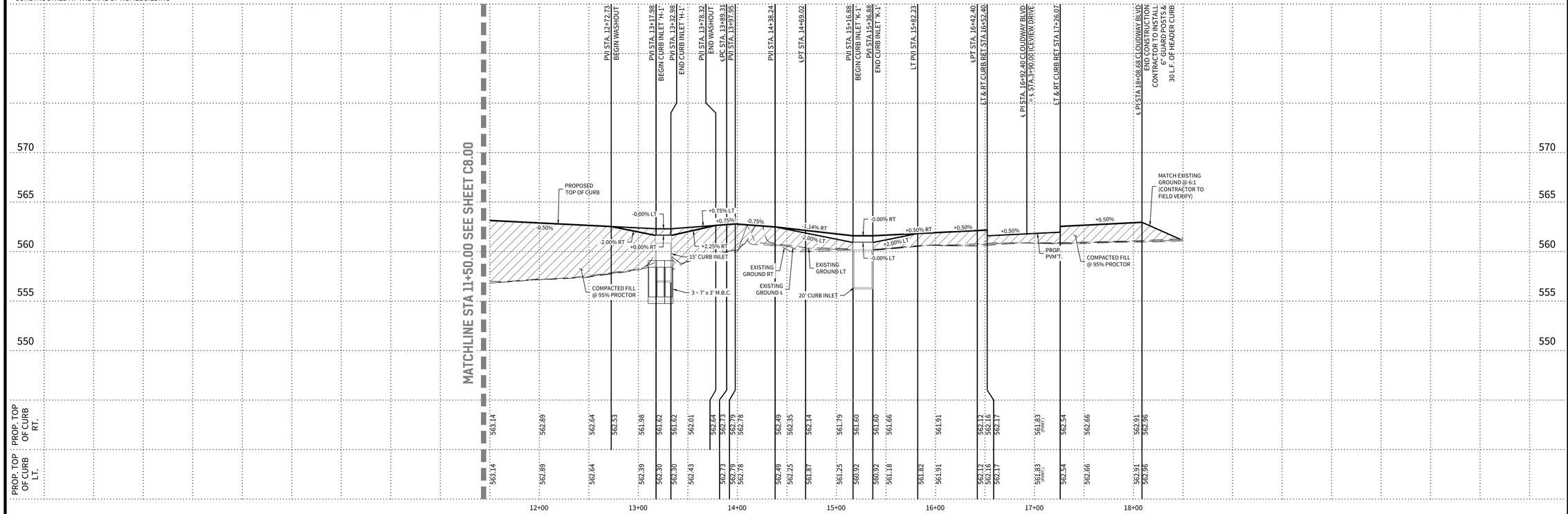
C8.00

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



CLOUDWAY BLVD

STA. 11+50.00 TO STA. 18+08.68



ELEVATIONS:

xxxx.xx PROPOSED TOP OF CONCRETE CURB ELEVATION

xxxx.xx PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)

- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C8.D2)

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NOTE: A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT OF WAY

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

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

ZIGMOND TRACT UNIT 1

STREET PLAN & PROFILE - CLOUDWAY BLVD

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C8.01

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

KEYNOTES:

1. CONTRACTOR TO TRANSITION FROM FULL DEPTH CURB TO FLUSH CURB.
2. FULL DEPTH CURB
3. CONTRACTOR TO TIE INTO EXISTING ABBOT ROAD VERTICALLY AND HORIZONTALLY, NOTIFY ENGINEER OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.

ELEVATIONS:

- XXXX.XX — PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX — PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

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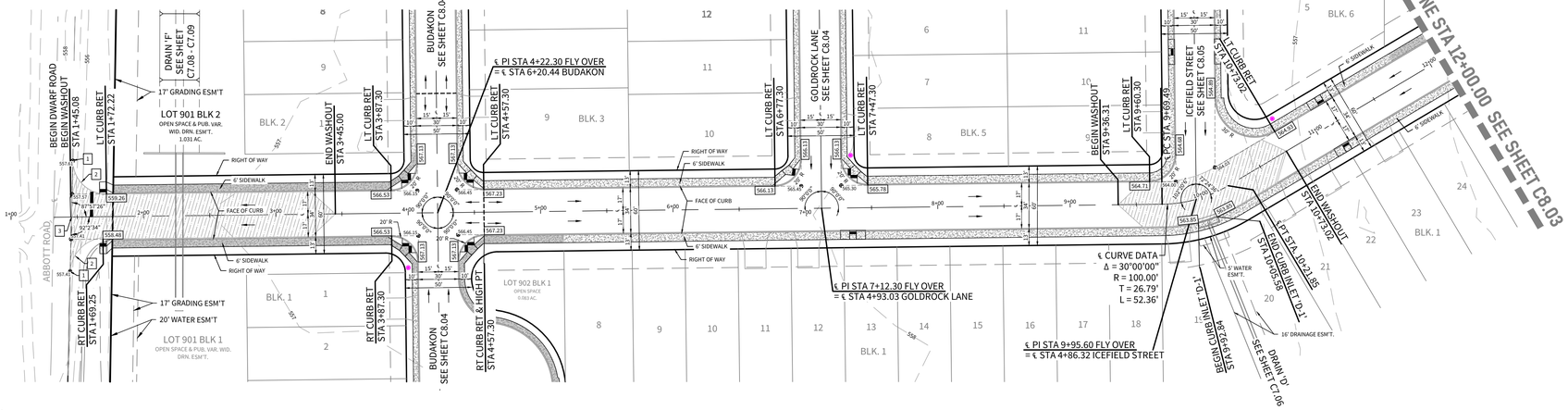
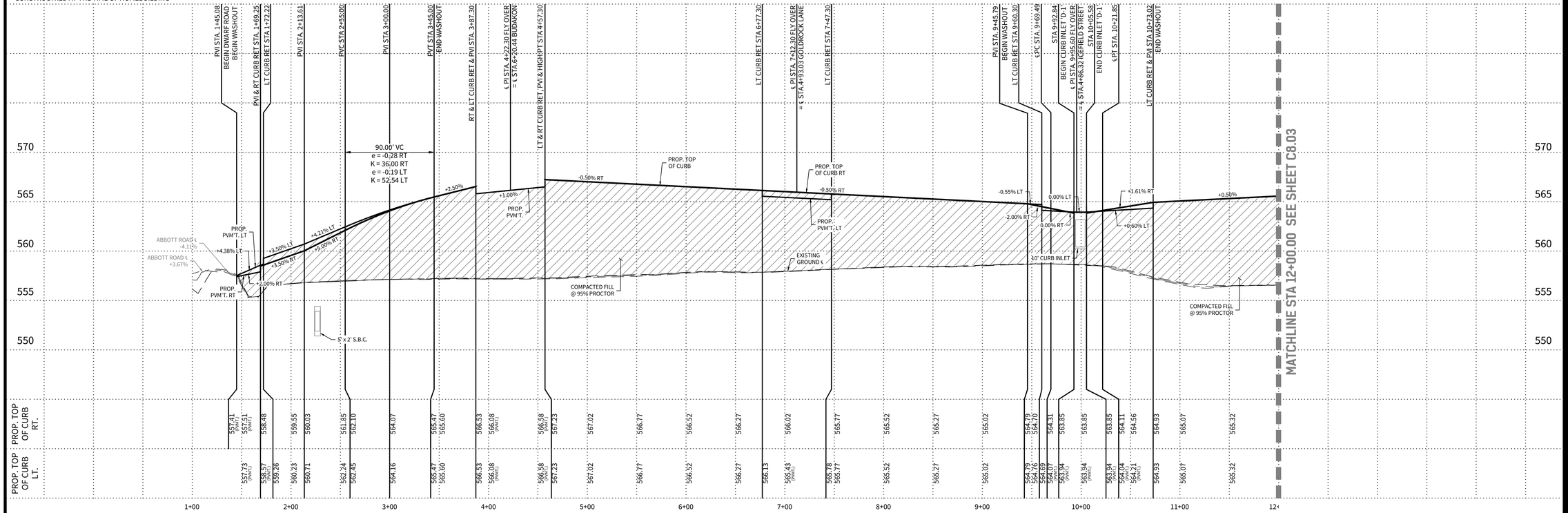


FLY OVER

STA. 1+00.00 TO STA. 12+00.00



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ZIGMOND TRACT UNIT 1

STREET PLAN & PROFILE - FLY OVER

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

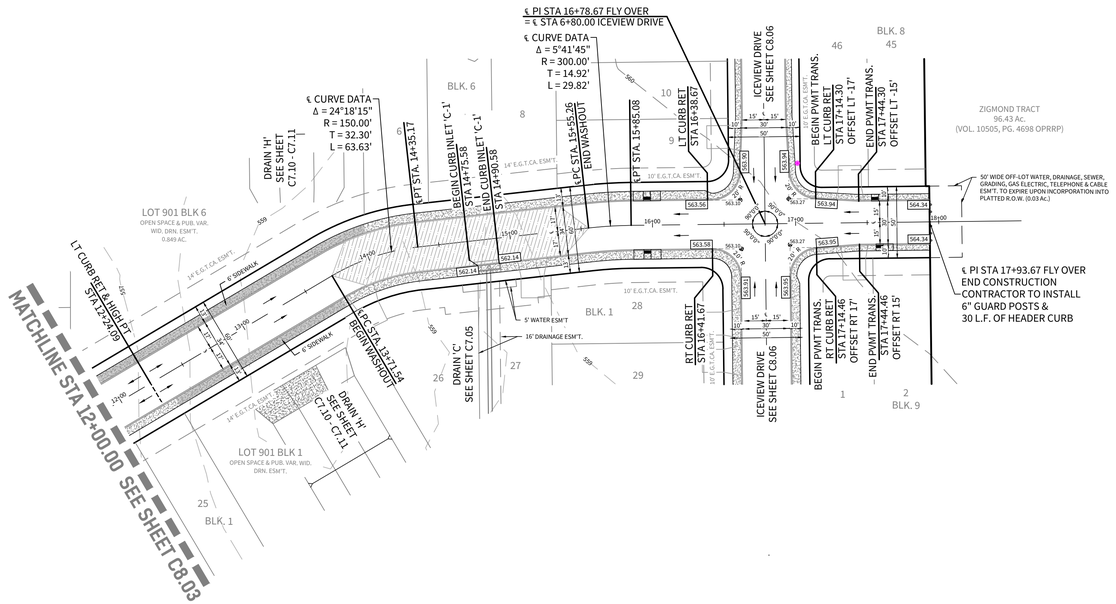
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C8.02

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



ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)

- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

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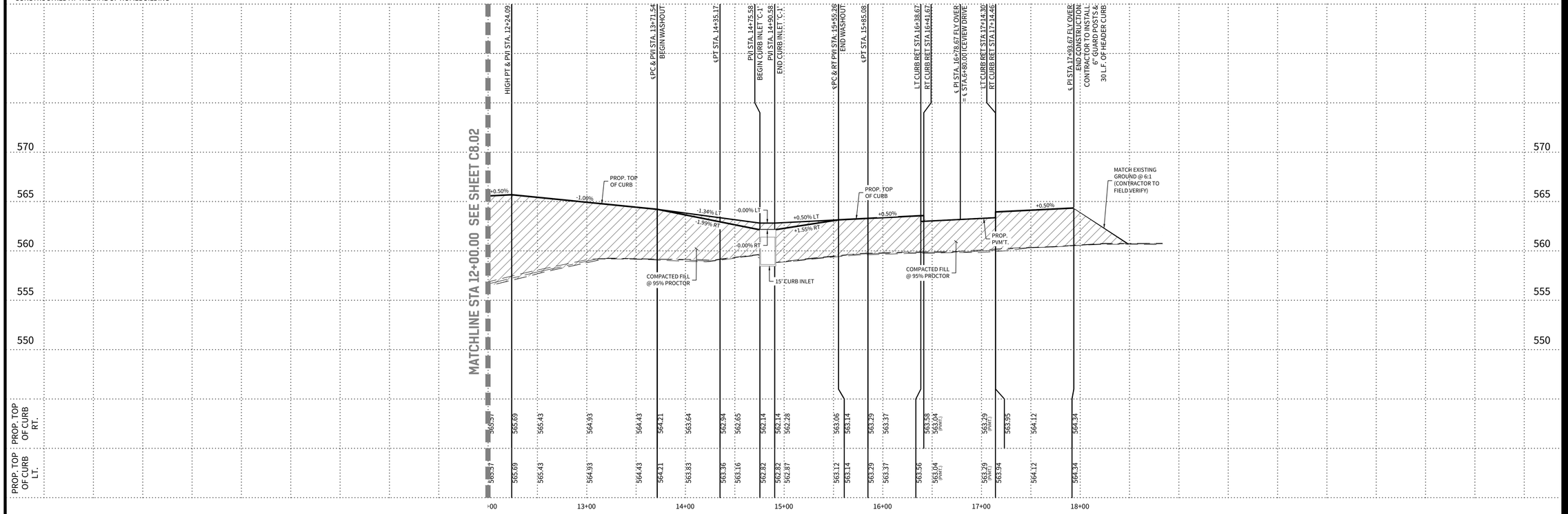
FLY OVER

STA. 12+00.00 TO STA. 17+93.67



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VERTICAL SCALE: 1" = 5'

CUDEENGINEERS.COM

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ZIGMOND TRACT UNIT 1

STREET PLAN & PROFILE - FLY OVER

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

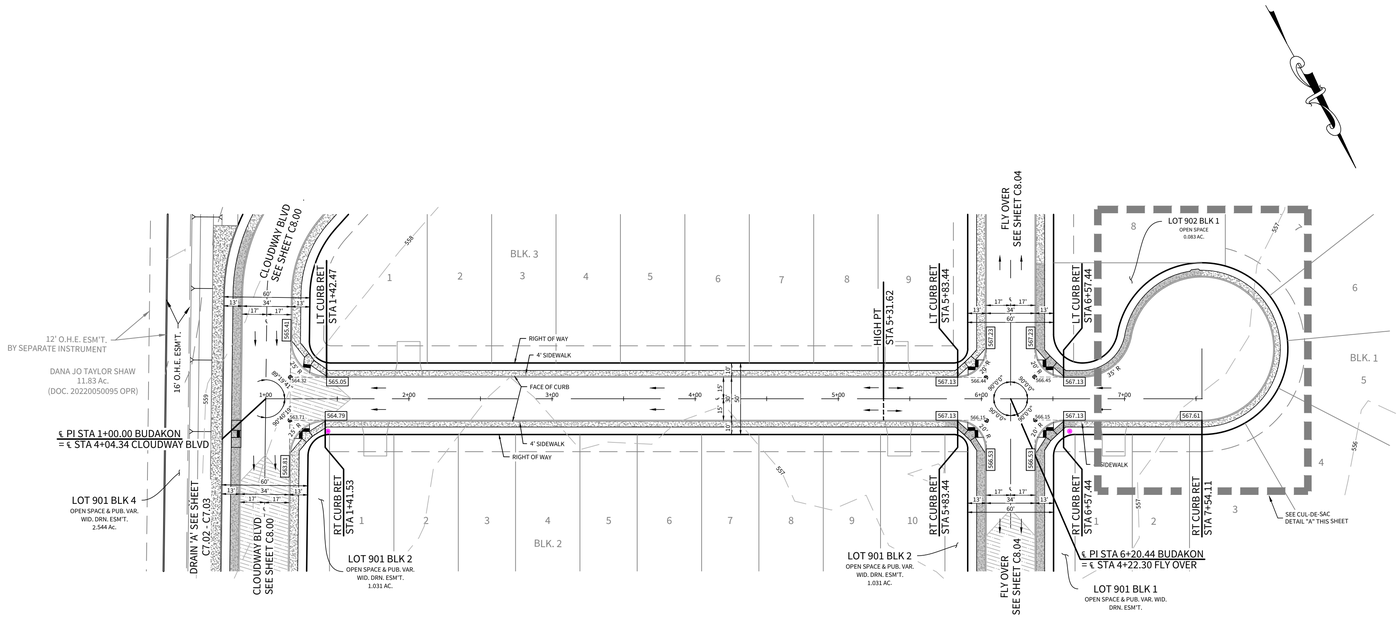
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

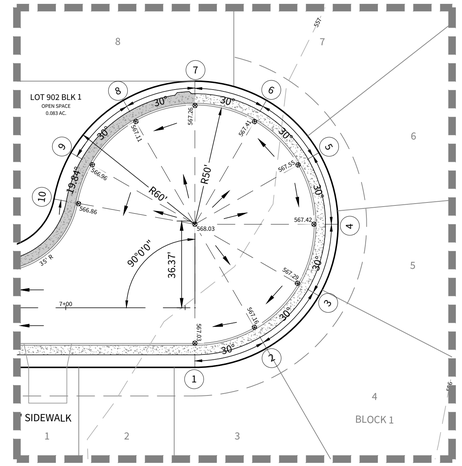
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C8.03

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





CUL-DE-SAC DETAIL "A"
SCALE: 1" = 30'

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)

- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C8.D2)

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BUDAKON

STA. 1+00.00 TO STA. 7+89.11

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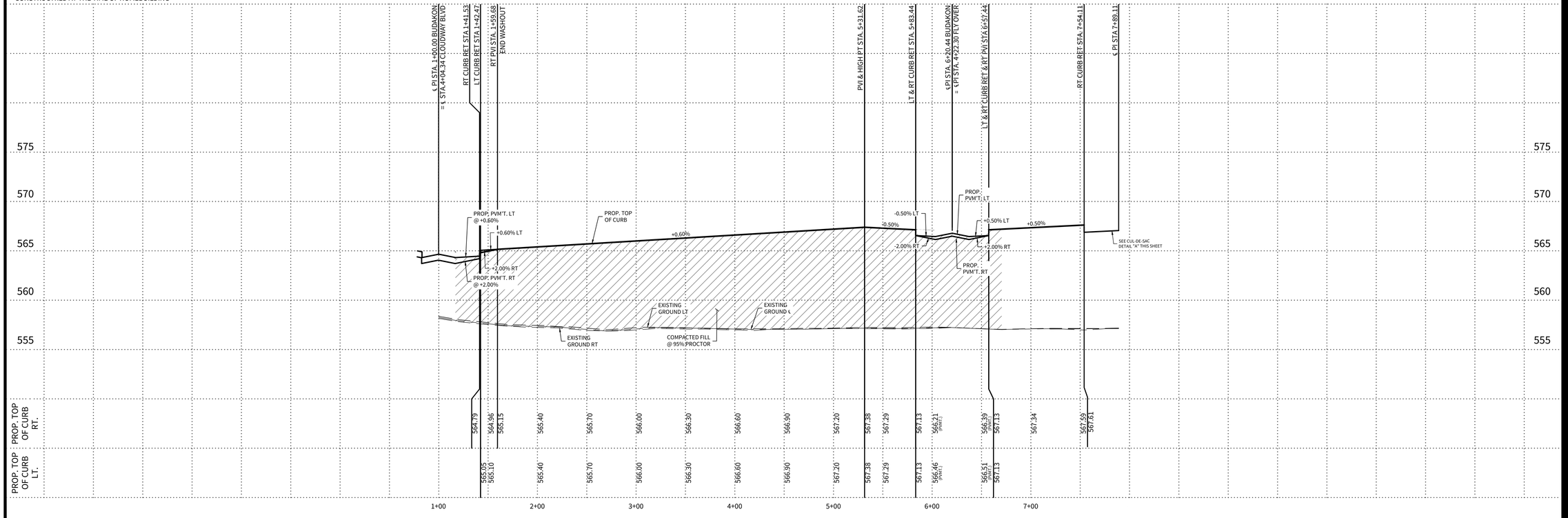
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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CUDE ENGINEERS

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

ZIGMOND TRACT UNIT 1

STREET PLAN & PROFILE - BUDAKON

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C8.04

© UNAUTHORIZED CHANGES AND USES MAY SUBJECT PLANS & PROFILE - BUDAKON.dwg, 10/13/2025 5:43pm, mmata

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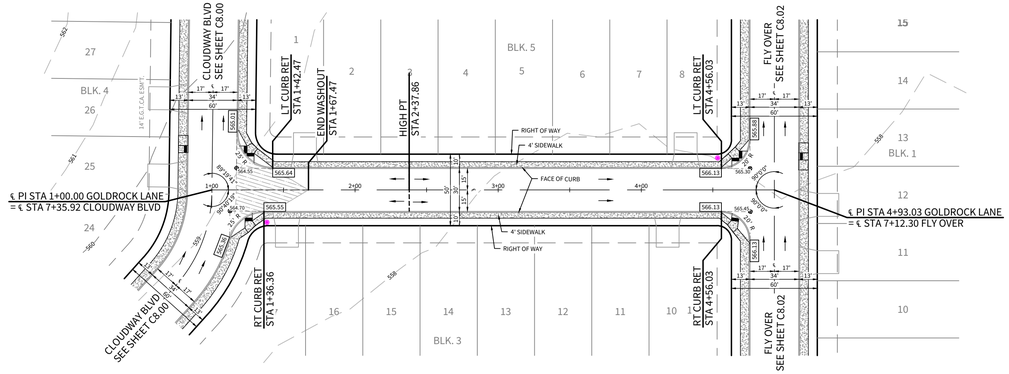

