TRES LAURELS

UNIT 4B SUBDIVISION

OCTOBER 2025
SAN ANTONIO, TEXAS

BID PACKAGE

PREPARED FOR:

LENNAR HOMES OF TEXAS, LLC

100 NE LOOP 410, SUITE 1150

SAN ANTONIO, TX 78216

CUDE ENGINEERS
SAN ANTONIO | AUSTIN | SAN MARCOS

4122 POND HILL ROAD, STE 101
SAN ANTONIO, TEXAS 78231

PHONE: (210) 681-2951
CUDEENGINEERS.COM

TBPE NO. 455
TBPELS NO. 10048500

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INVITATION TO BIDDERS

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.

INVITATION TO BIDDERS
CONSTRUCTION DOCUMENTS AND
TECHNICAL SPECIFICATIONS FOR
Tres Laurels 4B

STREETS, DRAINAGE, WATER & WASTEWATER CONSTRUCTION

BEXAR COUNTY, TEXAS

October 28, 2025

Sealed **bids** addressed to Lennar Homes of Texas LLC will be received at the office of Cude Engineers, 4122 Pond Hill Road, Suite 101, San Antonio Texas 78231 until **10:00 AM**, Local Time, **November 11th, 2025**, for the following project:

Scope of Work in this Contract includes:

- Water, Sewer, and Drainage to serve 167 single-family lots in Tres Laurels Unit 4A
- Approximately 2,842 LF of Onsite Roads
- Approximately 1,477 LF of Onsite Sewer
- Approximately 2,917 LF of Onsite Water

Instruction to bidders and other bid documents will be available for review or to download at www.CivCastUSA.com. Timeline for **Questions** will close at 10:00 AM, local time **Tuesday November 4th, 2025.**

A virtual bid opening will occur at **10:00 AM**, local time **Tuesday November 11th, 2025.**

INSTRUCTIONS TO BIDDERS

IMPORTANT NOTICE: Bidder must read ALL Instructions. Failure to do so may result in a non-responsive Bid. Failure to do so does not release Bidder from the obligation to comply.

1. Submission of Bids

1.1 In accordance with the Plans and Specifications prepared by the ENGINEER, any Proposal received after the published time of the bid opening will be returned unopened.

1.2 The OWNER reserves the right to reject any or all Bids if the OWNER believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or other criteria established by OWNER.

1.3 Bids shall be submitted at the location and time indicated in the Invitation to Bidders and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted) and name and address of Bidder and accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation “BID ENCLOSED” on the face of it. Bids which are not received by the time and at the location specified in the Bidding Documents, will be returned unopened to the Bidder.

1.4 By submitting a Bid, each Bidder agrees to fully and forever waive and release any claim (known or unknown) it has or may have against the OWNER, DEVELOPER, ARCHITECT and ENGINEER, and their respective attorneys, employees, consultants, representatives, agents, successors, assigns, officers, directors, and members arising under the statutes of Texas, tort, contract or otherwise; or out of or in connection with the: (i) administration, evaluation, or recommendation (or lack thereof) of any Bid; (ii) waiver of any requirements under the Bid Documents or the CONTRACT DOCUMENTS; (iii) acceptance or rejection of any bids; (iv) award of the Contract; and, (v) provision of references (positive or negative) in connection with any work performed by Bidder, and Bidder’s contractors and subcontractors in connection with the Project and the CONTRACT DOCUMENTS, to which Bidder hereby consents and authorizes.

1.5 All work must conform to Federal, State and local governmental rules and criteria.

1.6 The successful bidder will be required to enter into a Contract with the Owner, requiring full compliance and performance of the conditions of the proposal, plans and specifications as designed by CUDE ENGINEERS (Engineer) and reviewed by the CITY OF SAN ANTONIO, and/or other agencies as required, and agrees to commence work within ten (10) days after notification to begin. It is the intent of the owner to start construction as soon as possible.

1.7 Bidders are required to inspect the site and inform themselves of all conditions affecting the execution of the work to be performed. The filing of the "Proposal" shall constitute an admission by the bidder that he has carried out the foregoing stipulations to his entire satisfaction. Quantities included in the plans and proposals are estimated and are to be regarded as approximate only. The Owner reserves the right to vary the quantities, to construct all, or any part, or to delete any part or item of work that may be deemed advisable.

1.8 The most current editions of the City of San Antonio Standard Specifications, Texas Department of Transportation Standard Specifications and San Antonio Water Systems shall be followed for all construction except as amended by the City of San Antonio.

1.9 Portions of this proposal may be deleted. Prices for all items must stand on their own.

1.10 Contractor to complete the material take-off for items bid lump sum to confirm the Engineer Quantities. Quantities shown are plan estimates only.

1.11 Direct all questions concerning this proposal to Matthew Trinkle and Chris Chaffee at mtrinkle@cudeengineers.com and cchaffee@cudeengineers.com with Cude Engineers at (210) 681-2951.

1.12 Contractor is responsible for all Texas Commission on Environmental Quality (TCEQ) Storm Water Pollution Prevention Plan (SW3P) requirements, including but not limited to setting up, installing and maintaining the erosion and sedimentation controls as designed and shall inspect the controls every two weeks and after every significant rainfall (1/2 inch or greater) to ensure significant disturbance to the structure has not occurred. Sediment deposited after a significant rainfall shall be removed and placed in a designated soil disposal area. Contractor to maintain erosion control inspection reports as required by the TCEQ and provide Owner with one complete set of all SW3P inspection reports, including updates and modifications, prior to receiving final payment for the project.

1.13 Contractor must keep a copy of the Storm Water Pollution Prevention Plan (SW3P) on site and readily available for authorities.

1.14 Clearing and/or grading for the utility easements as well as removal of on-site deleterious material and trash shall be included in the base bid cost for site clearing and grading. Contractor is to clear entire project of all underbrush and undesirable vegetation. Contact Owner for extent and sequence of lot clearing and coordination with any applicable tree ordinance.

1.15 Excavated material that is free of organic matter and other deleterious substances may be disposed of on-site. No fill shall be placed within the flood plain without a Flood Plain Development Permit as applicable. Said material will be utilized as fill material for lots and easements as per the Grading Plan and compacted to meet 79G requirements with 95% Standard Density using ASTM 698 or TEX-114E. For fills greater than one (1) foot within building pad area, a 79G Letter will be required with testing complete per eight (8) inch lift. Testing to be paid by the Owner. Contractor shall get owners approval of test lab. Contractor shall pay re-testing due to failure of density requirements. All quantities are “In-place, tight” cubic yards.

1.16 Excavated material placed on lots shall have positive drainage to prevent any ponding of water, and provide a minimum final grade of 1.5% in all areas with the exception of building pads which shall have a minimum final grade of 1.0%.

1.17 Contractor shall submit a letter to Engineer after completion of final grading of utility easements, certifying that the grades on the utility easements are completed as per the grading plan.

1.18 Contractor shall be responsible for disposing of all waste materials off project site including, but not limited to, excess excavation not suitable for use as lot fill, concrete, trees, and any other material which is not part of the completed contract work. No separate pay item.

1.19 Street excavation includes cut in the parkways, as per design plans.

1.20 Contractor will protect existing utilities, structures, curb, fences and sidewalk during construction. Any damage will be repaired by the Contractor at no extra cost.

1.21 The streets are public. The Contractor must coordinate and schedule all testing required by the City of San Antonio and/or Bexar County.

1.22 The Contractor will be required to coordinate work with the Utility companies that will be installing electric, telephone and TV.

1.23 The Contractor is responsible for coordinating with Utility companies to mark existing buried utilities that may be affected by construction. The Contractor will be responsible to repair damaged utilities due to construction.

1.24 Contractor to notify City of San Antonio, Bexar County, CPS, AT&T, Time Warner Cable, and/or other appropriate Utility Providers prior to street (subgrade) and/or drain construction.

1.25 The Contractor shall coordinate with the Developer for placement of private conduit.

1.26 The Contractor is responsible for obtaining all final approvals and shall provide Engineer with street and grading "As-builts" at or before the final inspection. Copies of acceptance letters for such shall also be provided to Engineer, as applicable. One year warranty period shall begin at the date of the final acceptance letter as determined and provided by the City. Contractor is responsible for obtaining final approvals prior to the expiration of warranty period for City maintenance.

1.27 The Owner is to provide and pay for construction staking.

1.28 Water Tie-ins are will not be measured and are considered subsidiary to other Water Improvement items.

1.29 All Sanitary Sewer pipe to be SDR-26.

1.30 **Bid is due on or before 10:00 a.m. November 11th, 2025.** Please submit bid to Adrian Todsen, John Bare and Richard Mott of Lennar Homes of Texas Land and Construction, LTD.

2. Copies of the Bidding Documents

2.1 Complete sets of the Bidding Documents in the number and for the deposit sum of $100, if any, stated in the Invitation to Bidders may be obtained from the ENGINEER's Office. Checks for the Plans and Specifications shall be made payable to Cude Engineers.

2.2 Copies of Bidding Documents are made available only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

2.3 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.4 The Bidding Documents may include reports on the geotechnical, subsurface, physical or environmental conditions which contain information used by the ENGINEER and OWNER. Neither the ENGINEER nor OWNER are responsible for accuracy or completeness of any such information or data. Bidder shall have full responsibility for interpretation of the reports and use of the information for bidding and construction purposes.

3. Bid Security

3.1 No bid security required.

4. Contract Documents

Contract Documents include the Agreement, Addenda, all Conditions (General, Supplementary and Special), specifications and plans, the Bid Proposal, and any written modifications.

5. Defined Terms

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions have the meanings assigned to them in the Standard General Conditions unless modified by the Supplementary and Special Conditions.

6. Bid Proposal Form

6.1 The Bid Proposal Form is included with the Bidding Documents; additional copies may be obtained from the ENGINEER.

6.2 All blanks on the Bid Proposal Form must be completed by printing in ink or by typewriter.

6.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

6.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature. Bids by limited partnerships must be executed by an authorized representative of the general partner on behalf of the general partner.

6.5 All names must be typed or printed in ink below the signature. The address (including County), telephone number, e-mail address (if available), and facsimile number for communications regarding the Bid must be shown.

6.6 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Bid Proposal Form).

6.7 Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed, shall be provided. State Contractor license number, if any, must also be shown.

7. Interpretations and Addenda

7.1 All questions about the meaning or intent of the Bidding Documents are to be directed to ENGINEER. As necessary, interpretations or clarifications will be issued by Addenda mailed or delivered to all parties having received the Bidding Documents. Questions received less than three days prior to the date for opening of Bids may not be answered. Verbal discussions and answers are not binding.

7.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER or ENGINEER.

8. Self Performing

As a condition of this Agreement, the CONTRACTOR is required to self perform at least 60 percent of the work (based on total contract price awarded, complete in place) with personnel directly employed by CONTRACTOR.

9. Subcontractors, Suppliers and Others

9.1 If the Special Conditions require the identity of certain Subcontractors, Suppliers and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to OWNER prior to the Effective Date of the Agreement, apparent Successful Bidder, and any other Bidder so requested, shall within five days after the Bid opening, submit to OWNER a list of all such Subcontractors, Suppliers and other persons and organizations.

9.2 OWNER reserves the right to reject a proposed subcontractor or supplier at its sole discretion. OWNER may request apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price.

If apparent Successful Bidder declines to make any such substitution, OWNER may award the contract to another Bidder meeting the Bid requirements that proposes to use acceptable subcontractors, suppliers, and other persons and organizations. By declining to make requested substitutes, the apparent Successful Bidder will not sacrifice their Bid security.

9.3 No CONTRACTOR shall be required to employ any subcontractor, supplier, organization against whom CONTRACTOR has reasonable objection.

10. Examination of Contract Documents and Site

10.1 It is the responsibility of each Bidder before submitting a Bid:

10.1.1 To thoroughly examine the Contract Documents and other reports, tests, and drawings identified in the Bidding Documents and Special Conditions. Bidder is instructed to read all Bidding and Contract Documents before completing the bid form. Bidder is advised that failure to read Contract Documents, including without limitation, the General, Supplementary and Special Conditions, does not relieve Bidder from compliance with these documents.

10.1.1.1 Copies of available reports, tests and drawings will be produced by OWNER for review by Bidder on request. OWNER and ENGINEER disclaim any responsibility for the accuracy, true location and extent of surface and subsurface investigations that have been prepared by others.

10.1.1.2 Bidder is responsible for any interpretation or conclusion drawn from any reports, tests, and drawings, or any such data, interpretations, opinions or information, and OWNER and ENGINEER disclaim any responsibility for such interpretations by Bidders, e.g., without limitation, projecting soil-bearing values, rock profiles, soil stability and the presence, level and extent of underground water or underground facilities.

10.1.1.3 Bidder will be responsible for considering how said reports, tests and drawings may relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs performing the Work in accordance with the Contract Documents.

10.1.2 To visit the site to become familiar with and satisfy Bidder as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work;

10.1.3 To consider Federal, State and local laws and regulations that may affect cost, progress, performance or furnishing of the Work;

10.1.4 To correlate Bidder's knowledge and observations of the site with the Contract Documents and such other related reports, tests and drawings;

10.1.5 To promptly notify ENGINEER of all conflicts, errors, ambiguities or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents.

10.2 On request, OWNER may provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the site to its former conditions upon completion of such explorations, investigations, tests and studies.

11. Availability of Lands for Work, etc.

The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by OWNER unless otherwise provided in the Contract Documents.

12. Substitute and "Or-Equal" Items

All Bids shall be based on work, materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Although the Drawings or Specifications may state a substitute or "or-equal" item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, Bids shall not be based on any substitutions or as equal items. ENGINEER will not consider any application for substitute or as equal until after the Effective Date of the Agreement. The procedure for submission of any such application by CONTRACTOR and consideration by ENGINEER is set forth in the Standard General Conditions and may be supplemented in the Special Conditions.

13. Contract Time

The number of calendar days within which, or the dates by which, the Work is to be substantially completed and the Work is to achieve final completion are set forth in the Agreement and in the Special Conditions.

14. Economic Disincentive for Late Completion of Work

The CONTRACTOR and the OWNER agree that time is of the essence of this Contract. The CONTRACTOR and the OWNER agree that the Agreement is based on completion of the Work by CONTRACTOR in the time specified in the Agreement. CONTRACTOR and the OWNER agree that for each and every calendar day the work or any portion thereof shall remain uncompleted after the expiration of the time limit set in the Contract, or as extended under the provisions for Extension of Time in this Contract, CONTRACTOR shall be liable to OWNER for an economic disincentive in an amount specified in the Special Conditions for such calendar day. The OWNER shall have the option to deduct and withhold said amount from any monies that the OWNER owes the CONTRACTOR or to recover such amount from the CONTRACTOR or the Sureties on the CONTRACTOR's bond.

15. Modification and Withdrawal of Bids

15.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

15.2 If, within twenty-four hours after Bids are opened, any Bidder files a duly signed, written notice with OWNER and promptly thereafter demonstrates to the

reasonable satisfaction of OWNER that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work to be provided under the Contract Documents.

16. Opening of Bids

A virtual bid opening will occur at 10:00 AM, local time Tuesday November 11th, 2025.

17. Bids to Remain Subject to Acceptance

17.1 All Bids will remain subject to acceptance for ninety (90) days after the day of the Bid opening, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to that date.

18. Award of Contract

18.1 If the contract is to be awarded, it will be awarded to the Successful Bidder as evaluated by OWNER. The Bid price shall include such amounts as the Bidder deems proper for overhead and profit.

18.2 Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words or figures will be resolved in favor of the words. In case of any ambiguity or lack of clarity in stating the prices in the Bid, OWNER reserves the right to consider the most advantageous construction thereof or reject the Bid.

18.3 OWNER reserves the right to reject any or all Bids, including without limitation the rights to reject any or all nonconforming, non-responsive, unbalanced or conditional Bids. OWNER also reserves the right to waive all irregularities and defects in the Bids and the bidding process, except time of submitting a Bid.

18.4 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications and financial ability of bidders, proposed subcontractors, suppliers and other persons and organizations to perform and furnish the Work in accordance with the CONTRACT DOCUMENTS to OWNER's satisfaction. OWNER may require Bidders to submit bank references and financial statements in connection with bid evaluation.

18.5 OWNER may also consider Bidder's (or Bidder's officers', partners', directors', affiliates') (i) prior dealings with OWNER or with any entity responsible for payment to Bidder under this Contract and (ii) the amount, size, number, cost and completion-status of any projects that Bidder currently has underway (including, without limitation, projects underway with OWNER or with any entity responsible for payment to Bidder under this Contract), and the amount, nature and quality of the manpower, materials and equipment available to bidder.

18.6 By submitting a Bid, each Bidder agrees to fully and forever waive and release any claim (known or unknown) it has or may have against the OWNER, DEVELOPER, ARCHITECT and ENGINEER, and their respective attorneys, employees, consultants, representatives, agents, successors, assigns, officers, directors, and

members arising under the statutes of Texas, tort, contract or otherwise; or out of or in connection with the: (i) administration, evaluation, or recommendation (or lack thereof) or any BID; (ii) waiver of any requirements under the Bid Documents or the CONTRACT DOCUMENTS; (iii) acceptance or rejection of any bids; (iv) award of the Contract; and (v) provision of references (positive or negative) in connection with any work performed by Bidder, and Bidder's contractors and subcontractors in connection with the Project and the CONTRACT DOCUMENTS, to which Bidder hereby consents and authorizes.

18.7 If the contract is to be awarded, OWNER will give the Successful Bidder Notice of Award within ninety (90) days after the day of the Bid opening.

19. Bonds

Standard General Conditions and the Special Conditions set forth OWNER's requirements, if any, as to Bonds. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by the required payment and performance bonds.

20. Signing of Agreement

When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within seven days thereafter CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds. Within ten days thereafter OWNER shall deliver one fully signed counterpart to CONTRACTOR.

21. Retainage

The amount of retainage is set forth in the Special Conditions.

22. Sales Tax

22.1 Applicable taxes, licenses, fees and other similar items are part of the cost of the work and it shall be CONTRACTOR's responsibility to familiarize itself with these costs and to observe and comply with the laws and regulations relating to the same. The prices, sums, rates and other charges set forth in the CONTRACTOR's bid shall cover and include all such costs.

22.2 The Special Conditions will indicate if OWNER is exempt from sales tax.

23. Insurance Requirements

CONTRACTOR shall maintain such insurance as specified in the Standard General, Supplementary, and Special Conditions.

24. Estimates of Quantities

Unless otherwise noted in the Special Conditions, the quantities listed in the Bid Proposal shall be considered as approximate and will be used only for comparison of Bids. Payment to the CONTRACTOR will be made only for the actual quantities of work performed or materials furnished in accordance with the contract. The quantities may be increased or decreased as provided in the Standard General Conditions without in any way invalidating the unit Bid prices.

25. Statement of Qualifications

No statement of qualifications required.

26. Prevailing Wage Rate

Minimum wage rates, if applicable to this Contract, shall be specified in the Special Conditions.

27. Civil Engineer Responsibilities:

27.1 The Engineer does not guarantee the performance of, and shall have no responsibility for, the acts or omissions of any Contractor, Subcontractor, Supplier or any other entity furnishing materials or performing any work on the project. Engineer shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by the Contractor(s) or the safety precautions and programs incident to the work of the Contractor(s).

27.2 The engineering design of this project was performed by a representative of the Owner, referred to in these Specifications as the “Engineer” who will exercise the authority and functions of the Owner in the following respects:

- Staking the work for construction and furnishing all necessary cut sheets.
- Checking of shop and working drawings furnished by the Contractor.
- Consultation and advice during construction and rendering those decisions requiring interpretation of the Plans and Specifications.
- Periodic visits to the project for consultation with the Owner.
- Assist in the final inspection.
- Assist in processing of the monthly and final estimate.

27.3 Staking of requested infrastructure within 72 hours of notification by Contractor. Re-staking will be Charged to the Contractor by the Owner.

27.4 Staking Criteria

- General - The Contractor will be provided with construction stakes delineating each phase of the Project as to line and grade, appropriate benchmark information and cut sheets.
  Detailed transfer of elevations, lines and grades to structures and other features of the work shall be done by the Contractor.
- Clearing Staking - CUDE will set staking for clearing of street right-of-ways, drainage right-of-ways, utility easements, drainage easements, and lot grading. Staking will consist of laths defining the centerline of streets and the limits of the non-street ROW or easements.
- Contractor's Responsibility - When horizontal control points, benchmarks, construction stakes and iron lot pins have been set,

the preservation of such stakes/pins as to position, elevation and/or marking shall become the responsibility of the Contractor. Should any of the original construction stakes/pins be destroyed by the Contractor's operation, or by any other parties or means whatsoever, the replacement of such stakes/pins will be at the expense of the Contractor. Prior to beginning each phase of work, the contractor shall check for stakes/pins that have been destroyed and request re-staking before commencing work on that phase. Any re-staking requested after work has started on that phase will be charged to the Contractor. Upon completion of construction, any iron pins that have been destroyed/disturbed by the Contractor will be re-set by the Engineer at the expense of the Contractor.

- Contractor's Work Area - The Contractor shall confine all construction operations to the limits of the street right-of-way or respective easement in which work is occurring. Contractors working in easements within the client's property limits may use an area twenty-five feet (25') wide and immediately adjacent to the easement, however, clearing within the working area shall be limited to brush; no trees shall be removed. The use of any additional area for construction operations, haul road, material storage, equipment and personnel parking and vehicle traffic is expressly prohibited without written approval from the Owner and/or Engineer specifying the locations and permitted use.
- Street Staking - Construction staking shall consist of a single line of hubs at 100-foot common intervals on the water main side of the street and at 50-foot intervals on curves, PC's and PT's, on both sides of the street. All hubs shall be set at five feet (5') outside the street ROW. The line of hubs shall also be used for water main construction. In addition, the location of blow-offs and Fire hydrants will be staked on this line.
- Sanitary Sewer Staking - Construction stakes will consist of a single line of offset hubs spaced at 100-foot common intervals, at manhole locations and at other special features; with guard stakes showing the stationing and the offset.
- Water Staking - See Street Staking. Front property iron pins will be set after street subgrade and parkways have been graded. A wooden stake indicating the adjacent lots shall be placed at each property corner pin. These iron pins shall be used for installation of service lines and meter boxes. The Contractor is responsible for not disturbing these iron pins.
- Drain Staking - Construction stakes will consist of a single line of offset hubs spaced at 50-foot common intervals, at PI's at beginning and end of transitions, at manhole locations and at other special features; set flush with the ground, located along one right-of-way or street line, or offset as necessary, with guard stakes showing the station and the offset. Inlets and other structures will be staked separately.
- Utility Staking - Upon receipt of the CPS's construction design, the designated lot pins shall be set. A wooden stake indicating the adjacent lots shall be placed at each property corner pin. CPS shall utilize these pins for their construction.
- Each of these staking bullets mentioned above are to be staked in one trip to the site. Separate staking dates due to contractor request will result in additional services to be charged to the contractor by

the owner. The contractor is to submit any modifications to the above-noted staking terms in writing along with the bid proposal.

27.5 Unless otherwise provided or ordered, all inspections will be performed by an authorized representative of the authorities having jurisdiction over the work, referred to in these Specifications as the "Inspector" who will exercise authority and function in the following respects:

- Review laboratory, mill and shop tests of materials and equipment for compliance with the Plans and Specifications.
- General supervision and administration of the authorized construction and review of all work performed for compliance with Plans and Specifications.
- Accept the completed work for the authority having jurisdiction over the work.
- The Inspector shall have the authority to stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract. The Inspector shall also have the authority to reject all work and materials which do not conform to the Contract. The Contractor shall give the Inspector timely notice of the readiness for inspection of all work requiring inspection. If any underground work is performed without approval or consent of the Inspector, it shall be uncovered for inspection and properly restored at the Contractor's expense.

27.6 Cude Engineers will not inspect conduit locations and/or depths for CPS, AT&T or Spectrum/Charter infrastructure.

28. Contractor Responsibilities:

28.1 Contractor will be responsible for coordinating and scheduling all required meetings and inspections as needed. A minimum of 72 hours notice must be given to the Engineer for any requested site visits. Any and all costs for re-testing of sewer and water facilities due to failure to meet specifications or lack of preparedness will be paid by the Contractor.

28.2 Re-staking of stakes set by Engineer will be charged to the Contractor by the Owner.

28.3 The location and depths of existing utilities shown on the plans were placed on the plans from the best available information from various sources. The Contractor is required to verify the location and depth, prior to construction, of all utilities shown on the plans. The Contractor's attention is hereby specifically directed to the information regarding the existing utility structures, lines and mains which are known to exist and may be encountered within and adjacent to the limits of the work covered by this contract. The existence and location of the underground utilities indicated on the Plans are taken from the best records available 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 maintenance and protection of, existing utilities which cross proposed construction. The cost of temporarily relocating utilities for the convenience of the Contractor shall be paid by the Contractor. In instances where gas or water mains are exposed during the course of construction, the purveyor shall be notified prior to backfilling operations in order that protective coatings on mains may be inspected or repaired. It shall be the responsibility of the Contractor to determine the exact location of the existing utilities which cross proposed construction. It is the Contractor's responsibility to excavate bridging, if necessary, during construction, so as to maintain continuous service. It shall be his responsibility to backfill around the utility facility and to complete construction so as to leave the line firmly and securely bedded in its original position. In areas where utilities near the construction area would be damaged by soil movement, slips or cave-ins, the

Contractor shall take all precautions to protect such utilities from damage and the Contractor shall be fully responsible for and shall pay for the repair of such damage without additional cost to the Owner or the purveyor.

28.4 It shall be the Contractor's responsibility to perform a final "site clean" after construction activity has ceased and obtained all final acceptances. The Contractor will be responsible for hauling off and disposing of all infrastructure construction related debris, regardless of origin.

28.5 The responsibility shall be upon the Contractor to provide and maintain at his own expense an adequate supply of water for his use for construction and domestic consumption. Any connections and piping that the Contractor deems necessary shall be installed at his expense and at locations approved by the Water Purveyor. Before final acceptance, all temporary connections and piping installed shall be removed in a manner satisfactory to the Engineer.

28.6 All electric current required by the Contractor shall be furnished at his own expense. All necessary meters, switches, connections and wiring shall be installed at his expense and at locations approved by the Electric Company. Before final acceptance, all meters, switches, connections and wiring installed by the Contractor shall be removed in a manner satisfactory to the Engineer.

28.7 Contractor shall coordinate with Owner for parking and placement of all materials and equipment. Owner will not be responsible for any damaged, stolen or vandalized equipment, vehicles, etc.

28.8 Only those trees designated by the Engineer will be removed by the Contractor during construction operations. The Contractor shall be required to lay out all proposed improvements and notify the Engineer prior to any tree removal necessary for the execution of work. Trees which are intended to remain, and which are damaged beyond repair or removed, shall be replaced by the Contractor at no extra cost. Trees shall be trimmed and when doing so will avoid removal or damage. Trimmed or damaged trees shall be treated and repaired by persons with experience in this specialty and who are approved by the Engineer. This work is incidental to construction. (No separate pay item.) In the area where excavation or construction occurs within two feet of the canopy of a tree to be saved, the Contractor shall saw cut the edge of the excavation. This will allow for a clean cut of the tree roots and enable the Contractor to excavate in the proximity of trees with minimal damage to the root system. Contact the Engineer if in doubt where to saw cut. This work is incidental to construction. (No separate pay item.)

28.9 Contractor shall notify owner/Engineer if any evidence of ground water is present during any phase of the construction process.

28.10 Contractor is responsible for installing and maintaining the erosion and sedimentation controls as designed and shall inspect the controls weekly (7 days) and after every significant rainfall to ensure significant disturbance to the structure has not occurred. Sediment deposited after a significant rainfall shall be removed and placed in designated soil disposal area. Contractor to provide Owner with one complete set of all SW3P inspection reports, including updates and modifications, prior to receiving final payment for project. Contractor is also responsible for replacing SW3P measures if damaged during construction. Contractor must keep and maintain a copy of the Storm Water Pollution Prevention Plan (SW3P) on site and readily available for authorities.

28.11 Excavated material that is free of organic matter and other deleterious substances may be disposed on-site, as approved by Owner. Said material will be utilized as fill material for lots and easements as per the Grading Plan and compacted to meet 79G requirements with 95% Standard Density using ASTM 698 or TEX-114E. No fill shall be placed within natural lows unless indicated on grading plan. Fills in lot areas required compaction testing for every twelve (12") inch lift and fills greater than one foot deep within building pad areas require compaction testing for every six (6") inch lift.

28.12 Contractor shall coordinate with the Owner's choice of geotechnical testing lab to schedule all geotechnical and compaction testing.

28.13 The Owner will pay for all geotechnical testing required for verification of conformance with the project specifications as needed for acceptances and future permitting for uses determined by the Owner. Any and all costs for re-testing due to failure to meet specifications or lack of preparedness will be paid by the Contractor.

28.14 Contractor will be required to coordinate work with the utility companies that will be installing electric, telephone and TV. Contractor is responsible for coordinating with utility companies to mark existing buried utilities regardless of construction plan depiction plan, error or omission that may be affected by construction. The Contractor will be responsible to repair damaged utilities due to construction. It is the sole responsibility of the contractor to identify all potential conflicts between existing and proposed facilities.

28.15 Contractor shall coordinate with the Owner for placement of private conduit.

28.16 Contractor shall be responsible for periodic sweeping of existing streets adjacent to the site to insure they are free from silt and debris. It shall be the Contractors responsibility to perform a final "site clean" after construction activity has ceased. The Contractor will be responsible for hauling off and disposing of all infrastructure construction related debris, regardless of origin.

28.17 Contractor agrees that it will, as part of the award of this contract, obtain and provide to Owner all interim and final field inspection approvals, all interim and final completion approvals or certificate by governing utility and governmental authorities in writing. The applicable warranty period shall follow required governmental requirements for the jurisdiction the project is located in. Contractor agrees to provide plan of record documents within 30 days of substantial completion of project.

28.18 Contractor shall submit a letter to the Engineer and Owner prior to acceptance of infrastructure by all jurisdictional entities, that certifies the final grading of the lots is within 0.25' of the surface file provided by the Engineer. In addition, all spot elevations shown on the grading plan must be certified that the grade is within 0.1'. The Owner reserves the right to perform an as-built topographic survey to confirm such certification at or near substantial grading completion of the project. If errors or discrepancies are found, the Contractor shall be responsible for correcting grades at their own expense. The Contractor will also be responsible for additional as-built topographic survey costs incurred by the Owner for corrections to a miss on grades.

28.19 Contractor is responsible for the hydromulch (soil, seeding, or sodding and watering) of all earthen drainage channels, detention ponds, and on-site and off-lot grading. 85% of channel surface must have established vegetation prior to acceptance of the channel by the City of San Antonio and Bexar County. Hydromulch pay item to include soil, seeding, or sodding and watering for the time period needed to achieve 85% vegetation.

28.20 Contractor to haul excess material to a future unit within the Tres Laurels Subdivision. Contractor shall coordinate with owner/Engineer of location of excess material to be placed.

BID PROPOSAL

Date:_____

Bid of _____
(Legal Name of Bidder – Company)

[ ] an individual proprietorship

[ ] a corporation organized and existing under the laws of _____

[ ] a partnership consisting of _____

_____

[ ] a joint venture

[ ] other _____

FOR:

Tres Laurels 4B

STREETS, DRAINAGE, WATER & WASTEWATER CONSTRUCTION

TO:

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD.
100 NE Loop 410, Suite 1155
San Antonio, TX 78216

PROPOSAL BIDDING SHEET

Tres Laurels 4B

STREETS, DRAINAGE, WATER & WASTEWATER CONSTRUCTION

Gentlemen:

Pursuant to the foregoing Invitation and Instructions to Bidders, the undersigned bidder hereby proposes to do all the work for the unit prices bid to furnish all necessary superintendence, labor, machine, equipment, tools, materials, insurance and miscellaneous items, to complete all work according to the bids, as provided in the construction plan and contract documents for the **CONSTRUCTION OF TRES LAURELS 4B, STREETS, DRAINS, WATER AND WASTEWATER UTILITIES** and clean up the site to the satisfaction of the Owner/Engineer, and bind himself on acceptance of this proposal to execute a contract and bonds for completing said project within the time stated for the following prices, to wit:

Tres Laurels 4B

STREETS, DRAINAGE, WATER & WASTEWATER CONSTRUCTION

ACKNOWLEDGMENT OF RECEIPT OF ADDENDUM

ADDENDUM NO. 1 _____
Signature Date

ADDENDUM NO. 2 _____
Signature Date

ADDENDUM NO. 3 _____
Signature Date

ADDENDUM NO. 4 _____
Signature Date

ADDENDUM NO. 5 _____
Signature Date

ADDENDUM NO. 6 _____
Signature Date

BID FORM – UNIT 4B

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)

8/20/2025
Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B

BIDDER'S NAME: _____

BID SUMMARY

SEDIMENTATION AND EROSION CONTROL	$ -
LOT GRADING IMPROVEMENTS	$ -
DRAINAGE IMPROVEMENTS	$ -
STREET IMPROVEMENTS	$ -
WATER IMPROVEMENTS	$ -
SANITARY SEWER IMPROVEMENTS	$ -
MISCELLANEOUS IMPROVEMENTS	$ -
TOTAL BASE BID:	$ -

No shrinkage or swelling facor is accounted for in the engineering excavation and embankment quantities. Contractor to adjust unit price as he deems necessary to account for shrinkage and swelling.

* Includes Bid Bond, Warranty Assignments or Bonds, Per City of San Antonio, and SAWS Requirements

** Contractor is to perform an independent quantity take-off prior to signing the contract, to verify that the quantities given in the bid proposal are within three percent (3%) of the actual quantities required to complete the construction represented by the plans and specifications. If any quantity is found to be in error of more than three percent (3%), the Contractor shall notify the Engineer forty-eight (48) hours prior to signing the contract.

*** Bids shall include all Unit Price costs as indicated by the Contract Documents and Bid Form. The bid price submitted by the Contractor shall be the sum of the unit prices times the estimated quantity of each item shown in the bid form. However, the Contractor shall guarantee himself of the accuracy of the quantities shown in the bid form. The quantities shown are estimates only and indicate only the magnitude of the project and a basis for bid comparison. Any discrepancies in quantity or work necessary to fulfill the intent of the plans shall be included, whether a bid item is included or not. Any work required for which a bid item is not shown shall be considered subsidiary to other work items.

Bidders Initials _____
Date _____

8/20/2025

Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B
SEDIMENTATION & EROSION CONTROL

NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT PRICES	COST
Phase 4B					
1.	Stabilized Construction Entrance	EA	1	$ -	$ -
2.	Concrete Washout Pit	EA	1	$ -	$ -
3.	Silt Fence (Phase 1)	LF	3406	$ -	$ -
4.	Silt Fence (Phase 2)	LF	8180	$ -	$ -
5.	Inlet Protection	LF	50	$ -	$ -
6.	Rock Berm	LF	45	$ -	$ -
				TOTAL	$ -

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*** Commence of Construction:

1. Initial project clearing will need to be limited to the locations of the proposed temporary SWP3 Best Management Practices (BMP) designed by the engineer. These BMPs may include, but are not limited to:
Stabilized Construction Exit(s), Silt Fence, Discharge Point Rock Berms/Check Dams, Trash containment, Temporary Sediment Basins (if applicable), Demarcation of protected site features for exapmle; Wetlands, Environmental Buffers, Caves or Solution Features, and Habitats,
2. Prior to commencement of additional clearing or earth disturbing activities, the proposed BMPs will need to be installed by the Contractor and inspected by a Lennar Representative. Contractor must provide at minimum, 48-hours of notice to Lennar when the BMPs are scheduled to be installed and completed. The Lennar Representative will coordinate the Land Development Manager to release the project for construction.
3. When a Temporary Sediment Basin is required for the project, limited clearing of the proposed basin location and any material borrow areas to construct the Temporary Sediment Basin may occur during the initial BMP installation period. The Temporary Sediment Basin must be completely constructed to Engineer's design. This may include the following; Construction of the dewatering structure (Riser Pipe or Fair Cloth Skimmer and pump), Construction of the Emergency Overflow Structure, Installation of a sediment depth marker. Note-Once accessible to appropriate equipment, the only the Temporary Sediment Basin berms/slopes shall be temporarily stabilized.
4. General Contractor is to maintain all pollution control measures in effective operating condition throughout the contract period to the extent achievable. To ensure BMPs are operating effectively, and in accordance with the Construction General Permit, Lennar will provide regular and if applicable, post-rain event BMP inspections and inspection reports. The General Contractor will be provided an electronic copy of the BMP inspection report via email. weekly regarding issues with BMPs at the project through the Lennar SWP3 Inspection process. Items noted in the BMP Inspection report must be addressed by the General Contractor as soon as possible, and within 7 calendar days. General Contractor shall provide documentation to the assigned Lennar Land Development Project Manager to include:
a. Actions taken in response to the BMP inspection report and date(s) the actions were completed or,
b. Statement of extenuating circumstance as to why an item could not be completed within the 7-day timeframe and proposed scheduled date of completion.
5. Contractor to maintain Spill Response Supplies/Kit at the project location while actively working onsite.
6. When dewatering activities disccharge into onsite creeks or rivers, or discharge outside the limits of construction, daily dewatering inspections must be documented in accordance with the 03.05.2023 TCEQ Construction General Permit. Daily report must be sent to Lennar within 24-hours.

`

Bidders Initials _____

Date _____

8/20/2025

Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B
LOT GRADING

NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT PRICES	COST
Phase 4B					
1.	Overall Clearing & Grubbing (Disturbed Area)	AC	29.9	$ -	$ -
2.	Overall Excavation	CY	4,813	$ -	$ -
3.	Overall Embankment*	CY	26,370	$ -	$ -
				TOTAL	$ -

* The contractor is to field verify and survey the existing site topography.

** Contractor to field verify and survey the existing site topography and submit information to engineer prior to submitting final bid for verification. No shrinkage or swelling factor is accounted for in the engineering excavation and embankment quantities. Contractor to adjust unit price as he deems necessary to account for shrinkage and swelling.

*** All final lot grading shall be compacted in accordance with notes on the Lot Grading Plan, Sheets C2.00

**** Contractor is to perform an independent quantity take-off prior to signing the contract, to verify that the quantities given in the bid proposal are within three percent (3%) of the actual quantities required to complete the construction represented by the plans and specifications. If any quantity is found to be in error of more than three percent (3%), the Contractor shall notify the Engineer forty-eight (48) hours prior to signing the contract.

***** Bids shall include all Unit Price costs as indicated by the Contract Documents and Bid Form. The bid price submitted by the Contractor shall be the sum of the unit prices times the estimated quantity of each item shown in the bid form. However, the Contractor shall guarantee himself of the accuracy of the quantities shown in the bid form. The quantities shown are estimates only and indicate only the magnitude of the project and a basis for bid comparison. Any discrepancies in quantity or work necessary to fulfill the intent of the plans shall be included, whether a bid item is included or not. Any work required for which a bid item is not shown shall be considered subsidiary to other work items.

Bidders Initials _____

Date _____

10/15/2025

Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B
STREET IMPROVEMENTS

18292

NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT PRICES	COST
Phase 4B					
1	Mobilization	LS	1	$ -	$ -
2	Street Excavation	CY	8,300	$ -	$ -
3	Street Embankment (Final)(Dens. Cont.)(Type B)	CY	3,000	$ -	$ -
4	Contractor to remove existing header curb	LF	94	$ -	$ -
5	Contractor to Remove Existing Guard Posts	EA	25	$ -	$ -
6	2" HMAC Type "D"	SY	14,895	$ -	$ -
7	2" HMAC Type "C"	SY	828	$ -	$ -
8	14.50" Flexible Base (Compacted Depth)	SY	14,067	$ -	$ -
9	23" Flexible Base (Compacted Depth)	SY	828	$ -	$ -
10	6" Lime Treated Subgrade (32 LB/SY)	SY	3,306	$ -	$ -
11	Concrete Curb	LF	8,180	$ -	$ -
12	Concrete Sidewalk	SY	36	$ -	$ -
13	R1-1 STOP (30")(High Intensity)	EA	6	$ -	$ -
14	W16-7 Diagonal Arrow Sign (30" x 18") (High Intensity)	EA	4	$ -	$ -
15	W11A-2 Ped Crossing (30" x 30") (High Intensity)	EA	4	$ -	$ -
16	9" [229mm] Street Name, Block Number (VARIES x9")(High Intesity)	EA	16	$ -	$ -
17	W14-P Dead End Street Marker (36" x 9") (High Intensity)	EA	1	$ -	$ -
18	Type II Blue Raised Pavement Marker	EA	7	$ -	$ -
				TOTAL	$ -

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Bidders Initials _____

Date _____

8/20/2025

Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B
DRAINAGE IMPROVEMENTS

NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT PRICES	COST
Phase 4B					
1	Channel Excavation	CY	1,476	$ -	$ -
2	Type II Inlet (Complete) (20 FT)	EA	2	$ -	$ -
3	36" H.D.P.E.	LF	262	$ -	$ -
4	Concrete Rip-Rap (5" Thick)	SY	43	$ -	$ -
5	Revegetation (Disturbed Open Space)	SY	2,298	$ -	$ -
6	8"-12" Rock Rubble	SY	50	$ -	$ -
7	Concrete Collars	EA	2	$ -	$ -
8	Baffle Blocks	CY	1	$ -	$ -
				TOTAL	$ -

* Contractor is to perform an independent quantity take-off prior to signing the contract, to verify that the quantities given in the bid proposal are within three percent (3%) of the actual quantities required to complete the construction represented by the plans and specifications. If any quantity is found to be in error of more than three percent (3%), the Contractor shall notify the Engineer forty-eight (48) hours prior to signing the contract.

** Bids shall include all Unit Price costs as indicated by the Contract Documents and Bid Form. The bid price submitted by the Contractor shall be the sum of the unit prices times the estimated quantity of each item shown in the bid form. However, the Contractor shall guarantee himself of the accuracy of the quantities shown in the bid form. The quantities shown are estimates only and indicate only the magnitude of the project and a basis for bid comparison. Any discrepancies in quantity or work necessary to fulfill the intent of the plans shall be included, whether a bid item is included or not. Any work required for which a bid item is not shown shall be considered subsidiary to other work items.

Bidders Initials _____

Date _____

10/23/2025

Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B
WATER IMPROVEMENTS

NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT PRICES	COST
Phase 4B					
1	Remove Existing Blowoff & Tie To Existing 8" Main	EA	4	$ -	$ -
2	Trench Excavation Safety Protection	LF	5086	$ -	$ -
3	8" C-900, DR18 Class 235 PVC Pipe	LF	4794	$ -	$ -
4	2" HDPE, DR9	LF	292	$ -	$ -
5	Ductile Iron Fittings	TON	2.24	$ -	$ -
6	8" Gate Valve & Boxes, M.J.	EA	22	$ -	$ -
7	3/4" Short Single Service with 5/8" meter	EA	108	$ -	$ -
8	3/4" Long Single Service with 5/8" meter	EA	63	$ -	$ -
9	3/4" Irrigation Service with 5/8" meter	EA	1	$ -	$ -
10	Meter Boxes	EA	172	$ -	$ -
11	Fire Hydrant Assembly	EA	8	$ -	$ -
12	24" Steel Casing	LF	26	$ -	$ -
13	2" Blowoffs (Perm.)	EA	4	$ -	$ -
14	2" Blowoffs (Temp.)	EA	4	$ -	$ -
15	Hydrostatic Testing	EA	1	$ -	$ -
				TOTAL	$ -

* Cast Iron fittings weights were determined by mechanical joint compact

** Service cost shall include the cost of the 4" PVC Sleeve

*** Contractor is to perform an independent quantity take-off prior to signing the contract, to verify that the quantities given in the bid proposal are within three percent (3%) of the actual quantities required to complete the construction represented by the plans and specifications. If any quantity is found to be in error of more than three percent (3%), the Contractor shall notify the Engineer forty-eight (48) hours prior to signing the contract.

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Bidders Initials _____

Date _____

8/20/2025

Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B
SANITARY SEWER IMPROVEMENTS

NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT PRICES	COST
Phase 4B					
1	8" SDR Sanitary Sewer Pipe				
	8" SDR 26 (6'-10')	LF	421	$ -	$ -
	8" SDR 26 (10'-14')	LF	3,628	$ -	$ -
	8" SDR 26 (14'-18')	LF	224	$ -	$ -
2	Standard Manhole	EA	15	$ -	$ -
3	Connect to Existing Manhole and Reconstruct per SAWS Specs	EA	4	$ -	$ -
4	Extra Depth Manhole	VF	81	$ -	$ -
5	Vertical Stacks	LF	3	$ -	$ -
6	6" Sanitary Sewer Lateral (SDR-26)	LF	6,494	$ -	$ -
7	WYE	EA	171	$ -	$ -
8	Trench Excavation Protection	LF	4,273	$ -	$ -
9	TV / Video Sewer Line	LF	4,273	$ -	$ -
				TOTAL	$ -

* Unit cost of 6" Sanitary Sewer Lateral shall include trench excavation protection.

** Note: Refer quantities to the current San Antonio Water System (SAWS) Standard Specifications for Construction. SAWS approval is required. Contractor shall provide proof of trench compaction test results as tested by a Geotechnical Engineer, to comply with SAWS. Cost of first time testing to be paid by owner. Cost of required retesting shall be paid by Contractor.

*** Contractor is to perform an independent quantity take-off prior to signing the contract, to verify that the quantities given in the bid proposal are within three percent (3%) of the actual quantities required to complete the construction represented by the plans and specifications. If any quantity is found to be in error of more than three percent (3%), the Contractor shall notify the Engineer forty-eight (48) hours prior to signing the contract.

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Bidders Initials _____

Date _____

10/23/2025

Job No. 3050.019

BID PROPOSAL SCHEDULE
TRES LAURELS SUBDIVISION PHASE 4B
MISCELLANEOUS IMPROVEMENTS

NO.	DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES*	UNIT PRICES	COST
Phase 4B					
1	Revegetation (Disturbed Area Within Lots)	SY	88,472	$ -	$ -
2	Primary Crossing PVC Sleeve Bundle (3-6" SCH 80 & 2-4" SCH 40)	LF	398	$ -	$ -
3	Secondary Crossing PVC Sleeve Bundle (1-6" SCH 80 & 2-4" SCH 40)	LF	1,724	$ -	$ -
4	Centric PVC Sleeve (1-4" SCH 40)	LF	991	$ -	$ -
5	Import****	CY	14,781	$ -	$ -
				TOTAL	$ -

* Quantity provided is just to acquire Unit Price. True Quanitites will be provided once final CPS Design is complete.

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**** CLOMR grading completed by others, contractor to verify grades prior to commencing construction.

Bidders Initials _____

Date _____

GEOTECHNICAL REPORT
(InTEC **Project No.** S251271-**R**1)

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)

Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

InTEC Project No. S251271-R1
September 26, 2025

1922 Dry Creek Way, Suite 101
San Antonio, Texas 78259

Integrated Testing and Engineering Company of San Antonio, L.P.
12028 Radium, San Antonio, Texas 78216—Phone: (210) 525 9033—Fax: (210) 525 9032—www.InTEC-SA.com

Integrated Testing and Engineering Company of San Antonio, L.P.
Geotechnical & Environmental Engineering • Construction Services • Geologic Assessment

September 26, 2025

Lennar Homes

1922 Dry Creek Way, Suite 101

San Antonio, Texas 78259

Attention: **Mr. Richard Mott, P.E.**

Email: richard.mott@lennar.com

Re: Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

InTEC Project No. S251271-R1

Ladies & Gentlemen:

Integrated Testing and Engineering Company of San Antonio (InTEC) has completed a **subsurface exploration and pavement thickness evaluation report** at the above referenced project site. The results of the exploration are presented in this report.

We appreciate and wish to thank you for the opportunity to be of service to you on this project. If we can be of additional assistance during the foundations explorations, and materials testing-quality control phase of construction, please call us.

Sincerely,

InTEC of San Antonio

STATE OF TEXAS
MURALI SUBRAMANIAM
102417
LICENSED PROFESSIONAL ENGINEER

09/26/2025

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Vice President

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EXECUTIVE SUMMARY

The soil conditions at the location of the **proposed new streets at Tres Laurels, Units 1B, 4B, 5A, 5B in San Antonio, Texas** were obtained from **excavating 15 test pits to a depth of 6 to 10 feet.** Laboratory tests were performed on selected specimens to evaluate the engineering characteristics of various soil strata encountered in the test pits.

- The subsurface soils at the test pit locations primarily consist of brown clays, tan clays, tan calcareous clays, and marl with caliche and gravel.

- The results of our exploration, laboratory testing, and engineering evaluation indicate that the underlying soils consist predominantly of **moderately plastic to highly plastic clays**, with significant potential for shrink-swell behavior due to changes in moisture content.

- **Estimated potential vertical rise (PVR)** using TxDOT Test Method TEX-124-E ranges from **2 to 4 ½ inches** at the current site grades. These values are based on standard modeling assumptions and **should not be interpreted as exact predictions of future movement**.

- The proposed pavements at this site may be supported by flexible pavement sections.

- **Cut and fill information is not available for our review at this time.** Based on the soils encountered in the test pits, Clay or Calcareous Clay / Marl subgrades are anticipated.

- At the time of construction, if the final street subgrade consists of material other than encountered in our test pits, the recommendations may have to be revised.

- As requested, pavement section recommendations for Local Type streets are presented.

- Ground water was not encountered in the test pits at the time of excavation.

- The performance of the recommended pavement sections depends on **proper drainage, moisture control, construction practices**, and long-term **post-construction maintenance**. Shrink Swell related movements should be anticipated due to natural variability in subsurface conditions and soil behavior.

This summary is intended for general guidance only. **Detailed descriptions, analysis, assumptions, and recommendations** are included in the full report and should be reviewed in their entirety. The contents of this report are based on **site conditions at the time of exploration**, and **any deviation from those conditions may require reevaluation** by the geotechnical engineer.

Summary Table A – Input Parameters used in Asphalt Pavement Section Calculation

	Local Type A (no bus traffic)	**Local Type A** (with bus traffic)	**Local B**
ESAL	100,000	1,000,000	2,000,000
Reliability Level	R-70	R-70	R-90
Initial and Terminal Serviceability	4.2 and 2.0	4.2 and 2.0	4.2 and 2.0
Standard Deviation	0.45	0.45	0.45
Service Life	20 years	20 years	20 years
If heavy truck traffic is anticipated, please contact InTEC with anticipated traffic data for revised recommendations.			

Summary Table B – Minimum Flexible Pavement Recommendations – CBR = 2.0

Street Classification	Asphaltic Concrete			Aggregate Base, Inches	Geogrid	Treated Subgrade, Inches	Structural Number
	Type D, inches	Type C, inches	Type B, inches				
Local Type A (no bus traffic)	3.00	-	-	11.50	No	6" LT	2.93
	3.00	-	-	9.50	Yes	6" LT	2.93
	2.00	-	-	14.50	No	6" LT	2.91
	2.00	-	-	12.00	Yes	6" LT	2.92
	2.00	-	6.00	-	No	6" LT	2.92
Local Type A (with bus traffic)	3.00	-	-	19.50	No	6" LT	4.05
	3.00	-	-	16.50	Yes	6" LT	4.12
	3.00	-	8.50	-	No	6" LT	4.21
Local Type B	2.00	2.00	-	23.00	No	6" LT	4.98
	2.00	2.00	-	19.00	Yes	6" LT	4.99
	4.00	-	9.50	-	No	6" LT	4.99

Design Notes:

- The results of our laboratory testing and engineering evaluation indicate that the underlying shallow clays are **moderately plastic to highly plastic in character.** Potential vertical movement on the order of **2 to 4 ½ inches** is estimated at existing grade elevation.
- Clay or Calcareous Clay / Marl subgrades are anticipated. Pavement section recommendations are based on clay subgrade, with a Design CBR value of 2.0.
- Input parameters are shown in Table No. 3 (Summary Table A). Please call us to provide pavement recommendations, if needed, for different input values.

Subgrade Notes (*):

- Cut and fill data are not available at this time.
- Fill used to raise the grade in clay areas:
    - approved fill material free should have a minimum CBR value of 2.0 and a maximum Plasticity Index value of 45 (on site material). Lime application rates should be re-evaluated and tested for sulfate content prior to use of the fill material.
    - The fill material should be approved by the geotechnical engineer, free of deleterious material, and the gravel size should not exceed 3 inches in size. The material should be placed and compacted as per applicable city / county guidelines.
    - The subgrade, prior to placement of fill, should be proof rolled to identify weak areas. Any identified weak areas should be recompacted.
- Fill used to raise the grade in calcareous clay / marl areas:
    - Existing clays should be removed to marl / limestone stratum prior to placement of fill.

- approved fill material free should have a minimum CBR value of 5.0 and a maximum Plasticity Index value of 20.

- Based on the thickness of the clays encountered in the test pits, we anticipate the final pavement subgrade Plasticity Index value to be either less than or equal to 20 or greater than 20.

- **If the subgrade Plasticity Index values are less than or equal to 20, as per City of San Antonio or Bexar County requirements, subgrade TREATMENT is not needed.**

- Subgrade should be **TREATED** using lime or cement. Lime application rates are presented here. Please contact InTEC for cement application rates.
  - Treated to a depth of 6 inches using 6 percent lime content.
  - The subgrade soils should be tested for soil sulfate content prior to lime application. If the soil sulfate content is higher than 3000 ppm, an alternate procedure will be needed.
  - Lime application rate of **32 lbs per sq yard for 6-inch depth** of treatment is recommended.
  - Cement may be used in lieu of lime. Cement application rate should be determined at the time of construction.

General Notes:

- Input parameters are shown in Table No. 3 (Summary Table A). Please call us to provide pavement recommendations, if needed, for different input values. If repetitive truck or heavy truck traffic is anticipated, please contact us for revised pavement recommendations.

- Pavement section recommendations are based on a subgrade CBR value of 2.0. The pavement recommendations are not based on the shrink / swell characteristics of the underlying soils. The pavement can experience cracking and deformation due to shrinkage and swelling characteristics of the soils as described in the *Vertical Movements* section of this report. Use of geogrid helps reduce shrink / swell related pavement distress.

- Significant pavement distress has been observed during construction phase with the combination of construction traffic and irrigation water / rain water getting underneath the asphalt.

- If water is allowed to get underneath the asphalt / concrete or if moisture content of the base or subgrade changes significantly, then pavement distress will occur. Moisture penetration underneath the asphalt pavement surface should be reduced. One of the following methods should be used:
  - Deeper curbs; such as curbs extending a minimum of 3 inches into subgrade.
  - Compacted clays backfilled against the curbs.

- In addition, water should not be allowed to get underneath the pavement section at the time of home construction.

Geogrid:

- One layer of geogrid, Tensar Triax TX130 or better, installed on top of treated subgrade as per manufacturer's guidelines.

Subgrade Verification:

- The final pavement subgrade should be verified and delineated as needed for different subgrade conditions by InTEC.

Summary Table C – Summary of Pavement Materials

Pavement Section	Material	Stabilization or Treatment	Thickness
Subgrade	Clays	Treatment - Sulfate content should be tested prior to treatment	As recommended in pavement options (6 inches)
Base	TxDOT Item 247 A1-2	-	As recommended in pavement options (maximum of 6 inches per lift)
Asphalt	Type B, C, D	-	As recommended in pavement options
Geogrid	Tensar Triax TX130	One layer	As per manufacturer's recommendations

See report for more details

Summary Table D – Applicable procedures and minimum density and moisture percentages

All applicable city or county guidelines should be used. The following City of San Antonio Standard Specifications for Construction, June 2008, may be followed if specific guidelines are not available. Some of the relevant procedures are shown below.

Pavement Material	Procedure *	Density and Moisture Control
Subgrade fill (maximum 6 inch thick lifts)	Item 107	As per construction specifications
Treated Subgrade (6 inch thick lift)	Item 108- lime	As per construction specifications
Aggregate Base TxDOT Item 247 A1-2 (maximum 6 inch thick lift)	Item 200	As per construction specifications
Asphalt HMAC Type B, C, D	Item 205, 206	As per construction specifications
Geogrid	Manufacturer's Guidelines	-

(*) City of San Antonio Standard Specifications for Construction, June 2008

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INTRODUCTION

General

This report presents the results of our **subsurface exploration and pavement thickness evaluation** for the **proposed new streets at Tres Laurels, Units 1B, 4B, 5A, 5B in San Antonio, Texas.** This project was authorized by **Mr. Richard Mott, P.E.**

Purpose and Scope of Services

The purpose of our subsurface investigation was to evaluate the site's subsurface and ground water conditions and provide pavement thickness recommendations for the planning and development phases of the project. Our scope of services includes the following:

1) excavating and sampling of 15 test pits – to depths of 6 to 10 feet;

2) evaluation of the in-place conditions of the subsurface soils through field penetration tests;

3) observing the ground water conditions during drilling operations;

4) performing laboratory tests such as Atterberg limits, California Bearing Ratio (C.B.R.), Lime Series, and Moisture content tests;

5) review and evaluation of the field and laboratory test programs during their execution with modifications of these programs, when necessary, to adjust to subsurface conditions revealed by them;

6) compilation, generalization and analyses of the field and laboratory data in relation to the project requirements;

7) estimate of potential vertical movements;

8) preparation of pavement guidelines;

9) preparation of a written geotechnical engineering report for use by the members of the design team in their preparation of construction, contract, and specifications documents.

The Scope of Services **did not include slope stability or any environmental assessment** for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site. Any statements in this report or on the Test Pit Logs regarding odors, colors or unusual or suspicious items or conditions are strictly for the information of the client.

Project Description

The proposed project involves the development of the new streets at Tres Laurels, Units 1B, 4B, 5A, 5B in San Antonio, Texas.

- The proposed pavement areas are anticipated to include Local type streets.
- Cut and fill information are not available for our use at this time.
- Clay or Calcareous Clay / Marl subgrades are anticipated.
- Review of the geologic map indicates the site is located within Kpg, Pecan Gap Chalk, and Kknm, Navarro Group and Marlbrook Marl, formations. The Bexar County Karst Map indicates the site is located within “Karst Zone 3” (areas that probably do not contain listed invertebrate karst species).

SUBSURFACE EXPLORATION

Scope

The field exploration to determine the engineering characteristics of the subsurface materials included a reconnaissance of the project site, excavating the test pits, and obtaining bulk samples.

Fifteen test pits were excavated at the approximate locations shown on the Test Pit Location Plan, Plate 1, included in the Illustration section of this report. These test pits were **excavated to depths of 6 to 10 feet below the presently existing ground surface**. Test pit locations were selected by the project geotechnical engineer and established in the field by the drilling crew using normal taping procedures. Test pits were excavated to recover samples from different depths.

Excavating and Sampling

The test pits were performed with a mini-excavator. Test Pit samples of the subsurface materials were obtained and the samples were identified according to test pit number and depth, encased in polyethylene plastic wrapping to protect against moisture loss, and transported to our laboratory in special containers.

Water Level Measurements

Ground water was not encountered in the test pits at the time of excavation. In relatively pervious soils, such as sandy soils, the indicated elevations are considered reliable ground water levels. In relatively impervious soils, the accurate determination of the ground water elevation may not be possible even after several days of observation. Seasonal variations, temperature and recent rainfall conditions may influence the levels of the ground water table and volumes of water will depend on the permeability of the soils.

Field Logs

A field log was prepared for each test pit. Each log contained information concerning the sampling method, samples attempted and recovered, indications of the presence of various materials such as silt, clay, gravel or sand and observations of ground water. It also contained an interpretation of subsurface conditions between samples. **Therefore, these logs included both factual and interpretive information.**

Presentation of the Data

The final logs represent our interpretation of **the contents of the field logs for the purpose delineated by our client.** The final logs are included on **Plates 2 thru 16** included in the Illustration section. A key to classification terms and symbols used on the logs is presented on **Plate 17.**

LABORATORY TESTING PROGRAM

Purpose

In addition to the field exploration, a supplemental laboratory testing program was conducted to determine additional **pertinent engineering characteristics** of the subsurface materials necessary in evaluating the soil parameters.

Laboratory Tests

All phases of the laboratory testing program were performed **in general accordance with the indicated applicable** ASTM Specifications as indicated in Table No. 1.

Table No. 1 – Laboratory Testing Procedures

Laboratory Test	Applicable Test Standard
Liquid Limit, Plastic Limit and Plasticity Index of the Soils	ASTM D 4318
Moisture Content	ASTM D 2216
California Bearing Ratio	ASTM D 1883
pH	ASTM D 6276

In the laboratory, each sample **was observed and classified by a geotechnical engineer.** As a part of this classification procedure, the natural water contents of selected specimens were determined. Liquid and plastic limit tests were performed on representative specimens to determine the plasticity characteristics of the different soil strata encountered.

Presentation of the Data

In summary, the tests presented were conducted in the laboratory to evaluate the engineering characteristics of the subsurface materials. The results of all these tests are presented on appropriate Test Pit Logs. These laboratory test results were used to classify the soils encountered generally according to the Unified Soil Classification System (ASTM D 2487).

GENERAL SUBSURFACE CONDITIONS

Soil Stratigraphy

The soils underlying the site may be grouped into **two generalized strata** with similar physical and engineering properties. The lines designating the interface between soil strata on the logs represent approximate boundaries. Transition between materials may be gradual. The soil stratigraphy information at the test pit locations are presented in **Test Pit Logs, Plates 2 thru 16.** The soil conditions in between test pits may vary across the site. We should be called upon at the time of construction to verify the soil conditions between our test pits.

The engineering characteristics of the underlying soils, based the results of the laboratory tests performed in selected samples, are summarized and presented in the following paragraphs.

Fill was encountered to an approximate depth of 1.5-ft in Test Pit TP-4. Fill depths are likely to vary across the site.

The underlying dark brown to brown clays, dark brown clays, tan and gray clays, tan silty clays, tan gravelly clays, and light tan calcareous clays to marl are moderately plastic to highly plastic with tested liquid limit values varying from 27 to 67 and plasticity index values ranging from 15 to 45.

The above description is of a generalized nature to highlight the major soil stratification features and soil characteristics. The Test Pit Logs should be consulted for specific information at each test pit location.

Soil stratigraphy may vary between test pit locations. If deviations from the noted subsurface conditions are encountered during construction, they should be brought to the attention of InTEC. We may revise the recommendations after evaluating the significance of the changed conditions.

Ground Water Observations

Ground water was not encountered in the test pits at the time of excavation. Short term field observations generally do not provide accurate ground water levels. The contractor should check the subsurface water conditions prior to any excavation activities. The low permeability of the soils would require several days or longer for ground water to enter and stabilize in the test pit holes. Ground water levels will fluctuate with seasonal climatic variations and changes in the land use.

It is not unusual to encounter shallow groundwater during or after periods of rainfall. The surface water tends to percolate down through the surface until it encounters a relatively impervious layer.

PAVEMENTS ON EXPANSIVE SOIL

General

There are many plastic clays that swell considerably when water is added to them and then shrink with the loss of water. Pavements constructed on these clays are subjected to large uplifting forces caused by the swelling.

In the characterization of a pavement site, two major factors that contribute to potential shrink-swell problems must be considered. Problems can arise if a) the soil has expansive and shrinkage properties and b) the environmental conditions that cause moisture changes to occur in the soil.

Evaluation of the Shrink-Swell Potential of the Soils

Subsurface sampling, laboratory testing and data analyses are used in the evaluation of the shrink-swell potential of the soils under the pavements.

The Mechanism of Swelling

The mechanism of swelling in expansive clays is complex and is influenced by a number of factors. Basically, expansion is a result of changes in the soil-water system that disturbs the internal stress equilibrium. Clay particles in general have negative electrical charges on their surfaces and positively charged ends. The negative charges are balanced by actions in the soil water and give rise to an electrical interparticle force field. In addition, adsorptive forces exist between the clay crystals and water molecules, and Van Der Waals surface forces exist between particles. Thus, there exists an internal electro-chemical force system that must be in equilibrium with the externally applied stresses and capillary tension in the soil water. If the soil water chemistry is changed either by changing the amount of water or the chemical composition, the interparticle force field will change. If the change in internal forces is not balanced by a corresponding change in the state of stress, the particle spacing will change so as to adjust the interparticle forces until equilibrium is reached. This change in particle spacing manifests itself as a shrinkage or swelling.

Initial Moisture Condition and Moisture Variation

Volume change in an expansive soil mass is the result of increases or decreases in water content. The initial moisture content influences the swell and shrink potential relative to possible limits, or ranges, in moisture content. Moisture content alone is useless as an indicator or predictor of shrink-swell potential. The

relationship of moisture content to limiting moisture contents such as the plastic limit and liquid limit must be known.

If the moisture content is below or near plastic limit, the soils have high potential to swell. It has been reported that expansive soils with liquidity index* in the range of 0.20 to 0.40 will tend to experience little additional swell.

The availability of water to an expansive soil profile is influenced by many environmental and manmade factors. Generally, the upper few feet of the profile are subjected to the widest ranges of moisture variation, and are least restrained against movement by overburden. This upper stratum of the profile is referred to as the active zone. Moisture variation in the active zone of a natural soil profile is affected by climatic cycles at the surface, and fluctuating groundwater levels at the lower moisture boundary. The surficial boundary moisture conditions are changed significantly simply by placing a barrier such as a building floor slab or pavement between the soil and atmospheric environment. Other obvious and direct causes of moisture variation result from altered drainage conditions or man-made sources of water, such as irrigation or leaky plumbing. The latter factors are difficult to quantify and incorporate into the analysis, but should be controlled to the extent possible for each situation. For example, proper drainage and attention to landscaping are simple means of minimizing moisture fluctuations near structures, and should always be taken into consideration.

Man Made Conditions That Can Be Altered

There are a number of factors that can influence whether a soil might shrink or swell and the magnitude of this movement. For the most part, either the owner or the designer has some control over whether the factor will be avoided altogether or if not avoided, the degree to which the factor will be allowed to influence the shrink-swell process.

Antecedent Rainfall Ratio This is a measure of the local climate and is defined as the total monthly rainfall for the month of and the month prior to laying the pavement divided by twice the average monthly rate measured for the period. The intent of this ratio is to give a relative measure of ground moisture conditions at the time the pavement is placed. Thus, if a pavement is placed at the end of a wet period, the pavement should be expected to experience some loss of support around the perimeter as the wet soils begin to dry out and shrink. The opposite effect could be

* LIQUIDITY INDEX = (NATURAL WATER CONTENT - PLASTIC LIMIT) / (LIQUID LIMIT - PLASTIC LIMIT)

anticipated if the pavement is placed at the end of an extended dry period; as the wet season occurs, uplift around the perimeter may occur as the soil at the edge of the slab pavement in moisture content.

Age of Pavement The length of time since the pavement was cast provides an indication of the type of swelling of the soil profile that can be expected to be found beneath the pavement.

Drainage This provides a measure of the slope of the ground surface with respect to available free surface water that may accumulate around the pavement. Most builders are aware of the importance of sloping the final grade of the soil away from the pavement so that rain water is not allowed to collect and pond against or adjacent to the pavement. If water were allowed to accumulate next to the pavement, it would provide an available source of free water to the expansive soil underlying the pavement. Similarly, surface water drainage patterns or swales must not be altered so that runoff is allowed to collect next to the pavement.

Pre-Construction Vegetation Large amount of vegetation existing on a site before construction may have desiccated the site to some degree, especially where large trees grew before clearing. Constructing over a desiccated soil can produce some dramatic instances of heave and associated structural distress and damage as it wets up.

Post-Construction Vegetation **The type, amount, and location of vegetation that has been allowed to grow since construction can cause localized desiccation. Planting trees or large shrubs near a building can result in loss of foundation support as the tree or shrub removes water from the soil and dries it out.** Conversely, the opposite effect can occur if flowerbeds or shrubs are planted next to the foundation and these beds are kept well-watered or flooded. This practice can result in swelling of the soil around the perimeter where the soil is kept wet.

Site Grading, Lot Slopes, and Earthwork Effects In addition to the environmental and man-made factors described above, the grading and earthwork operations performed during site development can significantly influence the potential for shrink-swell movement at any given lot.

Cut and Fill Conditions During site development, many residential lots are brought to design grade through cut and fill operations. Fill soils, if not properly compacted at the time of placement, may experience post-construction volume changes due to wetting, drying, or consolidation. When fill

soils overlay natural undisturbed expansive clays, the combination of differing material types and histories can create non-uniform movement potential across the building pad. Transition zones, where cut and fill areas meet within the foundation footprint, are particularly sensitive and may result in localized differential movement under changing moisture conditions.

Lot Slopes and Surface Water Drainage The slope of the lot also plays a role in the long-term performance of foundations on expansive soils. Sloped lots may result in preferential surface water runoff toward one side of the structure, increasing the risk of moisture accumulation and differential heave if drainage is not properly controlled. Additionally, on sloped sites underlain by expansive soils, lateral soil movement may occur over time due to creep and shrink-swell cycles. This movement is typically oriented downslope and may contribute to gradual lateral displacement of light foundation systems unless proper design measures are incorporated.

As with other moisture-related factors, careful attention to site grading, uniform pad preparation, and positive drainage away from structures are critical elements in mitigating the effects of expansive soils. Special consideration should be given to areas of deep fill, slope transitions, or where cut/fill differentials exist within the foundation footprint.

Utilities Underneath the Pavement The utilities such as sewer, water, electricity, gas, and communication lines are often installed underneath the streets. The sewer utility construction, for example, typically involves trenching to the desired depth, installing gravel a gravel bed underneath the sewer main, installing primary backfill (gravel), and placing back the secondary backfill (generally excavated soils). The secondary backfill material is compacted in lifts. In addition, sewer service lines run laterally from each house (for a typical subdivision, approximately every 50-ft). These trenches with gravel and onsite material backfill are conducive to carrying water. In addition, the sewer service lines can carry water from behind the curb. Occasionally, the sewer line may be encased in concrete which will cause ponding of any travelling water within the sewer trenches. Any water travelling within these trenches can cause expansive clays to swell. If the backfill is not adequately compacted or if excessive water is flowing in these trenches, the trench backfill can potentially settle.

Summation

It is beyond the scope of this investigation to do more than point out that the above factors have a definite influence on the amount and type of swell to which a pavement is subjected during its useful life. The design engineer must be aware of these factors as he develops his design and make adjustments as necessary according to the results of special measurements or from his engineering experience and judgment.

Pavement Design Considerations

Review of the test pits and test data indicates that the following factors will affect the pavement design and construction at this site:

1) The site is underlain by moderately plastic to highly plastic clays. Structures supported on or within these soils will be subjected to potential vertical movements on the order of **2 to 4 ½ inches.**

2) The strengths of the underlying soils are adequate to support the proposed new streets.

3) Based on the stratigraphy observed at this site, the final street subgrade is anticipated to be in the Clay or Calcareous Clay / Marl strata. The final street subgrade should be verified by InTEC at the time of construction.

4) Ground water was not encountered in the test pits at the time of excavation.

Vertical Movements

The potential vertical rise (PVR) for slab-on grade construction at the location of the structures had been estimated using Texas Department of Transportation Procedure TXDOT-124-E. This method utilizes the liquid limits, plasticity indices, and in-situ moisture contents for soils in the seasonally active zone, estimated to be about twelve to fifteen feet at the project site.

The estimated PVR value provided is based on the proposed floor system applying a sustained surcharge load of approximately 1.0 lb. per square inch on the subgrade materials**. Potential vertical movement on the order of 2 to 4 ½ inches was estimated at the existing grade elevation**.

The PVR values are based on the current site grades. If cut and fill operations in excess of 6 inches are performed, the PVR values could change significantly. Higher PVR values than the above-mentioned values will occur in areas where water is allowed to pond for extended periods.

If proper drainage is not maintained (allowing subgrade moisture content to change significantly) and / or if the pavement is underlain by utility trenches and the utilities leak (a) potential vertical movements will be

much greater than 2 to 3 times the anticipated vertical movements will be realized and (b) the subgrade strength may be significantly lowered.

If the finish grade elevation is higher than the existing grade, compacted select fill should be used to raise the grade level. Any select fill should be placed and compacted as recommended under *Select Fill* in the "Construction Guidelines" section of this report. Each lift should be compacted and tested by InTEC to verify Compaction Compliance.

If the clays underlying the compacted / treated subgrade soils is moisture conditioned to a thickness of 18 inches, potential vertical movement on the order of 3 inches is estimated.

It should be noted that expansive clay does not shrink/swell without changes in moisture content, and thus good site design is very important to minimize movements. Coping with problems of shrink/swell due to expansive clays is a "fact of life" in the Texas region of south western U.S.A.