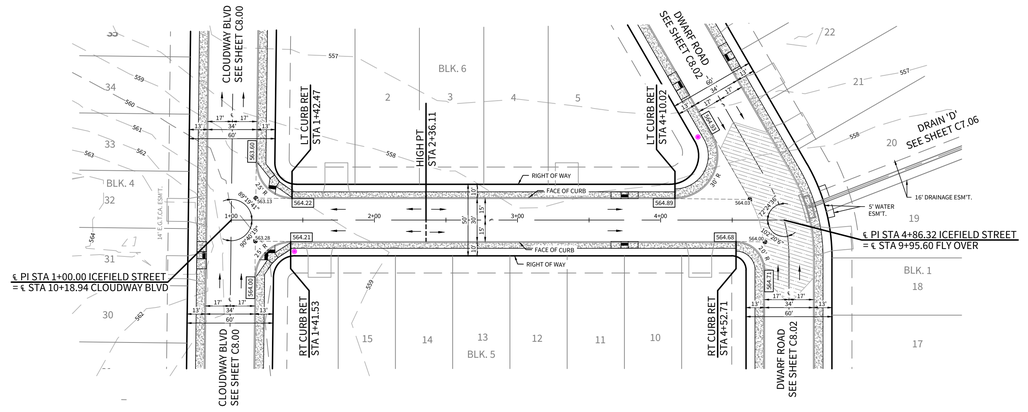

ELEVATIONS:

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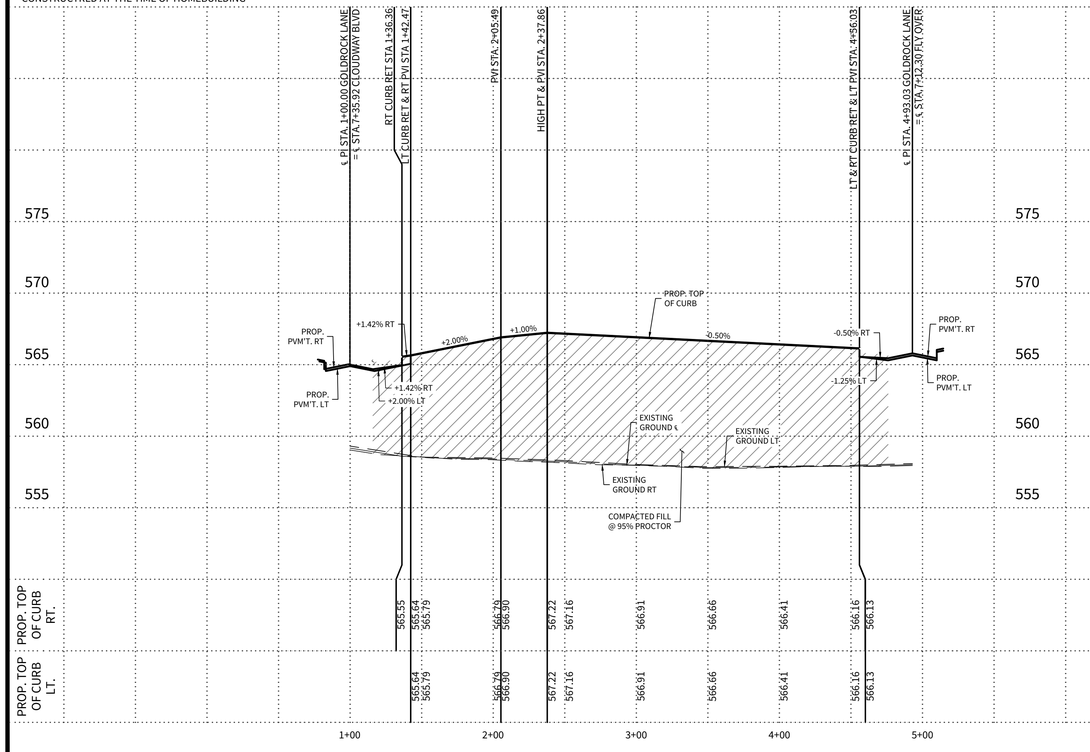
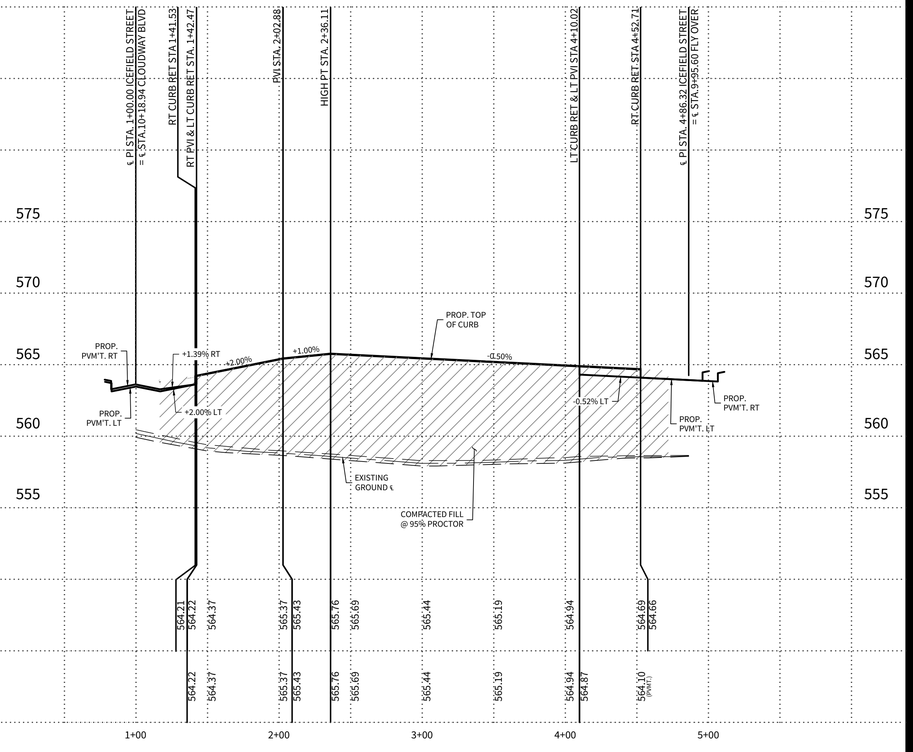
GOLDROCK LANE

STA. 1+00.00 TO STA. 4+93.03



ICEFIELD STREET

STA. 1+00.00 TO STA. 4+86.32



NOTE: A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT OF WAY

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

CUDEENGINEERS.COM

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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
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ZIGMOND TRACT
UNIT 1

STREET PLAN & PROFILE - GOLDROCK LANE & ICEFIELD STREET

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C8.05

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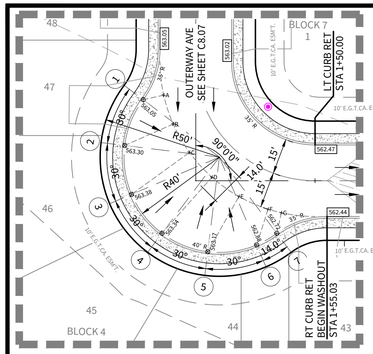
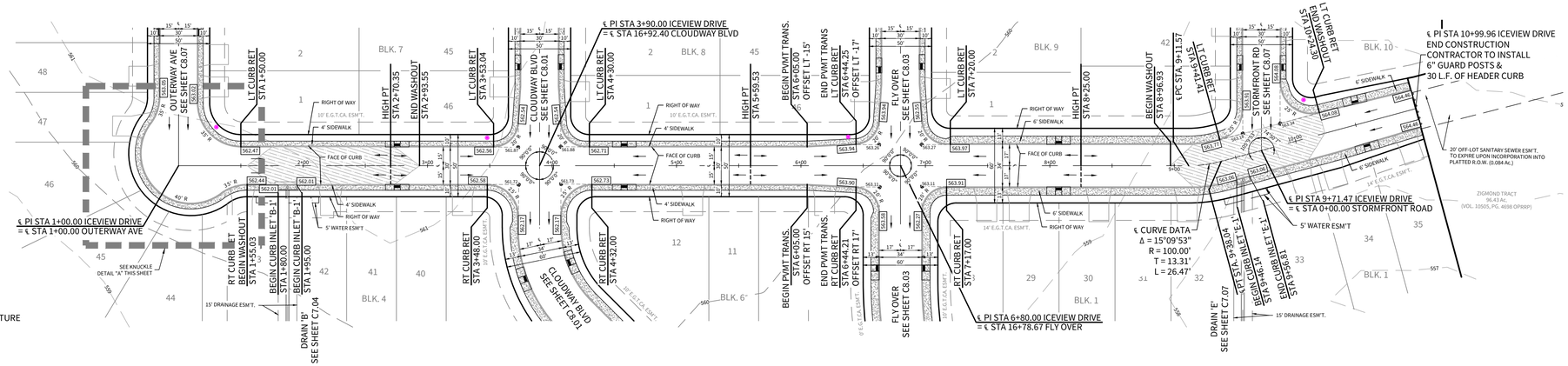


KNUCKLE DETAIL "A"

SCALE: 1" = 30'

KNUCKLE DETAIL "A"

POINT	Elevation
A	562.37
B	562.30
C	562.23
D	562.15
E	562.08
F	562.00
G	561.97



ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

- STREET WASHOUT (SEE DETAIL SHEET C7.D1)

- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

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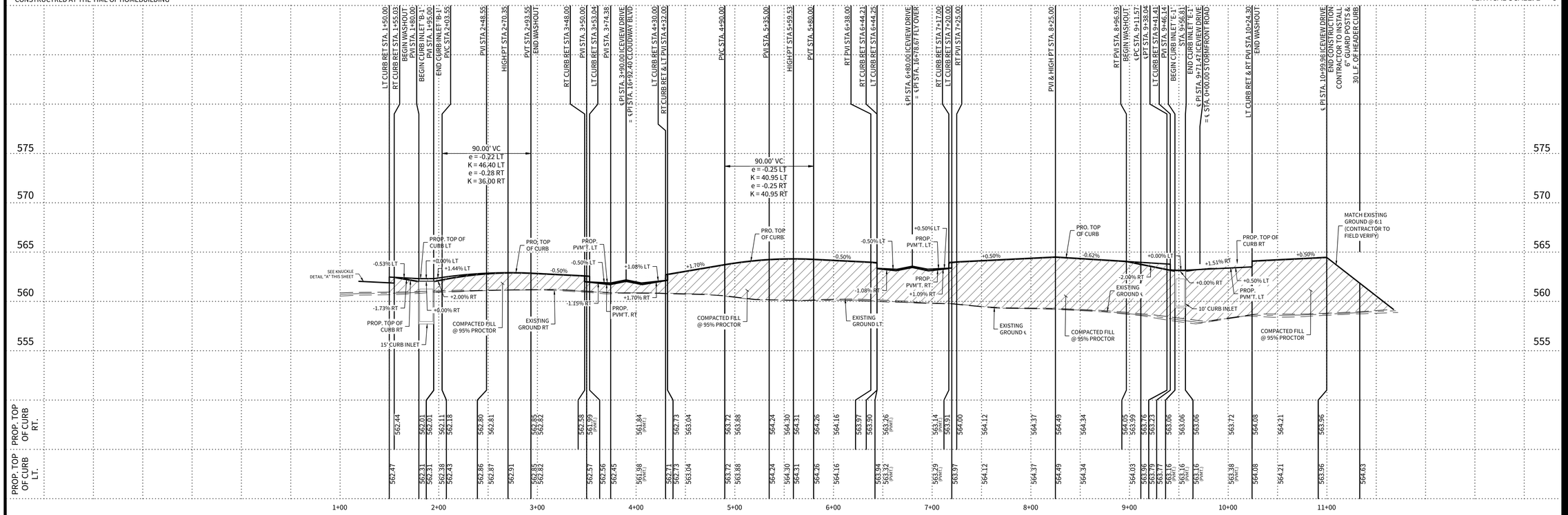
ICEVIEW DRIVE

STA. 1+00.00 TO STA. 10+99.96



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ZIGMOND TRACT UNIT 1

STREET PLAN & PROFILE - ICEVIEW DRIVE

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

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SPM

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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C8.06

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ELEVATIONS:

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XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

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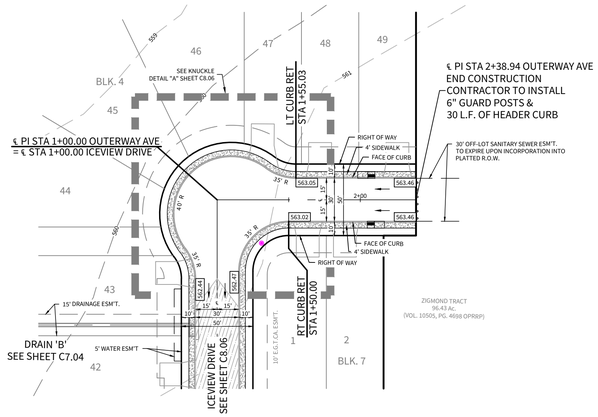
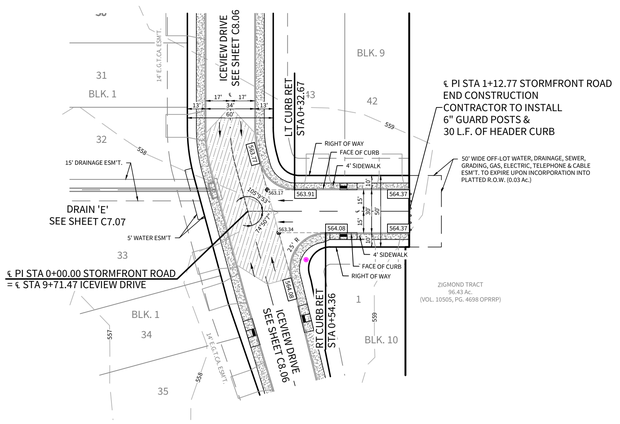


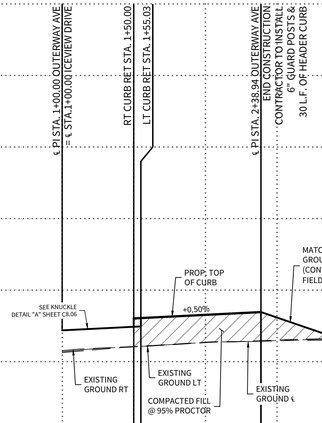
OUTERWAY AVE

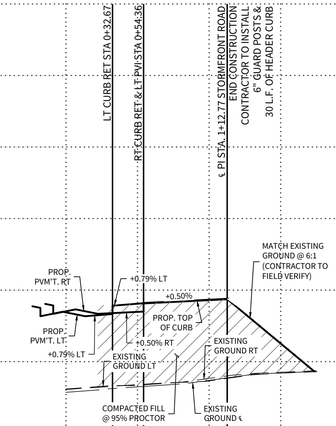
STA. 1+00.00 TO STA. 2+38.94



STORMFRONT ROAD

STA. 0+00.00 TO STA. 1+12.77





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ZIGMOND TRACT UNIT 1

STREET PLAN & PROFILE - OUTERWAY AVE & STORMFRONT ROAD

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C8.07

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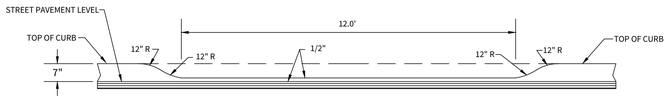
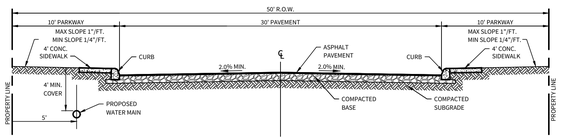
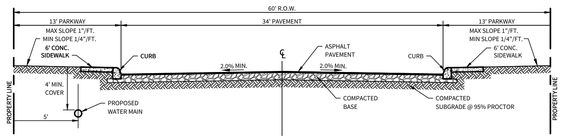


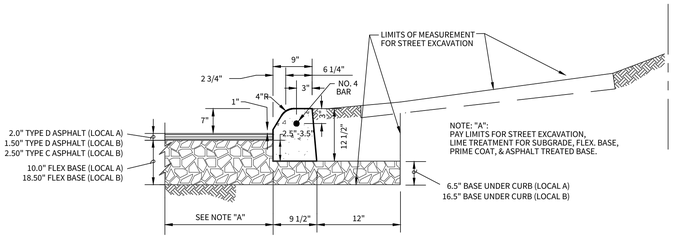
TYPICAL DRIVEWAY CUT SECTION



TYPICAL LOCAL "A" STREET CROSS-SECTION



TYPICAL LOCAL TYPE "B" STREET CROSS-SECTION



CURB SECTIONS

N.T.S.

STREET TYPE (CBR = 4.0)	HMAC TYPE "D"	HMAC TYPE "C"	FLEX BASE (TY A GR 2)	LIME STABILIZED SUBGRADE	BASE UNDER CURB	STRUCTURAL NUMBER
LOCAL "A"	2"	-	10.00"	8" (44 LB/SY)	6.5"	2.92
LOCAL "B"	1.5"	2.5"	18.50"	8" (44 LB/SY)	16.5"	4.99

STREET PAVEMENT DESIGN OPTIONS

NOTES:

1. THE SUBGRADE SOILS SHOULD BE TESTED FOR SOIL SULFATE CONTENT PRIOR TO TREATMENT. IF SOIL SULFATE CONTENT IS HIGH, AN ALTERNATE PROCEDURE WILL BE NEEDED.
2. LIME APPLICATION RATE OF 44.0 LBS PER SQ YD FOR 8 INCH DEPTH TREATMENT IS RECOMMENDED.
3. IF CEMENT APPLICATION RATES ARE NEEDED, PLEASE CONTACT INTECT TO RUN THE TESTS.
4. IF FILL IS USED TO RAISE THE GRADE, FILL MATERIAL UNDERNEATH THE PAVEMENT SHOULD BE APPROVED FILL MATERIAL, FREE OF DELETERIOUS MATERIAL AND WITH A MINIMUM CBR VALUE OF 4.0. LIME APPLICATION RATES SHOULD BE RE-EVALUATED AND TESTED FOR SULFATE CONTENT PRIOR TO USE OF THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES.
5. THE FINAL PAVEMENT SUBGRADE SHOULD BE DELINEATED FOR DIFFERENT SUBGRADE TYPES AND VERIFIED BY INTEC.

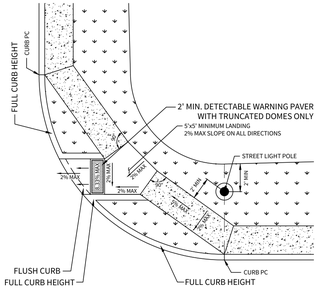
LIME STABILIZED

FOR CONSTRUCTION VERIFICATION THE FOLLOWING SHALL BE CONDUCTED IN THE FIELD:

- AFTER INITIAL MIXING, THE SOIL-LIME MIXTURE SHALL MELLOW FOR A PERIOD OF TWO TO THREE (2-3) DAYS. MAINTAIN A MOISTURE DURING MELLOWING;
- AFTER MELLOWING AND FINAL MIXING, THE PULVERIZATION SHALL BE CHECKED USING THE FOLLOWING CRITERIA (REMOVE NON-SLAKING AGGREGATES RETAINED ON THE ¾ INCH SIEVE FOR THE SAMPLE:

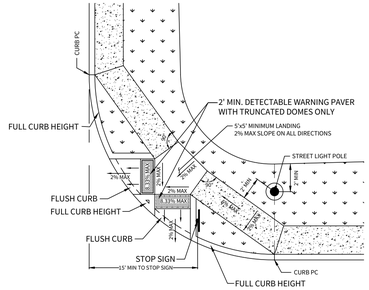
MINIMUM PASSING 1 ¾" SIEVE	100
MINIMUM PASSING ¾" SIEVE	85
MINIMUM PASSING NO. 4 SIEVE	60

- SAMPLE SOIL-LIME MIXTURE FOR DETERMINATION OF MDD. IN THE LABORATORY, MOLD SPECIMENS TO 95% OF MDD AT OPTIMUM MOISTURE CONTENT AND VERIFY UCS TO BE AT LEAST 160 PSI IN ACCORDANCE WITH PROCEDURE OUTLINED ABOVE FOR MIXTURE DESIGN.
- COMPACT AND CHECK FIELD DENSITY (MINIMUM OF 95% MDD REQUIRED);
- CURE FOR AN ADDITIONAL 2 TO 5 DAYS (TOTAL MELLOWING AND CURING TIME SHOULD TOTAL AT LEAST 5 DAYS).
- VERIFY DEPTH OF LIME STABILIZED LAYER TO DEPTH AS NOTED ON PLAN WITHIN +/- 1.0 INCHES.



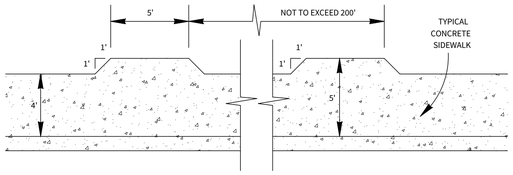
SINGLE ADA RAMP INTERSECTION LAYOUT DETAIL (TYPE 10 DIRECTIONAL RAMPS)

N.T.S.



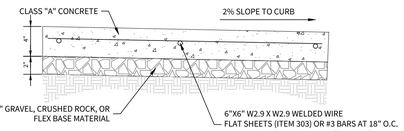
DUAL ADA RAMP INTERSECTION LAYOUT DETAIL (TYPE 10 DIRECTIONAL RAMPS)

N.T.S.



SIDEWALK PASSING SPACE

1. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
2. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.

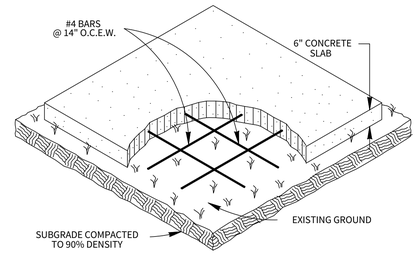


CONCRETE SIDEWALK

N.T.S.