PAVEMENT GUIDELINES

General

Pavement area at this unit is expected to include Local type streets. The following recommendations are presented as a guideline for pavement design and construction. These recommendations are based on a) our previous experience with subgrade soils like those encountered at this site, b) pavement sections which have proved to be successful under similar design conditions, c) final pavement grades will provide adequate drainage for the pavement areas and that water will not be allowed to enter the pavement system by either edge penetration adjacent to landscape areas or penetration from the surface due to surface ponding, or inadequate maintenance of pavement joints, or surface cracks that may develop.

Pavement Design

Pavement designs provide an adequate thickness of structural sections over a particular subgrade (in order to reduce the wheel load to a distributed level so that the subgrade can support load). The support characteristics of the subgrade are based on strength characteristics of the subgrade soils and not on the shrinkage and swelling characteristics of the clays. Therefore, the pavement sections may be adequate from a structural stand point, may still experience cracking and deformation due to shrinkage and swelling characteristics of the soils. In addition, if the proposed new pavements are used to carry temporary construction traffic, then heavier sections may be needed. Please contact InTEC to discuss options.

It is very important to minimize moisture changes in the subgrade to lower the shrinkage and swell movements of the subgrade clays. The pavement and adjacent areas should be well drained. Proper maintenance should be performed by sealing the cracks as soon as they develop to prevent further water penetrations and damage. In our experience,

(a) majority of the pavement distress observed over the years were caused by changes in moisture content of the underlying subgrade and / or excessive moisture in the base section,

(b) pavements with a grade of one percent or more have performed better than the pavements with allowable minimum grade,

(c) pavements with no underground utilities have performed better than pavements with underground utilities and the associated laterals,

(d) pavements that are at a higher-grade elevation than the surrounding lots have performed better, and

(e) any design effort that minimizes moisture penetration into the pavement layers have performed better.

"Alligator" Type Cracks

A layer of aggregate base is typically used underneath the concrete curbs around the pavement areas. This layer of aggregate base underneath the concrete curb is conducive to the infiltration of surface water into the pavement areas. Water infiltration into the subgrade and / or base layer can result in "alligator type" cracks especially when accompanied by construction traffic. Increased moisture content of the pavement sections will significantly impact its support characteristics. Moisture penetration into pavement layers can be reduced by (a) penetrating the concrete curbs at least three inches into the native clays soils, (b) installing French Drains on the outside of the curbs, or (c) installing a moisture barrier such as a trench filled with bentonite or flowable fill. Alligator type cracks are also caused by weak / soft pockets within the pavement layers. Thoroughly proof rolling the subgrade and base layers will help identify the soft softs and densify as needed.

Longitudinal Cracks

Asphalt pavements in highly expansive soil conditions, such as the soils encountered at this site, can develop longitudinal cracks along the pavement edges. The longitudinal cracking typically occurs about 1 to 4 feet inside of the pavement edges and they run parallel to the pavement edge. Longitudinal or reflective cracks may also be observed over utility trenches. The longitudinal cracks are generally caused by differential drying and shrinkage of the underlying expansive clays. The moisture content change of the underlying subgrade clays can be reduced by installing moisture barriers. Vertical moisture barriers along the edge of the pavement or horizontal moisture barriers such as paved sidewalks or geogrid will help control the development of the longitudinal cracks.

Periodic Maintenance

The pavements constructed on clay subgrades such as the one encountered at this site will be subjected to shrink / swell related movements. Hence, proper maintenance should be performed by sealing the cracks as soon as they develop to prevent further water penetrations and damage.

Pavement Sections

Local type residential streets may be designed with flexible pavements. The final finish street subgrade is expected to be in the Clay or Calcareous Clay / Marl subgrade areas. Minimum flexible pavement sections for the anticipated subgrades are presented in Table No. 2 in the following page. The project geotechnical engineer should delineate the streets for different subgrades at the time of construction. Input parameters used in the pavement section calculations are presented in Table No. 3.

- If pavement design for parameters other than those shown in Table No. 3 is needed or if repetitive / heavy truck traffic is anticipated, please contact us for additional pavement section recommendations.
- The recommended pavement sections are based on the subgrade soil support characteristics.
- The pavement sections are not based on shrink / swell characteristics of the subgrade soils.
- The subgrade soil support characteristics will be significantly affected by changes in moisture content.

The cut and fill information is not available at this time. The final street subgrade should be verified by InTEC at the time of construction.

Table No. 2 – Minimum Flexible Pavement Recommendations – CBR = 2.0

Street Classification	Asphaltic Concrete			Aggregate Base, Inches	Geogrid	Treated Subgrade, Inches	Structural Number
	Type D, inches	Type C, inches	Type B, inches				
Local Type A (no bus traffic)	3.00	-	-	11.50	No	6" LT	2.93
	3.00	-	-	9.50	Yes	6" LT	2.93
	2.00	-	-	14.50	No	6" LT	2.91
	2.00	-	-	12.00	Yes	6" LT	2.92
	2.00	-	6.00	-	No	6" LT	2.92
Local Type A (with bus traffic)	3.00	-	-	19.50	No	6" LT	4.05
	3.00	-	-	16.50	Yes	6" LT	4.12
	3.00	-	8.50	-	No	6" LT	4.21
Local Type B	2.00	2.00	-	23.00	No	6" LT	4.98
	2.00	2.00	-	19.00	Yes	6" LT	4.99
	4.00	-	9.50	-	No	6" LT	4.99

Design Notes:

- The results of our laboratory testing and engineering evaluation indicate that the underlying shallow clays are **moderately plastic to highly plastic in character.** Potential vertical movement on the order of **2 to 4 ½ inches** is estimated at existing grade elevation.
- Clay or Calcareous Clay / Marl subgrades are anticipated. Pavement section recommendations are based on clay subgrade, with a Design CBR value of 2.0.
- Input parameters are shown in Table No. 3 (Summary Table A). Please call us to provide pavement recommendations, if needed, for different input values.

Subgrade Notes (*):

- Cut and fill data are not available at this time.
- Fill used to raise the grade in clay areas:
    - approved fill material free should have a minimum CBR value of 2.0 and a maximum Plasticity Index value of 45 (on site material). Lime application rates should be re-evaluated and tested for sulfate content prior to use of the fill material.
    - The fill material should be approved by the geotechnical engineer, free of deleterious material, and the gravel size should not exceed 3 inches in size. The material should be placed and compacted as per applicable city / county guidelines.
    - The subgrade, prior to placement of fill, should be proof rolled to identify weak areas. Any identified weak areas should be recompacted.
- Fill used to raise the grade in calcareous clay / marl areas:
    - Existing clays should be removed to marl / limestone stratum prior to placement of fill.

- approved fill material free should have a minimum CBR value of 5.0 and a maximum Plasticity Index value of 20.

- Based on the thickness of the clays encountered in the test pits, we anticipate the final pavement subgrade Plasticity Index value to be either less than or equal to 20 or greater than 20.

- **If the subgrade Plasticity Index values are less than or equal to 20, as per City of San Antonio or Bexar County requirements, subgrade TREATMENT is not needed.**

- Subgrade should be **TREATED** using lime or cement. Lime application rates are presented here. Please contact InTEC for cement application rates.
  - Treated to a depth of 6 inches using 6 percent lime content.
  - The subgrade soils should be tested for soil sulfate content prior to lime application. If the soil sulfate content is higher than 3000 ppm, an alternate procedure will be needed.
  - Lime application rate of **32 lbs per sq yard for 6-inch depth** of treatment is recommended.
  - Cement may be used in lieu of lime. Cement application rate should be determined at the time of construction.

General Notes:

- Input parameters are shown in Table No. 3 (Summary Table A). Please call us to provide pavement recommendations, if needed, for different input values. If repetitive truck or heavy truck traffic is anticipated, please contact us for revised pavement recommendations.

- Pavement section recommendations are based on a subgrade CBR value of 2.0. The pavement recommendations are not based on the shrink / swell characteristics of the underlying soils. The pavement can experience cracking and deformation due to shrinkage and swelling characteristics of the soils as described in the *Vertical Movements* section of this report. Use of geogrid helps reduce shrink / swell related pavement distress.

- Significant pavement distress has been observed during construction phase with the combination of construction traffic and irrigation water / rain water getting underneath the asphalt.

- If water is allowed to get underneath the asphalt / concrete or if moisture content of the base or subgrade changes significantly, then pavement distress will occur. Moisture penetration underneath the asphalt pavement surface should be reduced. One of the following methods should be used:
  - Deeper curbs; such as curbs extending a minimum of 3 inches into subgrade.
  - Compacted clays backfilled against the curbs.

- In addition, water should not be allowed to get underneath the pavement section at the time of home construction.

Geogrid:

- One layer of geogrid, Tensar Triax TX130 or better, installed on top of treated subgrade as per manufacturer's guidelines.

Subgrade Verification:

- The final pavement subgrade should be verified and delineated as needed for different subgrade conditions by InTEC.

Table No. 3 – Input Parameters used in Asphalt Pavement Section Calculation

	Local Type A (no bus traffic)	**Local Type A** (with bus traffic)	**Local B**
ESAL	100,000	1,000,000	2,000,000
Reliability Level	R-70	R-70	R-90
Initial and Terminal Serviceability	4.2 and 2.0	4.2 and 2.0	4.2 and 2.0
Standard Deviation	0.45	0.45	0.45
Service Life	20 years	20 years	20 years
If heavy truck traffic is anticipated, please contact InTEC with anticipated traffic data for revised recommendations.			

Subgrade Preparation

It is important that any existing pavement and organic and compressible soils are removed and the exposed subgrade is properly prepared prior to pavement installation. The subgrade should be prepared as described in the applicable city / county Guidelines. Base course material should be placed immediately upon completion of the subgrade compaction operation to prevent drying of the soils due to exposure.

The finish grade elevation of the subgrade should be such that water drains downward freely towards a drainage area. At the drainage area, 3x5 rock may be provided at the subgrade level and the collected water at the drainage area should be taken out (such as into the existing concrete drainage channel). If any voids in the subgrade should be filled in with the same subgrade material and compacted in lifts.

The approved fill material should be placed in 8-inch lifts (6 inches compacted) and compacted as recommended in the Site Preparation section of the Construction Guidelines presented in this report.

Deeper Fill

If the fill depth exceeds 4 feet, the potential subgrade settlement should be considered. The fill material should have the minimum design CBR value. The fills should be placed in 6-inch thick lifts and compacted to a minimum of 98 percent of the maximum dry density at a minimum moisture content of optimum moisture content (Tex 114E). If the fill depths exceed 10-ft, each lift should be compacted to a minimum of

100 percent of the maximum dry density at a moisture content between optimum minus 2 and optimum plus 2 percent of the optimum moisture content (Tex 114E). In areas where culvert crossing are planned, above recommendations should be followed in backfilling around the culvert. Please contact InTEC with the cut and fill information to evaluate the effect of proposed cut and fill on the recommendations and to provide fill material and compaction recommendations.

Base Course

Based on the survey of available materials in the area, a base course of crushed limestone aggregate or gravel appears to be the most practical material for asphalt pavement project. The base course should conform to Texas State Department of Highways and Public Transportation Standard Specification, Item 247, Type A, Grade 1-2. The aggregate base course should be installed as per applicable city / county Guidelines.

At a minimum the base course should be brought to near optimum moisture conditions and compacted in lifts to at least 95 percent of maximum dry density as determined by test method TxDOT 113E.

Asphaltic Concrete

The asphaltic concrete surface course should conform to City of San Antonio Standard Construction Guidelines, 2008. The asphaltic concrete should be installed as per applicable city / county Guidelines.

Perimeter Drainage

It is important that proper perimeter drainage be provided so that infiltration of surface water from compacted areas surrounding the pavement is minimized, or if this is not possible, curbs should extent through the base and into the subgrade. A crack sealant compatible to both asphalt and concrete should be installed at the concrete-asphalt interfaces.

Wherever there are drastic grade changes in the pavement area (such as from 3 to 4 percent grade to 1 to 2 percent grade) 3 x 5 inch gravel subgrade with a subsurface drain system (such as Akwadrain® on the sides of the pavement) and outlet should be considered. This aspect will provide for a better drainage system in this area. Please contact InTEC for drainage recommendations.

CONSTRUCTION GUIDELINES

Construction Monitoring

InTEC, as the Geotechnical Engineer of Record, should be actively involved in monitoring earthwork and foundation construction. Proper performance of foundation systems depends not only on design but also on quality construction practices. Contact InTEC prior to construction to incorporate foundation and earthwork monitoring into the project's quality control plan.

Site Preparation

Site preparation will consist of removal of the organic material, preparation of the subgrade, and Remove organic materials, vegetation, and loose soils to a depth of at least 6 inches in areas where floor slabs or pavements are planned. Subgrade should be approved by InTEC and proof rolled. Recompact to at least 95% of maximum dry density (ASTM D698) within −1% to +3% of optimum moisture content. Exposed subgrade should be kept moist and approved before fill placement.

Old underground utilities beneath proposed structures should be removed or sealed. Backfill should be compacted in 6-inch lifts to 95% of maximum dry density within the specified moisture range.

If cut/fill operations occur beneath the building pad, fill thickness should be uniform to reduce differential movement. Voids from tree or structure removal must be compacted per recommendations.

Proof Rolling

Use a 25-ton pneumatic roller with 10 passes and tire pressures per manufacturer specs to achieve 90 psi ground contact pressure. InTEC must observe proof rolling. Weak zones should be removed and replaced with select fill. Retest areas that do not meet density.

Maintain positive drainage throughout construction to avoid ponding or construction delays.

Compaction

Site grading plan is not available for review at this time. If any low areas or disturbed areas encountered during construction should be appropriately prepared and compacted. Any deleterious or wet materials should be removed and wasted. The fill placement in the low areas should not be in a “bowl shape”. The

sides of the fill area should be "squared up" and the excavated bottom should be proof rolled as described in *Proof Rolling* section of this report. On site material, with no deleterious material, may be used to raise the grade. After proof rolling operation, the fill should be placed in 6-inch lifts and compacted to a minimum of **95 percent of the maximum dry density as determined by ASTM D 698 test method within optimum and three percent above optimum moisture content.** Each lift should be tested by InTEC for compaction compliance and approved before placement of the subsequent lifts. The exposed subgrade should not be allowed to dry out prior to placing structural fill. It is recommended that any given lot does not straddle filled areas and natural areas to help lower differential movement of the structures.

Select Fill

Use crushed limestone with LL < 40, PI = 5–20, and <30% passing No. 200 sieve. Max particle size: 3 inches. Place in 6-inch compacted lifts and compact to 95% of ASTM D 698 dry density within ± 2% of optimum moisture. Each lift must be tested and approved by InTEC.

General Fill

General fill materials may consist of clean on-site material, select fill materials, or any clean imported fill material. The purpose of a general fill is to provide soils with good compaction characteristics that will provide uniform support for any non-habitable structures that are not movement sensitive. The general fill material should be free of any deleterious material, construction debris, organic material, and should not have gravels larger than 6 inches in maximum dimension. The top two feet of fill material used underneath pavement areas should not have gravels larger than 3 inches in maximum dimension.

It should be understood that the use of the general fill may result in greater than anticipated potential vertical movements and differential movements. If the greater potential vertical movements or differential soil movements cannot be tolerated, then select fill material should be used and should conform to the Select Fill recommendations.

General Fill Compaction

The general fill materials should be placed in lifts not to exceed 8 inches thick and compacted to a minimum of 95 percent of the maximum dry density as determined by test method ASTM D 698 at a moisture content within 3 percent of the optimum water content. Each lift should be compacted and tested by a

representative of a geotechnical laboratory to verify compaction compliance and approved before placement of the subsequent lifts.

The general fill compaction requirements can also be discussed and determined in consultation with the owner prior to construction.

Ground Water

In any areas where significant cuts (2-ft or more) are made to establish final grades for pavement, attention should be given to possible seasonal water seepage that could occur through natural cracks and fissures in the newly exposed stratigraphy. Subsurface drains may be required to intercept seasonal groundwater seepage. The need for these or other dewatering devices on should be carefully addressed during construction. Our office could be contacted to visually inspect final pads to evaluate the need for such drains.

The ground water seepage may happen several years after construction if the rainfall rate or drainage changes within the project site or outside the project site. If seepage run off occurs towards the pavement areas an engineer should be called on to evaluate its effect and provision of French Drains at this location.

Drainage

Ground water seepage was not encountered in the test pits at the time of excavation. However, minor ground water seepage may be encountered within the pavement areas and grading excavations at the time of construction, especially after periods of heavy precipitation. **Small quantities of seepage may be handled by conventional sump and pump methods of dewatering.**

Temporary Drainage Measures

Temporary drainage provisions should be established, as necessary, to minimize water runoff into the construction areas. If standing water does accumulate, it should be removed by pumping as soon as possible.

Adequate protection against sloughing of soils should be provided for workers and inspectors entering the excavations. This protection should meet O.S.H.A. and other applicable building codes.

Construction Slopes

- Temporary Slopes: 1H:1V in Stratum I and II clays.
- Fill Slopes: 1H:1V, compacted in 3–5 ft lifts.
- Permanent Slopes: Max 3H:1V. Use 5H:1V where pedestrian access is expected.

Time of Construction

If the pavement is installed during or after an extended dry period, the subgrade may experience greater movement around the edges when the soil moisture content increases, such as due to rain or irrigation. Similarly, a pavement installed during or after a wet period may experience greater movement around the edges during the subsequent drying of the soils.

Control Testing and Field Observation

Subgrade preparation and base and asphalt placement should be monitored by the project geotechnical engineer or his representative of InTEC. As a guideline, at least one in-place density test should be **performed for every 100 lineal feet (or as per respective city and county requirements, whichever requires more frequent testing) of street of compacted surface lift.** However, a minimum of three density tests should be performed by InTEC on the subgrade or subsequent lifts of compaction. Any areas not meeting the required compaction should be re-compacted and retested until compliance is met.

DRAINAGE AND MAINTENANCE

Proper drainage and long-term moisture management are **critical** to the performance of the proposed structures and pavements, particularly due to the presence of **expansive soils** at the site. Seasonal or localized changes in moisture content can lead to **unpredictable slab and foundation movements**, especially if water is allowed to collect near building perimeters or utility corridors.

- **Roof Drainage & Plumbing**
  - All roof drainage must be directed **at least 10 feet away** from the foundation using gutters, downspouts, and splash blocks or extensions.
  - If positive surface slope cannot be provided, closed pipe systems discharging to a storm sewer are preferred.
  - Plumbing leaks, especially beneath the slab or within utility trenches, must be identified and repaired **immediately** to prevent localized swelling and loss of support.
- **Lot Grading & Flatwork**
  - Final grading should slope away from the structure at a **minimum of 5%** for the first 10 feet.
  - Pavements, sidewalks, and patios within this zone should follow the same slope guideline and be designed to **accommodate post-construction movement**, especially in fill areas or expansive clay zones.
  - Joints between slabs and structures should be **sealed and inspected regularly**. Water should not be allowed to pond in planters, depressions, or along unsealed joints.
- **Landscaping & Vegetation**
  - **Large trees and deep-rooted plants** should not be planted within a horizontal distance equal to their mature height from the foundation.
  - Planters adjacent to the structure should be self-contained and designed to prevent moisture infiltration to foundation soils.

- Irrigation systems and sprinkler mains should be located a **minimum of 5 feet** away from buildings, and designed to prevent overwatering near foundations.

- **Utility Trenches**

  - Trenches for utilities often include granular bedding, which can act as **conduits for water** to reach the building pad.

  - All trenches must be properly compacted and should include **cut-off collars or clay plugs** where lines cross building footprints to prevent subsurface water migration.

- **Long-Term Maintenance and Considerations**

  - The **PVR (Potential Vertical Rise)** values estimated in this report assume that all drainage systems are installed and maintained properly. Failure to do so may result in **actual movements 2–3 times greater** than those predicted.

  - During **extended dry periods**, observe the perimeter of the structure. If soil is pulling away from the foundation, **controlled watering** should be applied to avoid sudden moisture shifts when rain returns.

  - Any future modifications to drainage, site grading, landscaping, or nearby construction should be carefully evaluated for impact on foundation performance.

LIMITATIONS

The analyses and recommendations submitted in this report are based upon the data obtained from **15 test pits excavated at the site**. This report may not reflect the exact variations of the soil conditions across the site. The pavement recommendations presented in the report should be reviewed and confirmed based on the proposed cut and fill and observation at the time of construction.

The data and interpretations presented are professional opinions, not exact representations of all subsurface conditions. These recommendations are **confirmation-dependent** and should be reviewed by InTEC during construction to validate assumed conditions.

This report is **not intended to inform means, methods, or construction logistics** such as equipment selection, cost estimation, or contractor scheduling. If the report is used for bidding or other unintended purposes, it is done **solely at the contractor's risk.**

Revisions may be required if:

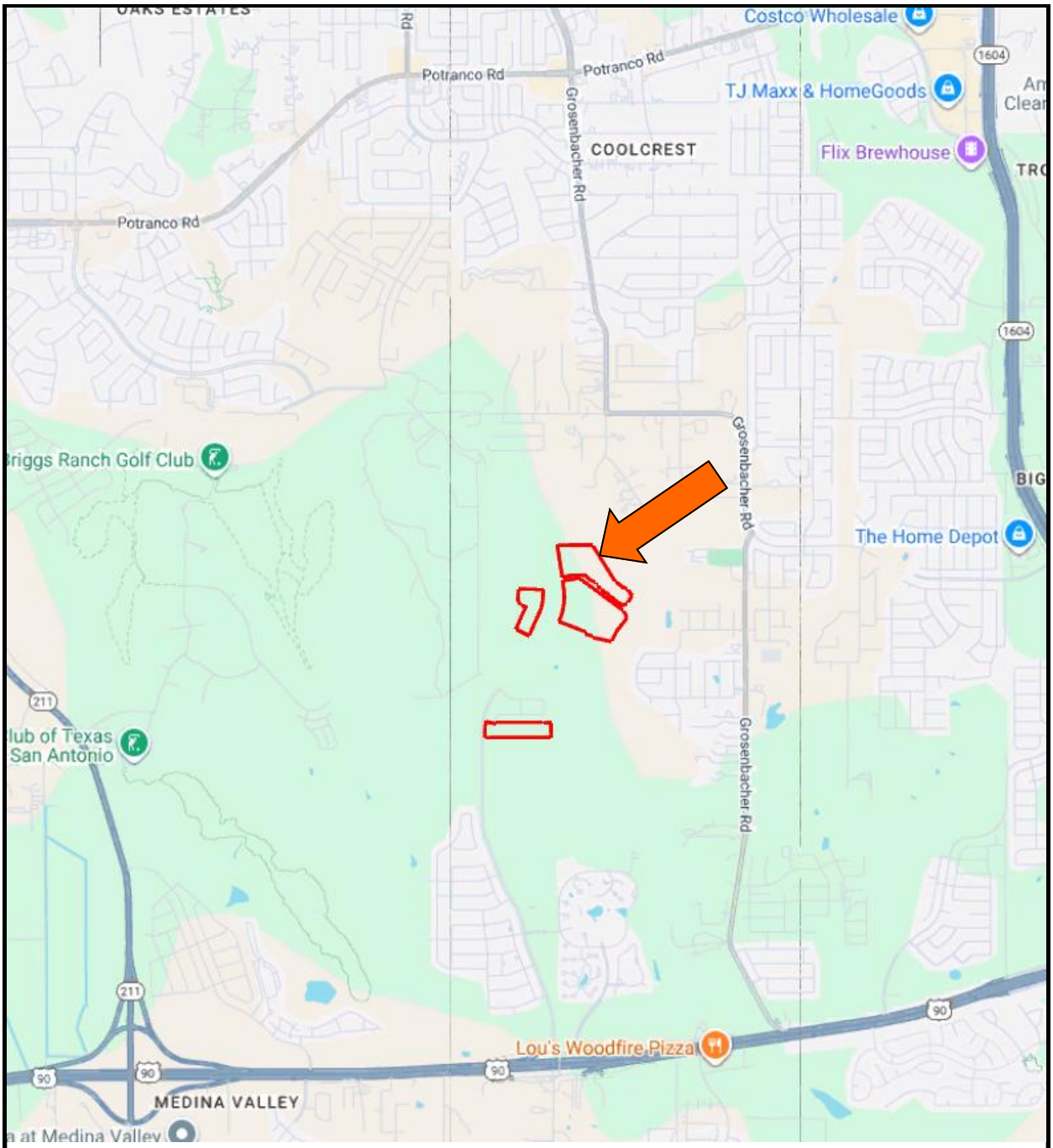
- the proposed structure or grading is changed;
- drainage or site use is altered;
- significant cut and fill activities are performed; or
- excessive time has passed since the field exploration.

The geotechnical engineer affirms that the findings and advice herein are consistent with the standard of care for geotechnical engineers practicing in this region. However, **no other warranties, express or implied, are provided.**

This report has been prepared for the exclusive use of **Lennar Homes** for pavement thickness evaluation for the **proposed new streets at Tres Laurels, Units 1B, 4B, 5A, 5B in San Antonio, Texas.**

Illustration Section

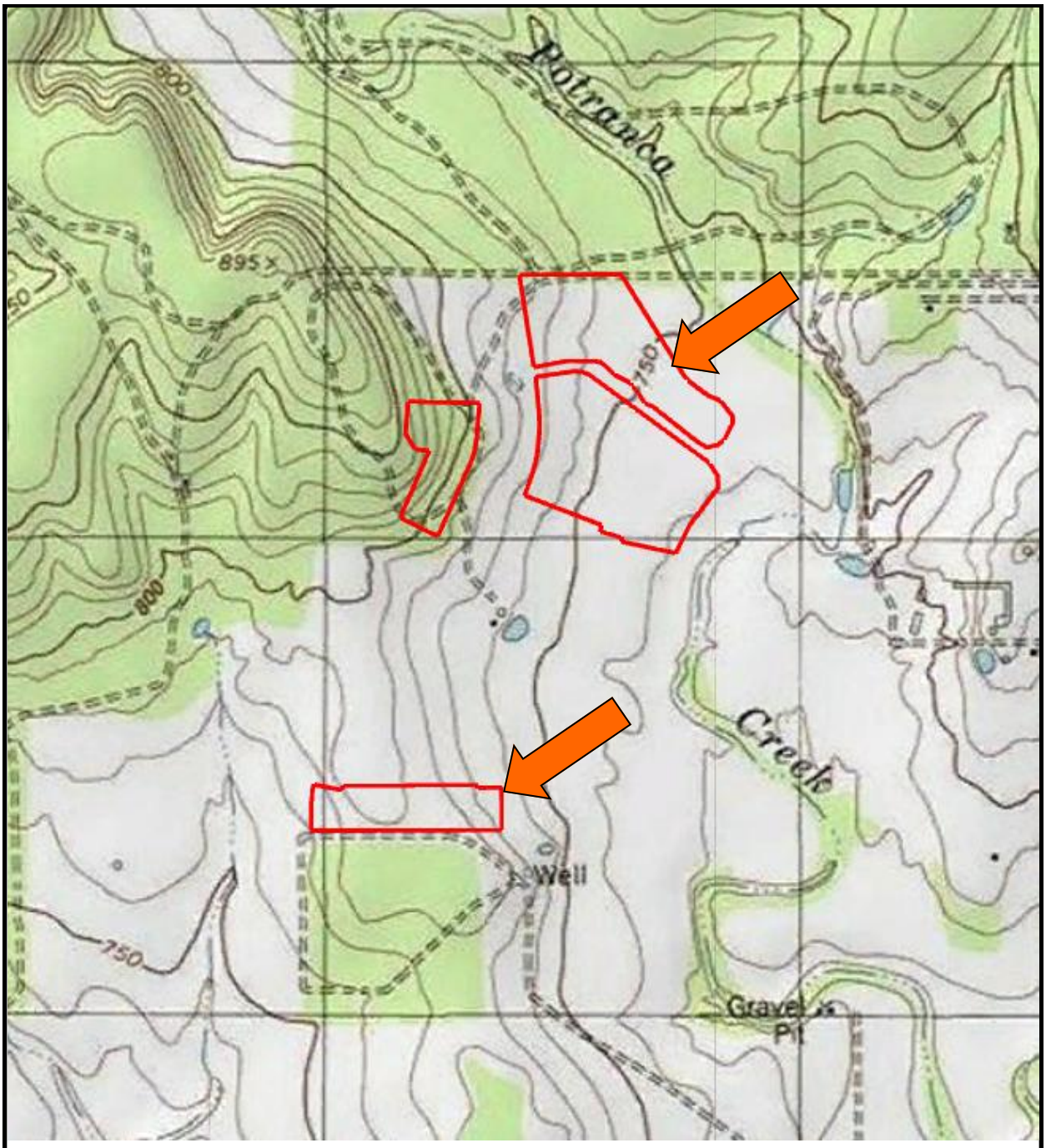
Description	Plate No.
Vicinity Map	Plate 1A
Aerial Map	Plate 1B
Topographic Map	Plate 1C
Geologic Map	Plate 1D
Soil Map	Plates 1E-1 & 1E-2
Bexar County Karst Map	Plate 1F
Approximate Test Pit Locations	Plate 1G
Test Pit Photos	Plates 1H-1 thru 1H-4
Test Pit Logs	Plates 2—16
Keys to Classifications and Symbols	Plate 17
Calculations	Plates 18—26
Information on Geotechnical Report	Appendix



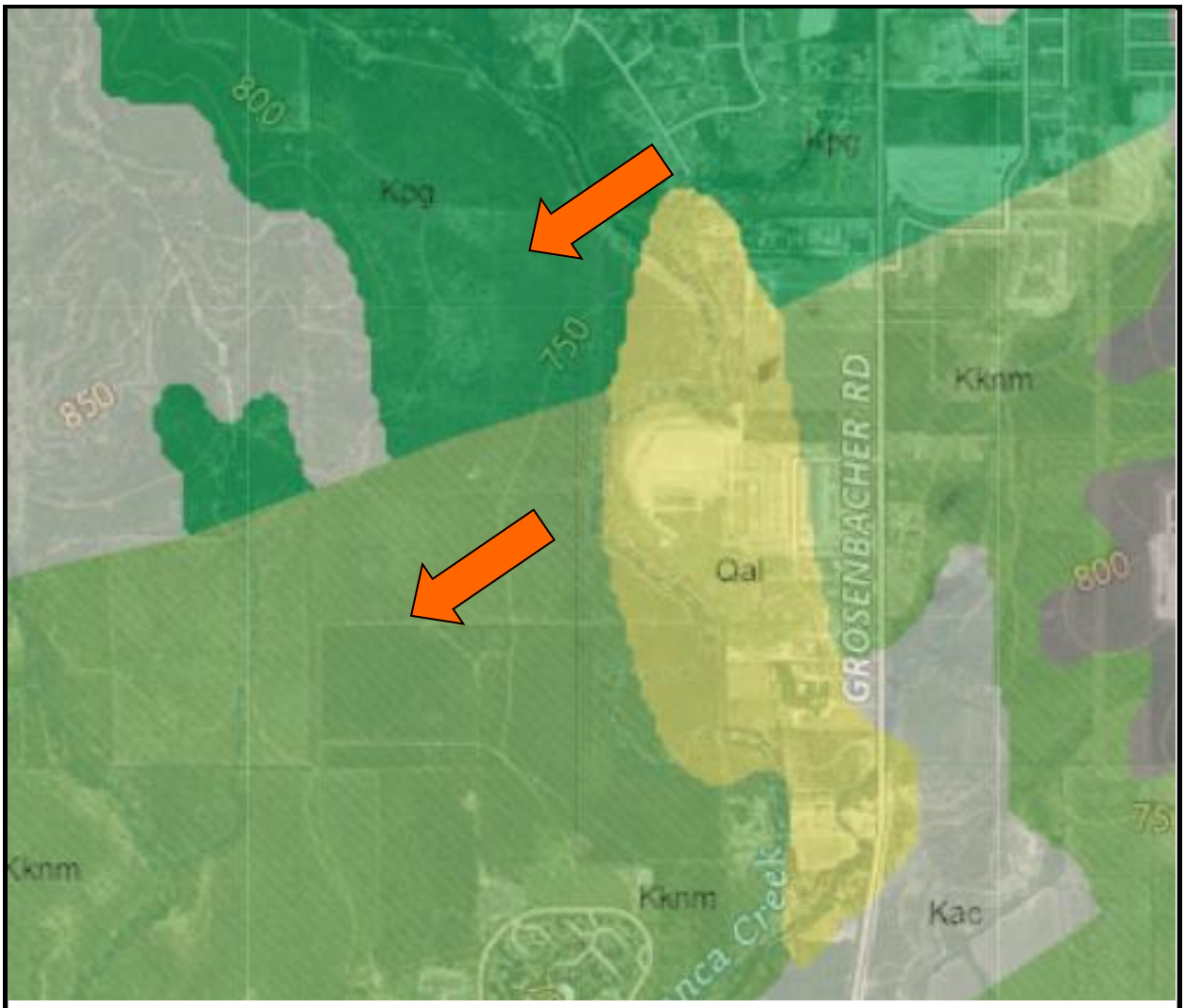
Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, 5B San Antonio, Texas	**Vicinity Map**	
	InTEC Project Number: **S251271**	Date: 08/29/2025



Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, 5B San Antonio, Texas	**Aerial Map—Approximate Location**	
	InTEC Project Number: **S251271**	Date: 08/29/2025



Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, 5B San Antonio, Texas	**Topographic Map—Approximate Location**	
	InTEC Project Number: **S251271**	Date: 08/29/2025



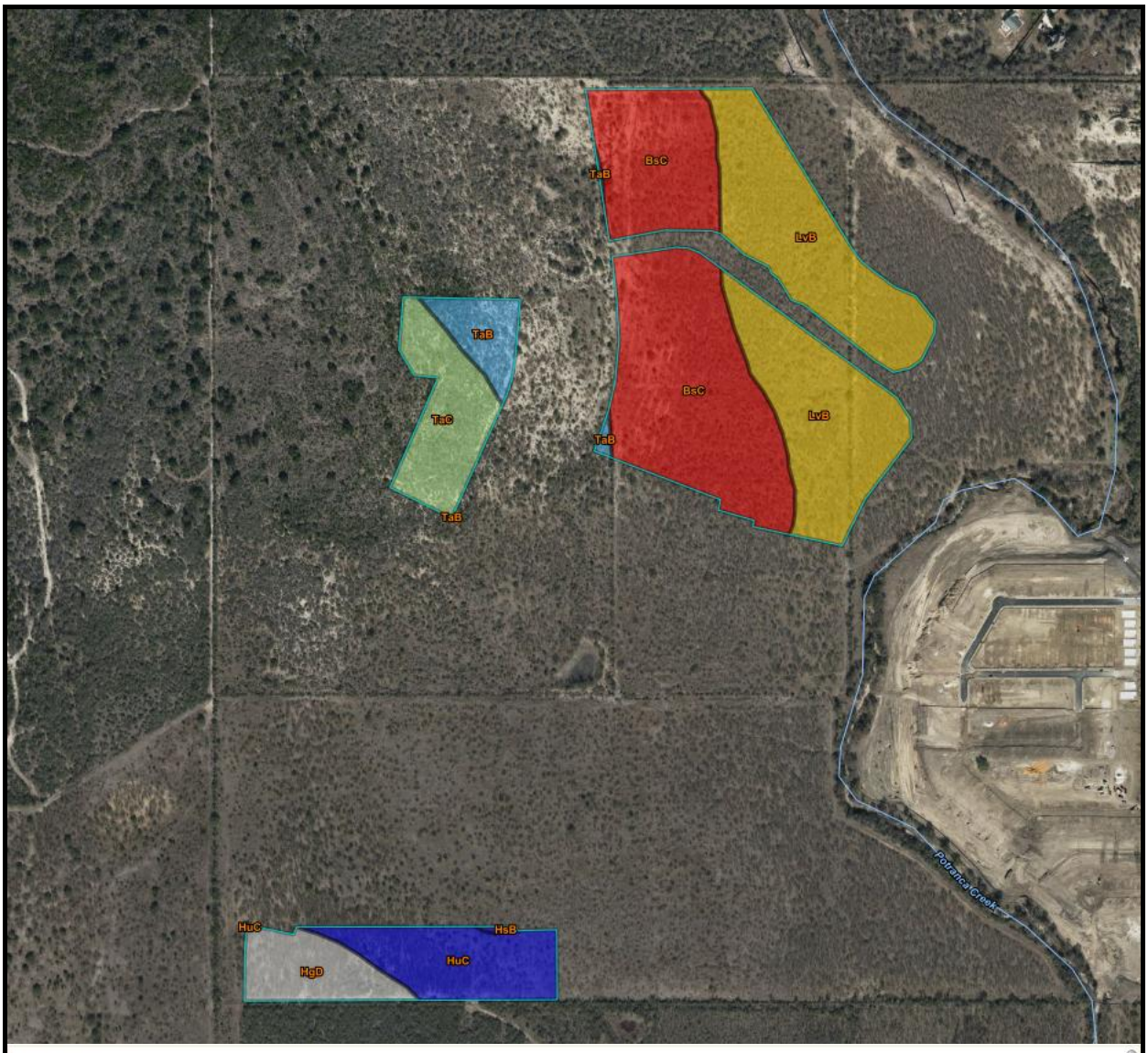
Kpg—Pecan Gap Chalk

chalk and chalky marl, more calcareous westward, very light yellow to yellowish brown, weathers to form moderately deep soil, seldom exposed; Exogyra ponderosa common; thickness 100-400 feet, thins westward to eastern Medina County where it is overlain by Anacacho Limestone, beyond this point included with Austin Chalk