GENERAL SPECIFICATIONS FOR COMPACTED FILL

1. FOLLOWING THE CLEARING AND DISKING OR SCARIFYING OF THE FILL AREA, IT SHALL BE BLADED UNTIL IT IS UNIFORM AND FREE FROM LARGE CLODS. THE AREA SHALL BE BROUGHT TO THE ADEQUATE MOISTURE CONTENT AND COMPACTED (TYPICALLY) TO NOT LESS THAN NINETY PERCENT (90%) OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT ASTM D 1557 COMPACTION PROCEDURE, OR 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CURRENT THD--TEX--113--E COMPACTION PROCEDURE.
2. THE MATERIALS USED SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES, SUCH AS TREES, BRUSH AND RUBBISH.
3. THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

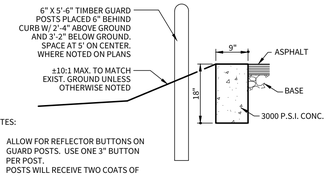


MAIL BOX PAD NOTE:

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

COMMUNITY MAIL BOX SLAB

ITEM 513.2

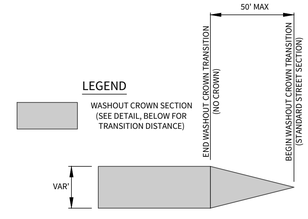


NOTES:

1. ALLOW FOR REFLECTOR BUTTONS ON GUARD POSTS. USE ONE 3" BUTTON PER POST.
2. POSTS WILL RECEIVE TWO COATS OF ALUMINUM PAINT.

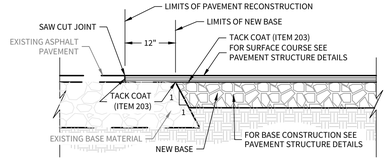
HEADER CURB DETAIL

N.T.S.



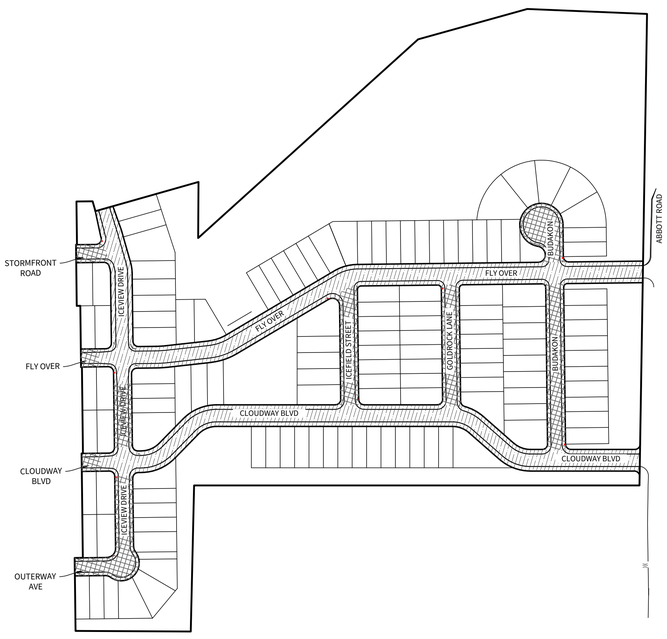
WASHOUT CROWN TRANSITION DETAIL

N.T.S.



PAVEMENT JUNCTION DETAILS

N.T.S.



STREET PAVEMENT DESIGN DETAIL

N.T.S.

PAVEMENT DESIGN SCHEMATIC

NOTE:
1. **REFERENCE GEOTECHNICAL REPORT (#S241275--P) FOR BORING INFORMATION AND CBR LOCATIONS.**

LEGEND:

LOCAL "A"

CLOUDWAY BLVD	STA 17+56.07 - 18+08.68
FLY OVER	STA 17+44.48 - 17+93.67
BUDAKON	STA 1+30.00 - 5+90.44
	STA 6+50.44 - 7+90.48
GOLDROCK LANE	STA 1+27.61 - 4+63.03
ICEFIELD STREET	STA 1+30.00 - 4+54.78
ICEVIEW DRIVE	STA 1+00.00 - 6+05.00
OUTERWAY AVE	STA 1+00.00 - 2+38.94
STORMFRONT ROAD	STA 0+28.39 - 1+12.77

LOCAL "B"

CLOUDWAY BLVD	STA 1+73.41 - 17+56.07
FLY OVER	STA 1+76.85 - 17+44.46
ICEVIEW DRIVE	STA 6+05.00 - 10+99.96

NOTE:
LIME TREATMENT IS NOT REQUIRED, ONLY IF ON-SITE FILL CONTAINS PI VALUES LESS THAN 20.

GENERAL NOTES

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

SAN ANTONIO WATER SYSTEM	233-2010
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
C.P.S. ENERGY	"
AT&T	"
TIME WARNER CABLE	"
VALERO ENERGY CO.	"
GREY FOREST UTILITIES	"

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

ZIGMOND TRACT UNIT 1

STANDARD STREET DETAILS

10/13/2025

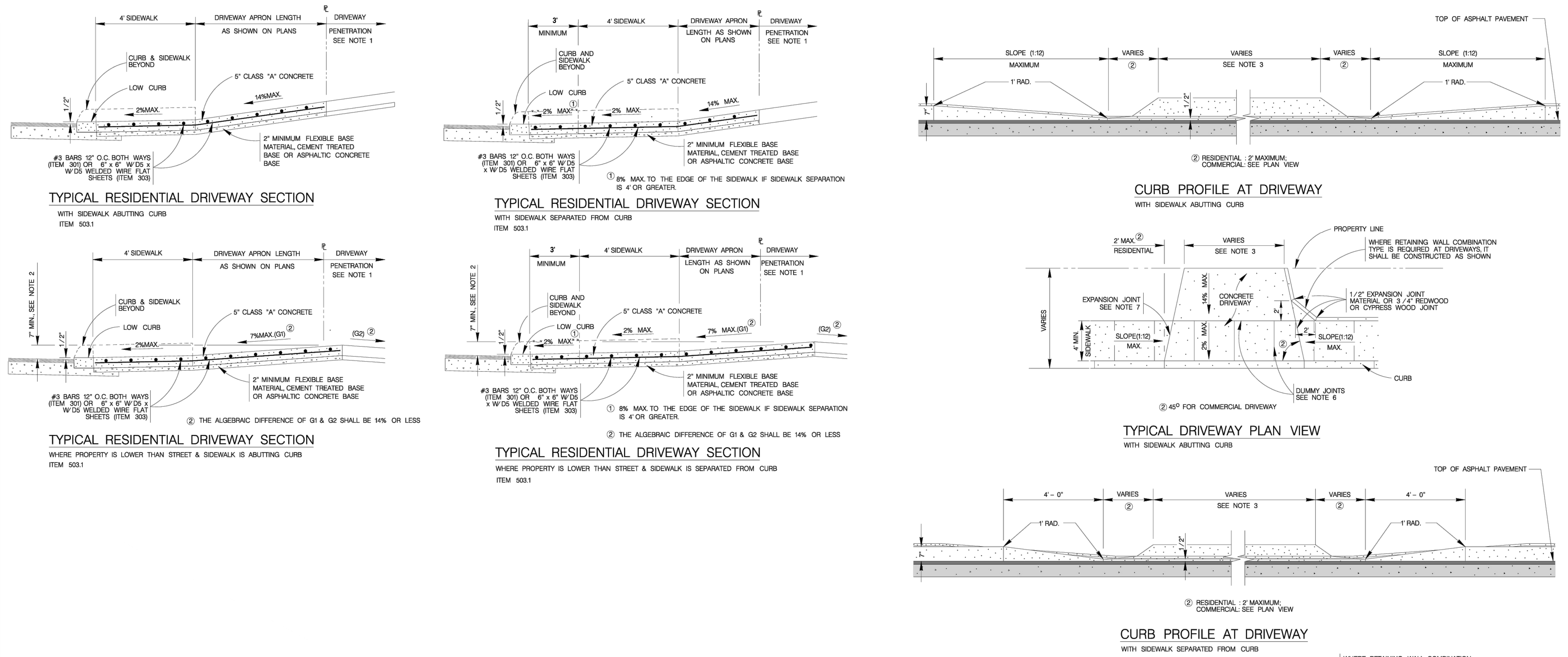
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

PLAT NO.
25-4486

C8.D1

© 2025 CUDE ENGINEERS I 2025-10-13 3:15:00 PM I S:\DWG\Projects\ZIGMOND TRACT UNIT 1\Sheets\ZIGMOND TRACT UNIT 1 C8.D1 STANDARD STREET DETAILS.dwg I mmata

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

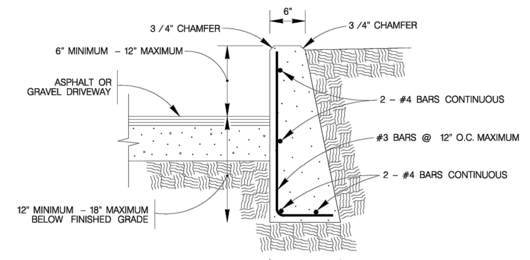


CONCRETE DRIVEWAY NOTES

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

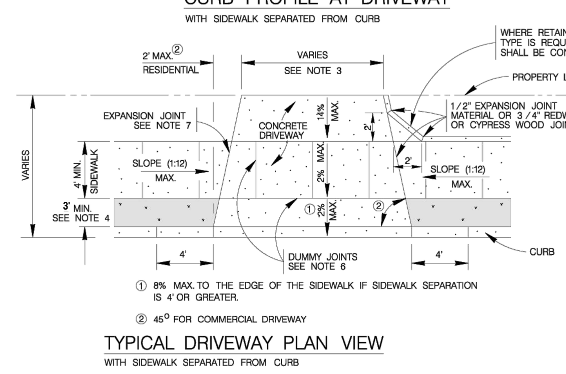
TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	20'
COMMERCIAL – ONE WAY	12'	20'
COMMERCIAL – TWO WAY	24'	30'

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

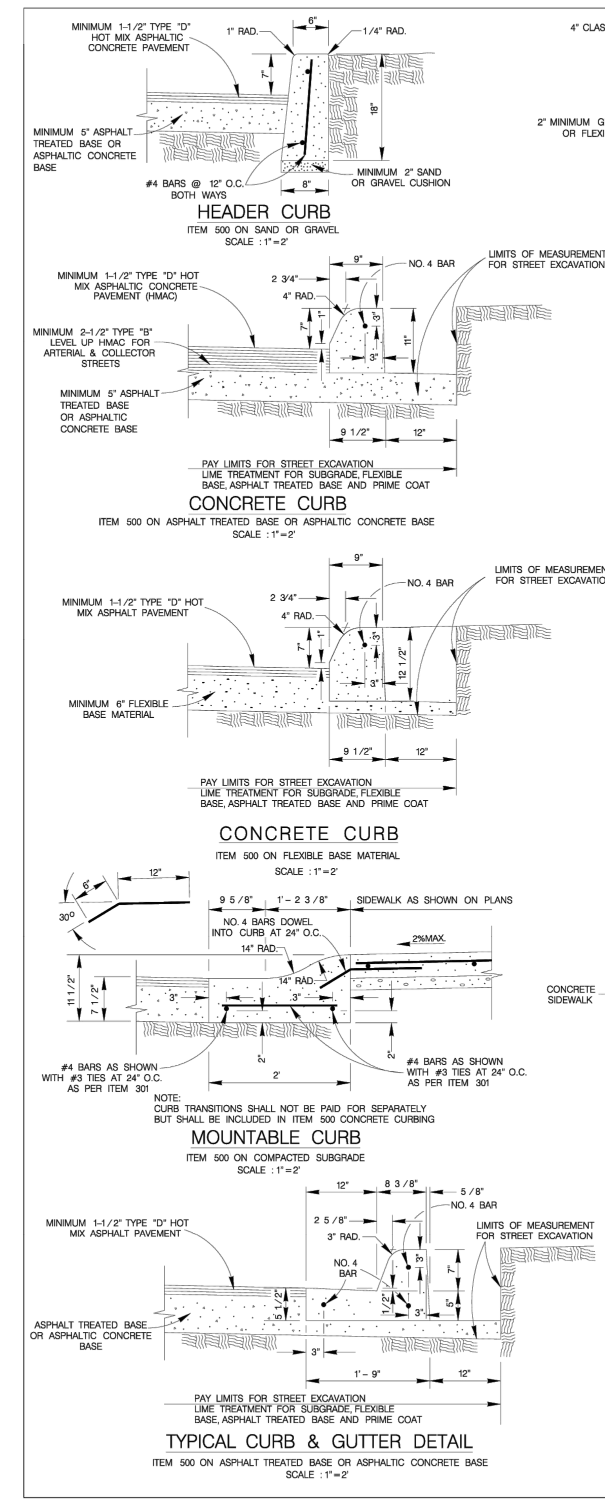


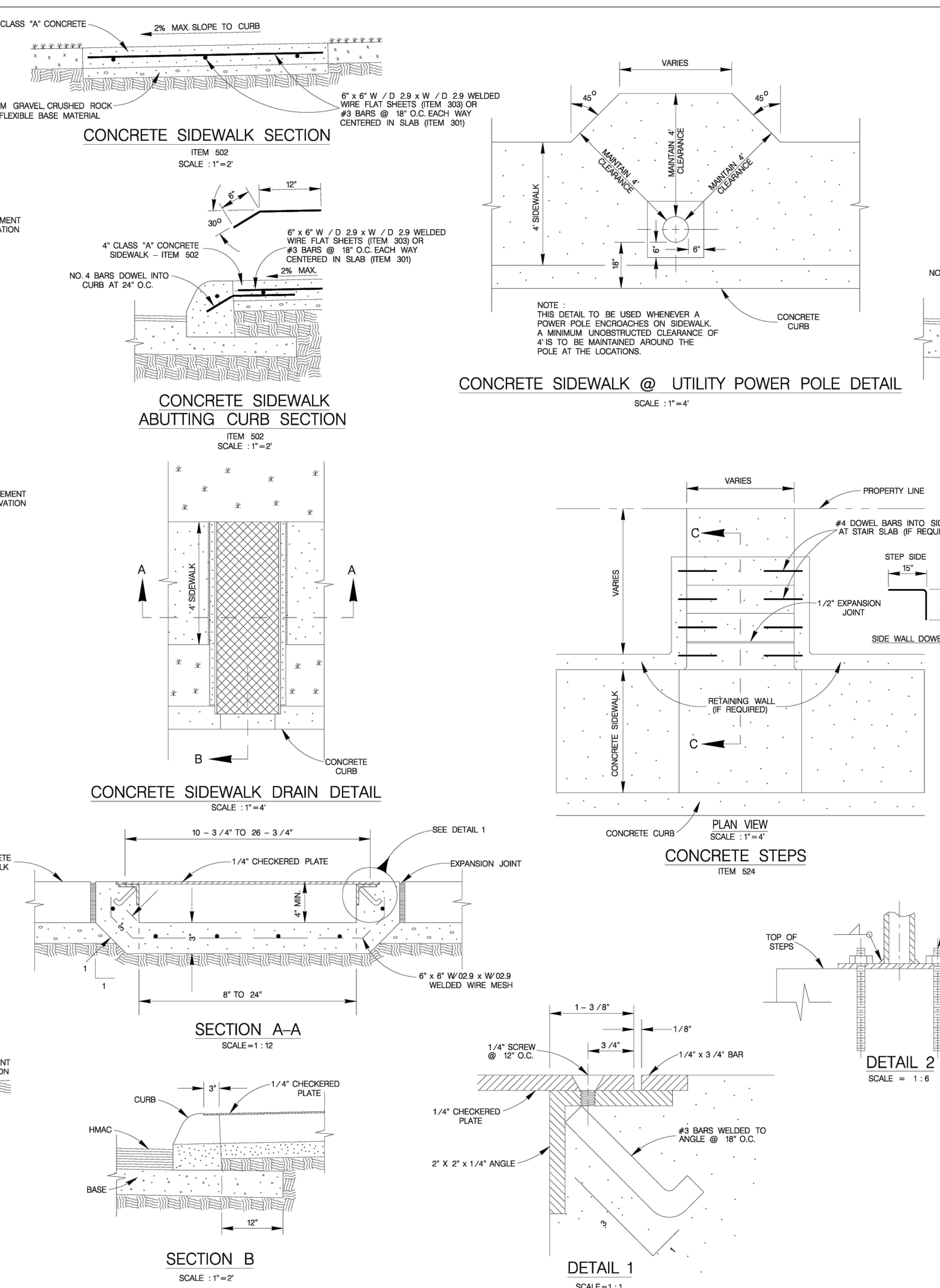
NOTE:
1. COST OF REINFORCEMENT TO BE INCLUDED IN UNIT COST OF ITEM 307.1.
2. CONCRETE RETAINING WALL COMBINATION TYPE SHALL BE USED FOR CONCRETE DRIVEWAYS.

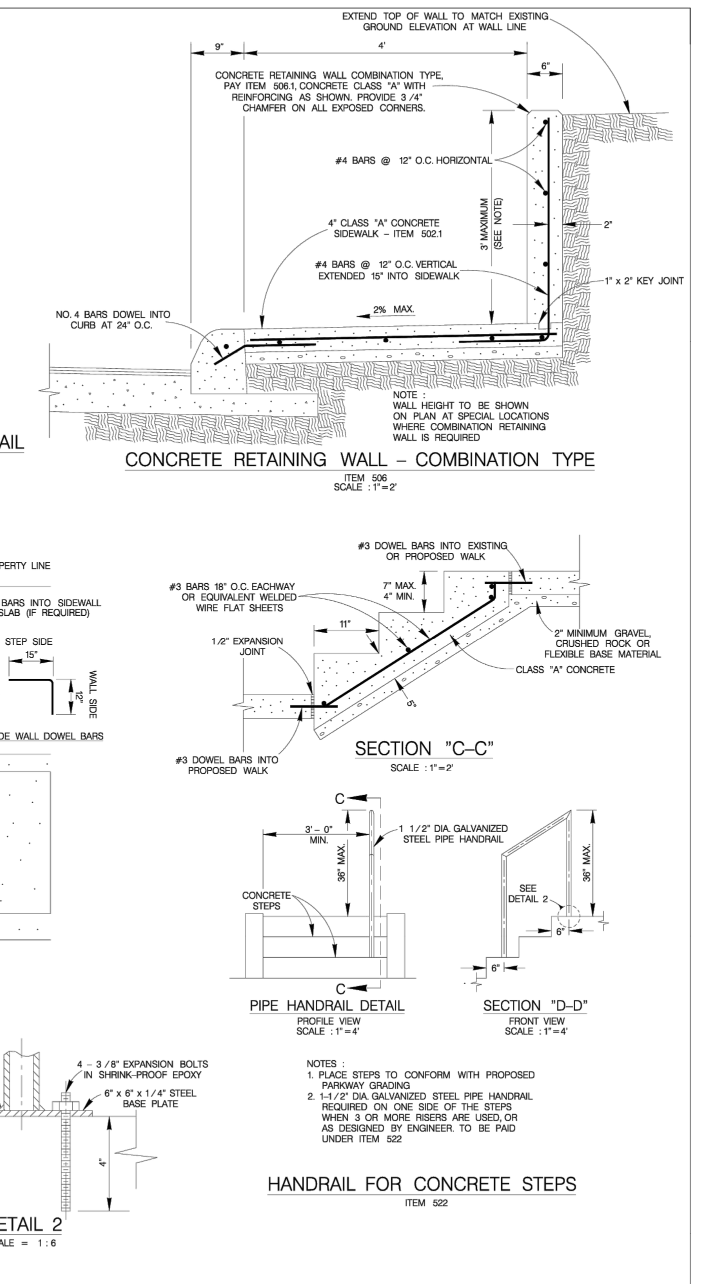
DRIVEWAY – CONCRETE RETAINING WALL
ON COMPACTED SUBGRADE
ITEM 307.1



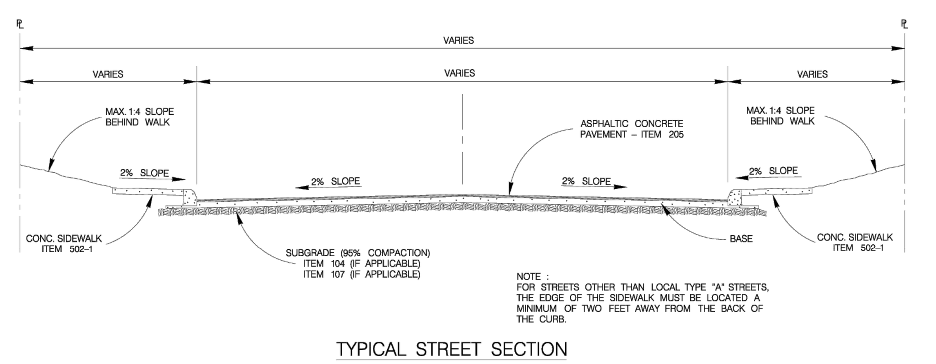
MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
CONCRETE DRIVEWAY STANDARDS
___% SUBMITTAL | PROJECT NO.:___ | DATE:___
DRWN. BY: V. VASQUEZ | DSGN. BY:___ | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.:___OF___