Kknm—Navarro Group and Marlbrook Marl

Navarro Group and Marlbrook Marl ("upper Taylor marl") undivided, Kknm. Upper part—marl, clay, sandstone, and siltstone; marl and clay, glauconitic, contain concretions of limonite and siderite; sandstone, fine grained, and siltstone, yellow brown, contain concretions of hard bluish-gray siliceous limestone 2 to 10 feet in diameter; sandstone beds have little lateral continuity and become more abundant westward; thickness up to 580 feet. Lower part—clay, dominantly montmorillonitic, unctuous, greenish gray to brownish gray; weathers to a very thick, black, clayey soil; thickness 400± feet. Total thickness 980± feet

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, 5B San Antonio, Texas	**Geologic Map—Approximate Location**	
	InTEC Project Number: **S251271**	Date: 08/29/2025



Bexar County, Texas

Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
BsC—Whitewright-Austin complex, 1 to 5 percent slopes														
Whitewright	65	D	0-6	Clay loam	CH, CL	A-6, A-7-6	0- 0- 0	0- 3- 5	95-98-100	90-95-100	80-90-100	60-79- 98	34-43 -52	15-24-32
			6-15	Silty clay, silty clay loam, clay loam, gravelly clay loam	CH, CL	A-6, A-7-6	0- 0- 0	0- 3- 5	85-93-100	80-90-100	70-85-100	60-79- 98	34-43 -52	15-24-32
			15-20	Bedrock	—	—	—	—	—	—	—	—	—	—
Austin	35	C	0-28	Silty clay	CH, CL	A-7-6	0- 0- 0	0- 3- 5	95-98-100	90-95-100	80-90-100	75-86- 96	45-57 -69	25-35-44
			28-42	Silty clay, clay, silty clay loam	CH, CL	A-6, A-7-6	0- 0- 0	0- 3- 5	95-98-100	90-95-100	80-90-100	75-86- 96	35-50 -65	16-28-40
			42-72	Bedrock	—	—	—	—	—	—	—	—	—	—

Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

Soil Map—Approximate Location

InTEC Project Number: **S251271**

Date: 08/29/2025

Bexar County, Texas

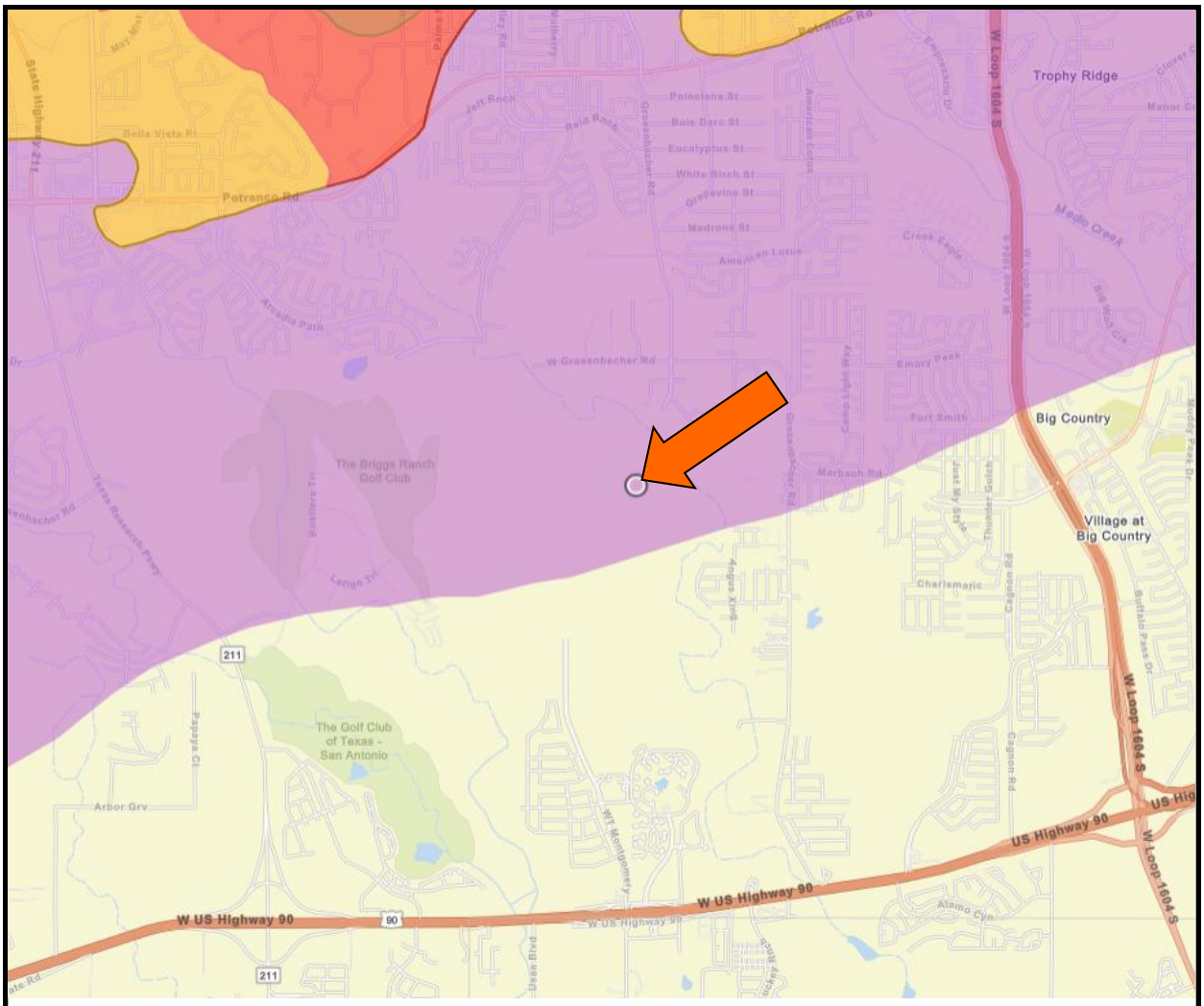
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
HgD—Rock outcrop-Olmos complex, 5 to 25 percent slopes														
Rock outcrop	80	D	0-80	Bedrock	—	—	—	—	—	—	—	—	—	—
Olmos	15	D	0-13	Very cobbly loam	SC, CL, GC	A-2-6, A-6	0- 0- 0	21-26- 35	61-72- 89	52-65- 86	44-58- 81	32-43- 62	32-35 -36	13-15-16
			13-14	Cemented material	—	—	—	—	—	—	—	—	—	—
			14-26	Cemented material	—	A-2-4, A-2-6, A-4	—	—	—	—	—	—	—	—
			26-80	Cemented material	—	A-2-4, A-2-6, A-4	—	—	—	—	—	—	—	—
HsB—Houston Black clay, 1 to 3 percent slopes														
Houston black	80	D	0-6	Clay	CH	A-7-6	0- 0- 0	0- 0- 0	96-98-100	92-96-100	81-92-100	71-81- 90	63-70 -76	34-44-49
			6-70	Clay, silty clay	CH	A-7-6	0- 0- 0	0- 0- 0	98-98-100	96-96-100	85-92-100	74-81- 90	58-70 -76	38-44-49
			70-80	Clay, silty clay	CH	A-7-6	0- 0- 0	0- 0- 0	94-96-100	86-92-100	74-88-100	65-78- 95	61-71 -75	37-45-50
HuC—Houston Black gravelly clay, 3 to 5 percent slopes														
Houston black	90	D	0-13	Gravelly clay	CH, GC	A-7-6	0- 0- 0	0- 3- 4	65-69- 77	46-57- 74	41-55- 74	35-48- 67	63-70 -76	38-44-49
			13-63	Clay	CH	A-7-6	0- 0- 0	0- 0- 0	98-98- 99	96-96- 98	85-92- 98	74-81- 89	63-70 -71	38-44-49
			63-86	Clay	CH	A-7-6	0- 0- 0	0- 0- 0	95-96- 99	88-93- 98	75-89- 98	66-79- 93	61-71 -75	37-45-50
LvB—Lewisville silty clay, 1 to 3 percent slopes														
Lewisville	85	C	0-15	Silty clay	CH	A-7-6	0- 0- 0	0- 0- 0	94-96-100	94-96-100	91-95-100	87-90-100	52-52 -59	28-29-34
			15-38	Silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7-6	0- 0- 0	0- 0- 0	95-96-100	95-96-100	83-95-100	76-88-100	39-49 -57	18-26-32
			38-69	Silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7-6	0- 0- 0	0- 0- 0	81-89-100	81-89-100	71-88-100	65-82-100	39-50 -59	18-27-34
TaB—Eckrant cobbly clay, 1 to 8 percent slopes														
Eckrant	85	D	0-4	Cobbly clay	CH, CL	A-7-6	0- 3- 15	28-34- 55	75-92-100	74-92-100	68-88-100	60-78- 93	45-60 -70	25-32-40
			4-11	Extremely cobbly silty clay, very cobbly silty clay, extremely cobbly clay, very cobbly clay, very stony clay	CH, CL, GC	A-2-7, A-7-6	0-14- 22	28-36- 67	33-72- 82	30-70- 81	27-67- 81	24-60- 77	45-60 -70	25-32-40
			11-80	Bedrock	—	—	—	—	—	—	—	—	—	—
TaC—Eckrant very cobbly clay, 5 to 15 percent slopes														
Eckrant	90	D	0-4	Very cobbly clay	CH, GC	A-7-6	0- 3- 12	9-23- 45	49-59- 80	46-58- 79	43-55- 79	37-48- 79	49-60 -70	25-31-42
			4-12	Very cobbly clay, very cobbly clay loam, cobbly clay, extremely cobbly silty clay	CH, CL, GC	A-2-7, A-7-6	0- 2- 21	27-46- 63	21-50- 83	18-48- 82	15-46- 82	13-41- 82	45-61 -70	23-32-43
			12-30	Bedrock	—	—	—	—	—	—	—	—	—	—

Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

Soil Map—Continued

InTEC Project Number: **S251271**

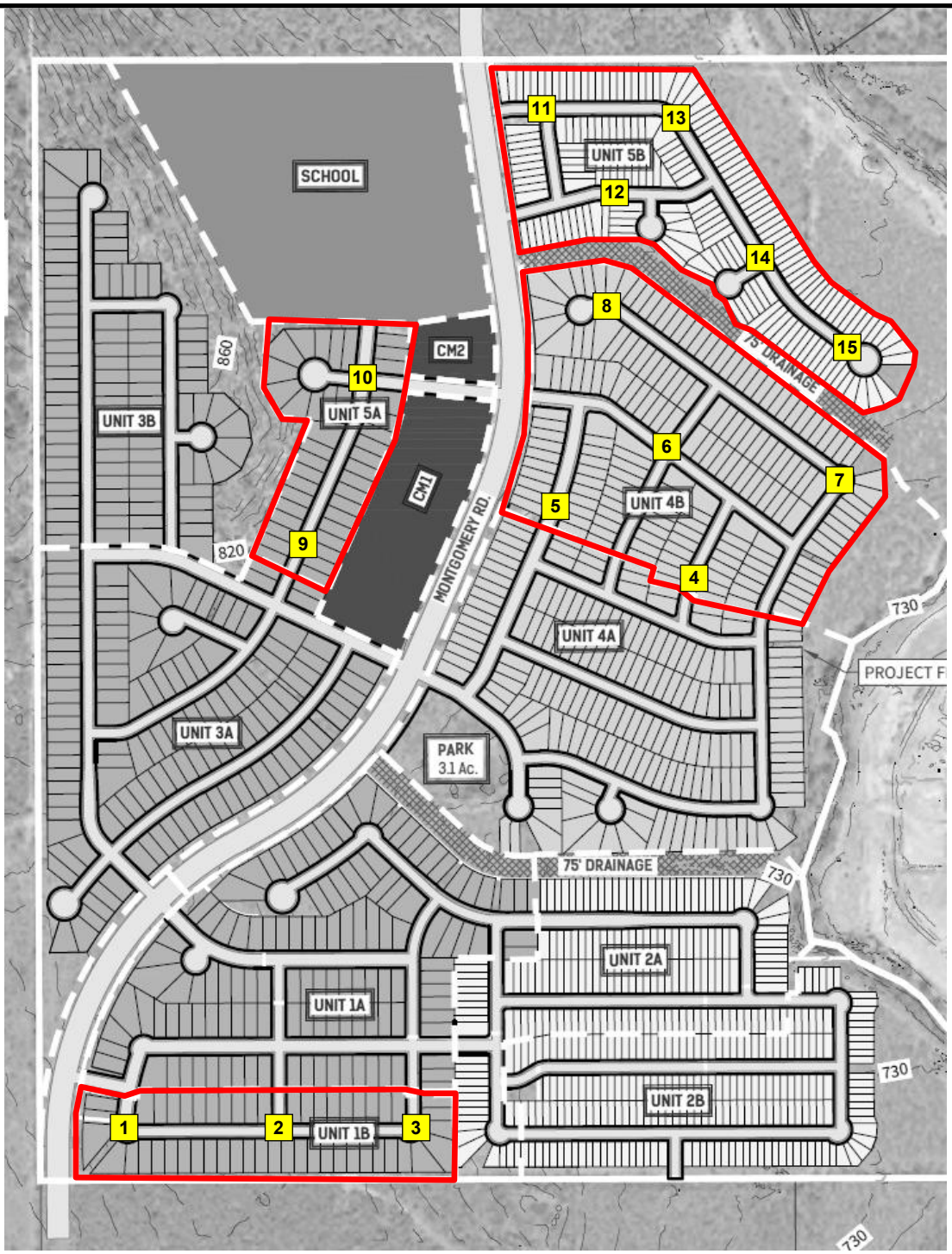
Date: 08/29/2025



- 1
- 2
- 3
- 4
- 5

- **Karst Zone 1 -** Areas known to contain listed invertebrate karst species
- **Karst Zone 2 -** Areas having a high probability of containing suitable habitat for listed invertebrate karst species
- **Karst Zone 3 -** Areas that probably do not contain listed invertebrate karst species
- **Karst Zone 4 -** Areas which require further research but are generally equivalent to Zone 3, although they may include sections which could be classified as Zone 2 or Zone 5 as more information becomes available
- **Karst Zone 5 -** Areas which do not contain listed invertebrate karst species

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, 5B San Antonio, Texas	**Bexar County Karst Map**	
	InTEC Project Number: **S251271**	Date: 08/29/2025



Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, 5B San Antonio, Texas	**Approximate Test Pit Locations**	
	InTEC Project Number: **S251271**	Date: 08/29/2025

Integrated Testing and Engineering Company of San Antonio, L.P. Plate No. 1G



Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

Test Pit Photos

InTEC Project Number:
S251271

Date:
08/29/2025



Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

Test Pit Photos

InTEC Project Number:
S251271

Date:
08/29/2025



Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

Test Pit Photos

InTEC Project Number:
S251271

Date:
08/29/2025







Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

Test Pit Photos

InTEC Project Number:
S251271

Date:
08/29/2025

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

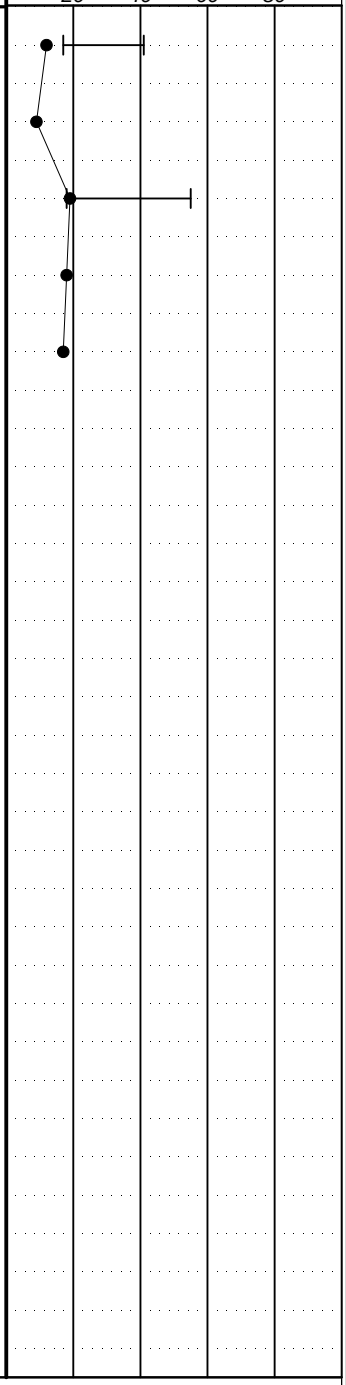
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TEST PIT NO. TP-1

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		TP	Dark Brown Clay -with Gravel						41	24
		TP								
			Tan Silty Clay -with Caliche and Gravel -with Calcareous Clay Seams							
5		TP							55	37
		TP								
		TP								
10			Mini-Excavator Refusal TP = Test Pit Sample							
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80



Notes:

Ground Water Observed: No

Completion Depth (ft): 10

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 2

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

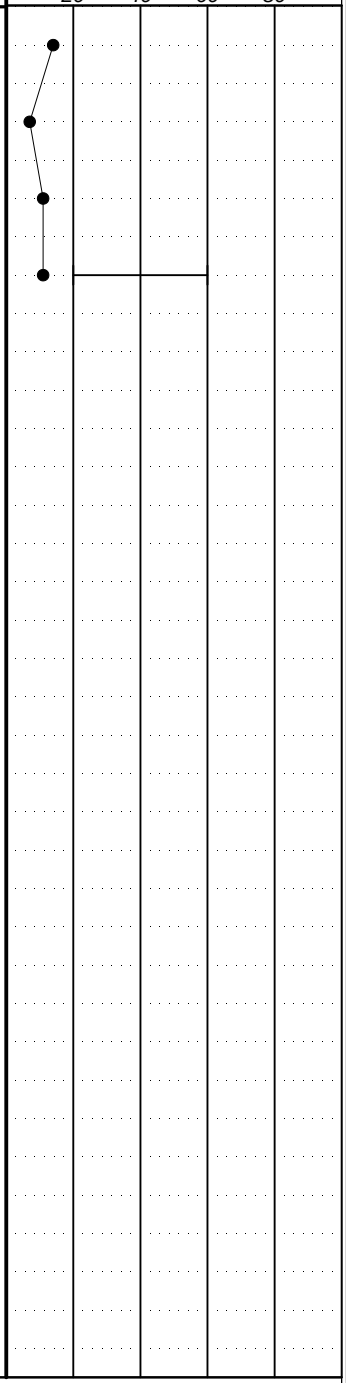
LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-2

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		TP	Dark Brown Clay -with Gravel							
		TP								
5		TP	Tan Silty Clay -with Caliche and Gravel -with Calcareous Clay Seams							
		TP							60	40
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										



Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 3

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

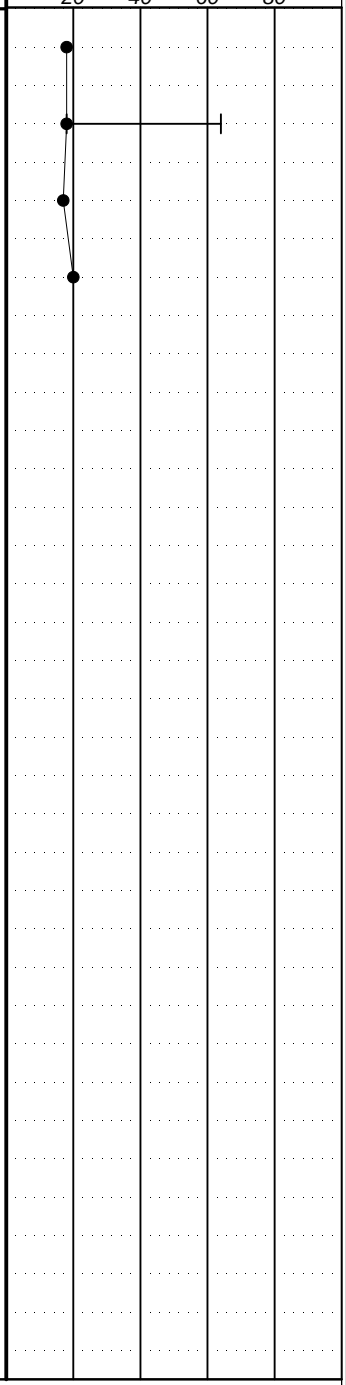
LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-3

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0										
		TP	Dark Brown to Brown Clay							
		TP							64	42
5		TP								
		TP	Tan and Gray Clay -with Caliche							
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										



Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 4

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-4

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX	Plastic Limit ⊢⊣ Liquid Limit; Moisture Content % - ● (20 40 60 80)
0			Fill: Tan Clay and Brown Clay								
		TP									
			Dark Brown Clay								
		TP									
5		TP							61	38	
		TP									
			Tan and Gray Clay								
10			Mini-Excavator Refusal TP = Test Pit Sample								
15											
20											
25											
30											
35											

Notes:

Ground Water Observed: No

Completion Depth (ft): 9

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 5

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-5

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX	Plastic Limit ⊢⊣ Liquid Limit Moisture Content % - ●
0			Dark Brown to Brown Clay								20 40 60 80
		TP									
		TP							51	29	
5		TP									
		TP									
			Tan and Gray Clay -with Caliche								
			Mini-Excavator Refusal TP = Test Pit Sample								
10											
15											
20											
25											
30											
35											

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 6

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

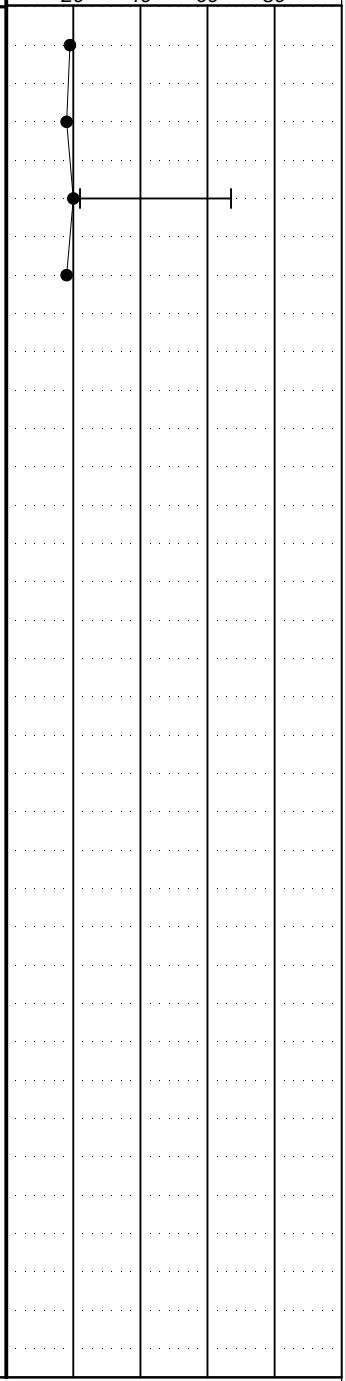
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TEST PIT NO. TP-6

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Brown to Brown Clay							
		TP								
		TP								
5		TP							67	45
		TP								
			Tan and Gray Clay -with Caliche							
			Mini-Excavator Refusal							
10			TP = Test Pit Sample							
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ Liquid Limit

Moisture Content % - ● 20 40 60 80



Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 7

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

TEST PIT NO. TP-7

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Brown to Brown Clay							
		TP								
		TP							54	31
5		TP								
		TP								
			Tan and Gray Clay -with Caliche							
			Mini-Excavator Refusal							
10			TP = Test Pit Sample							
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● *20 40 60 80*

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 8

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-8

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0										
		TP	Dark Brown to Brown Clay							
		TP							60	39
5		TP								
		TP	Tan and Gray Clay -with Caliche							
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● *20 40 60 80*

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 9

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

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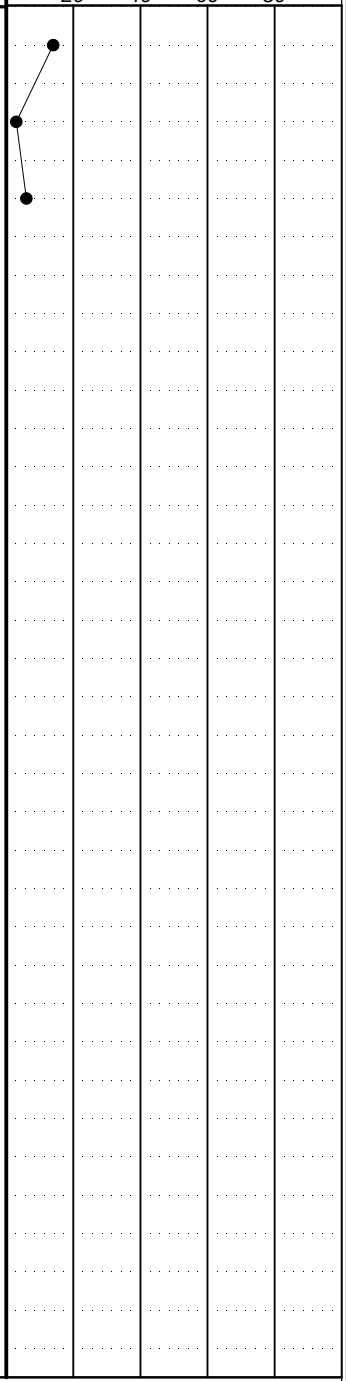
TEST PIT NO. TP-9

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Brown Clay							
		TP	Light Tan Calcareous Clay to Marl -with Caliche							
		TP								
5		TP								
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80



Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 10

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-10

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Brown Clay							
		TP	Light Tan Calcareous Clay to Marl -with Caliche							
		TP							27	15
5		TP								
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 11

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-11

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		TP	Dark Brown Clay							
		TP	Tan Silty Clay -with Marl Seams							
5		TP							35	20
		TP								
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 12

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

TEST PIT NO. TP-12

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0										
		TP	Dark Brown Clay							
		TP							57	38
5		TP								
		TP	Tan and Gray Clay -with Caliche							
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 13

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-13

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0										
		TP	Dark Brown Clay							
		TP								
5		TP							57	34
		TP	Tan and Gray Clay -with Caliche							
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 14

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

TEST PIT NO. TP-14

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0										
		TP	Dark Brown Clay							
		TP							57	37
5		TP								
		TP	Tan and Gray Clay -with Caliche							
			Mini-Excavator Refusal TP = Test Pit Sample							
10										
15										
20										
25										
30										
35										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● *20 40 60 80*

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

Plate: 15

PROJECT: Tres Laurels, Units 1B, 4B, 5A, 5B **PROJECT NO: S251271**

LOCATION: San Antonio, Texas **DATE:** 09/11/2025

CLIENT: Lennar Homes

inTEC

TEST PIT NO. TP-15

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	S.S. BY P.P	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX	Plastic Limit ⊢⊣ Liquid Limit Moisture Content % - ● (20 40 60 80)
0		TP	Dark Brown Clay								
		TP							47	27	
5		TP	Tan Gravelly Clay -with Calich								
		TP									
			Mini-Excavator Refusal TP = Test Pit Sample								
10											
15											
20											
25											
30											
35											

Notes:

Ground Water Observed: No

Completion Depth (ft): 8

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

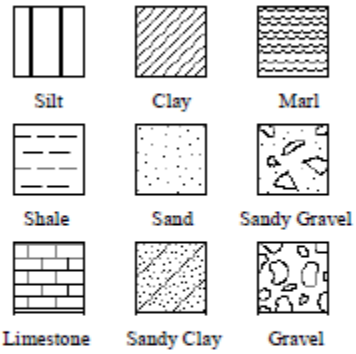
Plate: 16

KEY TO CLASSIFICATIONS AND SYMBOLS

Soil Fractions

Component	Size Range
Boulders	Greater than 12"
Cobbles	3" - 12"
Gravel	3" - #4 (4.76mm)
Coarse	3" - ¾"
Fine	¾" - #4
Sand	#4 - #200 (0.074mm)
Coarse	#4 - #10 (2.00mm)
Medium	#10 - #40 (0.42mm)
Fine	#40 - #200 (0.074mm)
Silt and Clay	Less than #200

Soil or Rock Types
(Shown in symbols column)
(Predominate Soil Types Shown Heavy)



TERMS DESCRIBING SOIL CONSISTENCY

Description (Cohesive Soils)	Unconfined Compression TSF	Blows/Ft. Std. Penetration Test	Description (Cohesionless Soils	Blows/Ft. Std. Penetration Tests
Very Soft	0.25	<2	Very Loose	0 – 4
Soft	0.25 – 0.50	2 – 4	Loose	4 – 10
Firm	0.50 – 1.00	4 – 8	Medium Dense	10 – 30
Stiff	1.00 – 2.00	8 – 15	Dense	30 – 50
Very Stiff	2.00 – 4.00	15 – 30	Very Dense	50
Hard	>4.00	>30		

SOIL STRUCTURE

Calcareous	Containing deposits of calcium carbonate; generally nodular.
Slickenside	Having inclined planes of weakness that are slick and glossy in appearance.
Laminated	Composed of thin layers of varying color and texture.
Fissured	Containing shrinkage cracks frequently filled with fine sand or silt. Usually more or less vertical.
Interbedded	Composed of alternate layers of different soil types.
Jointed	Consisting of hair cracks that fall apart as soon as the confining pressure is removed.
Varved	Consisting of alternate thin layers of sand, silt or clay formed by variations in sedimentations during the various seasons of the year, of often exhibiting contrasting colors when partially dried. Each layer is generally less than ½" in thickness.
Stratified	Composed of, or arranged in layers (usually 1 inch or more)
Well-graded	Having a wide range of grain sizes and substantial amount of all intermediate particle sizes.
Poorly or Gap-graded	Having a range of sizes with some intermediate sizes missing.
Uniformly-graded	Predominantly of one grain size.

Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, 5B
San Antonio, Texas

InTEC Project Number: **S251271**

Date: 08/29/2025

Calculations

CBR = 2.0

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas		
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

The calculation method used to create this Tensar software output is the design method for flexible pavements given in the AASHTO Guide for Design of Pavement Structures 1993. The enhancement of performance due to the inclusion of Tensar geogrids in the stabilised layer is derived empirically from full scale pavement tests and trafficking trials carried out by independent authorities.

Results

Stabilized
132,800 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.440	1.200
Aggregate base (NX750)	6 in	0.300	1.800
Structural number (SN)			3.000

Unstabilized
113,700 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.440	1.320
Aggregate base	11.5 in	0.140	1.610
Structural number (SN)			2.930

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
100,000	3,000 psi	70%	0.45	4.2	2

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Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Local Type A (without Bus Traffic)**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

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Results

Stabilized
132,800 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	6 in	0.300	1.800
Structural number (SN)			3.000

Unstabilized
108,700 ESALs



	Thickness	Coeff.	SN
HMA layer 1	2 in	0.440	0.880
Aggregate base	14.5 in	0.140	2.030
Structural number (SN)			2.910

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
100,000	3,000 psi	70%	0.45	4.2	2

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Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		Reference	
Project		Location	
Customer		Designer	Murali Subramaniam
Company	InTEC	Date	September 26, 2025

Method of analysis

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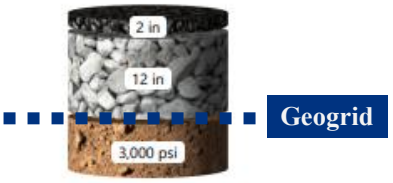
Results

Stabilized
132,800 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	6 in	0.300	1.800
Structural number (SN)			3.000

Unstabilized
111,200 ESALs



	Thickness	Coeff.	SN
HMA layer 1	2 in	0.440	0.880
Aggregate base	12 in	0.170	2.040
Structural number (SN)			2.920

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
100,000	3,000 psi	70%	0.45	4.2	2

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Geogrid option calculated with adjusted structural coefficient value (0.17)

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Local Type A (without Bus Traffic)**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

The calculation method used to create this Tensar software output is the design method for flexible pavements given in the AASHTO Guide for Design of Pavement Structures 1993. The enhancement of performance due to the inclusion of Tensar geogrids in the stabilised layer is derived empirically from full scale pavement tests and trafficking trials carried out by independent authorities.

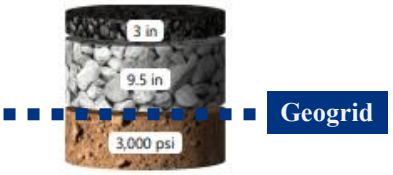
Results

Stabilized
132,800 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	6 in	0.300	1.800
Structural number (SN)			3.000

Unstabilized
115,000 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.440	1.320
Aggregate base	9.5 in	0.170	1.615
Structural number (SN)			2.935

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
100,000	3,000 psi	70%	0.45	4.2	2

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Geogrid option calculated with adjusted structural coefficient value (0.17)

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Local Type A (without Bus Traffic)**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

The calculation method used to create this Tensar software output is the design method for flexible pavements given in the AASHTO Guide for Design of Pavement Structures 1993. The enhancement of performance due to the inclusion of Tensar geogrids in the stabilised layer is derived empirically from full scale pavement tests and trafficking trials carried out by independent authorities.