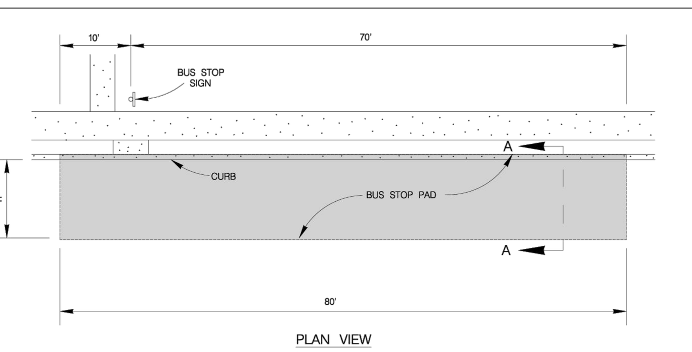


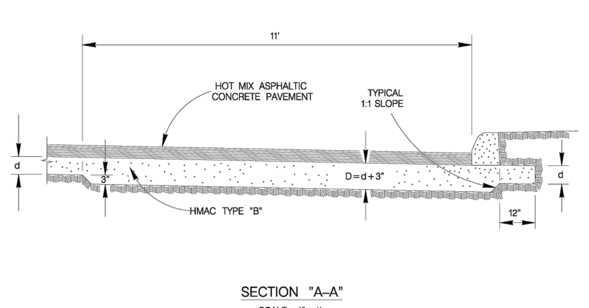




MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
MISCELLANEOUS CONSTRUCTION STANDARDS I
___% SUBMITTAL | PROJECT NO.:___ | DATE:___
DRWN. BY: V. VASQUEZ | DSGN. BY:___ | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.:___OF___

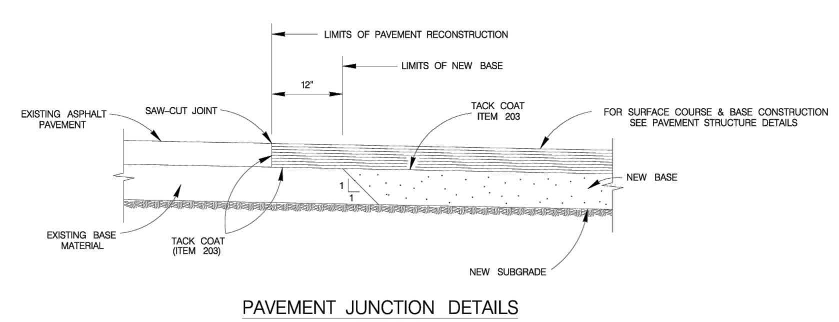


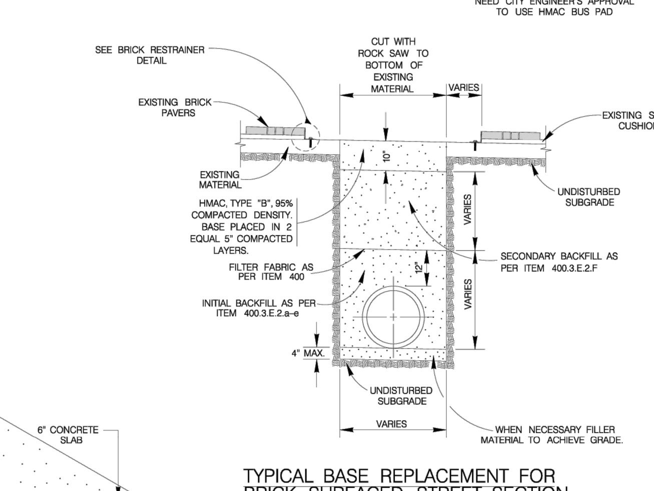


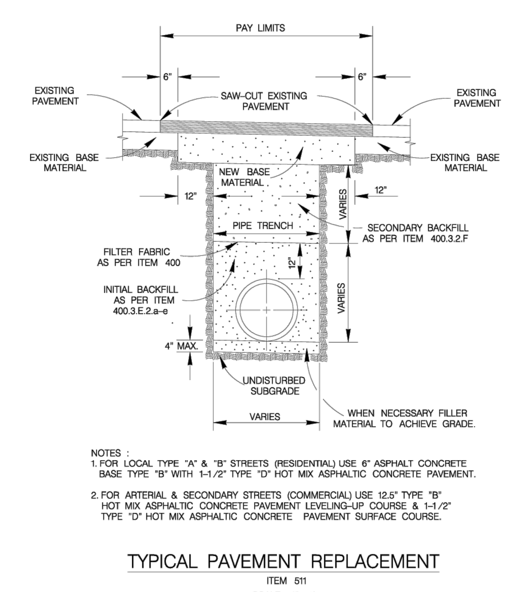


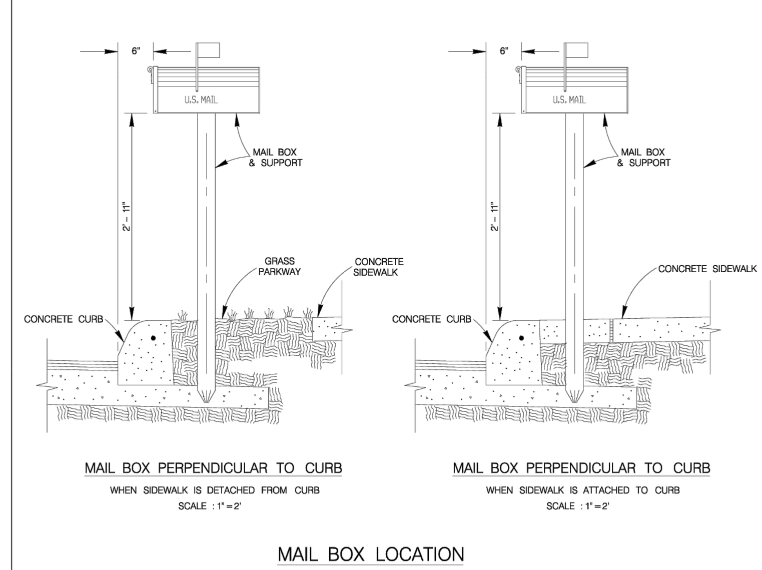
NOTES :
1. EXCAVATION FOR THICKENED PAVEMENT SECTION WILL BE PAID UNDER ITEM NO. 104 "STREET EXCAVATION".
2. BASE MATERIALS :
   A.) IF THE MEASUREMENT FOR THE HMAC MATERIAL IS PER TON, THICKENED PAVEMENT SECTION WILL BE PAID FOR UNDER ITEM NO. 205, TYPE "B" – PER TON.
   B.) IF THE MEASUREMENT FOR THE HMAC MATERIAL IS PER SQUARE YARD, NO EXTRA PAYMENT WILL BE MADE FOR THE THICKENED PAVEMENT.

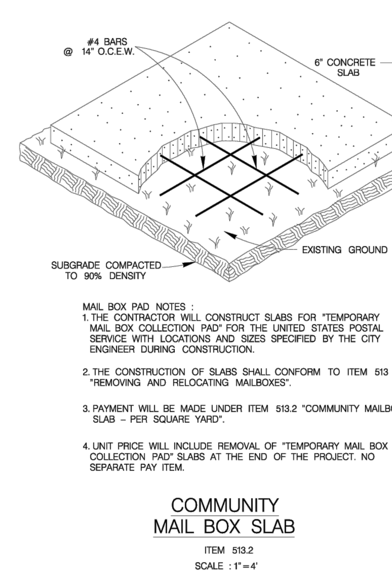
HMAC BUS STOP PAD
NEED CITY ENGINEER'S APPROVAL TO USE HMAC BUS PAD

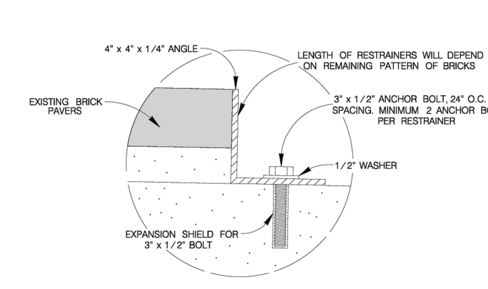




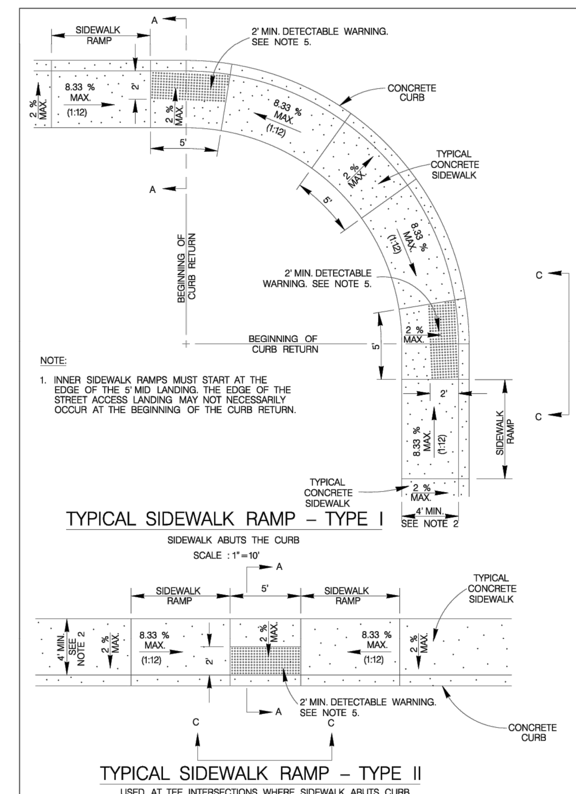






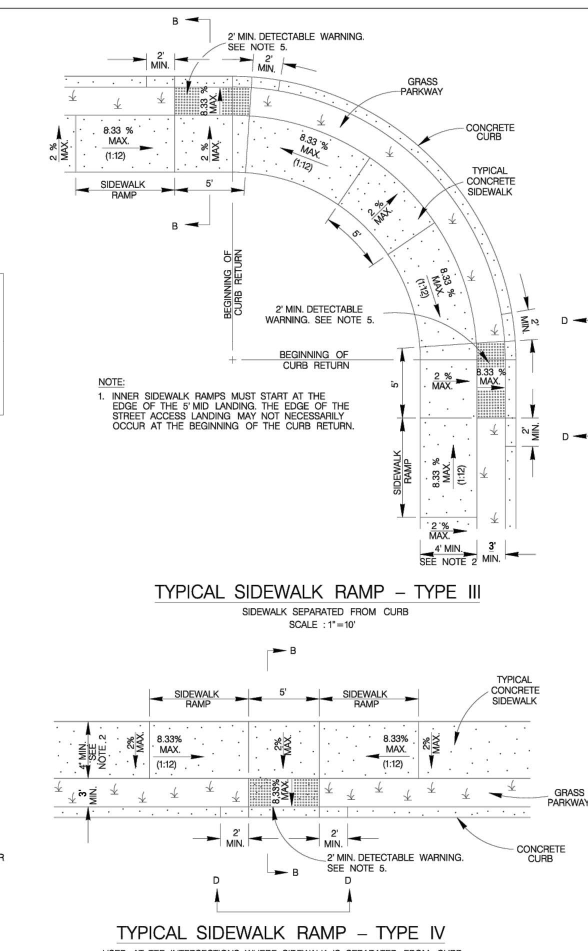


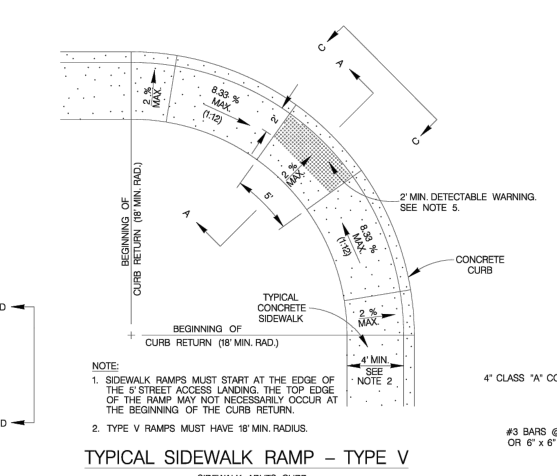
FEBRUARY 2010
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
MISCELLANEOUS CONSTRUCTION STANDARDS II
___% SUBMITTAL | PROJECT NO.:___ | DATE:___
DRWN. BY: V. VASQUEZ | DSGN. BY:___ | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.:___OF___

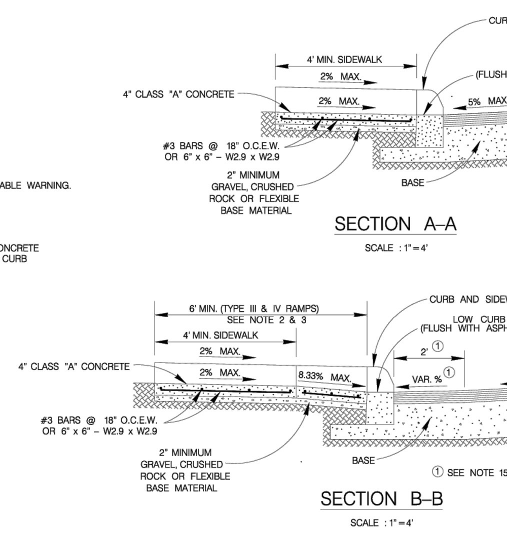


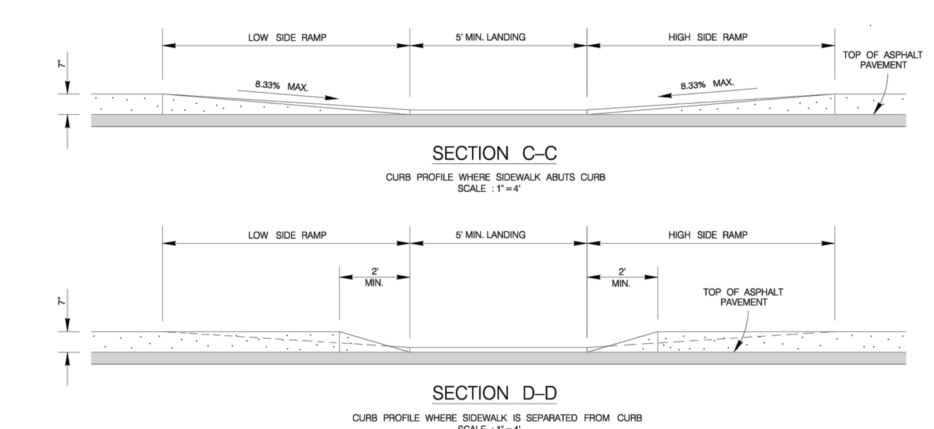
GENERAL NOTES

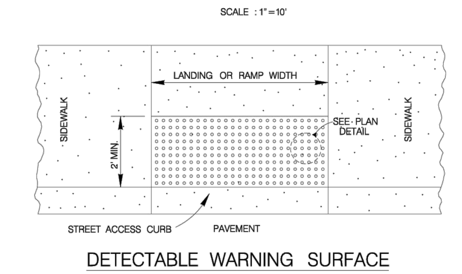
1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MININMUM OF 1 FOOT BUFFER. DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE.
5. ALL CURB-RAMPS OR LANDINGS ABUTTING THE CROSSWALK SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP (IN THE DIRECTION OF PEDESTRIAN TRAVEL) AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES, ALIGNED IN A GRID PATTERN WITH A DIAMETER OF A NOMINAL 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 0.2 INCHES (5 MM) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). THE DETECTABLE WARNING SURFACE SHALL BE A CAST-IN-PLACE TILE CONFORMING TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS OR PAVERS CONFORMING TO TXDOT STANDARD PED-05, PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I OR TYPE III RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEMS "500 – CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER" AND / OR "502 – CONCRETE SIDEWALKS". RAMP SURFACE SHALL BE BRUSH FINISHED.
9. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE SHOWN ON CONSTRUCTION PLANS. CITY CONSTRUCTION INSPECTOR CAN ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6" x 6" – W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY, ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2%. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33-(-2.67)=11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT.

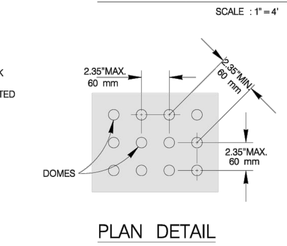


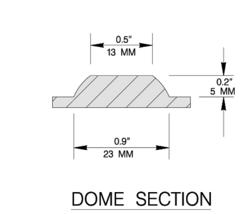












NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED FOR DETECTABLE WARNING ON WHEELCHAIR RAMPS. CONTRACTOR MUST SUBMIT TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.

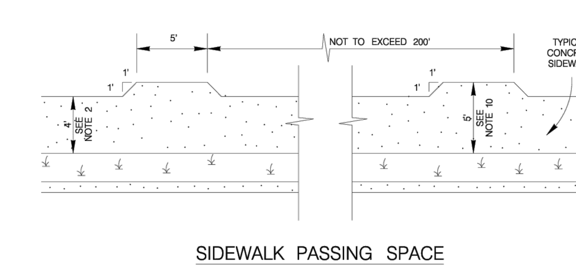


TABLE 1
(SEE NOTE 4)

GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12) LOW SIDE	HIGH SIDE
1%	5'-6"	7'-2"
2%	5'-0"	8'-4"
3%	4'-6"	10'-0"
4%	4'-2"	12'-6"
5%	3'-10"	16'-8"

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
WHEELCHAIR RAMP STANDARDS
___% SUBMITTAL | PROJECT NO.:___ | DATE:___
DRWN. BY: V. VASQUEZ | DSGN. BY:___ | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.:___OF___

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS

ZIGMOND TRACT UNIT 1

STREET DETAILS

10/13/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

PLAT NO.
25-4486

C8.D2

P:\04408\001\2-DWG\4-Plans\C7.D2 STREET DETAILS.dwg 2025/10/10 8:10pm rmata

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

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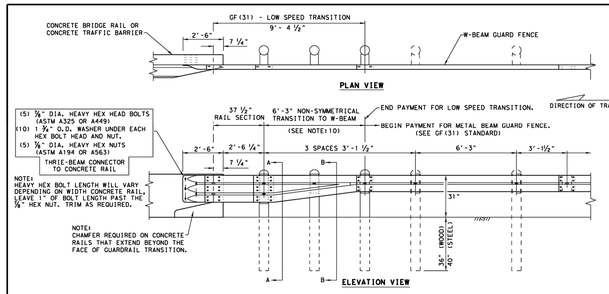
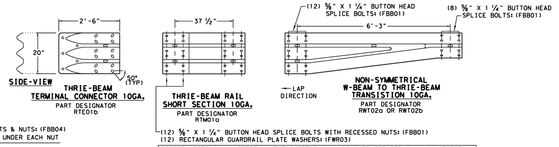
GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF TRANSITIONS SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. REFER TO GF(31)STANDARD SHEET.
2. RAIL ELEMENT SHALL MEET THE REQUIREMENTS OF ITEM 540,"METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS.
3. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM REQUIRING CONSTRUCTION OF THE TRANSITION.
4. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅜" WASHER (FWC16a)AND NOT MORE THAN 1" BEYOND IT. TRIM BOLT LENGTH TO MEET REQUIRED LENGTH.
5. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
6. CROWN SHALL BE WIDENED TO ACCOMMODATE TRANSITIONS.
7. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
8. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210,"COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT, MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL CAN FURNISH COMPOSITE MATERIAL BLOCKS.
9. REFER TO GF(31)STANDARD SHEET & BRIDGE RAILING DETAILS FOR ADDITIONAL DETAILS.
10. FOR ROUND WOOD POSTS SYSTEMS, ALL ROUND WOOD POSTS SHALL BE 7 ½" DIA. MINIMUM THROUGHOUT THE TRANSITION.



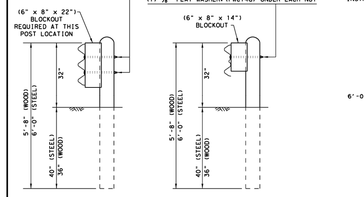


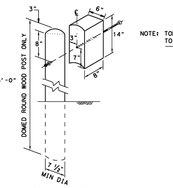
(2) ⅝" BUTTON HEAD POST BOLTS & NUTS (FBB04)
(1) ⅝" FLAT WASHER (FWC14a) UNDER EACH NUT

(12) ⅝" X 1 ¼" BUTTON HEAD SPLICE BOLTS WITH RECESSED NUTS (FBB01)
(12) RECTANGULAR GUARDRAIL PLATE WASHERS (FW003)

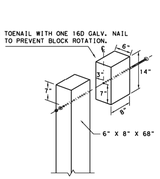
PLATE WASHER INSTRUCTIONS

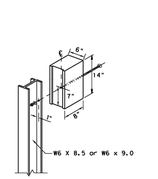
BRIDGE APPROACH – UPSTREAM: THE SHORT RAIL LAPS OVER THE TERMINAL CONNECTOR. PLATE WASHERS ARE INSTALLED UNDER THE SPLICE NUTS AGAINST INSIDE OF CONNECTOR.
BRIDGE EXIT – DOWNSTREAM: THE TERMINAL CONNECTOR LAPS OVER THE NESTED RAIL. PLATE WASHERS ARE INSTALLED UNDER THE BOLT HEAD AGAINST OUTSIDE OF CONNECTOR.





NOTE= TOENAIL WITH ONE 16D GALV. NAIL TO PREVENT BLOCK ROTATION.





NOTE= # "#WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.

DATE/ FILE:

LOW-SPEED TRANSITION

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE THRIE-BEAM TRANSITION TL-2 MASH COMPLIANT

GF(31)TR TL2-19

FILE: gf31tr1219.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type
FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
SCH 80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

Anchor Type
UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
BS = Wedge Anchor Steel - (see SMD(TWT))
BP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

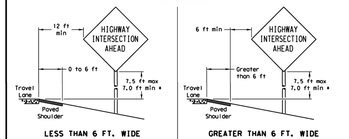
Sign Mounting Designation
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
(EXT or ZEXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
BC = 1.12 KrFt Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel pathsl.

SIGN LOCATION

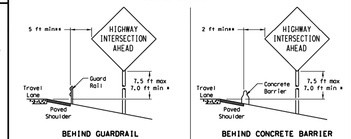
PAVED SHOULDERS



When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.

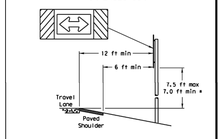
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER

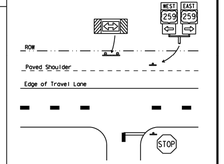


**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

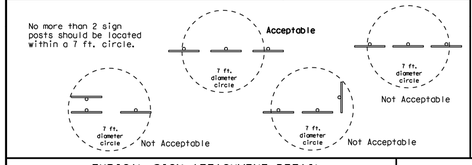
T-INTERSECTION



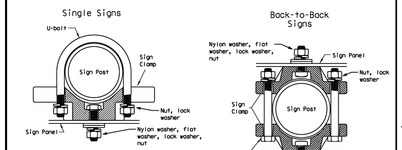
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL



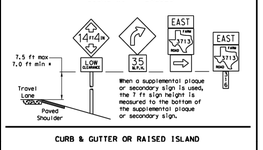
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

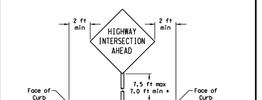
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



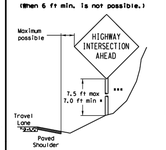
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(when 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

- Signs shall be mounted using the following condition that results in the greatest sign elevation:
  (1) a minimum of 7 ft to a maximum of 7.5 feet above the edge of the travel lane or
  (2) a minimum of 7 ft a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is: https://www.txdot.gov/publications/traffic.htm

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

©TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

26A

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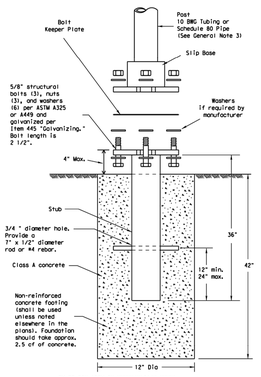
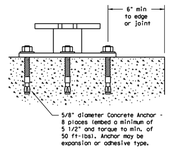
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

CONCRETE ANCHOR



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

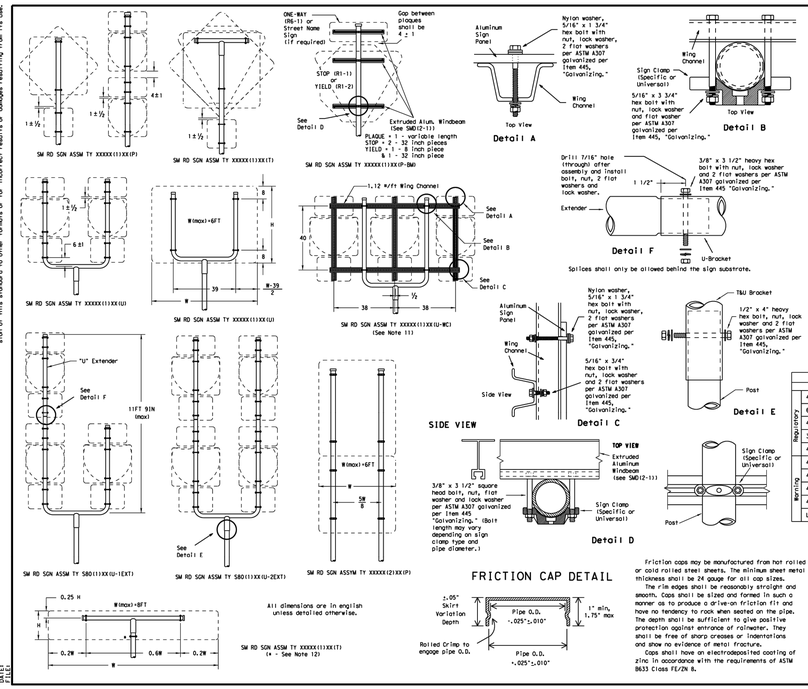
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized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

GENERAL NOTES:
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the followings
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.893"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the followings
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

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

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



GENERAL NOTES:

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

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

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY SB01(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY SB01(1)XX(T)
Service	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

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

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

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

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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26C

CUDEENGINEERS.COM

CUDE ENGINEERS — EST. 1980

ZIGMOND TRACT UNIT 1

STREET DETAILS

10/13/2025

STATE OF TEXAS — SEAN P. McFARLAND — 138893 — LICENSED PROFESSIONAL ENGINEER

PLAT NO. 25-4486

C8.D3

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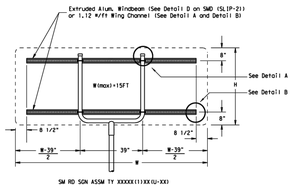
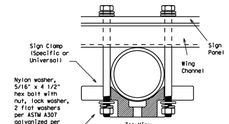
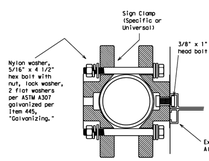
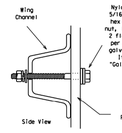




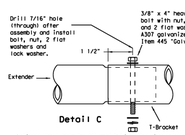
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

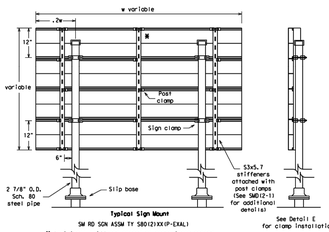


Detail B



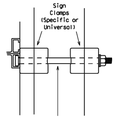
Detail C

Splices shall only be allowed behind the sign substrate.

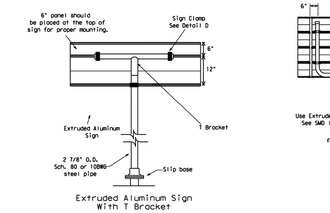


Typical Sign Mount
SM RD SGN ASSM TY SBD(2)XX(P-(X)AL)
W Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

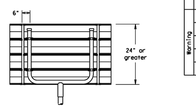
See Detail E for clamp installation



Detail E



Extruded Aluminum Sign With T Bracket



Use Extruded Alum. Windbeam as stiffeners See SMD (2-13) for additional details
See Detail E for clamp installation

GENERAL NOTES:

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

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

REQUIRED SUPPORT

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-3)-08

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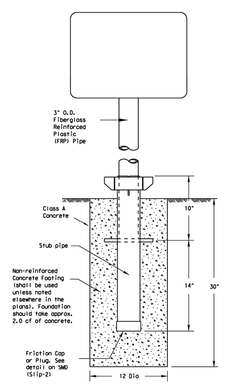
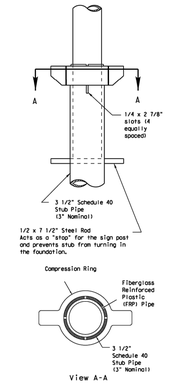
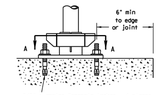
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



SM RD SGN ASSM TY FRP(XX)A(P)

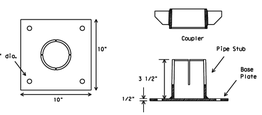




5/8" diameter Concrete Anchor - 4 places Embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS



SM RD SGN ASSM TY FRP(XX)UB(P)

GENERAL NOTES

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/trafficinfo.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4610 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are detailed by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

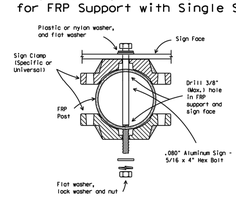
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer.
5. Bottom of base post slots shall be above the concrete footing.
6. Attach sign to FRP post.
7. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
8. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
9. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

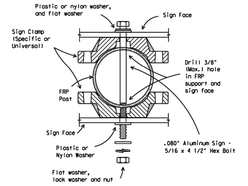
BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM WITH FRP POST
SMD(FRP)-08

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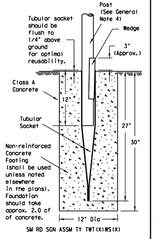
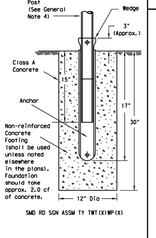
Wedge Anchor Steel System



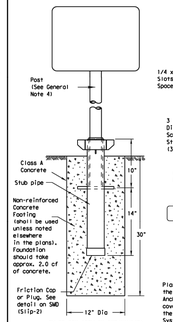
SM RD SGN ASSM TY TWT(X)BS(X)

Wedge Anchor High Density Polyethylene (HDPE) System



SMD RD SGN ASSM TY TWT(X)HP(X)

Universal Anchor System with Thin-Walled Tubing Post



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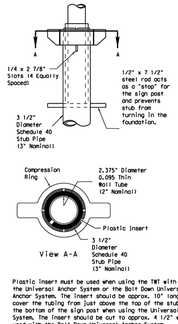
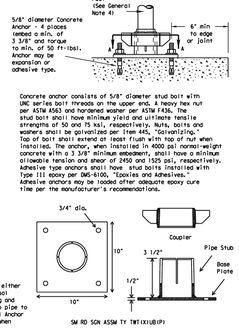
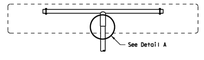


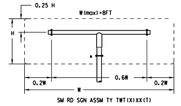


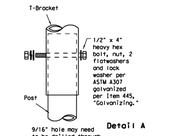
SM RD SGN ASSM TY TWT(X)UB(P)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post







Detail A

NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For prequoted steel tubing (ASTM A653), precoat tube outside diameter weld seam by metalizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/trafficinfo.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximately 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer.
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST
SMD(TWT)-08

©TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT: 5017	JOB:	HIGHWAY:	
9-08	DIST:	COUNTY:	SHEET NO.:	

266

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CUDE ENGINEERS — EST. 1980

ZIGMOND TRACT
UNIT 1

STREET DETAILS

10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

PLAT NO.
25-4486

C8.D4

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

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

DONALD WALTER GRAMS
30.74 Ac.
(DOC. 20070121456
OPRRP)

MATCHLINE 'A' SEE SHEET C9.01

PROP. TOP OF DRAIN

R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.3
D3-1 STREET NAME "BUDAKON" SIZE = 9" ITEM# 531.57
D3-1 STREET NAME "FLY OVER" SIZE = 9" ITEM# 531.57

TYPE II BLUE RAISED PAVEMENT MARKER ITEM# 537.8

211 LF 6"DOUBLE SOLID YELLOW THERMO-PLASTIC LINE W/DOUBLE TYPE II A-A @ 20' O.C. RPM'S

FLY OVER
(60' R.O.W.)

ABBOTT ROAD

ICEFIELD STREET
(50' R.O.W.)

R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.3
D3-1 STREET NAME "ICEFIELD STREET" SIZE = 9" ITEM# 531.57
D3-1 STREET NAME "FLY OVER" SIZE = 9" ITEM# 531.57

R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.3
D3-1 STREET NAME "GOLDROCK LANE" SIZE = 9" ITEM# 531.57
D3-1 STREET NAME "CLOUDWAY BLVD" SIZE = 9" ITEM# 531.57

GOLDROCK LANE
(50' R.O.W.)

BUDAKON
(50' R.O.W.)

CLOUDWAY BLVD
(60' R.O.W.)

R1-1 STOP SIGN "STOP" SIZE = 30" x 30" ITEM# 531.3
D3-1 STREET NAME "ABBOTT ROAD" SIZE = 9" ITEM# 531.57

DANA JO TAYLOR SHAW
11.83 Ac.
(DOC. 20220050095 OPR)

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

TRAFFIC SIGNAGE PLAN

DATE
10/11/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C9.00

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

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LOCATION MAP
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OWNER/DEVELOPER:
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4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:
M.W. CUDE ENGINEERS, L.L.C.
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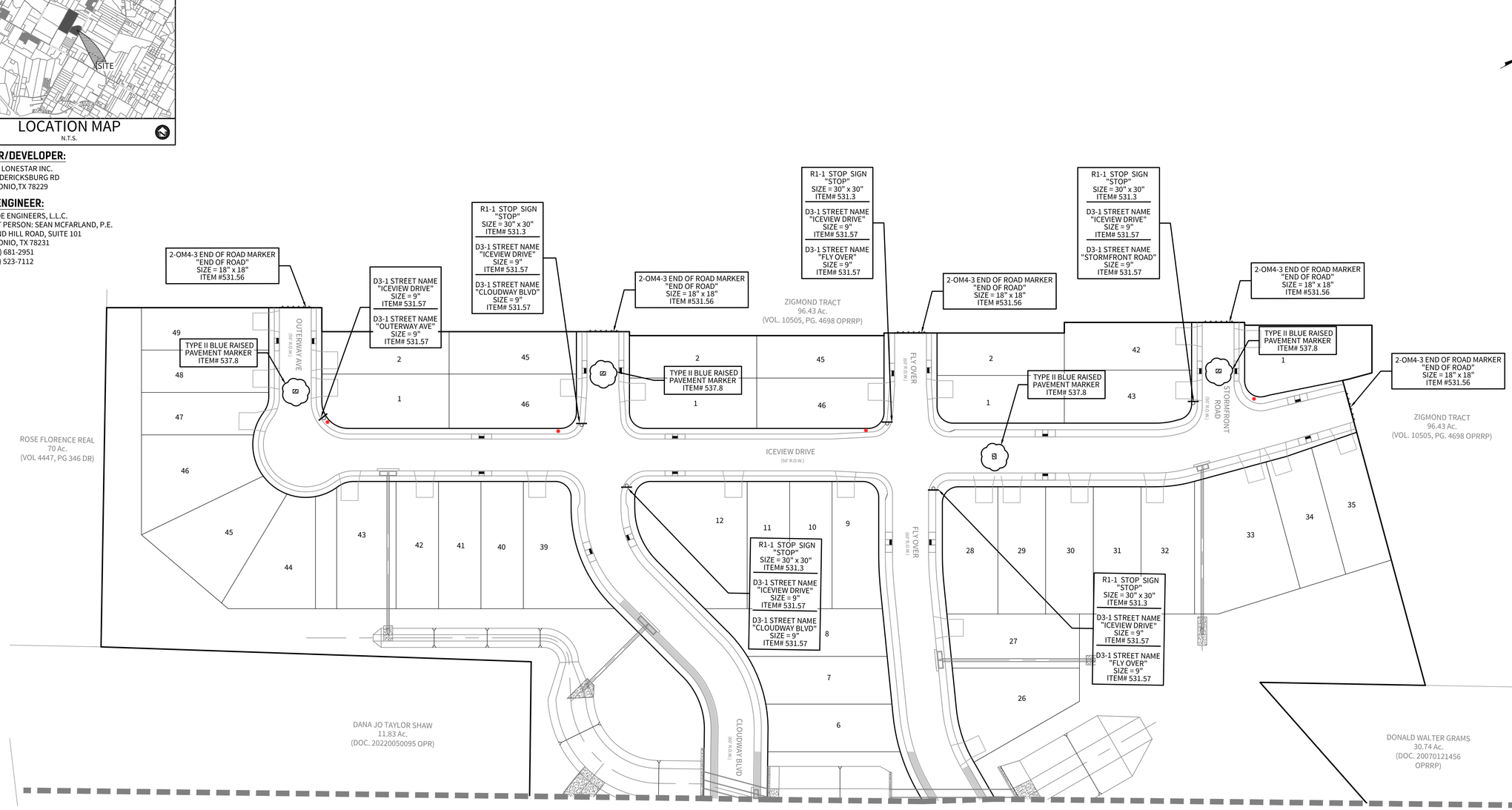
TEL: (210) 681-2951
FAX: (210) 523-7112



PROP. TOP OF DRAIN

CUDEENGINEERS.COM
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
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ZIGMOND TRACT UNIT 1

TRAFFIC SIGNAGE PLAN

DATE
10/11/2025

PROJECT NO.
04408.001

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DAF/SG/JW

CHECKED BY
SPM

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10/13/2025
STATE OF TEXAS
SEAN P. McFARLAND
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LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C9.01

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LOCATION MAP
N.T.S.

SCALE: 1"=100'
100 50 75 100

LEGEND

- PROPOSED WATER MAIN (C-900)
- EXISTING STANDARD FIRE HYDRANT
- PROPOSED STANDARD FIRE HYDRANT
- EXISTING WATER MAIN
- PROPOSED STANDARD GATE VALVE
- PROPOSED PERMANENT BLOWOFF
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER
- FEMA 100-YR FLOOD ZONE
- PROPOSED WATER EASMENT

BENCHMARKS / CONTROL POINT DATA:

ELEVATIONS SHOWN HEREON ARE NAVD 88.

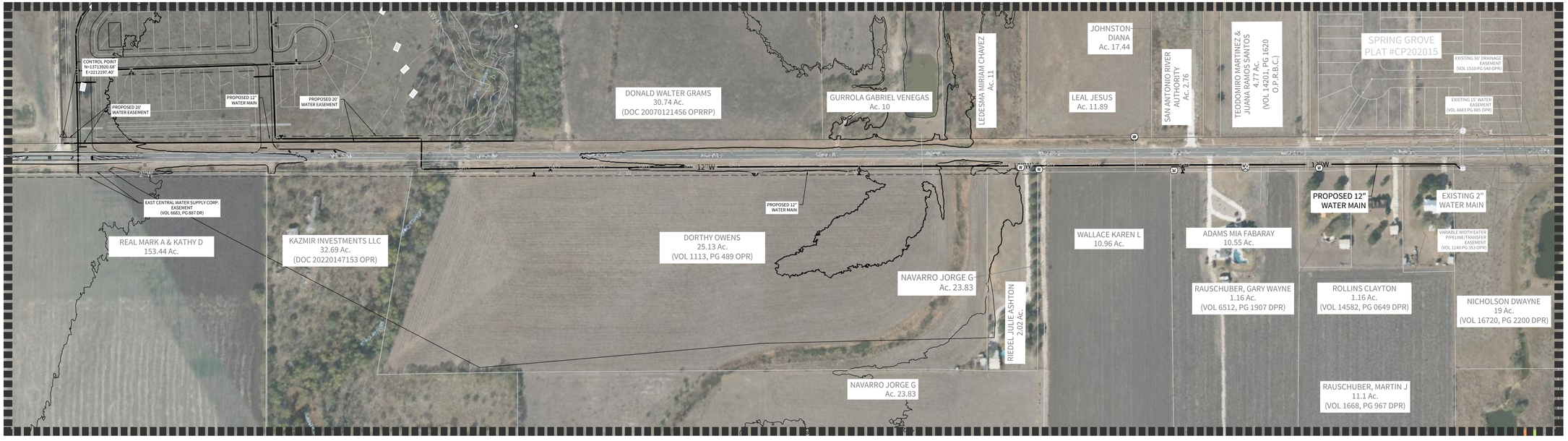
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	13713920.68	2212197.40	559.32	CP RSC

NOTE:
CONTRACTOR TO RUN LEVEL LOOP THROUGH BM'S PROVIDED TO CONFIRM BEFORE CONSTRUCTION. CONTACT ENGINEER/SURVEYOR IMMEDIATELY IF ELEVATIONS DO NOT MATCH THOSE SHOWN.

NOTES:

1. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE WATER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
2. THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES, INCLUDING SERVICE LATERALS AND DRAINAGE STRUCTURES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND DEPTHS OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT, AND TO PROTECT THE SAME DURING CONSTRUCTION.

EAST CENTRAL SUD	210-649-2383
BEXAR COUNTY PUBLIC WORKS	210-207-2800
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
CITY PUBLIC SERVICE	"
AT&T	"
TIME WARNER	"



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ZIGMOND TRACT UNIT 1

OFFSITE WATER DISTRIBUTION PLANS

DATE
10/08/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C10.00

P:\04408\2025\2 DWG\4 Sheets\C10.00 SP OFFSITE WATER EXISTING UTILITY PLAN.dwg 2025/10/08 4:56pm jwatkins

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

LOCATION MAP
N.T.S.

LEGEND

- PROPOSED WATER MAIN (C-900)
- PROPOSED STANDARD FIRE HYDRANT
- PROPOSED STANDARD GATE VALVE
- PROPOSED PERMANENT BLOWOFF
- PROPOSED ROW
- PROPOSED WATER EASEMENT
- PROPOSED WATER EASEMENT
- EFFECTIVE 100-YR FLOODPLAIN
- FUTURE PRELIMINARY GRADING
- EXISTING GROUND
- FUTURE SANITARY SEWER SYSTEM
- FUTURE ROW/LOTS
- JOINT RESTRAINT
- JOINT RESTRAINT ENTIRE LENGTH

KEYNOTES:

1 CONTRACTOR TO FOLLOW HTH METHOD FOR DISINFECTION OF NEW PIPE.
SEE ECSUD GENERAL NOTE 33.

AFTER RELEASED FOR SERVICE,
CONTRACTOR TO TIE NEW 12" WATER MAIN
INTO EXIST. 12" WATER MAIN WITH
±5 L.F. OF 12" WATER MAIN. CUT AS REQUIRED.

12" VALVE TO REMAIN CLOSED UNTIL AFTER
DISINFECTION & ACCEPTANCE

1 - 12" SOLID SLEEVE, M.J.