Results

Stabilized
132,800 ESALs



Unstabilized
111,200 ESALs



Total HMA thickness should be within the same range on both pavement sections for accurate comparison: 2-3 in | 3-6 in | 6-14 in

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	6 in	0.300	1.800
Structural number (SN)			3.000

	Thickness	Coeff.	SN
HMA layer 1	2 in	0.440	0.880
HMA layer 2	6 in	0.340	2.040
Structural number (SN)			2.920

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
100,000	3,000 psi	70%	0.45	4.2	2

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Asphalt Pavement
Design Analysis

Tensar. A Division of CMC

Design		Reference	
Project		Location	
Customer		Designer	Murali Subramaniam
Company	InTEC	Date	September 26, 2025

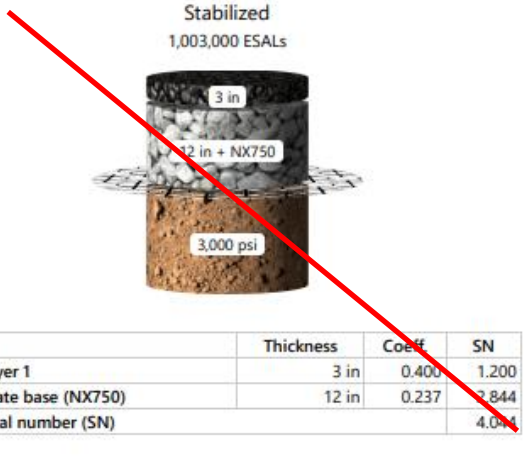
Method of analysis

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Results

Stabilized

1,003,000 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	12 in	0.237	2.844
Structural number (SN)			4.044

Unstabilized

1,013,500 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.440	1.320
HMA layer 2	2 in	0.140	0.280
Aggregate base	17.5 in	0.140	2.450
Structural number (SN)			4.050

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
1,000,000	3,000 psi	70%	0.45	4.2	2

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Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Local Type A (with Bus Traffic)**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
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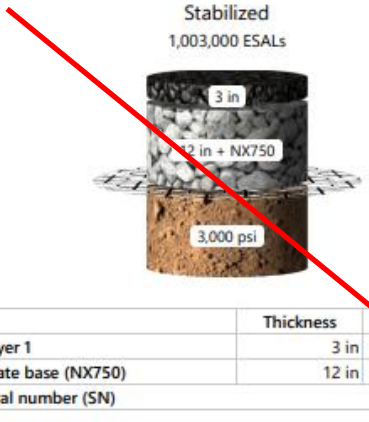
Design		Reference	
Project		Location	
Customer		Designer	Murali Subramaniam
Company	InTEC	Date	September 26, 2025

Method of analysis

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Results

Stabilized
1,003,000 ESALs



	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	12 in	0.237	2.844
Structural number (SN)			4.044

Unstabilized
1,152,800 ESALs



Geogrid

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.440	1.320
Aggregate base	16.5 in	0.170	2.805
Structural number (SN)			4.125

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
1,000,000	3,000 psi	70%	0.45	4.2	2

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Geogrid option calculated with adjusted structural coefficient value

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Local Type A (with Bus Traffic)**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

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Results

Stabilized
1,003,000 ESALs



Unstabilized
1,331,400 ESALs



Total HMA thickness should be within the same range on both pavement sections for accurate comparison: 2-3 in | 3-6 in | 6-14 in

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	12 in	0.237	2.844
Structural number (SN)			4.044

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.440	1.320
HMA layer 2	8.5 in	0.340	2.890
Structural number (SN)			4.210

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
1,000,000	3,000 psi	70%	0.45	4.2	2

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Asphalt Pavement
Design Analysis

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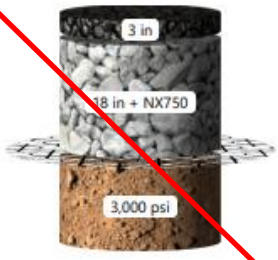
Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

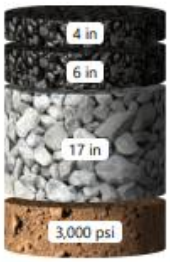
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Results

Stabilized
2,055,500 ESALs



Unstabilized
2,055,500 ESALs



Total HMA thickness should be within the same range on both pavement sections for accurate comparison: 2-3 in | 3-6 in | 6-14 in

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	18 in	0.210	3.780
Structural number (SN)			4.980

	Thickness	Coeff.	SN
HMA layer 1	4 in	0.440	1.760
HMA layer 2	6 in	0.140	0.840
Aggregate base	17 in	0.140	2.380
Structural number (SN)			4.980

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
2,000,000	3,000 psi	90%	0.45	4.2	2

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Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

The calculation method used to create this Tensar software output is the design method for flexible pavements given in the AASHTO Guide for Design of Pavement Structures 1993. The enhancement of performance due to the inclusion of Tensar geogrids in the stabilised layer is derived empirically from full scale pavement tests and trafficking trials carried out by independent authorities.

Results



Total HMA thickness should be within the same range on both pavement sections for accurate comparison: 2-3 in | 3-6 in | 6-14 in

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	18 in	0.210	3.780
Structural number (SN)			4.980

	Thickness	Coeff.	SN
HMA layer 1	4 in	0.440	1.760
HMA layer 2	6 in	0.170	1.020
Aggregate base	13 in	0.170	2.210
Structural number (SN)			4.990

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
2,000,000	3,000 psi	90%	0.45	4.2	2

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Limitations of this Report
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Geogrid option calculated with adjusted structural coefficient value

Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, & 5B
San Antonio, Texas

Local Type B

InTEC Project Number: **S251271-R1**

Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		Reference	
Project		Location	
Customer		Designer	Murali Subramaniam
Company	InTEC	Date	September 26, 2025

Method of analysis

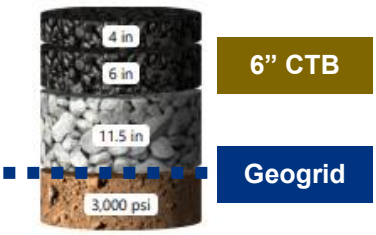
The calculation method used to create this Tensar software output is the design method for flexible pavements given in the AASHTO Guide for Design of Pavement Structures 1993. The enhancement of performance due to the inclusion of Tensar geogrids in the stabilised layer is derived empirically from full scale pavement tests and trafficking trials carried out by independent authorities.

Results

Stabilized
2,055,500 ESALs



Unstabilized
2,040,200 ESALs



Total HMA thickness should be within the same range on both pavement sections for accurate comparison: 2-3 in | 3-6 in | 6-14 in

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	18 in	0.210	3.780
Structural number (SN)			4.980

	Thickness	Coeff.	SN
HMA layer 1	4 in	0.440	1.760
HMA layer 2	6 in	0.210	1.260
Aggregate base	11.5 in	0.170	1.955
Structural number (SN)			4.975

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
2,000,000	3,000 psi	90%	0.45	4.2	2

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6" CTB Cement Treated Base

Geogrid option calculated with adjusted structural coefficient value

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Local Type B**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design		**Reference**	
Project		**Location**	
Customer		**Designer**	Murali Subramaniam
Company	InTEC	**Date**	September 26, 2025

Method of analysis

The calculation method used to create this Tensar software output is the design method for flexible pavements given in the AASHTO Guide for Design of Pavement Structures 1993. The enhancement of performance due to the inclusion of Tensar geogrids in the stabilised layer is derived empirically from full scale pavement tests and trafficking trials carried out by independent authorities.

Results

Stabilized
2,055,500 ESALs



Unstabilized
2,086,400 ESALs



Total HMA thickness should be within the same range on both pavement sections for accurate comparison: 2-3 in | 3-6 in | 6-14 in

	Thickness	Coeff.	SN
HMA layer 1	3 in	0.400	1.200
Aggregate base (NX750)	18 in	0.210	3.780
Structural number (SN)			4.980

	Thickness	Coeff.	SN
HMA layer 1	4 in	0.440	1.760
HMA layer 2	9.5 in	0.340	3.230
Structural number (SN)			4.990

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
2,000,000	3,000 psi	90%	0.45	4.2	2

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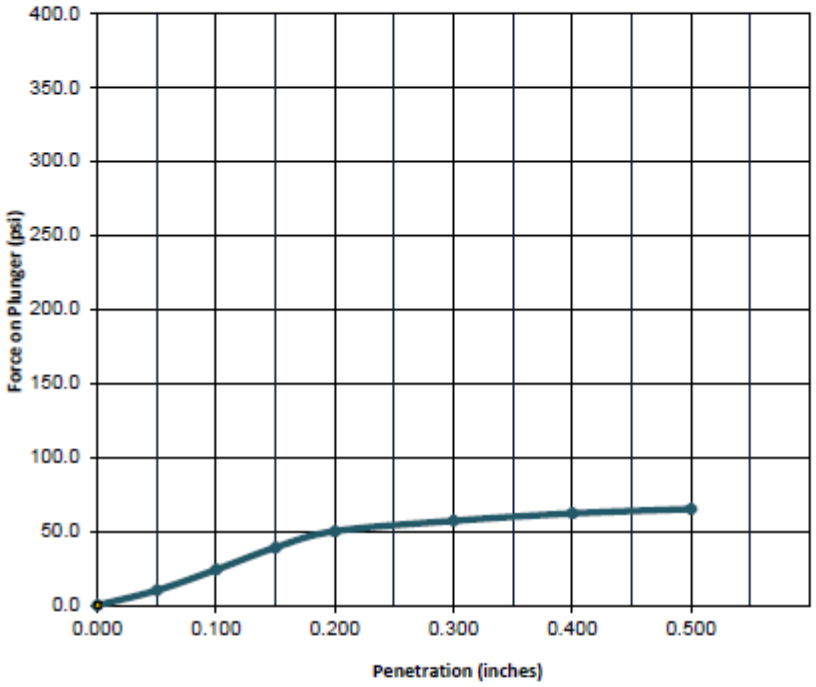
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Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Local Type B**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

InTEC of San Antonio

ASTM D-1883 California Bearing Ratio Test Report

Load Penetration Curve



CBR Results

Results	A	B	C	D	Average
0.1 in Pen.	2.4				
0.2 in Pen.	3.3				
Moisture (%)	19.20				
Density (pcf)	101.40				
Final Moisture (%)	27.60				
Final Density (pcf)	89.10				

Project Number	S251271	Sample Location	
Project Name	Tres Laurels, 1B, 4B, 5A, 5B	Specimen A	Vicinity of TP-3
Date	9/19/2025		
Client	Lennar Homes	Specimen C	
		Specimen D	
Job Ref.		Liquid Limit:	62.0
Sample Num.		Plastic Limit:	20.0
Remarks	Dark Brown Clay		

Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, & 5B
San Antonio, Texas

CBR Test Results (Clay)

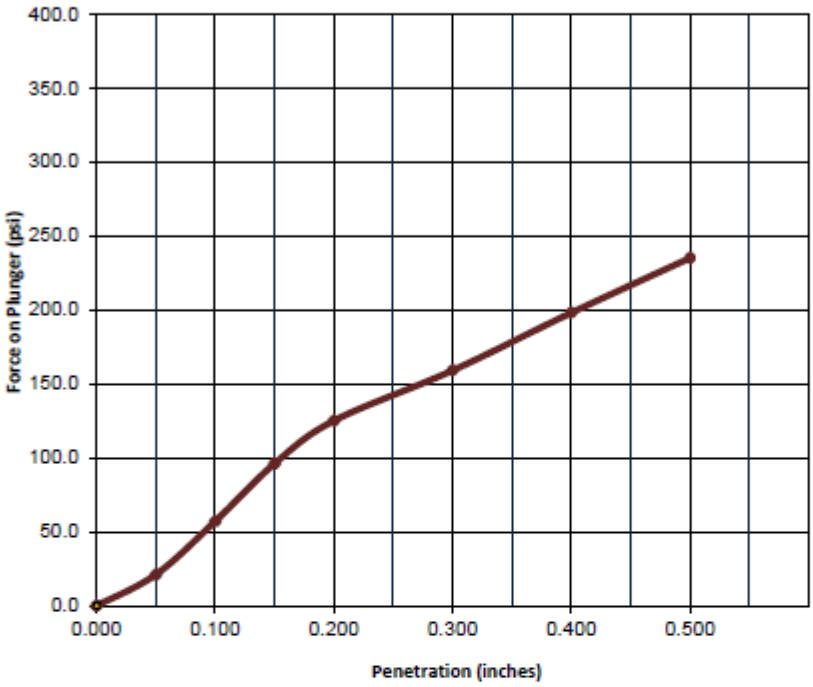
InTEC Project Number: **S251271-R1**

Date: 09/25/2025

InTEC of San Antonio

ASTM D-1883 California Bearing Ratio Test Report

Load Penetration Curve



CBR Results					
Results	**A**	**B**	**C**	**D**	**Average**
0.1 in Pen.	5.7				
0.2 in Pen.	8.3				
Moisture (%)	11.40				
Density (pcf)	120.70				
Final Moisture (%)	18.20				
Final Density (pcf)	101.60				

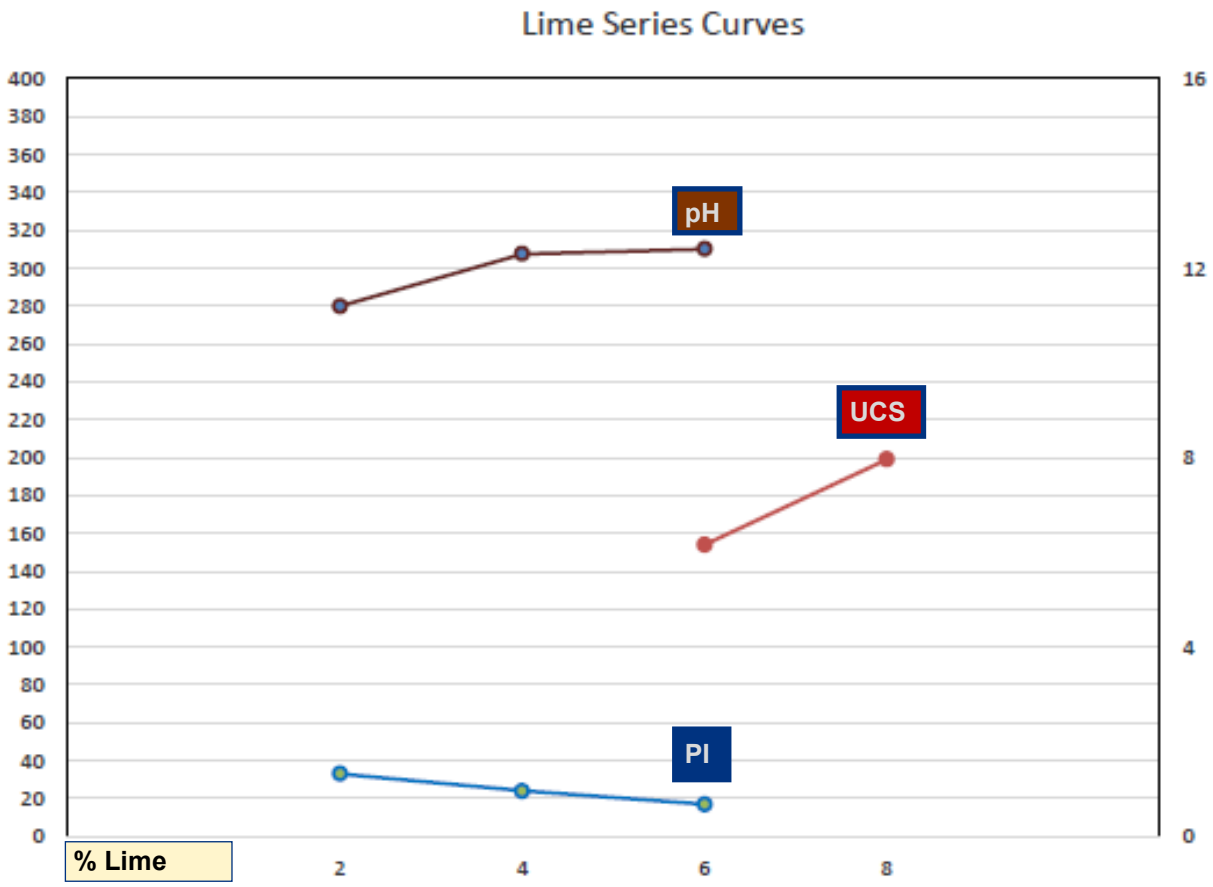
Project Number	S251271	**Sample Location**	
Project Name	Tres Laurels, 1B, 4B, 5A, 5B	Specimen A	Vicinity of TP-10
Date	9/17/2025		
Client	Lennar Homes	Specimen C	
		Specimen D	
Job Ref.		Liquid Limit:	31.0
Sample Num.		Plastic Limit:	14.0
Remarks	Tan Calcareous Clay, Marl, Caliche		

Subsurface Exploration and Pavement Analysis
Proposed New Streets
Tres Laurels, Units 1B, 4B, 5A, & 5B
San Antonio, Texas

CBR Test Results (Marl)

InTEC Project Number: **S251271-R1**

Date: 09/25/2025



Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas	**Lime Series**	
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Appendix

Subsurface Exploration and Pavement Analysis Proposed New Streets Tres Laurels, Units 1B, 4B, 5A, & 5B San Antonio, Texas		
	InTEC Project Number: **S251271-R1**	Date: 09/25/2025

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

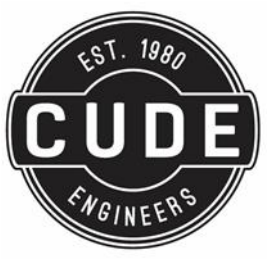
While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

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ATTACHMENTS



TRES LAURELS, UNIT 4B
CONSTRUCTION PLANS

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)

CIVIL PLANS

- C0.00 GENERAL NOTES

- C1.00 – STORMWATER POLLUTION PREVENTION PLAN
- C1.01 – STORMWATER POLLUTION PREVENTION PLAN
- C1.D1 – STORMWATER POLLUTION PREVENTION PLAN STANDARD DETAILS

- C2.00 – GRADING PLAN
- C2.01 – GRADING PLAN

- C3.00 – UTILITY LAYOUT PLAN
- C3.01 – UTILITY LAYOUT PLAN

- C4.00 – SANITARY SEWER MASTER PLAN
- C4.01 – SANITARY SEWER MASTER PLAN
- C4.02 – SANITARY SEWER PLAN & PROFILE – LINE '4B'
- C4.03 – SANITARY SEWER PLAN & PROFILE – LINE '4I' & '4G'
- C4.04 – SANITARY SEWER PLAN & PROFILE – LINE '4H'
- C4.05 – SANITARY SEWER PLAN & PROFILE – LINE '4H' & '4K'
- C4.06 – SANITARY SEWER PLAN & PROFILE LINE '4J'
- C4.D1 – SANITARY SEWER GENERAL NOTES

- C5.00 – WATER DISTRIBUTION PLAN
- C5.01 – WATER DISTRIBUTION PLAN
- C5.D1 – WATER DISTRIBUTION SYSTEM GENERAL NOTES

- C6.00 – PROPOSED DRAINAGE MASTER PLAN
- C6.01 – DRAINAGE PLAN & PROFILE – DRAIN '4E'
- C6.02 – DRAINAGE PLAN & PROFILE – DRAIN '4F'
- C6.03 – DRAINAGE PLAN & PROFILE – DRAIN '4G'
- C6.04 – DRAINAGE PLAN & PROFILE – DRAIN '4G'
- C6.05 – DRAINAGE PLAN & PROFILE – DRAIN '4G'
- C6.D1 – DRAINAGE DETAILS
- C6.D2 – DRAINAGE DETAILS

- C7.00 – STREET PLAN & PROFILE – RED OAK BEND
- C7.01 – STREET PLAN & PROFILE – RIVER BIRCH BEND
- C7.02 – STREET PLAN & PROFILE – WHITE PINE COVE
- C7.03 – STREET PLAN & PROFILE – WHITE PINE COVE
- C7.04 – STREET PLAN & PROFILE – KISSING OAK COVE
- C7.05 – STREET PLAN & PROFILE – RANGER OAK RIDGE
- C7.06 – STREET PLAN & PROFILE – CEDARWOOD COVE
- C7.D1 – STREET DETAILS
- C7.D2 – STREET DETAILS
- C7.D3 – STREET DETAILS

- C8.00 – TRAFFIC SIGNAGE PLAN
- C8.01 – TRAFFIC SIGNAGE PLAN
- C8.D1 – TXDOT & BEXAR COUNTY DETAILS – SIGN MOUNTING
- C8.D2 – TXDOT DETAILS – SIGN MOUNTING

SEWER: SOUTH SEWERSHED – DOS RIOS W.R.C. (LOWER MEDINA RIVER WATERSHED)

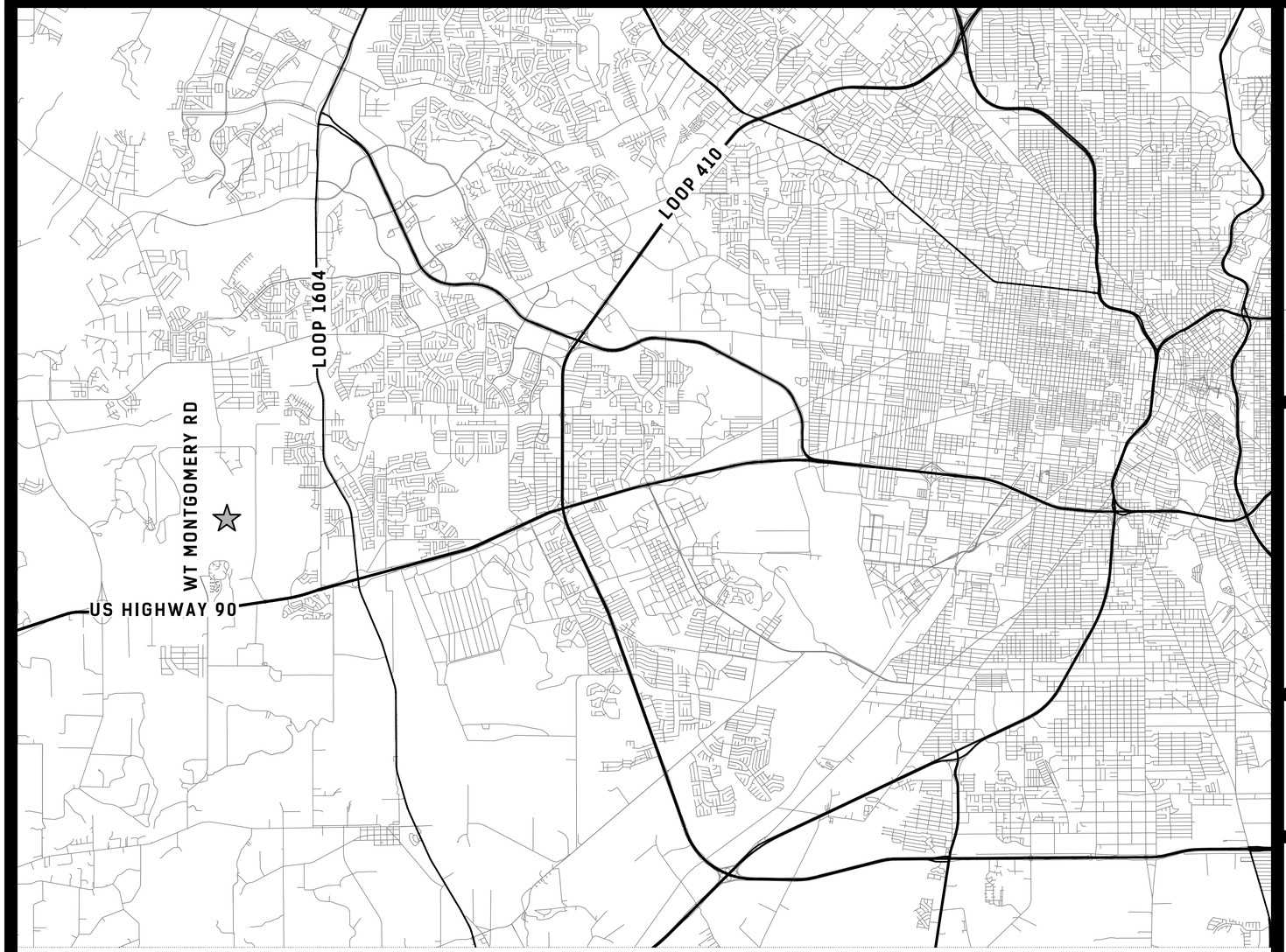
Developer's Name	LENNAR HOMES				
Developer's Address	100 NE LOOP 410 SUITE 1155				
City	SAN ANTONIO	State	TX	Zip	78216
Phone #	(210) 403-6200	Fax #	-		
SAWS Block Map #	082-568 & 084-568	Total EDU's	171	Total Acreage	28.13
Total Linear Footage of Pipe	4273 L.F. OF 8" SS - SDR 26			Plat No.	24-11800290
Number of Lots	171	SAWS Job No.	XX-XXXX		

SAWS PRESSURE ZONE 950 W

Developer's Name	LENNAR HOMES				
Developer's Address	100 NE LOOP 410 SUITE 1155				
City	SAN ANTONIO	State	TX	Zip	78216
Phone #	(210) 403-6200	Fax #	-		
SAWS Block Map #	082-568 & 084-568	Total EDU's	172	Total Acreage	28.13
Total Linear Footage of Pipe	8" – 4,504 L.F. ; 2" H.D.P.E. – 292 L.F.			Plat No.	24-11800290
Number of Lots	171	SAWS Job No.	XX-XXXX		

CONSTRUCTION DOCUMENTS FOR

TRES LAURELS UNIT 4B



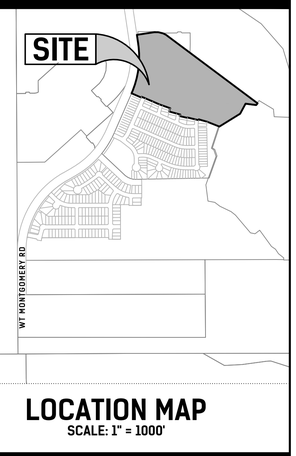
VICINITY MAP
N.T.S.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

SAN ANTONIO | AUSTIN | SAN MARCOS

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



LOCATION MAP
SCALE: 1" = 1000'

DEVELOPER:
LENNAR HOMES OF TEXAS LAND
AND CONSTRUCTION, LTD.
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TEXAS 78216
TEL: (210) 403-6200

N W E S

MDP NUMBER:
24-11100004

PLAT NUMBER:
24-11800290

PROJECT NUMBER:
03050.019

STATE OF TEXAS
CHRISTOPHER J. CHAFFEE
127282
LICENSED
PROFESSIONAL ENGINEER
03/19/2025

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

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER
03/13/2025

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

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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.

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

CUDE ENGINEERS
EST. 1980

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

TRES LAURELS
UNIT 4B

GENERAL NOTES

DATE
01/13/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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01/13/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

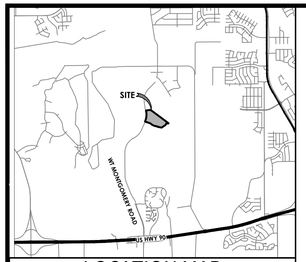
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

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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.

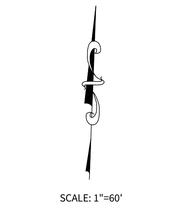
OWNER/DEVELOPER:

LENNAR HOMES OF TEXAS LAND
ANDCONSTRUCTION, LTD.
A TEXAS LIMITED PARTNERSHIP
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT: CHRIS CHAFFEE, P.E.
4122 POND HILL RD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951





LEGEND

- PROPERTY LINE
- EXISTING CONTOURS — 930 —
- PROPOSED CONTOURS
- BMP ITEM NUMBER [1]
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- SILT FENCE SF
- FLOW ARROW EX. GROUND
- FLOW ARROW PROP. GROUND
- STAGING AREA
- CONCRETE WASHOUT PIT
- LIMITS OF CONSTRUCTION
- TEMPORARY STABILIZATION
- PERMANENT STABILIZATION
- ROCK BERM
- 100-YR ULTIMATE DEVELOPMENT 1% ANNUAL CHANCE FLOODPLAIN
- 100-YR EFFECTIVE (EXISTING) FEMA 1% ANNUAL CHANCE FLOODPLAIN

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.
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.
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8. TEMPOPRARY STABILIZATION MUST BE COMPLETED NO MORE THAN 14 CALENDAR DAYS AFTER INITIATION OF SOIL STABILIZATION MEASURES, AND FINAL STABILIZATION OF 80% COVERAGE MUST BE ACHIEVED PRIOR TO TERMINATION OF PERMIT COVERAGE.

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

TRES LAURELS UNIT 4B

STORMWATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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06/19/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

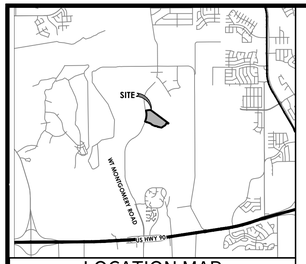
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TBPELS No. 10048500

PLAT NO.
24-11800290

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CIVIL ENGINEER:

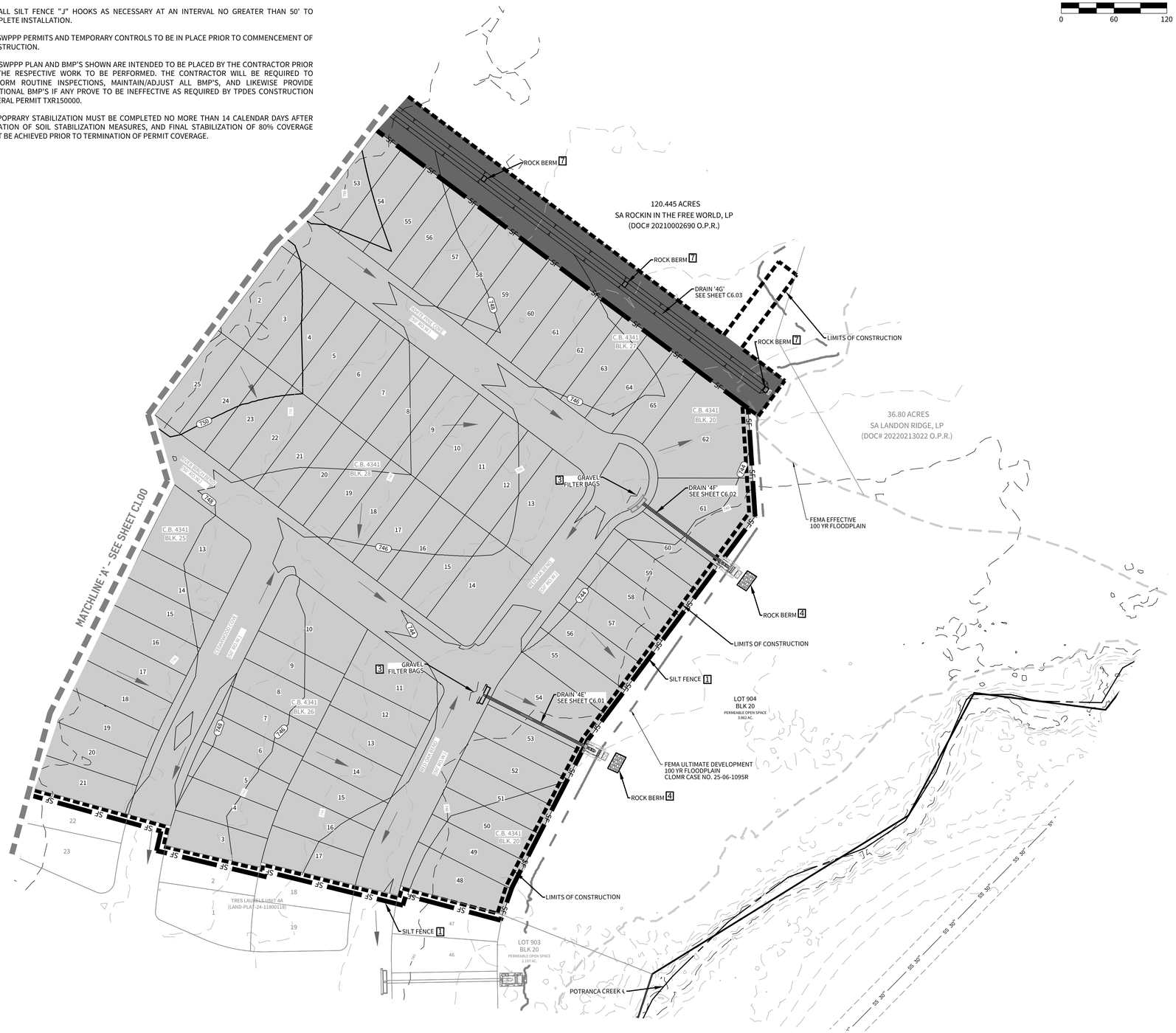
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TEL: (210) 681-2951

LEGEND

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- PROPOSED CONTOURS
- BMP ITEM NUMBER [1]
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951

TRES LAURELS UNIT 4B

STORMWATER POLLUTION PREVENTION PLAN

DATE
06/18/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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06/19/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
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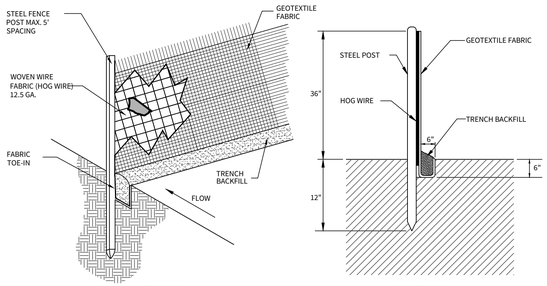
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
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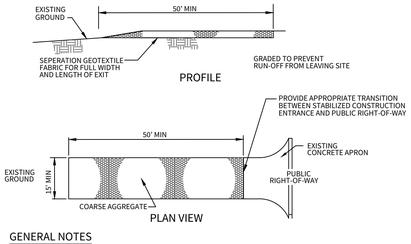
PLAN SECTION

NOTES:

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NON WOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN 2 , ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.
2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FT 2 , AND BRINDELL HARDNESS EXCEEDING 140.
3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12.5 GAUGE MINIMUM.
4. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1 FOOT DEEP AND SPACED NOT MORE THAN 5 FEET ON CENTER.
5. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.
6. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
7. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
8. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
9. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
10. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES, OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE OLD FENCE.
11. REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.
12. REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

1 SILT FENCE DETAIL

SCALE: NONE



GENERAL NOTES

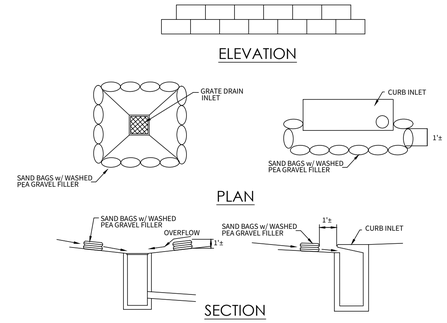
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A TRUCK WASHING AREA WHEN SHOWN ON THE CONSTRUCTION DRAWING. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.
5. STONE MATERIAL SHALL CONSIST OF 3 TO 5 INCH OPEN GRADED ROCK AND SHALL BE PLACED IN A LAYER OF AT LEAST 8 INCHES THICKNESS.

NOTES:

1. THE AGGREGATE SHOULD CONSIST OF 4 TO 8 INCH WASHED STONE OVER A STABLE FOUNDATION.
2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8 INCHES.
3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD 2 , A MULLEN BURST RATING OF 140 LB/IN 2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
4. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
5. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
6. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
7. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
8. PLACE STONE TO DIMENSIONS AND GRADE SHOWN. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
9. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
10. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
11. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
12. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
13. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE.

2 TEMPORARY CONSTRUCTION ENTRANCE / EXIT

SCALE: NONE

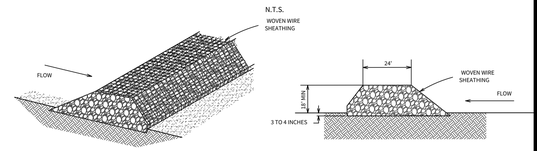


BAGGED GRAVEL INLET FILTER NOTES

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 BAGS SHOULD BE FILLED WITH ¾" GRAVEL .
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
10. BAGGED GRAVEL INLET FILTERS TO BE USED DURING THE LAND DEVELOPMENT STAGE AND NOT THE HOME DEVELOPMENT STAGE.

3 BAGGED GRAVEL INLET FILTER

SCALE: NONE

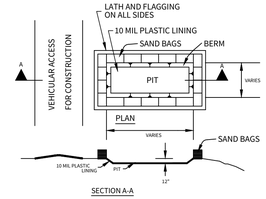


NOTES:

1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.
2. CLEAN, OPEN GRADED 3 TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-TO 8-INCH DIAMETER ROCKS MAY BE USED.
3. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE.
4. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
5. PLACE THE ROCK ALONG THE SHEATHING TO A HEIGHT NOT LESS THAN 18".
6. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
7. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
8. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.
9. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
10. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT OF IN AN APPROVED MANNER AND REPAIR ANY LOOSE WIRE SHEATHING.
11. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
12. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

4 ROCK BERM DETAIL

SCALE: NONE

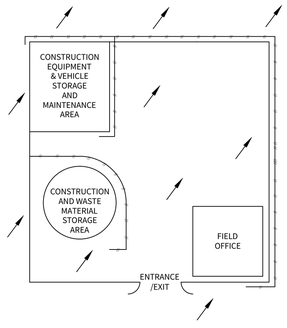


NOTES:

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.
2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

5 CONCRETE TRUCK WASHOUT PIT

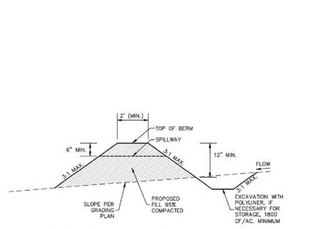
SCALE: NONE



NOTE: CONTRACTOR SHALL ADJUST STORM WATER POLLUTION PREVENTION PLAN CONTROLS AS NECESSARY TO PROMOTE EROSION CONTROL IN AND AROUND DESIGNATED STAGING AREA.

6 TYP. CONSTRUCTION STAGING AREA

SCALE: NONE



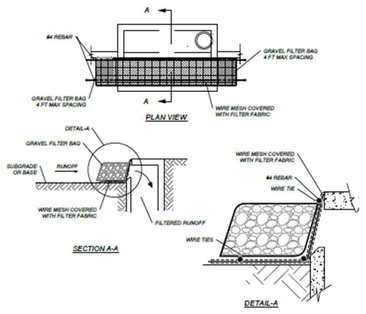
EARTHEN BERM W/ POLYLINER AND SPILLWAY

NOT TO SCALE

NOTE: EARTHEN BERMS ARE TO SPAN ACROSS PROPOSED STREET SECTION (APPROX. 30-FEET WIDE) FROM CURB TO CURB

7 EARTHEN CHECK BERM

SCALE: NONE



CURB INLET PROTECTION (ALRTERNATE)

8 CURB INLET PROTECTION (ALTERNATE)

SCALE: NONE

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

TRES LAURELS UNIT 4B

STORMWATER POLLUTION PREVENTION PLAN STANDARD DETAILS

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
1.
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4.
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10.