1 - 2" BLOWOFF ASSEMBLY (TEMP.)
1 - 12" M.J. X 2" THR. DI. ECCENTRIC REDUCER (TEMP.)
SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2)
SHT C6.D3

2 1 - STD FIRE HYDRANT ASSEMBLY
(SEE E.C.S.U.D. STD. DWG DET-834-01 SHT C6.D1)
1 - 12" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J. (FIRE HYDRANT SIDE)
1 - 6" VALVE BOX, COMPLETE
1 - 6" D.I. PIPE, CUT AS REQ'D.

3 1 - 2" BLOWOFF ASSEMBLY (PERM.)
1 - 2" X 2" TEE, M.J. ANCHOR
SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2)
SHT C6.D2

4 CONTRACTOR TO PROVIDE:
1 - 1" RESIDENTIAL SERVICE
(PER ECSUD DETAIL 824-05) RECONSTRUCTION OF
EXISTING WATER SERVICE/METER (BY OTHERS)

5 CONTRACTOR TO RECONSTRUCT EXISTING 1"
SERVICE AND TIE INTO PROPOSED WATER MAIN
(FOLLOWING ECSUD ACCEPTANCE)
1 - 12" X 2" TEE

6 CONTRACTOR TO INSTALL SAMPLING STATION
SEE ECSUD DETAIL 824-04 SHEET C6.D1

NOTE:

ALL PIPE TO BE PVC C-900 CLASS 235 DR 18 UNLESS OTHERWISE NOTED.

PROPOSED WATER MAIN DEFLECTION SHOWN ON THESE PLANS ARE FOR ILLUSTRATION PURPOSES ONLY. CONTRACTOR TO INSTALL BENDS TO MEET REQUIRED RADIUS AND ALIGNMENT.

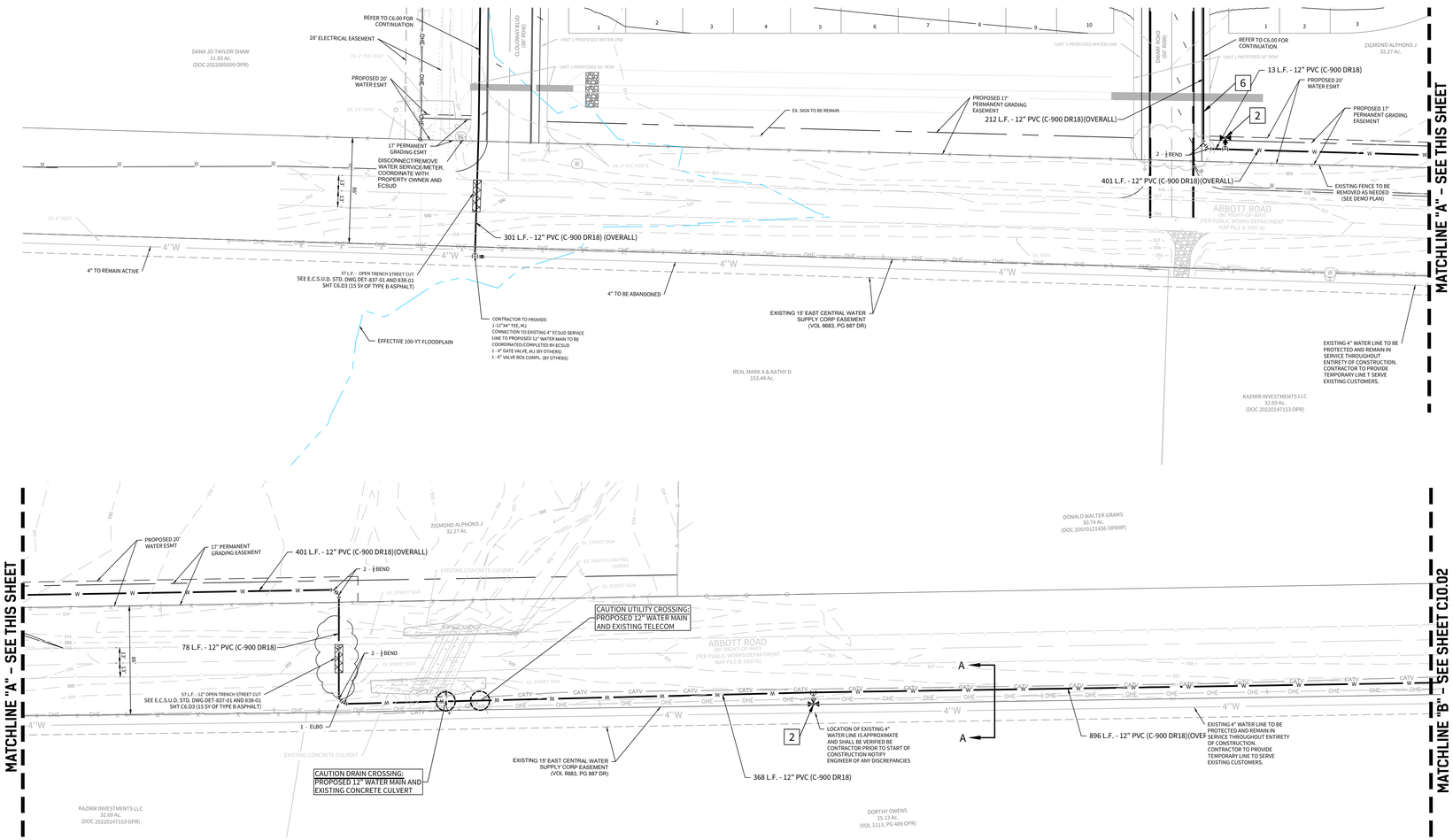
CONTRACTOR TO PLACE WATER MAIN 5' BELOW EXISTING GROUND OR PROPOSED FUTURE GRADING SHOWN, WHICHEVER CONTROLS 5' MINIMUM.

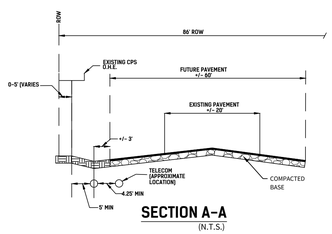
CAUTION!!!

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

TRENCH EXCAVATION SAFETY PROTECTION

Contractor and/or Contractor's independently retained employee or structural design/geotechnical/safety/equipment consultant, if any, shall review these plans and available geotechnical information and the anticipated installation site(s) within the project work area in order to implement Contractor's trench excavation safety protection systems, programs and/or procedures for the project described in the contract documents. The Contractor's implementation of these systems, programs and/or procedures shall provide for adequate trench excavation safety protection that comply with as a minimum, OSHA standards for trench excavations. specifically, Contractor and/or Contractor's independently retained employee or safety consultant shall implement a trench safety program in accordance with OSHA standards governing the presence and activities of individuals working in and around trench excavation.





SECTION A-A
(N.T.S.)

JOINT RESTRAINT DIMENSION TABLE

TYPE	MAIN SIZES	RESTRAINT LENGTH(S)
TEE	12" x 4"	2' ALONG BRANCH OF TEE
TEE	12" x 6"	1' ALONG BRANCH OF TEE
45° BEND	12"	18' ON BOTH SIDES OF BEND
90° BEND	12"	43' ON BOTH SIDES OF BEND

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

OFFSITE WATER DISTRIBUTION PLAN

DATE
10/10/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/09/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

SAWS JOB NO.
XX-XXXX

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

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LOCATION MAP
N.T.S.

LEGEND

- PROPOSED WATER MAIN (C-900)
- PROPOSED STANDARD FIRE HYDRANT
- PROPOSED STANDARD GATE VALVE
- PROPOSED PERMANENT BLOWOFF
- PROPOSED ROW
- PROPOSED WATER EASEMENT
- PROPOSED WATER EASEMENT
- EFFECTIVE 100-YR FLOODPLAIN
- FUTURE PRELIMINARY GRADING
- EXISTING GROUND
- FUTURE SANITARY SEWER SYSTEM
- FUTURE ROW/LOTS
- JOINT RESTRAINT
- JOINT RESTRAINT ENTIRE LENGTH

KEYNOTES:

1 CONTRACTOR TO FOLLOW HTH METHOD FOR DISINFECTION OF NEW PIPE.
SEE ECSUD GENERAL NOTE 33.

AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 12" WATER MAIN INTO EXIST. 12" WATER MAIN WITH ±5 L.F. OF 12" WATER MAIN. CUT AS REQUIRED.

12" VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE

1 - 12" SOLID SLEEVE, M.J.

1 - 2" BLOWOFF ASSEMBLY (TEMP.)
1 - 12" M.J. X 2" THR. DI. ECCENTRIC REDUCER (TEMP.)
SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2)
SHT C6.D3

2 1 - STD FIRE HYDRANT ASSEMBLY
(SEE E.C.S.U.D. STD. DWG DET-834-01 SHT C6.D1)
1 - 12" x 6" TEE, M.J., ANCHOR
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1 - 6" VALVE BOX, COMPLETE
1 - 6" D.I. PIPE, CUT AS REQ'D.

3 1 - 2" BLOWOFF ASSEMBLY (PERM.)
1 - 2" X 2" TEE, M.J. ANCHOR
SEE E.C.S.U.D. STD. DWG DET-844-02 (1 OF 2)
SHT C6.D2

4 CONTRACTOR TO PROVIDE:
1 - 1" RESIDENTIAL SERVICE
(PER ECSUD DETAIL 824-05) RECONSTRUCTION OF EXISTING WATER SERVICE/METER (BY OTHERS)

5 CONTRACTOR TO RECONSTRUCT EXISTING 1" SERVICE AND TIE INTO PROPOSED WATER MAIN (FOLLOWING ECSUD ACCEPTANCE)
1 - 12" X 2" TEE

6 CONTRACTOR TO INSTALL SAMPLING STATION SEE ECSUD DETAIL 824-04 SHEET C6.D1

NOTE:

ALL PIPE TO BE PVC C-900 CLASS 235 DR 18 UNLESS OTHERWISE NOTED.

PROPOSED WATER MAIN DEFLECTION SHOWN ON THESE PLANS ARE FOR ILLUSTRATION PURPOSES ONLY. CONTRACTOR TO INSTALL BENDS TO MEET REQUIRED RADIUS AND ALIGNMENT.

CONTRACTOR TO PLACE WATER MAIN 5' BELOW EXISTING GROUND OR PROPOSED FUTURE GRADING SHOWN, WHICHEVER CONTROLS 5' MINIMUM.

CAUTION!!!

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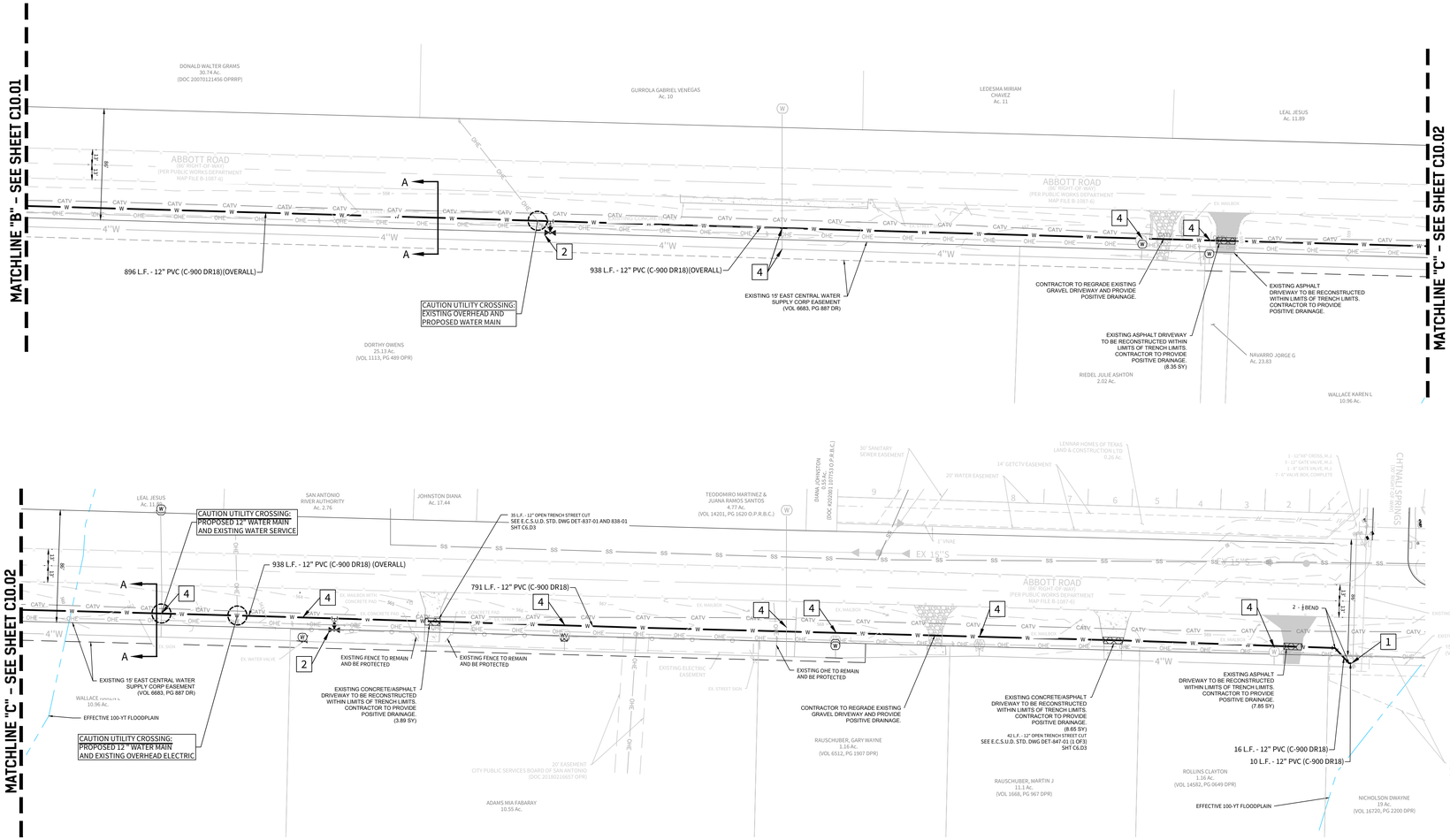

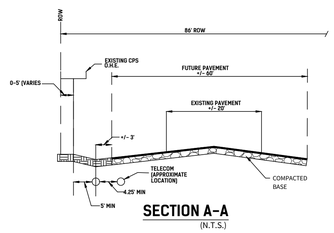

SECTION A–A
(N.T.S.)

JOINT RESTRAINT DIMENSION TABLE

TYPE	MAIN SIZES	RESTRAINT LENGTH(S)
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ZIGMOND TRACT UNIT 1

OFFSITE WATER DISTRIBUTION PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025
STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

SAWS JOB NO.
XX-XXXX

C10.02

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

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:

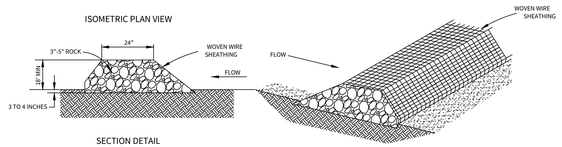
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND

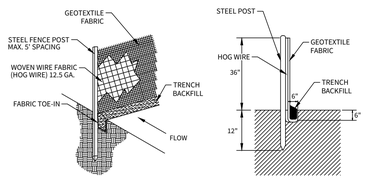
- PROPERTY LINE
- EXISTING CONTOURS — 930 —
- BMP ITEM NUMBER [1]
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- SILT FENCE — SF —
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- LIMITS OF CONSTRUCTION
- ROCK BERM

NOTE:

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. CONTRACTOR TO PROVIDE SILT FENCE ALONG BACK OF CURB POST-CONSTRUCTION OF STREET RIGHT-OF-WAY AND PRIOR TO COMMENCEMENT OF HOME CONSTRUCTION.
3. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, UTILITY EASEMENTS & LOTS.
4. THE CITY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.
5. INSTALL SILT FENCE "J" HOOKS AS NECESSARY AT AN INTERVAL NO GREATER THAN 50' TO COMPLETE INSTALLATION.
6. ALL SWPPP PERMITS AND TEMPORARY CONTROLS TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
7. THE SWPPP PLAN AND BMP'S SHOWN ARE INTENDED TO BE PLACED BY THE CONTRACTOR PRIOR TO THE RESPECTIVE WORK TO BE PERFORMED. THE CONTRACTOR WILL BE REQUIRED TO PERFORM ROUTINE INSPECTIONS, MAINTAIN/ADJUST ALL BMP'S, AND LIKEWISE PROVIDE ADDITIONAL BMP'S IF ANY PROVE TO BE INEFFECTIVE AS REQUIRED BY TPDES CONSTRUCTION GENERAL PERMIT TXR150000.

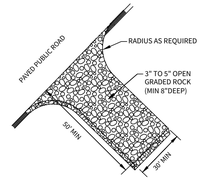


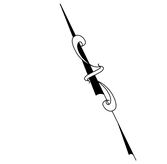
ROCK BERM [5]
N.T.S.



SILT FENCE DETAIL SECTION DETAIL

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

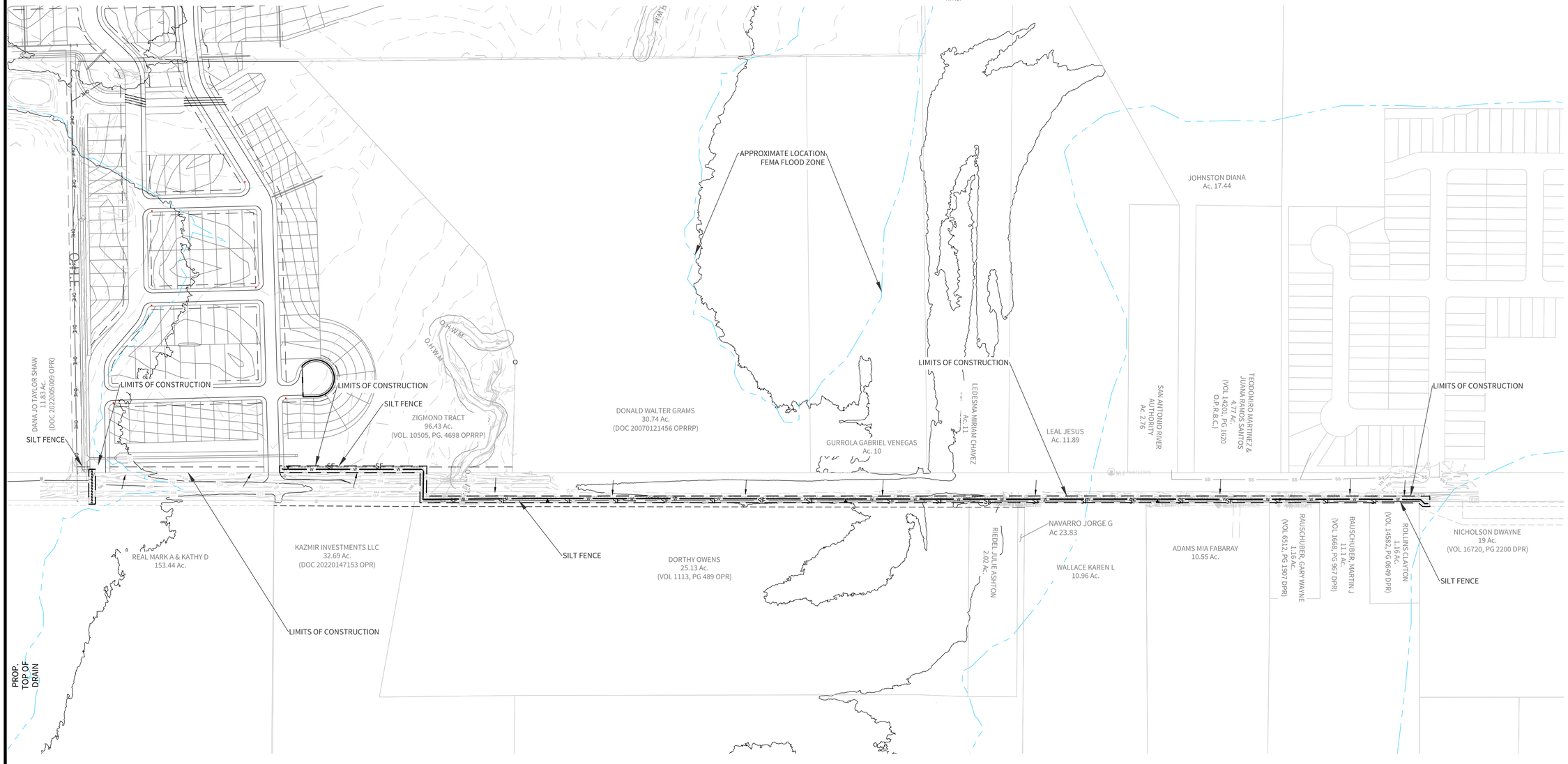




STABILIZED CONSTRUCTION EXIT NOTES:

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

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



CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

OFFSITE WATER - STORMWATER POLLUTION PREVENTION PLAN

DATE
09/17/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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09/18/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
XX-XXXXXXX

C10.03

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

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

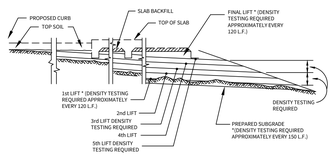
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

NOTES:

1. UPON COMPLETION OF CLOMR GRADING ENGINEER TO REVIEW COMPETENCY OF BEDROCK WHERE PROJECT CONDITION VELOCITIES EXCEED EXISTING CONDITION VELOCITIES AND/OR WHERE VELOCITIES EXCEED 6 FPS AND REASSESS SITE FOR EROSION CONTROL MEASURES.
2. FILL SITES, UPON WHICH STRUCTURES WILL BE CONSTRUCTED OR PLACED MUST BE COMPACTED TO 95 PERCENT OF THE MAXIMUM DENSITY ATTAINABLE WITH THE STANDARD PROCTOR TEST METHOD OR AN ACCEPTABLE EQUIVALENT METHOD.
3. FILL SHALL BE COMPOSED OF CLEAN GRANULAR OR EARTHEN MATERIAL.
4. NO CONSTRUCTION AND/OR WASTE MATERIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTAR FLOW LIMITS OF EXISTING NATURAL DRAINAGE OR PLACED WITHIN THE LIMITS OF EXISTING FLOODPLAIN.
5. SEE SHEET C11.01 FOR FFE TABLES.



DENSITY TEST FREQUENCY
NOT TO SCALE

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. General Description

This item shall consist of all clearing and grubbing, demolition, preparation of land to be filled, filling of the land, spreading, compaction testing and inspection of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades and slopes as shown

2. Clearing the Area to be Filled

All timber, logs, trees, brush and rubbish shall be removed from the site.

3. Scarifying the Area to be Filled

All organic matter shall be removed from the surface upon which the fill is to be placed, and the surface shall then be disked or scarified to a minimum depth of six inches (6"), all surface ruts or other uneven features will be leveled prior Where fills are made on hillsides or slopes, the slope of the original ground upon which the fill is to be placed shall be disked or scarified.

4. Compacting the Area to be Filled

Following the clearing and disking or scarifying of the fill area, it shall be bladed until it is uniform and free from large clods. The area shall be brought to the adequate moisture content and compacted (typically) to not less than ninety percent (90%) of maximum density in accordance with the current ASTM D 1557 Compaction Procedure, or 95% of maximum density in accordance with the current THD--TEX--113--E Compaction Procedure.

5. Fill Materials

The materials used shall be free from organic matter and other deleterious substances, such as trees, brush and rubbish.

6. Depth and Mixing of Fill Layers

The selected fill material shall be placed in level, uniform layers which, when compacted, shall have a density conforming to that stipulated above. Each layer shall be thoroughly mixed during the spreading to ensure uniformity of material in each layer. Compacted layer thickness may vary depending on the compaction equipment of demonstrated capability. The maximum loose depth for any material shall not exceed twelve inches (12").

When fill material includes rock, the maximum rock size shall be as approved by the Geotechnical Engineer. No large rocks shall be allowed to nest and all voids must be filled with small stones or soil and adequately compacted. No large rocks will be permitted within eighteen inches (18") of the finished grade.

8. Compaction of Fill Layer

Compaction equipment shall be capable of compacting the fill to the specified density. Compaction shall be accomplished while the fill material is at or near the appropriate moisture content.

9. Compaction of Slopes

The faces of fill slopes shall be compacted. Compacting operations shall be continued until the slope faces are stable but not too dense for planting on the slopes. Compaction of the slope faces may be done progressively in increments of three to five feet (3' to 5') in fill height as this fill progresses or after the fill has been brought to its total height.

10. Moisture Content

The fill material shall be compacted at the appropriate moisture content specified for the soils being used. Appropriate moisture content is defined, typically, as optimum moisture content; however, for expansive soils it may be greater than optimum moisture content, and other moisture contents may be necessary to produce the desired results with certain soils.

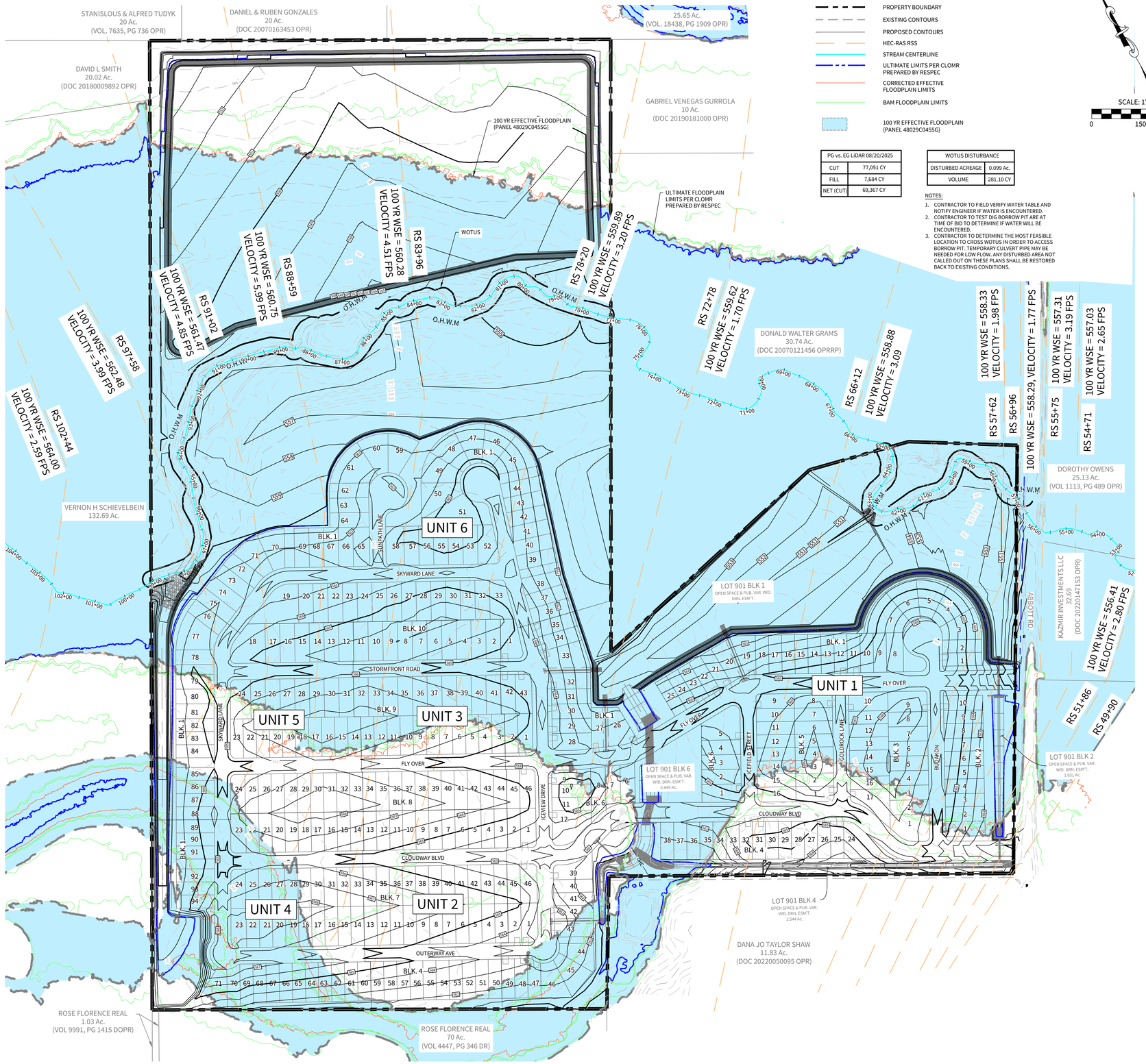
11. Density Tests

Field density tests shall be performed on layers of fill when the fill is being placed as directed by the Geotechnical Engineer. The maximum fill height between density testing shall be eighteen inches (18"). All testing shall be requested by the contractor to meet the contractor's construction schedule. Notification by the contractor to conduct tests shall be at least the day before. This notification shall include the fill area location (Lot and Block), the lift or height of fill and approximate desired time of testing. When these tests indicate that the density of any layer of fill or portion thereof is below the required density, the particular layer or portion shall be reworked and retested at the expense of the contractor unless the contractor can show evidence that circumstances beyond his control required the retesting. Generally, the specific testing will be as follows and conducted by Geotechnical Engineer.

1. The land to be filled (prepared subgrade) shall be prepared and tested at a frequency as determined by the Geotechnical Engineer.
2. The first lift of compacted fill (generally 8 to 12-in.) shall be tested as determined by the Geotechnical Engineer. Any areas supporting the proposed structures requiring fill shall be tested for density compliance.
3. Fills shall be tested a maximum of each eighteen inches (18") of fill.
4. Test results will be provided by the field technician to the contractor when possible; however, all test results are to be reviewed by the Geotechnical Engineer for compliance. The engineer will notify the contractor of all test results.

12. Cut/Fill Lots

Areas involving cut on one portion and fill on another portion of a specific lot shall be prepared to a minimum depth of 6-in. and will be the same material classification at the same compaction and moisture content. A minimum of two (2) field density tests shall be required on each cut/fill lot for the purpose of determining uniformity of the area supporting the proposed structures.



LEGEND

- PROPERTY BOUNDARY
- EXISTING CONTOURS
- PROPOSED CONTOURS
- HEC-RAS RSS
- STREAM CENTERLINE
- ULTIMATE LIMITS PER CLOMR PREPARED BY RESPEC
- CORRECTED EFFECTIVE FLOODPLAIN LIMITS
- BAM FLOODPLAIN LIMITS
- 100 YR EFFECTIVE FLOODPLAIN (PANEL 48029C0455G)

SCALE: 1"=150'
0 150 150

PG vs. EG LiDAR 08/20/2025	
CUT	77,051 CY
FILL	7,684 CY
NET (CUT)	69,367 CY

WOTUS DISTURBANCE	
DISTURBED ACREAGE	0.099 Ac.
VOLUME	281.10 CY

NOTES:

1. CONTRACTOR TO FIELD VERIFY WATER TABLE AND NOTIFY ENGINEER IF WATER IS ENCOUNTERED.
2. CONTRACTOR TO TEST DIG BORROW PIT ARE AT TIME OF BID TO DETERMINE IF WATER WILL BE ENCOUNTERED.
3. CONTRACTOR TO DETERMINE THE MOST FEASIBLE LOCATION TO CROSS WOTUS IN ORDER TO ACCESS BORROW PIT. TEMPORARY CULVERT PIPE MAY BE NEEDED FOR LOW FLOW. ANY DISTURBED AREA NOT CALLED OUT ON THESE PLANS SHALL BE RESTORED BACK TO EXISTING CONDITIONS.

CUDEENGINEERS.COM

M.W. CUDE ENGINEERS

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ZIGMOND TRACT UNIT 1

CLOMR IMPROVEMENT PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C11.00

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LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
1	1	558.88	559.88
2	1	558.88	559.88
3	1	558.88	559.88
4	1	558.88	559.88
5	1	558.88	559.88
6	1	558.88	559.88
7	1	558.88	559.88
8	1	558.88	559.88
9	1	558.88	559.88
10	1	558.88	559.88
11	1	558.88	559.88
12	1	558.88	559.88
13	1	558.88	559.88
14	1	558.88	559.88
15	1	559.62	560.62
16	1	559.62	560.62
17	1	559.62	560.62
18	1	559.62	560.62
19	1	559.62	560.62
20	1	559.62	560.62
21	1	559.62	560.62
22	1	559.62	560.62
23	1	559.62	560.62
24	1	559.62	560.62
25	1	559.62	560.62
26	1	559.62	560.62
27	1	559.89	560.89
28	1	559.89	560.89
29	1	559.89	560.89
30	1	559.89	560.89
31	1	559.89	560.89
32	1	559.89	560.89
33	1	559.89	560.89
34	1	559.89	560.89
35	1	559.89	560.89
36	1	559.89	560.89
37	1	559.89	560.89
38	1	559.89	560.89
39	1	559.89	560.89
40	1	559.89	560.89
41	1	559.89	560.89
42	1	560.28	561.28
43	1	560.28	561.28
44	1	560.28	561.28
45	1	560.28	561.28
46	1	560.28	561.28
47	1	560.28	561.28
48	1	560.28	561.28
49	1	560.28	561.28
50	1	560.28	561.28
51	1	560.28	561.28
52	1	560.28	561.28
53	1	560.28	561.28
54	1	560.28	561.28
55	1	560.28	561.28
56	1	560.28	561.28
57	1	560.75	561.75
58	1	560.75	561.75
59	1	560.75	561.75
60	1	560.75	561.75
61	1	560.75	561.75
62	1	560.75	561.75
63	1	560.75	561.75
64	1	560.75	561.75
65	1	560.75	561.75
66	1	560.75	561.75
67	1	561.47	562.47
68	1	561.47	562.47
69	1	561.47	562.47
70	1	561.47	562.47
71	1	562.48	563.48
72	1	562.48	563.48
73	1	562.48	563.48
74	1	562.48	563.48
75	1	564	565.00
76	1	564	565.00
77	1	564	565.00
78	1	564	565.00
79	1	564	565.00
85	1	562.48	563.48
86	1	562.48	563.48
87	1	562.48	563.48
88	1	562.48	563.48
89	1	562.48	563.48
90	1	562.48	563.48
91	1	562.48	563.48
92	1	562.48	563.48
93	1	562.48	563.48
94	1	562.48	563.48

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
1	2	558.29	559.29
2	2	558.29	559.29
3	2	558.29	559.29
4	2	558.33	559.33
5	2	558.33	559.33
7	2	558.33	559.33
8	2	558.33	559.33
9	2	558.88	559.88
10	2	558.88	559.88

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
1	3	558.88	559.88
2	3	558.88	559.88
3	3	558.88	559.88
4	3	558.88	559.88
5	3	558.88	559.88
6	3	558.88	559.88
7	3	558.88	559.88
8	3	558.88	559.88
9	3	558.88	559.88
10	3	558.88	559.88
11	3	558.88	559.88
12	3	558.88	559.88
13	3	558.88	559.88
14	3	558.88	559.88
15	3	558.88	559.88
16	3	558.88	559.88

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
33	4	559.62	560.62
34	4	559.62	560.62
35	4	559.62	560.62
36	4	559.62	560.62
37	4	559.62	560.62
38	4	559.62	560.62
41	4	559.62	560.62
42	4	559.62	560.62
43	4	559.62	560.62
44	4	559.62	560.62
45	4	559.62	560.62
46	4	559.62	560.62
47	4	559.62	560.62
48	4	559.62	560.62
49	4	559.62	560.62
50	4	559.89	560.89
51	4	559.89	560.89
52	4	559.89	560.89
59	4	560.28	561.28
60	4	560.28	561.28
61	4	560.28	561.28
62	4	560.28	561.28
63	4	560.28	561.28
64	4	560.75	561.75
65	4	560.75	561.75
66	4	560.75	561.75
67	4	560.75	561.75
68	4	560.75	561.75
69	4	560.75	561.75
70	4	560.75	561.75
71	4	560.75	561.75

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
3	5	558.88	559.88
4	5	558.88	559.88
5	5	558.88	559.88
6	5	558.88	559.88
7	5	558.88	559.88
8	5	558.88	559.88
9	5	559.62	560.62
10	5	559.62	560.62
11	5	559.62	560.62
12	5	559.62	560.62
13	5	559.62	560.62
14	5	559.62	560.62
15	5	559.62	560.62

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
1	6	559.62	560.62
2	6	559.62	560.62
3	6	559.62	560.62
4	6	559.62	560.62
5	6	559.62	560.62
6	6	559.62	560.62
7	6	559.62	560.62
8	6	559.89	560.89
9	6	559.89	560.89
10	6	559.89	560.89

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
17	7	560.75	561.75
18	7	560.75	561.75
19	7	560.75	561.75
20	7	560.75	561.75
21	7	560.75	561.75
22	7	561.47	562.47
23	7	561.47	562.47
24	7	561.47	562.47
25	7	561.47	562.47
26	7	561.47	562.47
27	7	561.47	562.47
28	7	560.75	561.75
29	7	560.75	561.75

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
20	8	561.47	562.47
21	8	561.47	562.47
22	8	561.47	562.47
23	8	561.47	562.47
24	8	562.48	563.48

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
1	9	559.89	560.89
2	9	559.89	560.89
3	9	559.89	560.89
4	9	559.89	560.89
5	9	559.89	560.89
6	9	559.89	560.89
7	9	559.89	560.89
8	9	559.89	560.89
9	9	560.28	561.28
10	9	560.28	561.28
11	9	560.28	561.28
12	9	560.28	561.28
13	9	560.75	561.75
14	9	560.75	561.75
15	9	560.75	561.75
16	9	560.75	561.75
17	9	561.47	562.47
18	9	561.47	562.47
19	9	561.47	562.47
20	9	561.47	562.47
24	9	562.48	563.48
25	9	562.48	563.48
26	9	562.48	563.48
27	9	561.47	562.47
28	9	561.47	562.47
29	9	561.47	562.47
30	9	560.75	561.75
31	9	560.75	561.75
32	9	560.75	561.75
33	9	560.75	561.75
34	9	560.75	561.75
35	9	560.28	561.28
36	9	560.28	561.28
37	9	560.28	561.28
38	9	560.28	561.28
39	9	560.28	561.28
40	9	559.89	560.89
41	9	559.89	560.89
42	9	559.89	560.89
43	9	559.89	560.89

LOT NO.	BLK. NO.	1% FUT WSE	MINIMUM FFE
1	10	559.89	560.89
2	10	559.89	560.89
3	10	560.28	561.28
4	10	560.28	561.28
5	10	560.28	561.28
6	10	560.28	561.28
7	10	560.28	561.28
8	10	560.28	561.28
9	10	560.75	561.75
10	10	560.75	561.75
11	10	560.75	561.75
12	10	560.75	561.75
13	10	560.75	561.75
14	10	561.47	562.47
15	10	561.47	562.47
16	10	561.47	562.47
17	10	562.48	563.48
18	10	562.48	563.48
19	10	562.48	563.48
20	10	561.47	562.47
21	10	561.47	562.47
22	10	560.75	561.75
23	10	560.75	561.75
24	10	560.75	561.75
25	10	560.75	561.75
26	10	560.75	561.75
27	10	560.28	561.28
28	10	560.28	561.28
29	10	560.28	561.28
30	10	560.28	561.28
31	10	560.28	561.28
32	10	560.28	561.28
33	10	560.28	561.28

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

CLOMR IMPROVEMENT PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

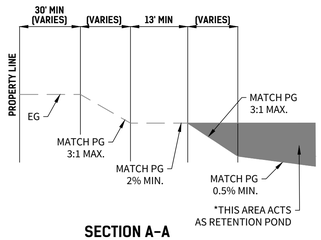
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

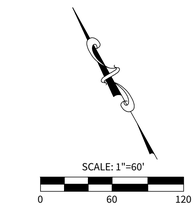
C11.01

P:\04408\03\13 DWG\A-Sheets\11x17\C11.01.dwg 2025/10/13 10:43am rmata

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

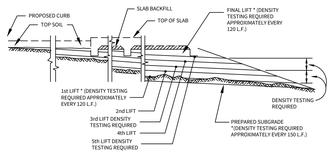


SECTION A-A



LEGEND

PROPOSED CONTOUR	1000
EXISTING CONTOUR	1000
PROPOSED ELEVATION	297.50
EXISTING ELEVATION	672.00E
GRADE BREAK	GRADE BREAK
SWALE	
CLOMR FLOODPLAIN	
EFFECTIVE FLOODPLAIN	



DENSITY TEST FREQUENCY

NOT TO SCALE

DANIEL & RUBEN GONZALES
(20 Ac.)(DOC 20070163453 OPR)

MIRIAM CHAVEZ LEDESMA
(25.65 Ac.)(VOL. 18438, PG 1909 OPR)

DAVID L SMITH
(20.02 Ac.)(DOC 20180009892 OPR)

GABRIEL VENEGAS GURROLA
10 Ac.
(DOC 20190181000 OPRP)

DONALD WALTER GRAMS
30.74 Ac.
(DOC 20070121456 OPRP)

VERNON H SCHIEVELBEIN
132.69 Ac.

100 YR EFFECTIVE FLOODPLAIN
(PANEL 48029C0455G)

WOTUS

SALITRILLO CREEK CENTERLINE

UNIT 6

CONTRACTOR GRADE TO DRAIN

ME +/-557.00

ME +/-555.00

BLK. 1

O.H.W.M

MATCHLINE 'A' SEE SHEET C10.02

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ZIGMOND TRACT UNIT 1

CLOMR GRADING PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS

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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
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CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C11.02

P:\04408\2025\12-DWG\Plans\C11\C11.02.DWG, 10/13/2025 11:19:43 AM, sean.mada

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

VERNON H SCHIEVELBEIN
132.69 Ac.