01/09/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

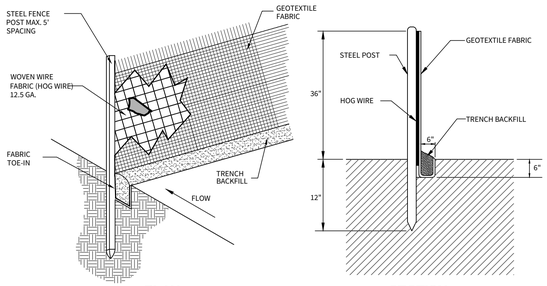
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C1.D1

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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.

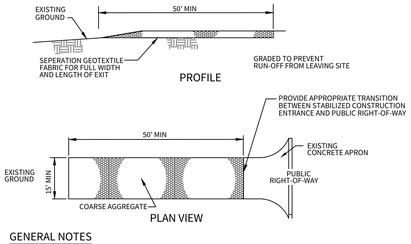


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1 SILT FENCE DETAIL

SCALE: NONE



GENERAL NOTES

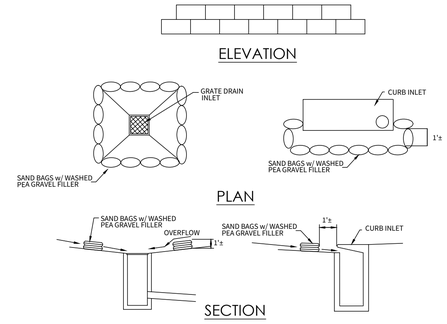
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SCALE: NONE

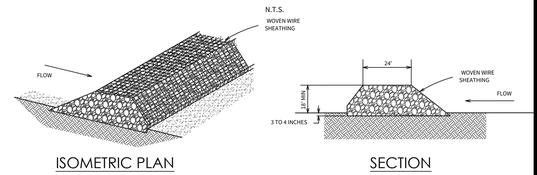


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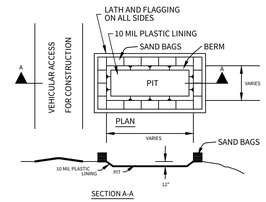


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8. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.
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10. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT OF IN AN APPROVED MANNER AND REPAIR ANY LOOSE WIRE SHEATHING.
11. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
12. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

4 ROCK BERM DETAIL

SCALE: NONE

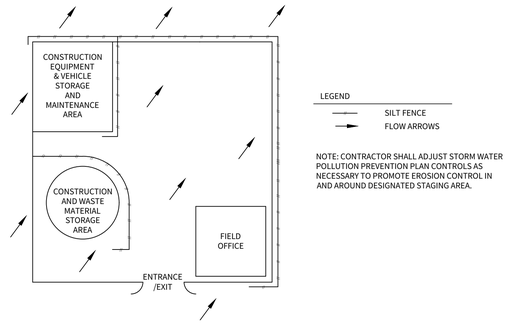


NOTES:

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.
2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

5 CONCRETE TRUCK WASHOUT PIT

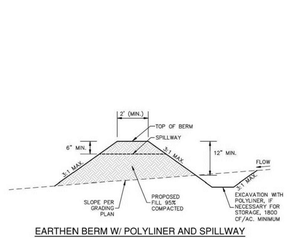
SCALE: NONE



NOTE: CONTRACTOR SHALL ADJUST STORM WATER POLLUTION PREVENTION PLAN CONTROLS AS NECESSARY TO PROMOTE EROSION CONTROL IN AND AROUND DESIGNATED STAGING AREA.

6 TYP. CONSTRUCTION STAGING AREA

SCALE: NONE



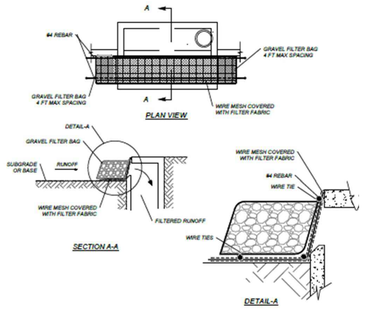
EARTHEN BERM W/ POLYLINER AND SPILLWAY

NOT TO SCALE

NOTE: EARTHEN BERMS ARE TO SPAN ACROSS PROPOSED STREET SECTION (APPROX. 30-FEET WIDE) FROM CURB TO CURB

7 EARTHEN CHECK BERM

SCALE: NONE



CURB INLET PROTECTION (ALRTERNATE)

8 CURB INLET PROTECTION (ALTERNATE)

SCALE: NONE

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

TRES LAURELS UNIT 4B

STORMWATER POLLUTION PREVENTION PLAN STANDARD DETAILS

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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01/09/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

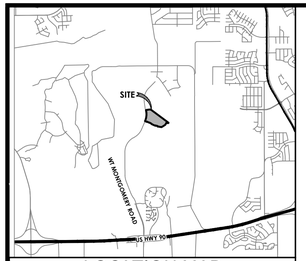
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C1.D1

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LOCATION MAP

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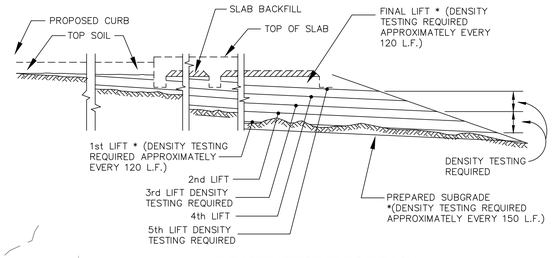
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CIVIL ENGINEER:

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CONTACT: CHRIS CHAFFEE, P.E.
4122 POND HILL RD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951





DENSITY TEST FREQUENCY

NOT TO SCALE

SCALE: 1"=50'

0 50 100

LEGEND

- PROPOSED CONTOUR — 770
- EXISTING CONTOUR — 768
- PROPOSED ELEVATION — 771.12
- EXISTING ELEVATION — 771.49E
- TOP OF WALL — 771.12 TW
- BOTTOM OF WALL — 771.12 BW
- GRADE BREAK — GRADE BREAK
- BUILDING SETBACK
- SWALE
- RETAINING WALL
- 100-YR ULTIMATE DEVELOPMENT 1% ANNUAL CHANCE FLOODPLAIN
- 100-YR EFFECTIVE (EXISTING) FEMA 1% ANNUAL CHANCE FLOODPLAIN

NOTE:

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

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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.

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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.

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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.

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3. FILLS SHALL BE TESTED A MAXIMUM OF EACH EIGHTEEN INCHES (18") OF FILL.
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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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CUDE ENGINEERS EST. 1980

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San Antonio, Texas 78231
P:(210) 681.2951

TRES LAURELS UNIT 4B

GRADING PLAN

DATE
03/12/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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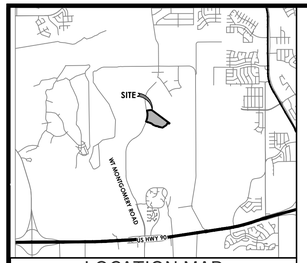
03/13/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C2.00

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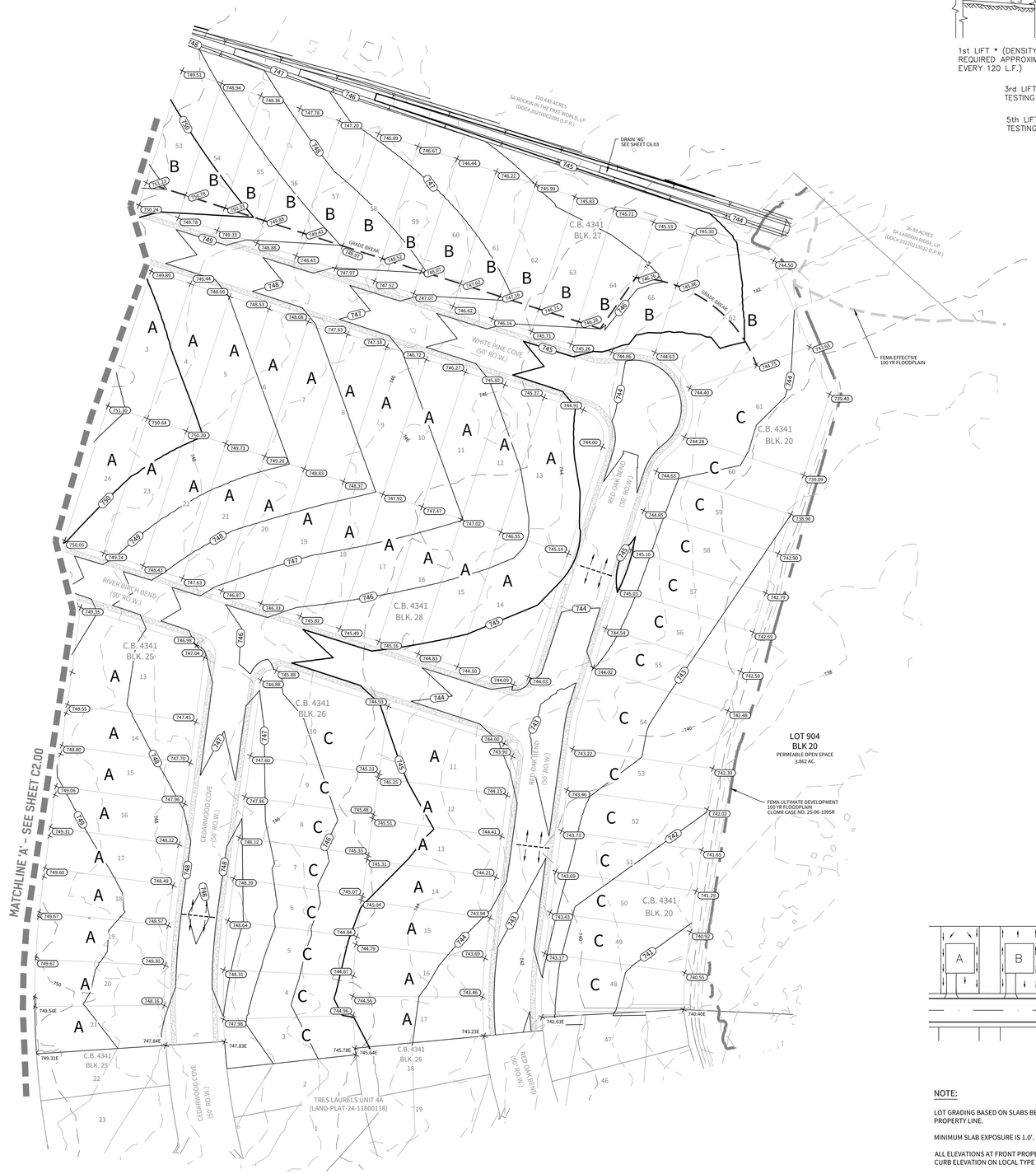
LOCATION MAP
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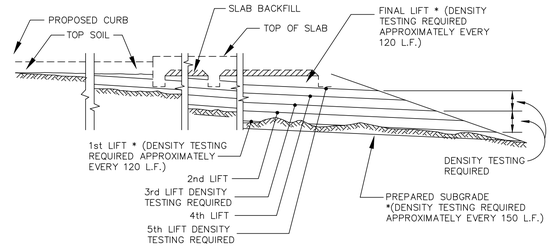
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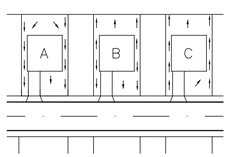


DENSITY TEST FREQUENCY
NOT TO SCALE

SCALE: 1"=50'
0 50 100

LEGEND

PROPOSED CONTOUR	770
EXISTING CONTOUR	768
PROPOSED ELEVATION	771.12
EXISTING ELEVATION	771.49E
TOP OF WALL	771.12 TW
BOTTOM OF WALL	771.12 BW
GRADE BREAK	GRADE BREAK
BUILDING SETBACK	
SWALE	
RETAINING WALL	
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TRES LAURELS UNIT 4B

GRADING PLAN

DATE
03/12/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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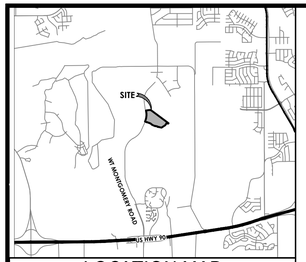
03/13/2025
STATE OF TEXAS
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LOCATION MAP
N.T.S.

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.CA. ESM'T
BUILDING SETBACK LINE	B.S.L.
LANDSCAPE	L.S.
UTILITY CONDUIT CROSSING	UTIL
IRRIGATION CONDUIT CROSSING	IRR

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 SYSTEMSK PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NOTE:

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

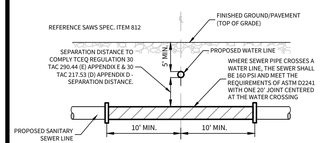
AT&T AND TIME WARNER CABLE LINES TO GO INTO JOINT TRENCH WITH C.P.S. ENERGY
LOTS WITH CONFLICTING TRANSFORMER / SECONDARY ENCLOSURE ELECTRIC SERVICE AND WATER METER PLACED 5' FROM PROPERTY LINE WHERE THE CONFLICT OCCURS.

TYPICAL UTILITY CROSSINGS WILL HAVE
3 - 6" SCH 80 PVC CONDUIT WITH SWEEPS,
2 - 4" SCH 40 PVC CONDUIT WITH SWEEPS,
THE TOTAL AMOUNT OF CONDUIT TO BE USED WILL BE DETERMINED DURING CONSTRUCTION.

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

* CONDUIT ONLY TO BE INSTALLED IF:

1.) STREET BASE AND DRAINAGE COMPLETION PRECEDES CPS UTILITY LINE INSTALLATION.
2.) INSTALLATION IS AUTHORIZED BY THE DEVELOPER.



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

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND WATER AND SEWER LINES EXIST ALONG RANGER OAK RIDGE, KISSING OAK COVE, CEDARWOOD COVE AND RED OAK BEND. 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.

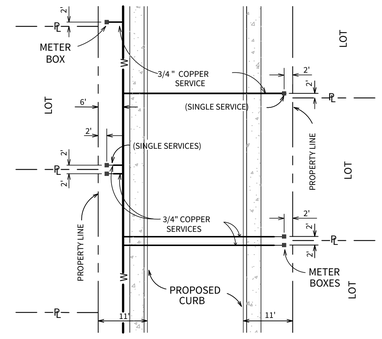
SCALE: 1"=50'
0 50 100

CAUTION!!! EARTHEN CHANNEL & 8" WATER CROSSING
16' SAWS WATER ESM'T.
DRAINAGE EASEMENT (0.241 Ac.) DOC. #20230026143 O.P.R.
26' X 48' E.G.T.CA. ESM'T.
5' E.G.T.CA. ESM'T.
14' E.G.T.CA. ESM'T.
16' PUBLIC DRAINAGE ACCESS ESM'T. & SAWS WATER ESM'T.
OFF-LOT VAR. WIDTH DRAINAGE ESM'T. (1.611 Ac.)
DRAIN '4G' SEE SHEET CG.04
WEST RIDGE COVE (60' R.O.W.)
WEST MONTGOMERY ROAD (120' R.O.W.)
RIVER BIRCH BEND (60' R.O.W.)
KISSING OAK COVE (50' R.O.W.)
CEDARWOOD COVE (50' R.O.W.)
RANGER OAK RIDGE (60' R.O.W.)
RED OAK BEND (50' R.O.W.)
C.B. 4341 BLK. 27
C.B. 4341 BLK. 21
C.B. 4341 BLK. 24
C.B. 4341 BLK. 25
C.B. 4341 BLK. 26
C.B. 4341 BLK. 28
LOT 901 BLK 27
PERMEABLE OPEN SPACE & PUB, VAR. WID. DRN. ESM'T. 0.250 AC.
LOT 902 BLK 21
PERMEABLE OPEN SPACE & PUB. VAR. WID. DRN. ESM'T. 0.326 AC.
BEXAR COUNTY 5.461 ACRE RIGHT-OF-WAY DEDICATION (DOC# 20210123679 O.P.R.)
78.67 ACRES SA LANDON RIDGE, LP (DOC# 20220213022 O.P.R.)
OFF-LOT 50' x 60' DRAINAGE, SEWER & WATER ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC STREET R.O.W. (0.069 Ac.)
OFF-LOT 25' x 25' SANITARY SEWER ESM'T. (0.014 Ac.)
3/4" IRR. METER WITH 5/8" SERVICE
3-#4" SCH 40 CONDUITS
120.915 ACRES SA REGION NINE FREE WORLD LP (DOC# 20220228558 O.P.R.)
LOT 4H MONTGOMERY PARK (0.787 Ac.)
TRES LAURELS UNIT 4A (LAND-PLAT-24-11800118)

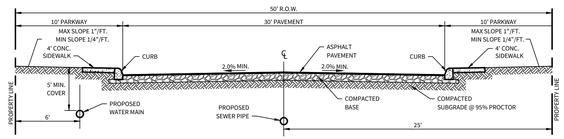
STA 14+08.91 SS LINE '4J'
MH NO. 4J-4
STA 15+30.38 SS LINE '4J'
MH NO. 4J-5
STA 14+79.79 SS LINE '4J'
2" WATER & 8" SANITARY SEWER CROSSING
STA 10+70.01 SS LINE '4J'
MH NO. 4J-3
STA 14+90.45 SS LINE '4H'
MH NO. 4H-6
STA 13+85.81 SS LINE '4H'
8" WATER & 8" SANITARY SEWER CROSSING
STA 12+55.34 SS LINE '4H'
MH NO. 4H-5
STA 16+86.86 SS LINE '4H'
MH NO. 4H-7
STA 17+22.52 SS LINE '4H'
MH NO. 4H-8
STA 20+58.66 SS LINE '4B'
MH NO. 4B-9
STA 10+03.67 SS LINE '4H'
MH NO. 4H-4
STA 9+76.79 SS LINE '4H'
8" WATER & 8" SANITARY SEWER CROSSING
STA 18+83.56 SS LINE '4B'
MH NO. 4B-8
STA 16+90.65 SS LINE '4B'
EX MH NO. 4B-7
STA 2+80.58 SS LINE '4I'
EX MH NO. 4I-1
MATCHLINE 'A' - SEE SHEET C3.01

CONDUIT NOTES:

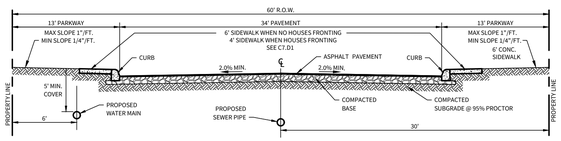
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WATER METER BOX LOCATION
N.T.S.



LOCAL "A" STREET CROSS-SECTION



LOCAL "B" STREET CROSS-SECTION

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

TRES LAURELS UNIT 4B

UTILITY LAYOUT PLAN

DATE 03/12/2025
PROJECT NO. 03050.019
DRAWN BY IV/RM/JS
CHECKED BY MT/CC

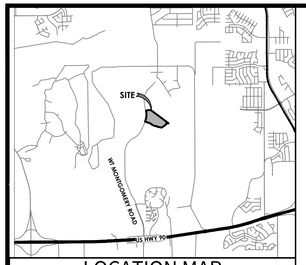
REVISIONS
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

03/13/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 24-11800290

C3.00

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



LOCATION MAP
N.T.S.

LEGEND

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PROPOSED SANITARY SEWER	8"SS
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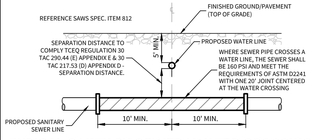
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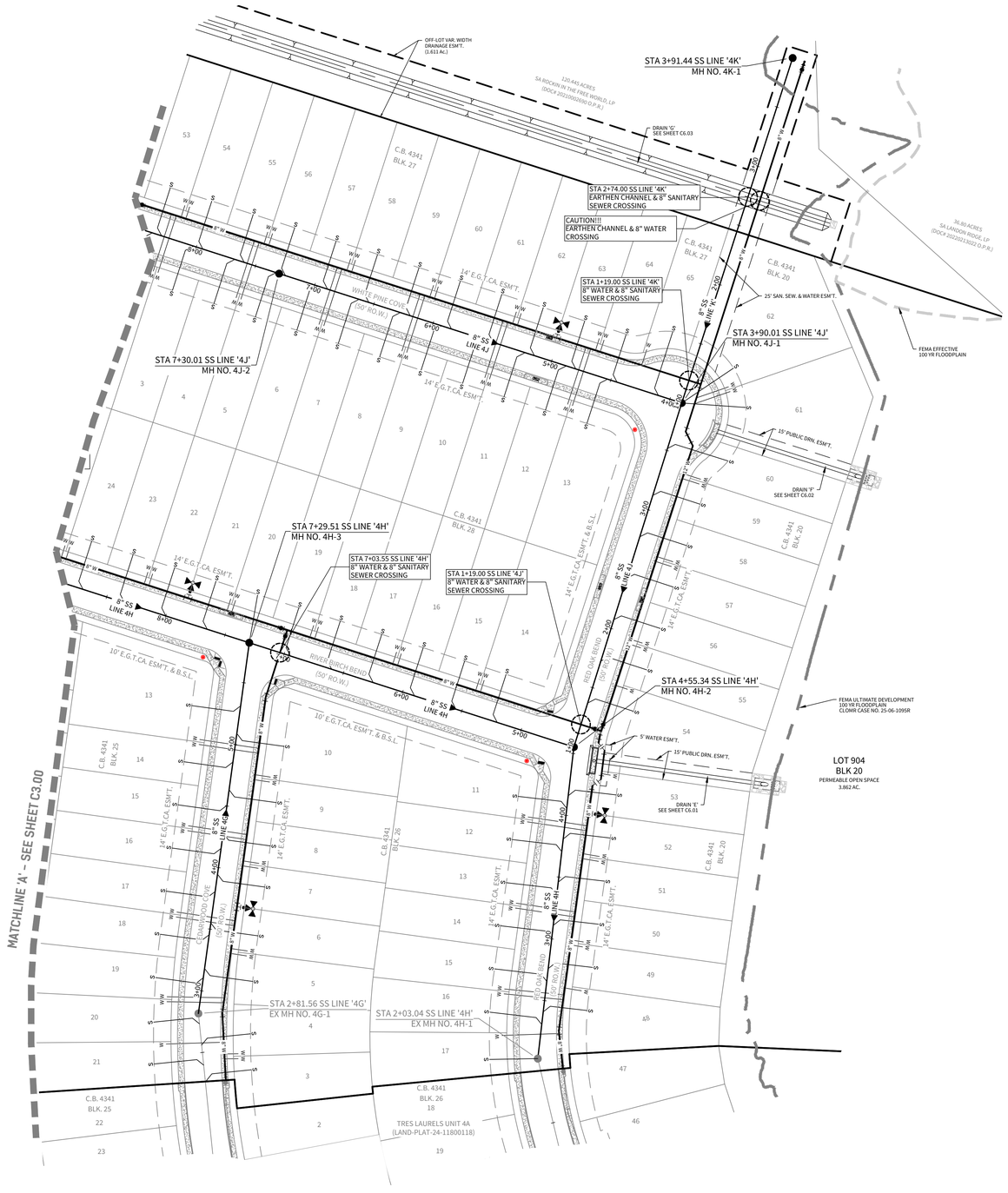
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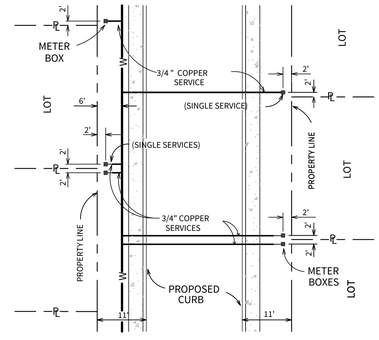
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



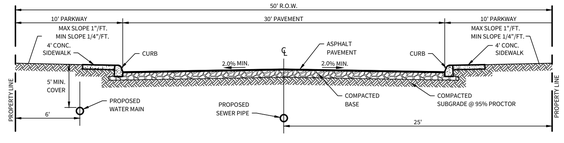


CONDUIT NOTES:

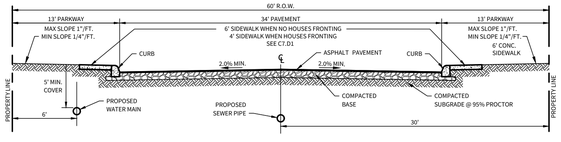
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WATER METER BOX LOCATION
N.T.S.



LOCAL "A" STREET CROSS-SECTION



LOCAL "B" STREET CROSS-SECTION

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CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

TRES LAURELS UNIT 4B

UTILITY LAYOUT PLAN

DATE
03/12/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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03/13/2025

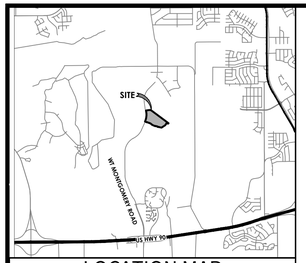
STATE OF TEXAS
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TBPELS No. 10048500

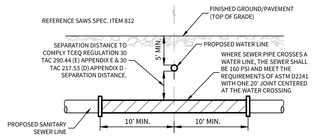
PLAT NO.
24-11800290

C3.01

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LOCATION MAP
N.T.S.



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

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"4H"	9+76.79
"4H"	13+85.81
"4J"	14+79.79

TRENCH EXCAVATION SAFETY PROTECTION

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SANITARY SEWER NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS SHALL BE ALLOWED, UNLESS OTHERWISE NOTED ON PLANS.
3. WHEN HORIZONTAL DISTANCE BETWEEN EWER PIPES AND WATER MAIN IS LESS THAN 9 FT. OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 160 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH SAWS CONSTRUCTION CRITERIA FOR CONSTRUCTION OF SEWER MAINS IN THE VICINITY OF WATER MAINS.
4. ALL SEWER PIPES SHALL BE PVC (SDR 26), UNLESS OTHERWISE NOTED.
5. PRIOR TO CONSTRUCTION CONTRACTOR IS TO VERIFY EXISTING INVERT OF EXISTING SANITARY SEWER MAINS AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
6. CONTOURS SHOWN ARE GRAPHICAL USE ONLY.
7. MANHOLE OPENING ARE 30" AS PER TCEQ CHAPTER 217.55.
8. CONTRACTOR TO INSTALL PERMANENT MARKERS AT THE END OF ALL SEWER LATERALS, PER HOUSE LATERAL DETAIL DD-854-01.
9. ALL 6" SEWER LATERALS WILL BE SET AT A MINIMUM 2% SLOPE.
10. BACKFILL MUST COMPLY WITH SAWS SPECIFICATIONS 804.4.
11. TOPS OF EXISTING MANHOLES SHALL BE ADJUSTED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS, AND TO BE 0.50 FEET ABOVE FINISHED GROUND ELEVATIONS IN UNPAVED AREAS WITH WATER TIGHT LIDS.
12. CONTRACTOR TO INSTALL SERVICE LATERAL USING A LATERAL SADDLE (SAWS DETAIL DD 854-0). THE SADDLE SHALL BE PERMANENTLY BONDED TO THE EXISTING MAIN BY THE USE OF COMPOUNDS AND CLAMPS AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE SAN ANTONIO WATER SYSTEM.
13. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAINMENT RUNOFF.
14. ALL SANITARY SEWER LATERALS TO BE EXTENDED TO UTILITY EASEMENT LINE.
15. 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.

KEYNOTES:

① CONTRACTOR TO ADJUST EXISTING MANHOLE TOP TO MATCH PROPOSED GRADING AND RECOAT MANHOLE PER SAWS SPECIFICATIONS

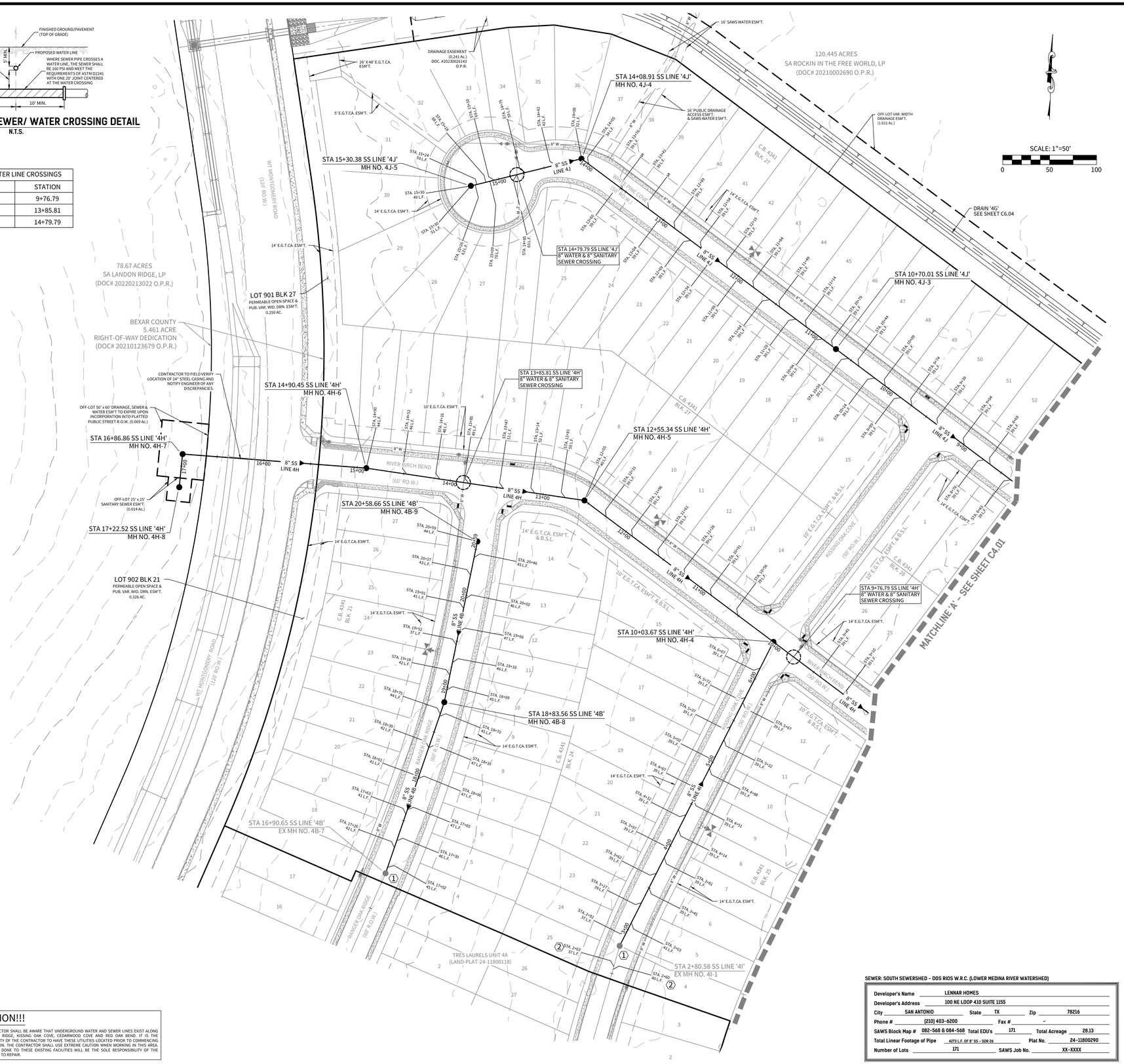
② CONTRACTOR TO INSTALL SERVICE LATERAL USING LATERAL SADDLE ONTO EXISTING MAIN (SAWS JOB# 24-1545)

BENCHMARK BM-1

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

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SEWER: SOUTH SEWERSHED - DOS RIOS W.R.C. (LOWER MEDINA RIVER WATERSHED)

Developer's Name	LENNAR HOMES				
Developer's Address	100 NE LOOP 410 SUITE 1155				
City	SAN ANTONIO	State	TX	Zip	78216
Phone #	(210) 403-6200	Fax #	-		
SAWS Block Map #	082-568 & 084-568	Total EDU's	171	Total Acreage	28.13
Total Linear Footage of Pipe	4273 L.F. OF 8" SS - SDR 26			Plat No.	24-11800290
Number of Lots	171			SAWS Job No.	XX-XXXX

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CUDE ENGINEERS

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

TRES LAURELS UNIT 4B

SANITARY SEWER MASTER PLAN

DATE 03/12/2025
PROJECT NO. 03050.019
DRAWN BY IV/RM/JS
CHECKED BY MT/CC

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

03/13/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

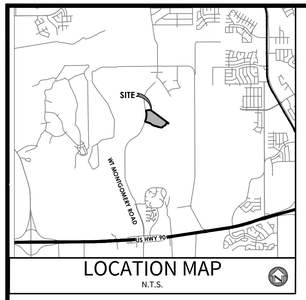
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 24-11800290
SAWS JOB NO. XX-XXXX

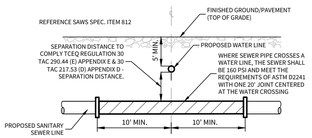
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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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LOCATION MAP
N.T.S.



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

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"4H"	7+03.55
"4J"	1+19.00
"4K"	1+19.00

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 SYSTEMSK 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.

SANITARY SEWER NOTES

1. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 P.S.I. AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
2. NO VERTICAL STACKS SHALL BE ALLOWED, UNLESS OTHERWISE NOTED ON PLANS.
3. WHEN HORIZONTAL DISTANCE BETWEEN EWER PIPES AND WATER MAIN IS LESS THAN 9 FT. OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 160 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH SAWS CONSTRUCTION CRITERIA FOR CONSTRUCTION OF SEWER MAINS IN THE VICINITY OF WATER MAINS.
4. ALL SEWER PIPES SHALL BE PVC (SDR 26), UNLESS OTHERWISE NOTED.
5. PRIOR TO CONSTRUCTION CONTRACTOR IS TO VERIFY EXISTING INVERT OF EXISTING SANITARY SEWER MAINS AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
6. CONTOURS SHOWN ARE GRAPHICAL USE ONLY.
7. MANHOLE OPENING ARE 30" AS PER TCEQ CHAPTER 217.55.
8. CONTRACTOR TO INSTALL PERMANENT MARKERS AT THE END OF ALL SEWER LATERALS, PER HOUSE LATERAL DETAIL DD-854-01.
9. ALL 6" SEWER LATERALS WILL BE SET AT A MINIMUM 2% SLOPE.
10. BACKFILL MUST COMPLY WITH SAWS SPECIFICATIONS 804.4.
11. TOPS OF EXISTING MANHOLES SHALL BE ADJUSTED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS, AND TO BE 0.50 FEET ABOVE FINISHED GROUND ELEVATIONS IN UNPAVED AREAS WITH WATER TIGHT LIDS.
12. CONTRACTOR TO INSTALL SERVICE LATERAL USING A LATERAL SADDLE (SAWS DETAIL DD 854-0). THE SADDLE SHALL BE PERMANENTLY BONDED TO THE EXISTING MAIN BY THE USE OF COMPOUNDS AND CLAMPS AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE SAN ANTONIO WATER SYSTEM.
13. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAINMENT RUNOFF.
14. ALL SANITARY SEWER LATERALS TO BE EXTENDED TO UTILITY EASEMENT LINE.
15. 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.

KEYNOTES:

① CONTRACTOR TO ADJUST EXISTING MANHOLE TOP TO MATCH PROPOSED GRADING AND RECOAT MANHOLE PER SAWS SPECIFICATIONS

② CONTRACTOR TO INSTALL SERVICE LATERAL USING LATERAL SADDLE ONTO EXISTING MAIN (SAWS JOB# 24-1545)

BENCHMARK BM-1

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.



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Phone #	(210) 403-6200	Fax #	–		
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Total Linear Footage of Pipe	4273 L.F. OF 8" SS - SDR 26			Plat No.	24-11800290
Number of Lots	171	SAWS Job No.	XX-XXXX		

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TRES LAURELS UNIT 4B

SANITARY SEWER MASTER PLAN

DATE 03/12/2025
PROJECT NO. 03050.019
DRAWN BY IV/RM/JS
CHECKED BY MT/CC

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03/13/2025
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MATTHEW A. TRINKLE
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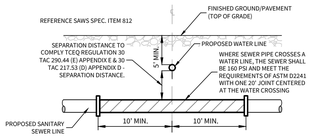
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 24-11800290
SAWS JOB NO. XX-XXXX

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P:\03050\03.0_CIVIL\CAD Files\SW_XR\SAN Aerial 2025\03.13.25 Sanitary Maste



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

NOTE:

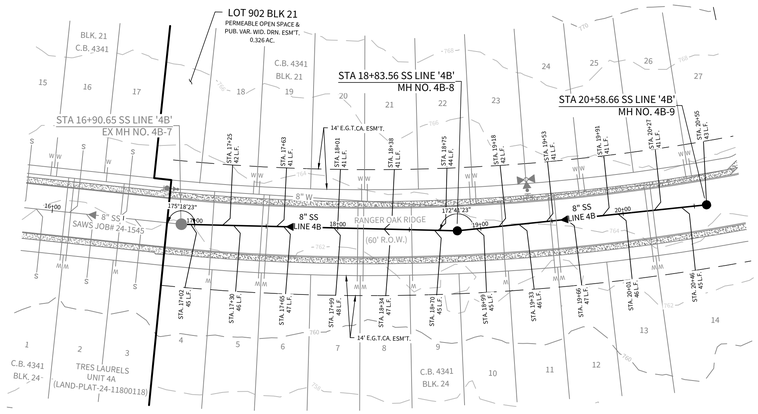
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TRENCH EXCAVATION SAFETY PROTECTION

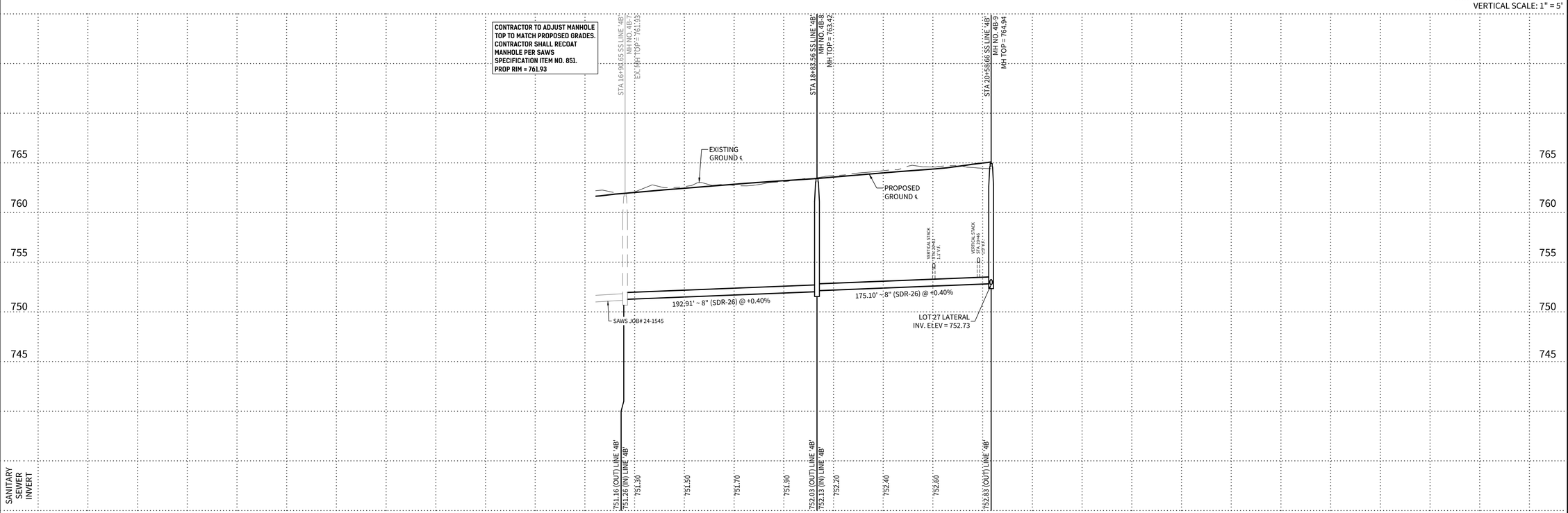
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LINE 4B

STA. 16+90.65 TO STA. 20+58.66

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



SEWER: SOUTH SEWERSHED – DOS RIOS W.R.C. (LOWER MEDINA RIVER WATERSHED)

Developer's Name	LENNAR HOMES		
Developer's Address	100 NE LOOP 410 SUITE 1155		
City	SAN ANTONIO	State TX	Zip 78216
Phone #	(210) 403-6200	Fax #	-
SAWS Block Map #	082-568 & 084-568	Total EDU's 171	Total Acreage 28.13
Total Linear Footage of Pipe	4273 L.F. OF 8" SS - SDR 26		Plat No. 24-11800290
Number of Lots	171	SAWS Job No.	XX-XXXX

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TRES LAURELS UNIT 4B

SANITARY SEWER PLAN & PROFILE - LINE '4B'

DATE
03/12/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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03/13/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

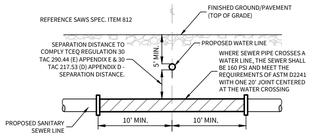
PLAT NO.
24-11800290

SAWS JOB NO.
XX-XXXX

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

NOTE:

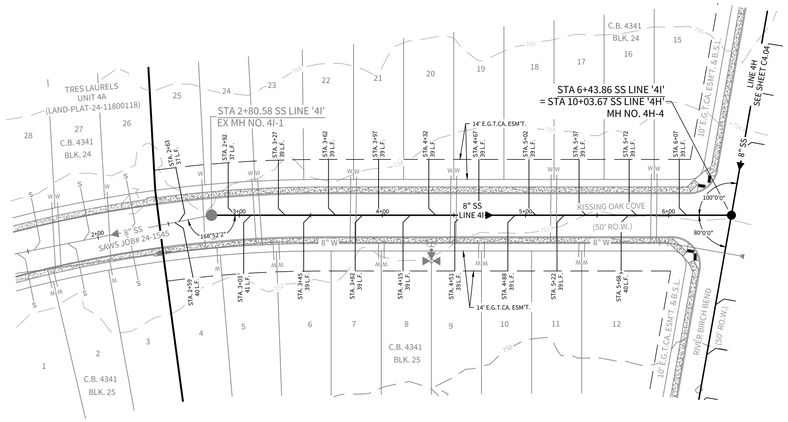
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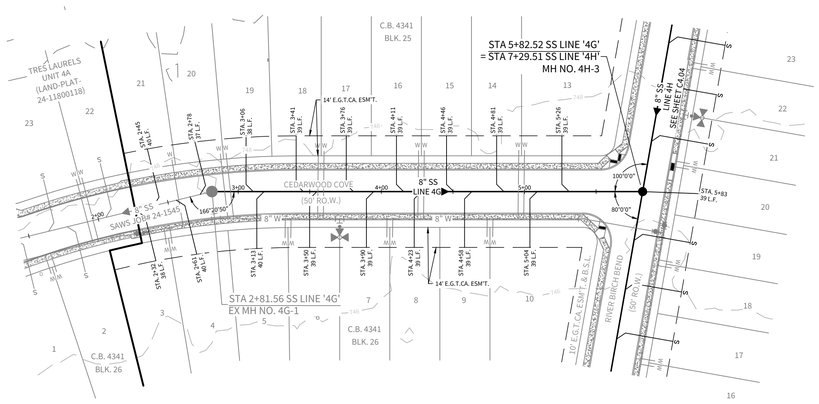
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Developer's Name	LENNAR HOMES				
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Phone #	(210) 403-6200	**Fax #**	–		
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Total Linear Footage of Pipe	4273 L.F. OF 8" SS – SDR 26			**Plat No.**	24-11800290
Number of Lots	171	**SAWS Job No.**	XX-XXXX		

LINE 4I

STA. 2+80.58 TO STA. 6+43.86

CONTRACTOR TO ADJUST MANHOLE TOP TO MATCH PROPOSED GRADES. CONTRACTOR SHALL RECOAT MANHOLE PER SAWS SPECIFICATION ITEM NO. 851. PROP RIM = 754.22

STA 2+80.58 SS LINE '4I' EX. MH NO. 4I-1 MH TOP = 753.81

STA 6+43.86 SS LINE '4I' = STA 10+03.67 SS LINE '4H' MH NO. 4H-4 MH TOP = 751.86

PROPOSED GROUND ℄

EXISTING GROUND ℄

SAWS JOB# 24-1545

363.27' ~ 8" (SDR-26) @ -0.88%

SANITARY SEWER INVERT	
743.79 (OUT) LINE '4I'	
743.78 (OUT) LINE '4I'	
	743.61
	743.17
	742.73
	742.29
	741.85
	741.41
	740.97
739.97 (OUT) LINE '4H'	
740.59 (IN) LINE '4I'	
740.07 (IN) LINE '4H'	

LINE 4G

STA. 2+81.56 TO STA. 5+82.52

CONTRACTOR TO ADJUST MANHOLE TOP TO MATCH PROPOSED GRADES. CONTRACTOR SHALL RECOAT MANHOLE PER SAWS SPECIFICATION ITEM NO. 851. PROP RIM = 747.72

STA 2+81.56 SS LINE '4G' EX. MH NO. 4G-1 MH TOP = 746.05

STA 5+96.25 SS LINE '4I' = STA 7+29.51 SS LINE '4H' MH NO. 4H-3 MH TOP = 746.05

PROPOSED GROUND ℄

EXISTING GROUND ℄

SAWS JOB# 24-1545

LOT 20 LATERAL INV. ELEV = 735.84

300.96' ~ 8" (SDR-26) @ -0.48%

SANITARY SEWER INVERT	
737.27 (OUT) LINE '4G'	
737.27 (IN) LINE '4G'	
	737.19
	736.95
	736.71
	736.47
	736.23
	736.00
734.14 (OUT) LINE '4H'	
735.84 (IN) LINE '4G'	
734.24 (IN) LINE '4H'	

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

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TRES LAURELS UNIT 4B

SANITARY SEWER PLAN & PROFILE - LINE '4I' & '4G'

DATE
03/12/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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03/13/2025

STATE OF TEXAS
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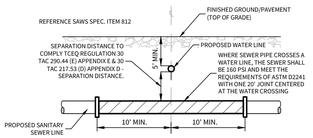
PLAT NO.
24-11800290

SAWS JOB NO.
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TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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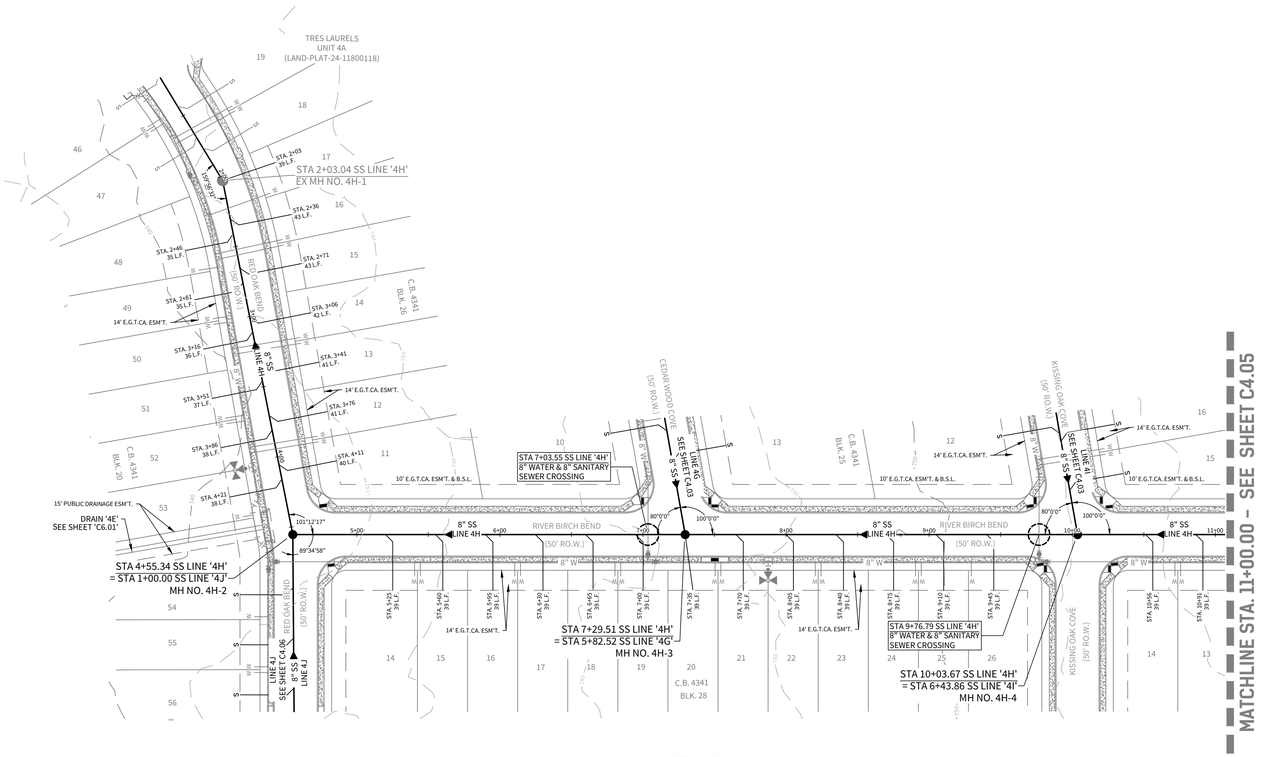
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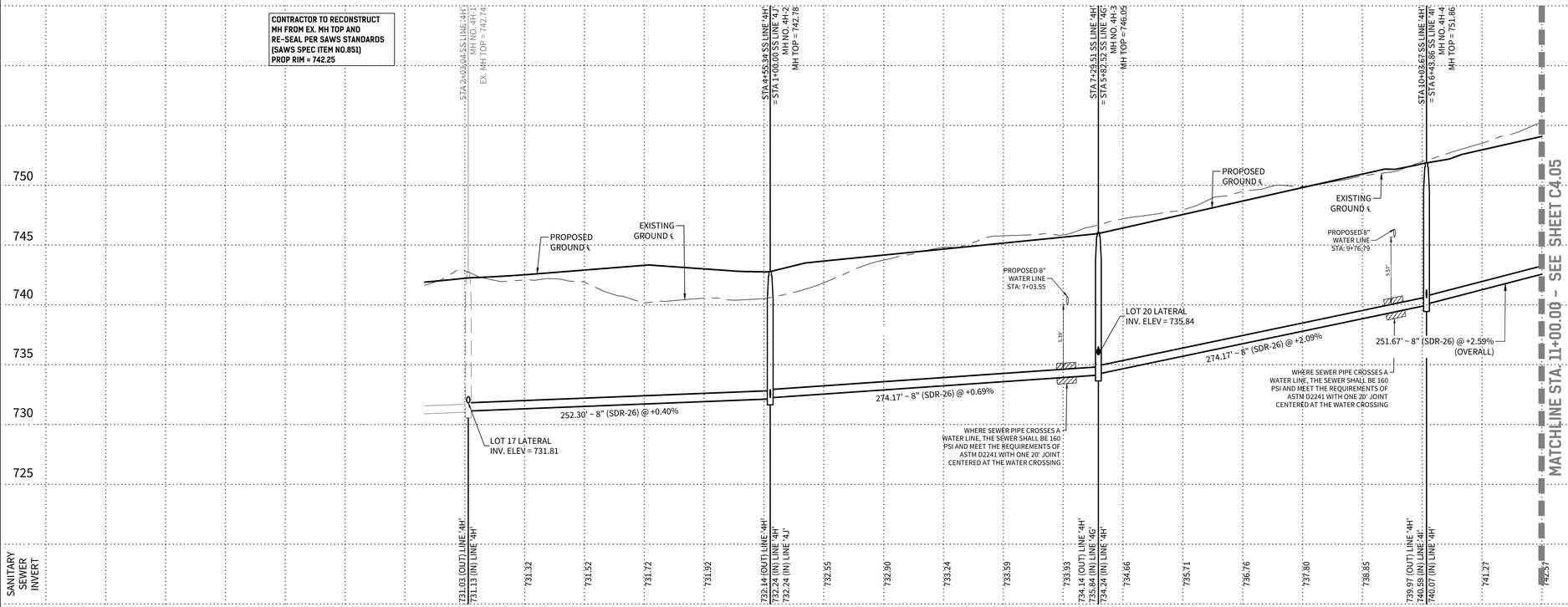


LINE 4H

STA. 2+03.04 TO STA. 11+00.00

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

CONTRACTOR TO RECONSTRUCT MH FROM EX. MH TOP AND RE-SEAL PER SAWS STANDARDS (SAWS SPEC ITEM NO.851) PROP RIM = 742.25



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Number of Lots	171	**SAWS Job No.**	XX-XXXX		

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TRES LAURELS UNIT 4B

SANITARY SEWER PLAN & PROFILE - LINE '4H'

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03/10/2025

PROJECT NO.
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DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

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CUDE ENGINEERS
TBPELS No. 10048500

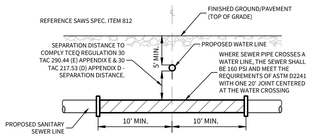
PLAT NO.
24-11800290

SAWS JOB NO.
XX-XXXX

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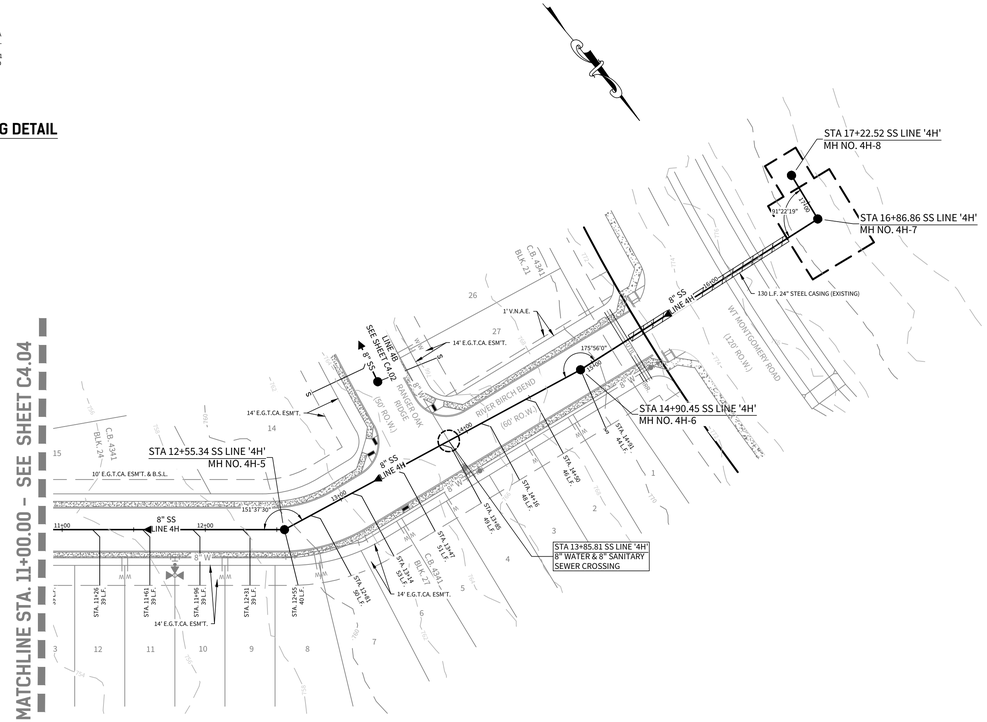
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

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TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



NOTE:

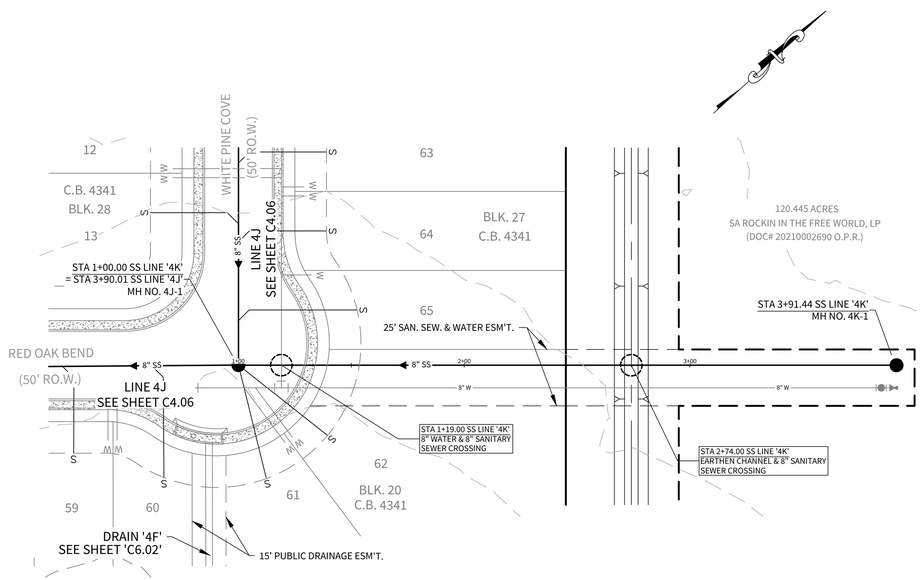
CONTRACTOR TO VERIFY LOCATION AND INVERT OF EXISTING SEWER MAIN AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND WATER AND SEWER LINES EXIST ALONG RANGER OAK RIDGE, KISSING OAK COVE, CEDARWOOD COVE AND RED OAK BEND. 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 SYSTEMSK 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.

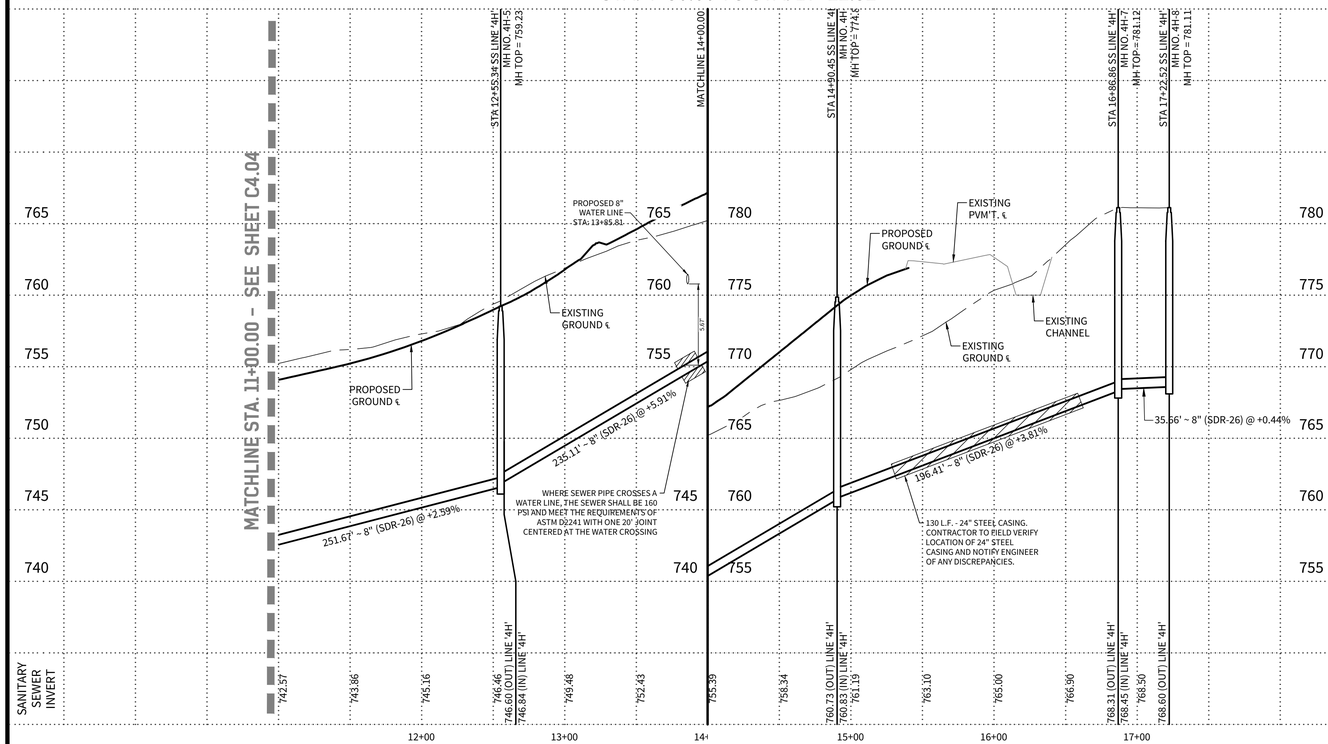


SEWER: SOUTH SEWERSHED - DOS RIOS W.R.C. (LOWER MEDINA RIVER WATERSHED)

Developer's Name	LENNAR HOMES		
Developer's Address	100 NE LOOP 410 SUITE 1155		
City	SAN ANTONIO	State TX	Zip 78216
Phone #	(210) 403-6200	Fax #	-
SAWS Block Map #	082-568 & 084-568	Total EDU's 171	Total Acreage 28.13
Total Linear Footage of Pipe	4273 L.F. OF 8" SS - SDR 26		Plat No. 24-11800290
Number of Lots	171	SAWS Job No.	XX-XXXX

LINE 4H

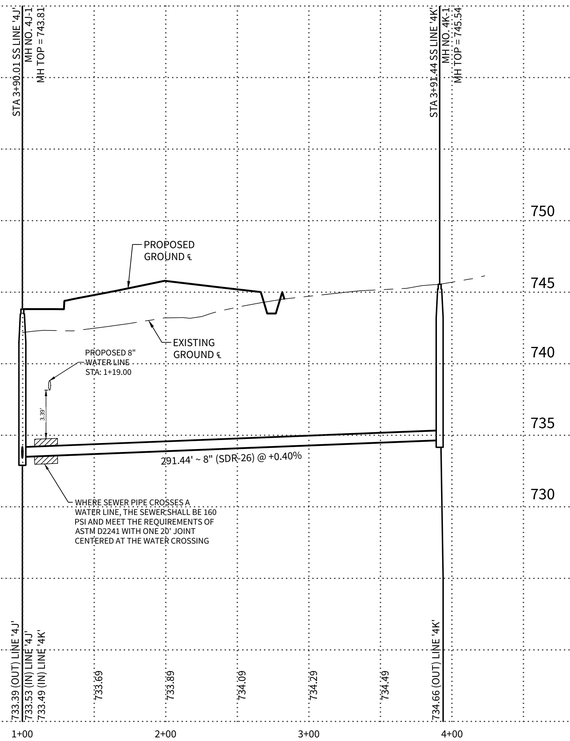
STA. 4+50.00 TO STA. 17+22.52



LINE 4K

STA. 1+00.00 TO STA. 2+45.00

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

TRES LAURELS UNIT 4B

SANITARY SEWER PLAN & PROFILE - LINE '4H' & '4K'

DATE
03/12/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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03/13/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

SAWS JOB NO.
XX-XXXX

C4.05

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.

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NOTE:

CONTRACTOR TO VERIFY LOCATION AND INVERT OF EXISTING SEWER MAIN AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

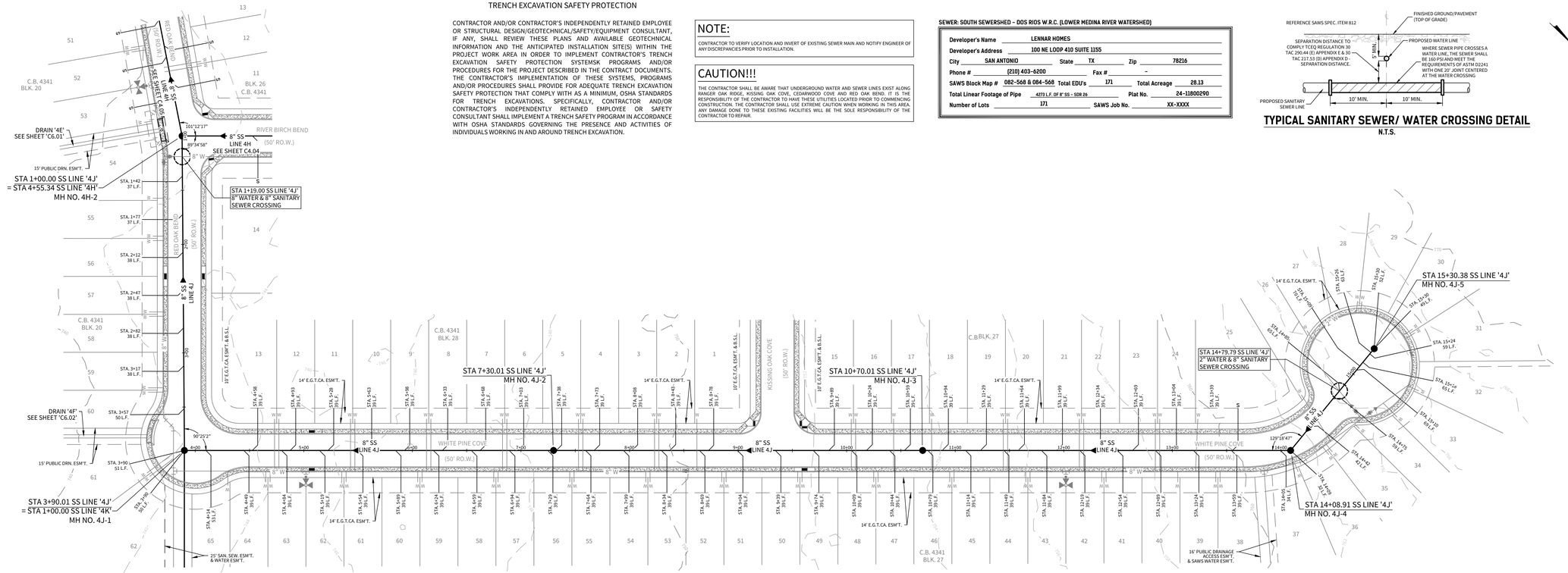
CAUTION!!!

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SEWER: SOUTH SEWERSHED – DOS RIOS W.R.C. (LOWER MEDINA RIVER WATERSHED)

Developer's Name	LENNAR HOMES		
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City	SAN ANTONIO	**State** TX	**Zip** 78216
Phone #	(210) 403-6200	**Fax #** –	
SAWS Block Map #	082-568 & 084-568	**Total EDU's** 171	**Total Acreage** 28.13
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Number of Lots	171	**SAWS Job No.**	XX-XXXX

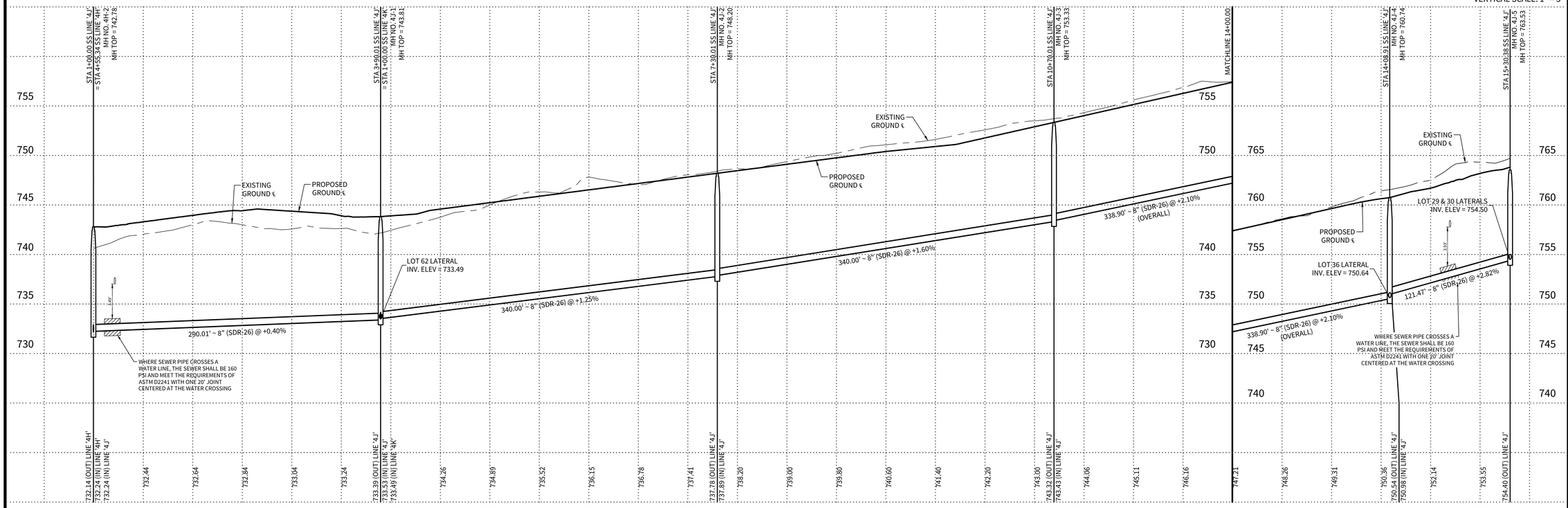
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



LINE 4J

STA. 1+00.00 TO STA. 15+30.38

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



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CUDE ENGINEERS EST. 1980

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San Antonio, Texas 78231
P:(210) 681.2951

TRES LAURELS UNIT 4B

C4.06 - SANITARY SEWER PLAN & PROFILE LINE '4J'

DATE
03/13/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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03/13/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

SAWS JOB NO.
XX-XXXX

C4.06

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SAWS STANDARD GENERAL CONSTRUCTION NOTES ASSOCIATED WITH 2021 SAWS STANDARD SPECS *REVISED DECEMBER 2021*

GENERAL CONSTRUCTION

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITH THE SCOPE OF CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE:

   A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM," TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART I CHAPTER 217 AND "PUBLIC DRINKING WATER," TAX TITLE 30 PART I CHAPTER 290.

   B. CURRENT TXDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND DRAINAGE."

   C. CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION."

   D. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR CONSTRUCTION."

   E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).

2. THE CONTRACTOR SHALL OBTAIN SAWS STANDARD DETAILS FROM SAWS WEBSITE, https://apps.saws.org/business_center/specs/constspecs/ UNLESS OTHERWISE NOTED WITHIN DESIGN PLANS.
3. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT 210-233-3500 (DURING REGULAR SAWS WORKING HOURS) AND PROVIDE NOTIFICATION PROCEDURES THE CONTRACTOR WILL USE TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS TWO (2) WEEKS PRIOR TO EXCAVATION. OUTSIDE OF REGULAR SAWS WORKING HOURS THE SAWS EOC SHOULD BE CONTACTED AT 210-704-7297.
4. IF NECESSARY, CONTRACTOR WILL COORDINATE USE OF SAWS PREMISES AT NO ADDITIONAL COST TO SAWS. SUCH EFFORTS INCLUDE, BUT ARE NOT LIMITED TO, OBTAINING SECURITY IDENTIFICATION BADGES REQUIRED FOR ACCESS TO SAWS FACILITIES.
5. 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 PRIOR TO CONSTRUCTION. 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 SAWS.
6. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. AS-BUILTS FOR SAWS INFRASTRUCTURE CAN BE OBTAINED AT WEBSITE BELOW. CONTRACTOR SHALL COORDINATE PHYSICAL LOCATES FOR SAWS INFRASTRUCTURE THROUGH THE SAWS INSPECTOR. PLEASE ALLOW UP TO 7 BUSINESS DAYS FOR LOCATES REQUESTING PIPE LOCATION MARKERS ON SAWS INFRASTRUCTURE. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:

   SAN ANTONIO WATER SYSTEM:

   REQUEST AS-BUILTS: https://www.saws.org/service/locates-service/

   COSA DRAINAGE: 210-206-8433
   COSA TRAFFIC SIGNAL OPERATIONS: 210-207-7720
   TEXAS STATEWIDE ONE CALL LOCATOR: 1-800-545-6005 OR 811

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING, AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION AS A RESULT OF DAMAGES DONE BY THE PROJECT'S CONSTRUCTION.
8. CONTRACTOR SHALL NOT MAKE USE OF DUMPSTERS OR WASTE BINS THAT ARE INTENDED TO SERVE RESIDENTS AND/OR BUSINESS.
9. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION AND BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT.
10. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
11. ALL WORK WITHIN THE 100-YEAR FLOODPLAIN SHALL BE DONE IN ACCORDANCE WITH FLOODPLAIN DEVELOPMENT PERMIT.
12. ANY WORK COMPLETED WITHOUT PRIOR WRITTEN AUTHORIZATION WHICH IS NOT INCLUDED IN THESE PLANS AND SPECIFICATIONS WITH NOT BE COMPENSATED BY THE SAN ANTONIO WATER SYSTEM.
13. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS.