ROSE FLORENCE REAL
1.03 Ac.
(VOL 9991, PG 1415 DOPR)

ROSE FLORENCE REAL
70 Ac.
(VOL 4447, PG 346 DR)

SCALE: 1"=60'
0 60 120

LEGEND
- PROPOSED CONTOUR 1000
- EXISTING CONTOUR 1000
- PROPOSED ELEVATION 297.58
- EXISTING ELEVATION 872.00E
- GRADE BREAK
- SWALE
- CLOMR FLOODPLAIN
- EFFECTIVE FLOODPLAIN

SKYWARD LANE
OUTERWAY AVE
CLOUDWAY BLVD
FLY OVER
STORMFRONT ROAD
SKYWARD LANE
SUNPATH LANE
ICEVIEW DRIVE

UNIT 1
UNIT 2
UNIT 3
UNIT 4
UNIT 5
UNIT 6

BLK. 1

CONTRACTOR GRADE TO DRAIN

1139.15 S.Y.
12" d50 ROCK RUBBLE
(24" EMBEDMENT)

SALITRILLO CREEK CENTERLINE

O.H.W.M

MATCHLINE 'A' SEE SHEET C10.01

MATCHLINE 'B' SEE SHEET C10.03

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

4122 Pond Hill Road, Suite 101
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ZIGMOND TRACT
UNIT 1

CLOMR GRADING PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C11.03

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

MATCHLINE 'B' SEE SHEET C10.02

LEGEND

- PROPOSED CONTOUR — 1000
- EXISTING CONTOUR — 1000
- PROPOSED ELEVATION — 297.50
- EXISTING ELEVATION — 672.00E
- GRADE BREAK — GRADE BREAK
- SWALE
- CLOMR FLOODPLAIN
- EFFECTIVE FLOODPLAIN

SCALE: 1"=60'

0 60 120

DANA JO TAYLOR SHAW
11.83 Ac.
(DOC. 20220050095 OPR)

LOT 901 BLK 6
OPEN SPACE & PUB. VAR. WID. DRN. ESM'T.
0.849 Ac.

LOT 901 BLK 4
OPEN SPACE & PUB. VAR. WID. DRN. ESM'T.
2.04 Ac.

LOT 901 BLK 1
OPEN SPACE & PUB. VAR. WID. DRN. ESM'T.

LOT 901 BLK 2
OPEN SPACE & PUB. VAR. WID. DRN. ESM'T.
1.031 Ac.

DONALD WALTER GRAMS
30.74 Ac.
(DOC. 20070121456 OPRRP)

ICEFIELD STREET
CLOUDWAY BLVD
GOLDROCK LANE
BUDAKON
FLY OVER
FLY OVER

BLK. 1
BLK. 2
BLK. 3
BLK. 4
BLK. 5
BLK. 6

UNIT 1

CONTRACTOR GRADE TO DRAIN
CONTRACTOR GRADE TO DRAIN
TO DRAIN

EXISTING CONC. CULVERT CROSSING SEE C11.06 FOR AS-BUILT INFO

O.H.W.M.

ABBOTT RD.

CUDEENGINEERS.COM

CUDE ENGINEERS

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

ZIGMOND TRACT UNIT 1

CLOMR GRADING PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C11.04

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

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

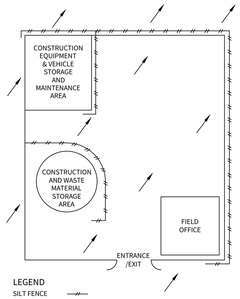
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:

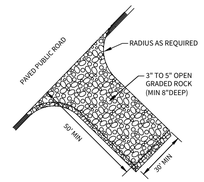
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND

- PROPERTY LINE
- EXISTING CONTOURS — 930
- BMP ITEM NUMBER — 1
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- SILT FENCE — SF
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- LIMITS OF CONSTRUCTION
- ROCK BERM



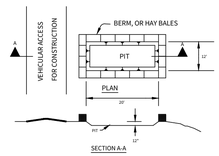
TYP. CONSTRUCTION STAGING AREA 1
N.T.S.



STABILIZED CONSTRUCTION EXIT NOTES:

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

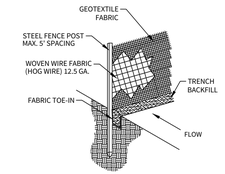
TEMPORARY CONSTRUCTION ENTRANCE/EXIT 2
N.T.S.



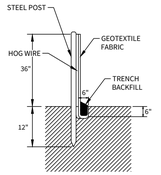
GENERAL NOTES:

- DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY USE.
- IF HAY BALES ARE USED, THEY SHALL BE PLACED IN ACCORDANCE WITH DETAILS SHOWN ON EXHIBIT FOR HAY BALES.
- WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
- WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORMWATER RUNOFF.
- WASHOUT PIT SHALL BE LINED WITH A 10-MIL THICK POLYETHLENE SHEETING FREE OF HOLES, TEARS AND OTHER DEFECTS.

CONCRETE TRUCK WASHOUT PIT 3
N.T.S.

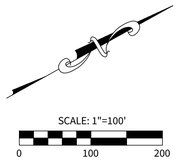


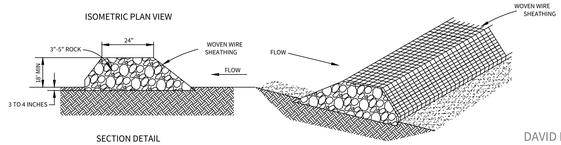
SILT FENCE DETAIL



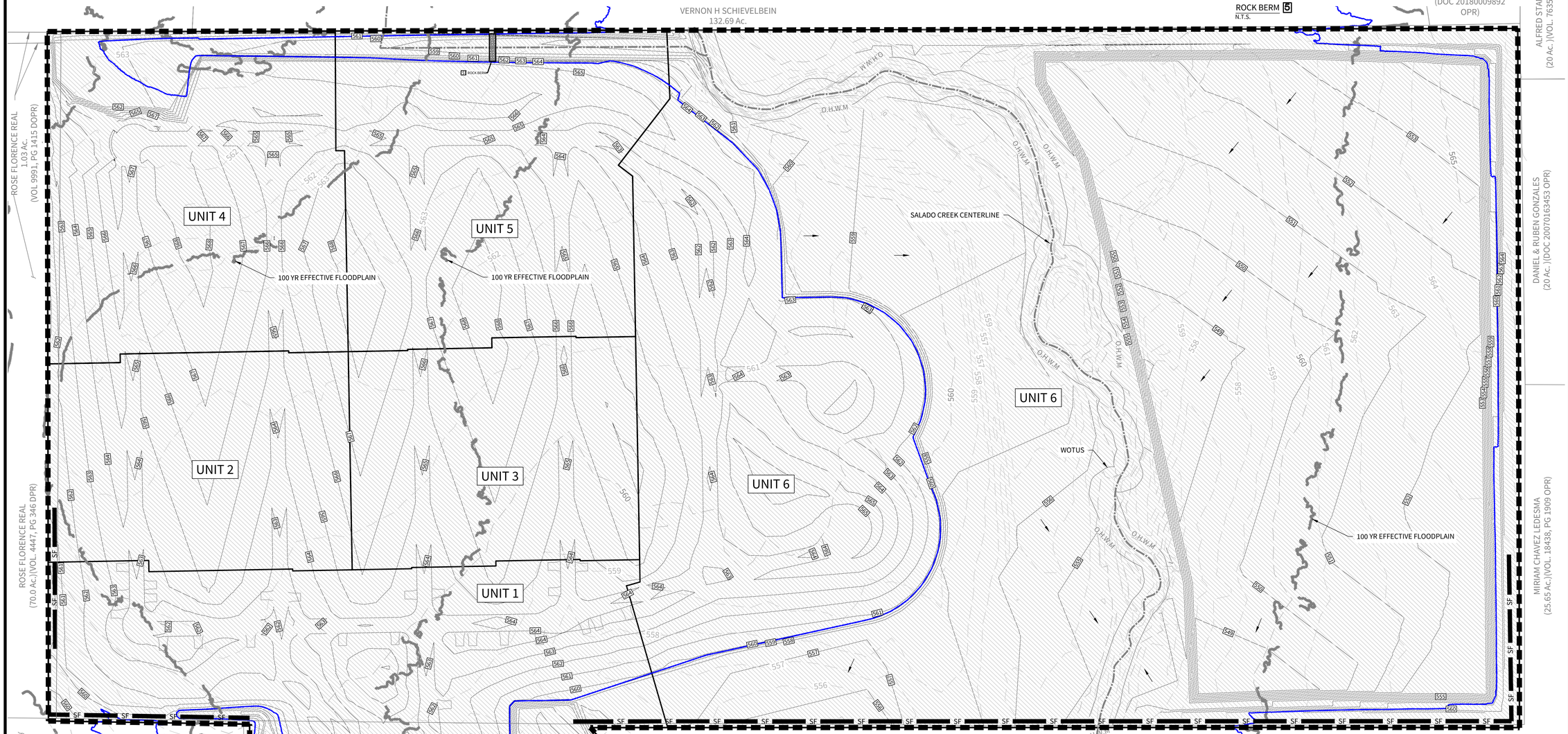
SECTION DETAIL

STANDARD SILT FENCE 4
N.T.S.





ROCK BERM 5
N.T.S.



MATCHLINE 'A' SEE SHEET C10.05

CUDEENGINEERS.COM

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

ZIGMOND TRACT UNIT 1

EROSION & SEDIMENT CONTROL PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
138893
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
25-4486

C11.05

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

LOCATION MAP
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OWNER/DEVELOPER:

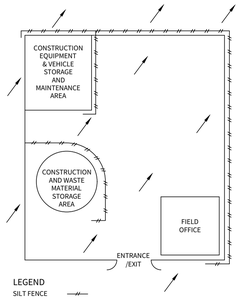
KB HOME LONESTAR INC.
4800 FREDERICKSBURG RD
SAN ANTONIO,TX 78229

CIVIL ENGINEER:

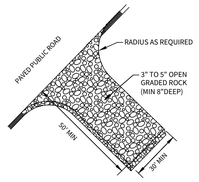
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: SEAN MCFARLAND, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

LEGEND

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



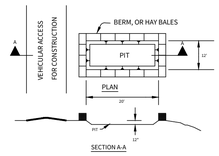
TYP. CONSTRUCTION STAGING AREA [1]
N.T.S.



STABILIZED CONSTRUCTION EXIT NOTES:

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

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



GENERAL NOTES:

- DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY USE.
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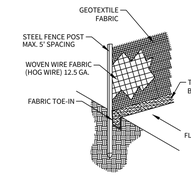
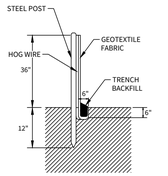
- WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
- WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORMWATER RUNOFF.
- WASHOUT PIT SHALL BE LINED WITH A 10 MIL THICK POLYETHYLENE SHEETING FREE OF HOLES, TEARS AND OTHER DEFECTS.

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

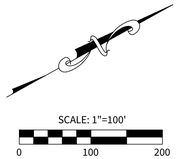


SILT FENCE DETAIL

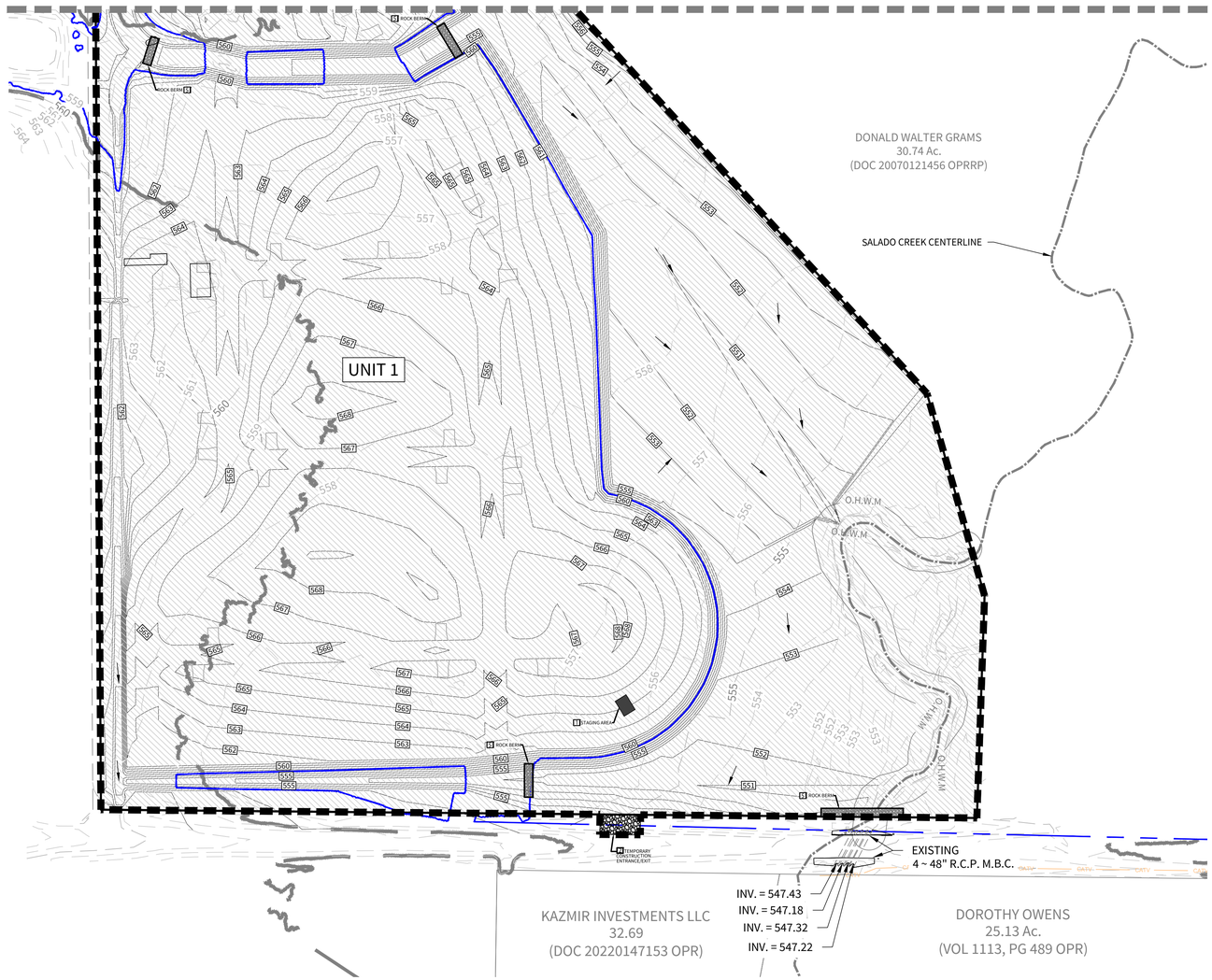


SECTION DETAIL

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



MATCHLINE 'A' SEE SHEET C10.05



TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

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

INSPECTIONS:

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

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

NOTE:

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. CONTRACTOR TO PROVIDE SILT FENCE ALONG BACK OF CURB POST-CONSTRUCTION OF STREET RIGHT-OF-WAY AND PRIOR TO COMMENCEMENT OF HOME CONSTRUCTION.
3. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, UTILITY EASEMENTS & LOTS.
4. THE CITY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.
5. INSTALL SILT FENCE "J" HOOKS AS NECESSARY AT AN INTERVAL NO GREATER THAN 50' TO COMPLETE INSTALLATION.
6. ALL SWPPP PERMITS AND TEMPORARY CONTROLS TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
7. THE SWPPP PLAN AND BMP'S SHOWN ARE INTENDED TO BE PLACED BY THE CONTRACTOR PRIOR TO THE RESPECTIVE WORK TO BE PERFORMED. THE CONTRACTOR WILL BE REQUIRED TO PERFORM ROUTINE INSPECTIONS, MAINTAIN/ADJUST ALL BMP'S, AND LIKEWISE PROVIDE ADDITIONAL BMP'S IF ANY PROVE TO BE INEFFECTIVE AS REQUIRED BY TPDES CONSTRUCTION GENERAL PERMIT TXR150000.

EMERGENCY RESPONSE PLAN

WHEN THE CONTRACTOR IDENTIFIES THE POTENTIAL FOR A RAINFALL EVENT OCCURRING WITHIN THE DRAINAGE BASIN ASSOCIATED WITH CLOMR IMPROVEMENTS THE CONTRACTOR SHALL TAKE THE FOLLOWING ACTIONS:

1. CONTRACTOR SHALL NOTIFY ALL PERSONNEL WORKING ON THE CLOMR IMPROVEMENTS THAT A POTENTIAL RAINFALL EVENT MAY OCCUR THAT WOULD IMPACT WORK BEING DONE ASSOCIATED WITH THE CLOMR.
2. CONTRACTOR SHALL TAKE ALL REASONABLE MEASURES TO ENSURE FLOODPLAIN FLOWS ARE NOT BLOCKED OR OBSTRUCTED BY ANY WORK BEING PERFORMED BY THE CONTRACTOR WITHIN THE LIMITS OF THE FLOODPLAIN.
3. CONTRACTOR SHALL ENSURE THAT ALL LOOSE MATERIAL, DEBRIS AND/OR TRASH ARE REMOVED FROM THE FLOODPLAIN LIMITS AND STORED IN A SECURE MANNER THAT WILL ENSURE RAINFALL AND RUNOFF WILL NOT RESULT IN MATERIAL, DEBRIS AND/OR TRASH BEING WASHED DOWNSTREAM.
4. CONTRACTOR SHALL REMOVE ALL CONSTRUCTION RELATED TOOLS AND MACHINERY FROM THE LIMITS OF THE FLOODPLAIN AND REQUIRE ALL CONSTRUCTION PERSONNEL TO LEAVE THE LIMITS OF THE FLOODPLAIN UNTIL THE RAINFALL EVENT HAS ENDED AND FLOODPLAIN FLOWS RETURN TO NORMAL NON-RAINFALL EVENT CONDITIONS.

AFTER THE RAIN EVENT HAS ENDED AND FLOODPLAIN FLOWS RETURN TO NORMAL CONDITIONS, THE CONTRACTOR AND/OR DEVELOPER SHALL:

1. AFTER SIGNIFICANT RAINFALL EVENTS, THE CONTRACTOR AND DEVELOPER'S APPOINTED REPRESENTATIVE SHALL INSPECT ALL BMPS (SILT FENCE, ROCK BERM, ETC.) AND REMOVE SEDIMENT ACCUMULATION FROM THESE BMPS. ALL BMP SHALL BE INSPECTED TO ENSURE THEY FUNCTION AS INTENDED UPON SEDIMENT REMOVAL. PLEASE SEE SWPPP NOTES FOR FURTHER DETAILS.
2. IF PONDING OCCURS WITHIN THE FLOODPLAIN LIMITS DUE TO WORK IN PROGRESS BY THE CONTRACTOR, THE CONTRACTOR SHALL PUMP STANDING WATER WITHIN THE LIMITS OF THE FLOODPLAIN. ALL WATER REMOVED SHALL BE PUMPED AND DISCHARGED AT A LOCATION WHERE IT CAN BE TREATED BY AN APPROPRIATE BMP (SILT FENCE, ROCK BERM, ETC.) PRIOR TO LEAVING THE SITE.
3. THE CONTRACTOR'S PROJECT MANAGER OR SAFETY INSPECTOR SHALL INSPECT THE SITE AND DETERMINE IF CONTINUING WORK IN THE AREA IS FEASIBLE. GREAT CARE SHOULD BE GIVEN TO ALLOW THE SITE TO SUFFICIENTLY DRY TO ENSURE EXCESS MUD AND SEDIMENT ARE NOT TRACKED OVER THE SITE AND ADJACENT ROADWAYS DUE TO WORK BEING INITIATED BEFORE THE SITE HAD SUFFICIENT TIME TO DRY. CONTRACTOR SHALL ENSURE THE SITE IS DRY ENOUGH TO ACHIEVE PROPER COMPACTION ON ALL MATERIAL EMBANKMENTS AS WELL.
4. ONCE THE CONTRACTOR'S PROJECT MANAGER OR SAFETY INSPECTOR HAS DETERMINED THE SITE IS SUFFICIENTLY DRY TO CONTINUE WORK, EQUIPMENT AND PERSONNEL SHALL BE ALLOWED TO CONTINUE WORK WITHIN THE LIMITS OF THE FLOODPLAIN.

CONSTRUCTION PHASING PLAN

1. INSTALL ALL BMPS SHOWN ON SWPP PLAN (CONSTRUCTION ENTRANCE, ROCK BERM, SILT FENCE, ETC.).
2. CLEAR TREES AND STRIP VEGETATION FROM AREAS OF EXCAVATION AND EMBANKMENT WITHIN DISTURBED LIMITS OF SITE. ONLY REMOVE TREES SHOULD PROPOSED GROUND WITHIN ROOT PROTECTION ZONE DIFFER FROM EXISTING GROUND BY MORE THAN SIX (6) INCHES.
3. STRIP TOP-SOIL FROM AREAS OF EXCAVATION AND STORE WITH PROPER BMPS TO PREVENT SEDIMENT RUN-OFF.
4. SITE GRADING
   a. PLACE EMBANKMENTS AS SHOWN ON GRADING PLAN. ENSURE REQUIRED COMPACTION PROCTOR IS MET.
5. CONSTRUCT ALL OTHER IMPROVEMENTS.
6. REVEGETATE DISTURBED AREAS PER CONSULTATION WITH ENGINEER AND DEVELOPER ON TYPE OF REVEGETATION REQUIRED. CONTRACTOR TO PROVIDE 4" OF TOPSOIL TO MATCH FINISHED GRADE, SEEDING AND/OR SODDING AND WATERING FOR A TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
7. ONCE 85% VEGETATION HAS BEEN ACHIEVED FOR ALL DISTURBED AREAS, TEMPORARY BMPS (CONSTRUCTION ENTRANCE, ROCK BERM, SILT FENCE, ETC.) SHALL BE REMOVED AND DISPOSED OF PROPERLY.

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ZIGMOND TRACT UNIT 1

EROSION & SEDIMENT CONTROL PLAN

DATE
10/13/2025

PROJECT NO.
04408.001

DRAWN BY
DAF/SG/JW

CHECKED BY
SPM

REVISIONS
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10/13/2025

STATE OF TEXAS
SEAN P. McFARLAND
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PROFESSIONAL ENGINEER

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