    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO SUBMIT REQUEST TO THE SAWS INSPECTION CONSTRUCTION DEPARTMENT BY 12:00 PM ON THE WEDNESDAY PRIOR TO THE WEEKEND BEING REQUESTED. REQUEST SHOULD BE SENT TO constworkreq@saws.org.

    ANY AND ALL SAWS UTILITY INSTALLED WITHOUT WEEKEND APPROVAL WILL BE SUBJECT TO BY UNCOVERED FOR PROPER INSPECTION AT NO COST TO SAWS.

14. PRE-CON SITE VIDEO: BEFORE THE START OF ANY CONSTRUCTION. THE SITE MUST BE VIDEO RECORDED BY THE CONTRACTOR WITH ONE COPY SUBMITTED TO SAWS INSPECTIONS. A PRE-SITE VIDEO WILL PROVIDE ACCURATE DOCUMENTATION OF THE EXISTING CONDITIONS (NSPI).
15. POWER POLE BRACING: CONTRACTORS SHOULD BE ADVISED THAT THERE ARE EXISTING OVERHEAD UTILITY POLES ALONG THE PROJECT CORRIDOR. CONTRACTORS SHOULD FURTHER BE ADVISED THAT IS DISTANCE FROM THE OUTSIDE FACE OF A UTILITY TRENCH TO THE FACE OF A UTILITY POLE IS LESS THAN 5 FEET, SAID UTILITY POLE IS SUBJECT TO BRACING, BASED ON DOCUMENTATION MADE BY UTILITY POLE OWNER. COSTS INCURRED BY CONTRACTOR FOR BRACING OF THESE UTILITY POLES IS SUBSIDIARY TO THAT RESPECTIVE UTILITY COMPANY'S WORK. IT IS ADVISABLE FOR THE CONTRACTOR TO REVIEW THE CONSTRUCTION DOCUMENTS AND VISIT THE CONSTRUCTION SITE TO DETERMINE POTENTIAL IMPACTS.
16. CONSTRUCTION SEQUENCING: IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO SCHEDULE SEQUENCING FOR REMOVAL AND INSTALLATION OF EXISTING AND PROPOSED SAWS UTILITIES IN CONJUNCTION WITH GENERAL PROJECT CONSTRUCTION. SEQUENCE OF CONSTRUCTION ACTIVITIES SHALL BE CONSIDERED IN ORDER TO MINIMIZE THE EXTENT AND DURATION OF DISTURBANCES.
17. CONTRACTOR SHALL COMPLY WITH APPLICABLE REGULATIONS INCLUDING, BUT NOT LIMITED TO, THOSE OVERSEEN BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA INFORMATION AND RELATED MATERIALS MAY BE OBTAINED AT https://www.osha.gov/ OR AT THE OSHA SAN ANTONIO OFFICE LOCATED AT FOUNTAINHEAD TOWER, SUITE 605 8200 W. INTERSTATE 10 SAN ANTONIO, TX 78230 WHICH IS ALSO REACHABLE AT (210) 472-5040.
18. TRENCH EXCAVATION SAFETY PROTECTION: CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTAL 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 AREAS IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION, PROGRAMS, AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS, AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION PROTECTION THAT COMPLIES WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
19. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

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.**

SEWER NOTES

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

   A. IDENTIFY THE SOURCE OF THE SSO AND NOTIFY SAWS EMERGENCY OPERATIONS CENTER)EOC) IMMEDIATELY AT 210-704-SAWS (210-704-7297). PROVIDE THE ADDRESS OF THE SPILL AND AN ESTIMATED VOLUME OF FLOW.

   B. ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.

   C. CONTAIN SEWAGE FROM THE SSO TO THE EXTENT OF PREVENTING A POSSIBLE CONTAMINATION OF WATERWAYS.

   D. CLEAN UP SPILL SITE (RETURN CONTAINED SEWAGE TO THE COLLECTION SYSTEM IF POSSIBLE) AND PROPERLY DISPOSE OF THE CONTAMINATED SOIL/MATERIALS.

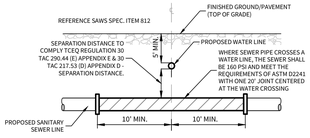
   E. CLEAN THE AFFECTED SEWER MAINS AND REMOVE ANY DEBRIS.

   F. MEET ALL POST-SSO REQUIREMENTS AS PER THE EPA CONSENT DECREE, INCLUDING LINE CLEANING AND TELEVISING THE AFFECTED SEWER MAINS (AT SAWS DIRECTION) WITHIN 25 HOURS.

   SHOULD THE CONTRACTOR FAIL TO ADDRESS AN SSO IMMEDIATELY AND TO SAWS SATSIFACTION, THEY WILL BE RESPONSIBLE FOR ALL COSTS INCURRED BY SAWS, INCLUDING AND FINES FROM EPA.

   NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TCEQ AND SAWS.

2. THE CONTRACTOR SHALL PROVIDE BYPASS PUMPING OF SEWAGE AROUND EACH SEGMENT OF PIPE TO BE REPLACED, IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION ITEM NO. 865, "BYPASS PUMPING SMALL DIAMETER SANITARY SEWER MAINS" AND STANDARD SPECIFICATION ITEM NO. 864, "BYPASS PUMPING LARGE DIAMETER SANITARY SEWER MAINS" AS APPLICABLE. PAYMENT FOR SUCH WORK WILL BE MADE UNDER THE APPROPRIATE BID ITEM ASSOCIATED WITH SANITARY SEWER BYPASS PUMPING IN ACCORDANCE WITH SAWS STANDARD SPECIFICATIONS 865 AND 864.
3. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING FORCE MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT 210-233-3500 AND/OR SAWS PRODUCTION GROUPS AT LEAST TWO WEEKS OR MORE IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.
4. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: IT SHALL BE THE RESPONSIBILITY FOR THE CONTRACTOR TO MAKE ALLOWANCES AND ADJUSTMENTS FOR TOP OF MANHOLES TO MATCH THE FINISHED GRADE OF THE PROJECT'S IMPROVEMENTS (NSPI).
5. MANHOLE REMOVAL: WHERE EXISTING MANHOLES ARE TO BE REPLACED BY THE CONTRACTOR, THE EXISTING MANHOLES SHALL BE REMOVED (NSPI).
6. SMART MANHOLE COVERS: THE CONTRACTOR SHALL NOTIFY SAWS EOC AT 210-704-SAWS (210-233-7297) AND EITHER AMERICA ESPINOZA AT 210-233-2934 OR JOSE A. MARTINEZ AT 210-233-3071 A MINIMUM OF 72 HOURS, NOT COUNTING WEEKENDS OR SAWS HOLIDAYS, BEFORE WORKING ON THE PIPE OR MANHOLE, IN ORDER TO HAVE SAWS REMOVE THE SMART COVER. ANY DAMAGE DONE TO THE SMART COVER WILL BE CHARGED TO THE CONTRACTOR THROUGH A CHANGE ORDER.
7. FLOW METERS IN MANHOLES: THE CONTRACTOR SHALL NOTIFY BOBBY JOHNSON AT 210-233-3493 OR ABEL BORUNDA AT 210-233-3704 A MINIMUM OF 72 HOURS, NOT COUNTING WEEKENDS OR SAWS HOLIDAYS, BEFORE WORKING ON THE PIPE MANHOLE, IN ORDER TO HAVE SAWS REMOVE THE FLOW METER IN THE MANHOLE. ANY DAMAGE DONE TO THE FLOW METER WILL BE CHARGED TO THE CONTRACTOR THROUGH A CHANGE ORDER.



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

SUPPLEMENTARY

No extra-payment shall be allowed for work called for on the plans but not included on the bid schedule. This incidental work will be required and shall be included under the pay item to which it relates.

The Developer dedicates the sanitary sewer mains upon completion by the Developer and acceptance by the San Antonio Water System. The San Antonio Water System will own and maintain said sanitary sewer mains which are located within this particular subdivision. (As applicable)

The Developer will be responsible for the lift station maintenance fee in effect at the time of certification. The current maintenance fee per lift station will be collected prior to plat recordation.

All PVC Sewer Pipe with over 14 feet of cover shall be extra strength pipe, Minimum Stiffness of 115 PSI.

WORK COMPLETED BY THE CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR THE NOTICE TO PROCEED WITH THE SAN ANTONIO WATER SYSTEM CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.

The Contractor is responsible to ensure that no overflows of sewage occurs. Should this occur the Contractor shall:

A. Identify the source of the spill and attempt to eliminate any additional spillage. Notify SAWS Construction Inspections Division at 233-3500.

B. Contain the spill in place and prevent contamination of streams.

C. Clean up the spill and dispose of contaminated materials.

D. Disinfect the area of the spill with a mixture of HTH chlorine and water.

E. Identify and train personnel responsible for spillage prevention and control.

No separate measurement or payment shall be made for this work. All work shall be done in according to guidelines set by the Texas Natural Resource Contamination Commission (TNRCC) and the San Antonio Water System.

Service Lateral Connections:

A. The exact location and elevation of the service laterals and manholes shall be field verified by the Contractor (NSPI).

B. A minimum of 3 feet of cover is to be maintained over the sanitary sewer laterals or subgrade.

C. All sewer lateral services for future connections as identified on plan and profiles, shall be capped and sealed.

D. The Contractor shall be responsible for disconnecting each existing service line from the existing water main and re-connecting the service to the new service main. The Contractor shall be responsible for maintaining continuous service (NSPI).

E. Laterals shall be constructed to serve all existing houses and vacant lots.

The Contractor shall provide by-pass pumping of sewage around each segment of pipe to be replaced, in accordance with SAWS special specification "Sanitary Sewer". Payment for such work will be made under the bid item "Sanitary Sewer (By-Pass Pumping)" as per SAWS special specification "Sanitary Sewer".

Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the SAWS inspection and/or SAWS production groups at least one week or more in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.

WASTEWATER SPILLS, OVERFLOWS OR DISCHARGES

1. SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER
   Attention contractors: All spills, overflows, or discharges of wastewater, recycled water, petroleum products, or chemicals must be reported immediately to the SAWS Inspector assigned to your counter permit or General Construction Permit (GCP). This requirement applies to every spill, overflow, or discharge - regardless of size. Your compliance will enable SAWS to fulfill regulatory reporting requirements.

   It is the Contractor's responsibility to control sewer flows so that a spill overflow, or discharge does not occur. In the event that a spill, overflow, or discharge occurs, the Contractor may be liable for:

   1. All. fines, penalties, or other costs assessed to or against SAWS by any State, Federal, or other governmental agency.

2. SAWS staff and material costs to respond to the spill, overflow, or discharge, or to mitigate the effects of the spill, overflow, or discharge, or to support the cleanup effort.
3. All damages caused to SAWS, or any other persons or entities that result from the spill, overflow or discharge.

NOTES:

1. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
2. ALL LATERALS TO BE BUILT TO FRONT UTILITY EASEMENT LINE.
3. ALL LATERAL SHALL BE INSTALLED @ MIN. 2.0% SLOPE, UNLESS OTHERWISE NOTED.
4. ALL SANITARY SEWER PIPE SHALL BE PVC THAT MEETS ASTM SPECIFICATION, SDR-26, UNLESS OTHERWISE NOTED ON THE PLANS.
5. 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	210-233-2010
CoSA DRAINAGE	210-207-2800
CITY SIDEWALK TRENCHING DIVISION	210-821-3240
CoSA TRAFFIC SIGNAL OPERATIONS	210-207-7765
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
CITY PUBLIC SERVICE	"
AT&T	"
TIME WARNER	"
VALERO ENERGY CO.	"

SAN ANTONIO WATER SYSTEM
CRITERIA FOR SEWER MAIN CONSTRUCTION
IN THE VICINITY OF WATER MAINS

I. For separation distance requirements between sewer mains & water mains, see the 30 TAC §217.53 Pipe Design notes included on this sheet.

II. Corrosion protected mechanical coupling devices of a cast iron or ductile iron material shall be used.

III. Plan & profile must show type of crossing and material to use.

TCEQ - 30 TAC290.44(e)

(e) Location of waterlines. The following rules apply to installations of waterlines, wastewater mains or laterals, and other conveyances/appurtenances identified as potential sources of contamination. Furthermore, all ratings specified shall be defined by ASTM or AWWA standards unless stated otherwise. New mains, service lines, or laterals are those that are installed where no main, service line, or lateral previously existed, or where existing mains, service lines, or laterals are replaced with pipes of different size or material.
(1) When new potable water distribution lines are constructed, they shall be installed no closer than nine feet in all directions to wastewater collection facilities. All separation distances shall be measured from the outside surface of each of the respective pieces.
(2) Potable water distribution lines and wastewater mains or laterals that form parallel utility lines shall be installed in separate trenches.
(3) No physical connection shall be made between a drinking water supply and a sewer line. Any appurtenance shall be designed and constructed so as to prevent any possibility of sewage entering the drinking water system.
(4) Where the nine-foot separation distance cannot be achieved, the following criteria shall apply.
(A) New waterline installation - parallel lines.
(i) Where a new potable waterline parallels an existing, non-pressure or pressure rated wastewater main or lateral and the licensed professional engineer licensed in the State of Texas is able to determine that the existing wastewater main or lateral is not leaking, the new potable waterline shall be located at least two feet above the existing wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the existing wastewater main or lateral. Every effort shall be exerted not to disturb the bedding and backfill of the existing wastewater main or lateral.
(ii) Where a new potable waterline parallels an existing pressure-rated wastewater main or lateral and it cannot be determined by the licensed professional engineer if the existing line is leaking, the existing wastewater main or lateral shall be replaced with at least 150 psi pressure-rated pipe. The new potable waterline shall be located at least two feet above the new wastewater line, measured vertically, and at least four feet away, measured horizontally, from the replaced wastewater main or lateral.
(iii) Where a new potable waterline parallels a new wastewater main, the wastewater main or lateral shall be constructed of at least 150 psi pressure-rated pipe. The new potable waterline shall be located at least two feet above the wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the wastewater main or lateral.
(B) New waterline installation - crossing lines.
(i) Where a new potable waterline crosses above a wastewater main or lateral, the segment of the waterline pipe shall be centered over and must be perpendicular to the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. When crossing an existing wastewater main or lateral and it is disturbed or shows signs of leaking, the wastewater main or lateral shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure-rated pipe embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.
(I) The potable waterline shall be at least two feet above an existing, non-pressure rated wastewater main or lateral.
(II) The potable waterline shall be at least six inches above an existing, pressure-rated wastewater main or lateral.
(ii) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral, the segment of the waterline pipe shall be centered over and shall be perpendicular to the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end. The materials and method of installation shall conform to one of the following options:
(I) Within nine feet horizontally of either side of the waterline, the wastewater pipe and joints shall be constructed with pipe material having a minimum pressure rating of at least 150 psi. An absolute minimum vertical separation distance of two feet shall be provided. The wastewater main or lateral shall be located below the waterline.

NOTE:

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

SAN ANTONIO WATER SYSTEM	210-233-2010
COSA DRAINAGE	210-207-2800
CITY SIDEWALK AND TRENCHING DIVISION	210-821-3240
COSA TRAFFIC SIGNAL OPERATIONS	210-207-7765
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-545-6005
CITY PUBLIC SERVICE	"
AT&T	"
TIME WARNER	"
VALERO ENERGY CO.	"

AT&T AND TIME WARNER CABLE LINES TO GO INTO JOINT TRENCH WITH C.P.S. ENERGY
LOTS WITH CONFLICTING TRANSFORMER / SECONDARY ENCLOSURE ELECTRIC SERVICE AND WATER METER PLACED 5' FROM PROPERTY LINE WHERE THE CONFLICT OCCURS.

SEWER: SOUTH SEWERSHED - DOS RIOS W.R.C. (LOWER MEDINA RIVER WATERSHED)

Developer's Name	LENNAR HOMES		
Developer's Address	100 NE LOOP 410 SUITE 1155		
City	SAN ANTONIO	**State** TX	**Zip** 78216
Phone #	(210) 403-6200	**Fax #**	–
SAWS Block Map #	082-568 & 084-568	**Total EDU's** 171	**Total Acreage** 28.13
Total Linear Footage of Pipe	4273 L.F. OF 8" SS - SDR 26	**Plat No.**	24-11800290
Number of Lots	171	**SAWS Job No.**	XX-XXXX

CUDEENGINEERS.COM

CUDE ENGINEERS

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

TRES LAURELS UNIT 4B

SANITARY SEWER GENERAL NOTES

DATE 03/10/2025
PROJECT NO. 03050.019
DRAWN BY IV/RM/JS
CHECKED BY MT/CC

REVISIONS
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03/13/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

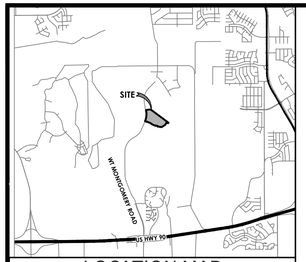
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 24-11800290
SAWS JOB NO. XX-XXXX

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© 2025 CUDE ENGINEERS | C:\Users\JS\Desktop\Projects\03050.019 Tres Laurels Unit 4B\Civil\Sheets\03050.019 Tres Laurels Unit 4B_SAWS Notes.dwg, 3/13/2025 2:56:09 PM, 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.



LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

LENNAR HOMES OF TEXAS LAND
ANDCONSTRUCTION, LTD.
A TEXAS LIMITED PARTNERSHIP
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT: CHRIS CHAFFEE, P.E.
4122 POND HILL RD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951

KEYNOTES:

1 FOR CHLORINATION INJECTION:
2 - 1" CORPORATION STOP, C.C. X I.P
2 - 1" COPPER TUBING, CUT AS REQ.
2 - 1" 1/4" THD. SOLID CAPS, THR.
2 - 1" COMP. X 1 1/4" COUPLING, CURB
CONTRACTOR SHALL PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN.

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

8" VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY SAWS

1 - 8" SOLID SLEEVE

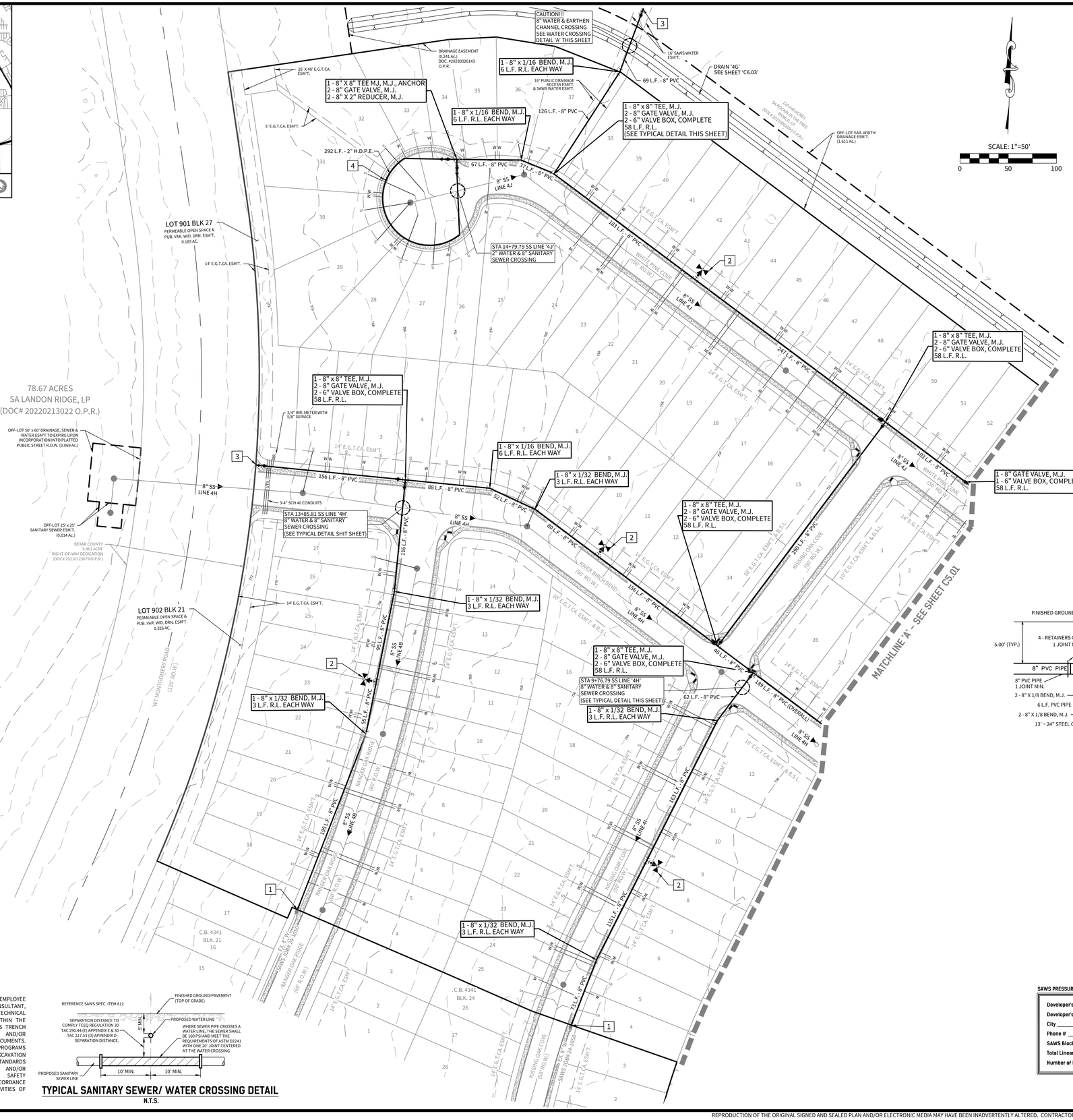
1 - 2" BLOWOFF ASSEMBLY (TEMP.)

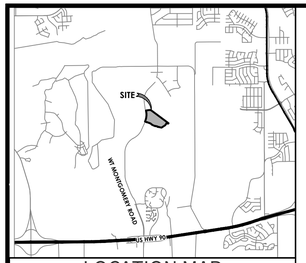
SEE SAWS STD. DWG. DD-844-01

2 1 - 8" x 6" TEE, M.J. ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQ'D.
SEE S.A.W.S. STD. DWG DD-834-01 (SHEET 1 OF 3)

3 1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 2" BLOWOFF ASSEMBLY (PERM.)
SEE SAWS STD DWG. DD-844-02

4 1 - 2" BLOWOFF ASSEMBLY (PERM.)
1 - 2" x 2" TEE, M.J. ANCHOR
SEE SAWS STD DWG. DD-844-02


CAUTION!!! 8" WATER & EARTHEN CHANNEL CROSSING SEE WATER CROSSING DETAIL 'A' THIS SHEET
DRAINAGE EASEMENT (0.241 Ac.) DOC. #20230026143 O.P.R.
26' X 48' E.G.T.CA ESM'T.
1 - 8" X 8" TEE M.J., M.J., ANCHOR
2 - 8" GATE VALVE, M.J.
2 - 8" X 2" REDUCER, M.J.
1 - 8" x 1/16 BEND, M.J. 6 L.F. R.L. EACH WAY
69 L.F. - 8" PVC
DRAIN '4G' SEE SHEET 'C6.03'
16' PUBLIC DRAINAGE ACCESS ESM'T. & SAWS WATER ESM'T.
1 - 8" x 1/16 BEND, M.J. 6 L.F. R.L. EACH WAY
126 L.F. - 8" PVC
1 - 8" x 8" TEE, M.J. 2 - 8" GATE VALVE, M.J. 2 - 6" VALVE BOX, COMPLETE 58 L.F. R.L. (SEE TYPICAL DETAIL THIS SHEET)
5' E.G.T.CA. ESM'T.
292 L.F. - 2" H.D.P.E.
67 L.F. - 8" PVC
37 L.F. - 8" PVC
8" SS LINE 4J
OFF-LOT VAR. WIDTH DRAINAGE ESM'T. (1.611 Ac.)
230.440 ACRES SA ROCKIN 'M' RANCH, LP (DOC# 20220026143 O.P.R.)
SCALE: 1"=50'
0 50 100
LOT 901 BLK 27
PERMEABLE OPEN SPACE & PUB. VAR. WID. DRN. ESM'T. 0.185 AC.
14' E.G.T.CA. ESM'T.
STA 14+79.79 SS LINE '4J' 2" WATER & 8" SANITARY SEWER CROSSING
185 L.F. - 8" PVC
WHITE PINE COVE (50' R.O.W.)
241 L.F. - 8" PVC
1 - 8" x 8" TEE, M.J. 2 - 8" GATE VALVE, M.J. 2 - 6" VALVE BOX, COMPLETE 58 L.F. R.L.
78.67 ACRES SA LANDON RIDGE, LP (DOC# 20220213022 O.P.R.)
1 - 8" x 8" TEE, M.J. 2 - 8" GATE VALVE, M.J. 2 - 6" VALVE BOX, COMPLETE 58 L.F. R.L.
3/4" IRR. METER WITH 5/8" SERVICE
OFF-LOT 50' x 60' DRAINAGE, SEWER & WATER ESM'T TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC STREET R.O.W. (0.069 Ac.)
1 - 8" x 1/16 BEND, M.J. 6 L.F. R.L. EACH WAY
1 - 8" x 1/32 BEND, M.J. 3 L.F. R.L. EACH WAY
156 L.F. - 8" PVC
88 L.F. - 8" PVC
52 L.F. - 8" PVC
8" SS LINE 4H
3-4" SCH 40 CONDUITS
STA 13+85.81 SS LINE '4H' 8" WATER & 8" SANITARY SEWER CROSSING (SEE TYPICAL DETAIL SHIT SHEET)
116 L.F. - 8" PVC
OFF-LOT 25' x 25' SANITARY SEWER ESM'T. (0.014 Ac.)
BEXAR COUNTY 5.461 ACRE RIGHT-OF-WAY DEDICATION (DOC# 20210123679 O.P.R.)
1 - 8" x 8" TEE, M.J. 2 - 8" GATE VALVE, M.J. 2 - 6" VALVE BOX, COMPLETE 58 L.F. R.L.
80 L.F. - 8" PVC
RANGER BIRCH BEND (50' R.O.W.)
156 L.F. - 8" PVC
8" SS LINE 4H
1 - 8" x 1/32 BEND, M.J. 3 L.F. R.L. EACH WAY
14' E.G.T.CA. ESM'T.
LOT 902 BLK 21
PERMEABLE OPEN SPACE & PUB. VAR. WID. DRN. ESM'T. 0.326 AC.
W MONTGOMERY ROAD (120' R.O.W.)
59 L.F. - 8" PVC
8" SS LINE 4B
1 - 8" x 1/32 BEND, M.J. 3 L.F. R.L. EACH WAY
RANGER OAK RIDGE (60' R.O.W.)
105 L.F. - 8" PVC
8" SS LINE 4B
C.B. 4341 BLK. 21 16
SWVR, 24.185'±
C.B. 4341 BLK. 24
SWVR, 24.185'±
KISSING OAK COVE (50' R.O.W.)
1 - 8" x 1/32 BEND, M.J. 3 L.F. R.L. EACH WAY
115 L.F. - 8" PVC
8" SS LINE 4I
73 L.F. - 8" PVC
1 - 8" x 8" TEE, M.J. 2 - 8" GATE VALVE, M.J. 2 - 6" VALVE BOX, COMPLETE 58 L.F. R.L.
1 - 8" GATE VALVE, M.J. 1 - 6" VALVE BOX, COMPLETE 58 L.F. R.L.
103 L.F. - 8" PVC
8" SS LINE 4J
14' E.G.T.CA. ESM'T.
10' E.G.T.CA. ESM'T. & B.S.L.
14' E.G.T.CA. ESM'T. & B.S.L.
10' E.G.T.CA. ESM'T. & B.S.L.
14' E.G.T.CA. ESM'T.
10' E.G.T.CA. ESM'T. & B.S.L.
14' E.G.T.CA. ESM'T.
14' E.G.T.CA. ESM'T.
14' E.G.T.CA. ESM'T



LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

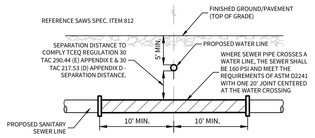
LENNAR HOMES OF TEXAS LAND
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A TEXAS LIMITED PARTNERSHIP
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

CIVIL ENGINEER:

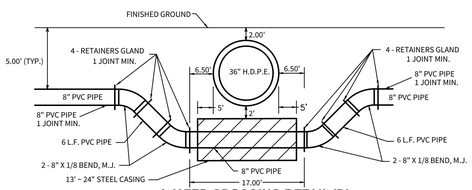
M.W. CUDE ENGINEERS, L.L.C.
CONTACT: CHRIS CHAFFEE, P.E.
4122 POND HILL RD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951

TRENCH EXCAVATION SAFETY PROTECTION

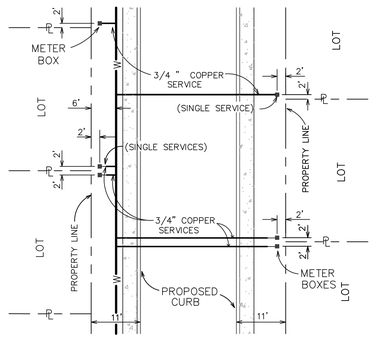
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMSK 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 SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



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



WATER METER BOX LOCATION
N.T.S.

KEYNOTES:

1 FOR CHLORINATION INJECTION:
2 - 1" CORPORATION STOP, C.C. X I.P
2 - 1" COPPER TUBING, CUT AS REQ.
2 - 1" 1/4" THD. SOLID CAPS, THR.
2 - 1" COMP. X 1 1/4" COUPLING, CURB
CONTRACTOR SHALL PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN.

AFTER RELEASED FOR SERVICE, CONTRACTOR TO TIE NEW 8" PVC WATER MAIN INTO EXIST. 12" PVC WATER MAIN WITH ±5 L.F. OF 8" WATER MAIN. CUT AS REQUIRED.

8" VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY SAWS

1 - 8" SOLID SLEEVE

1 - 2" BLOWOFF ASSEMBLY (TEMP.)

SEE SAWS STD. DWG. DD-844-01

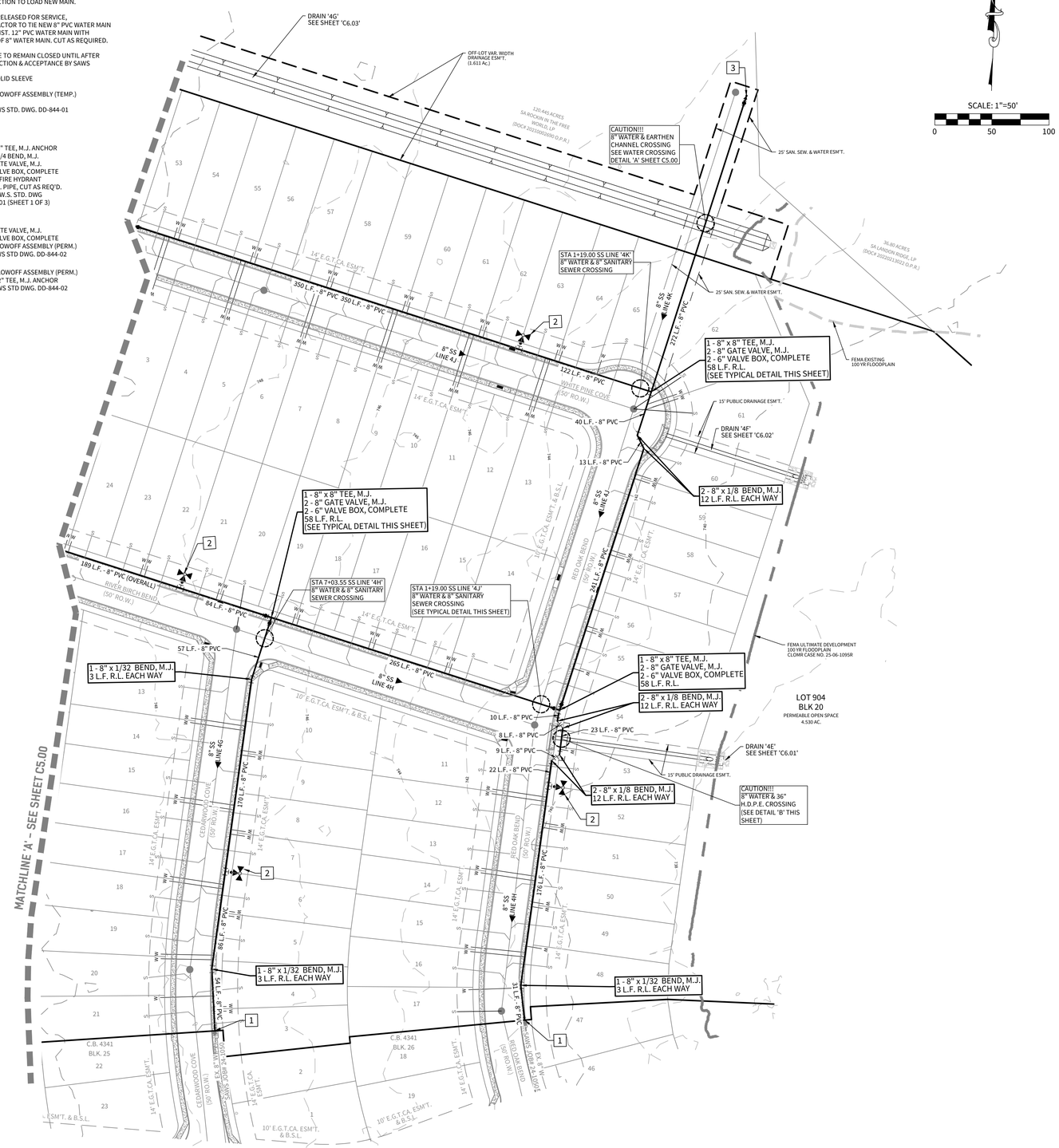
2 1 - 8" x 6" TEE, M.J. ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQ'D.
SEE S.A.W.S. STD. DWG
DD-834-01 (SHEET 1 OF 3)

3 1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 2" BLOWOFF ASSEMBLY (PERM.)
SEE SAWS STD DWG. DD-844-02

4 1 - 2" BLOWOFF ASSEMBLY (PERM.)
1 - 2" x 2" TEE, M.J. ANCHOR
SEE SAWS STD DWG. DD-844-02

LEGEND

EXISTING SANITARY SEWER	EX.8"SS
PROPOSED SANITARY SEWER	8"SS
EXISTING SANITARY SEWER MANHOLE	
PROPOSED WATER MAIN	8"W
EXISTING WATER MAIN	EX. 8"W
EXISTING STANDARD FIRE HYDRANT	
PROPOSED STANDARD FIRE HYDRANT	
PROPOSED STANDARD GATE VALVE	
PROPOSED PERMANENT BLOWOFF	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T
PROPOSED 3/4" WATER SERVICE WITH 5/8" METER	



SAWS PRESSURE ZONE 950 W

Developer's Name	LENNAR HOMES				
Developer's Address	100 NE LOOP 410 SUITE 1155				
City	SAN ANTONIO	State	TX	Zip	78216
Phone #	(210) 403-6200	Fax #	-		
SAWS Block Map #	082-568 & 084-568	Total EDU's	172	Total Acreage	28.13
Total Linear Footage of Pipe	8" - 4,794 L.F. ; 2" H.D.P.E. - 292 L.F.			Plat No.	24-11800290
Number of Lots	171	SAWS Job No.			25-1087

CUDEENGINEERS.COM

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

TRES LAURELS UNIT 4B

WATER DISTRIBUTION PLAN

DATE 10/23/2025

PROJECT NO. 03050.019

DRAWN BY IV/RM/JS

CHECKED BY MT/CC

REVISIONS
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10.

10/23/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 24-11800290

SAWS JOB NO. 25-1087

C5.01

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.

P:\03050\03050.2\SHEETS\WDS\WATERWDSHP.dwg 2025.10.23.1:11pm ivela

GENERAL SECTION

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE:
   A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM", TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART 1 CHAPTER 217 AND "PUBLIC DRINKING WATER", TAC TITLE 30 PART 1 CHAPTER 290.
   B. CURRENT TXDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE".
   C. CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION".
   D. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
   E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).
2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP) FROM THE CONSULTANT AND HAS BEEN NOTIFIED BY SAWS CONSTRUCTION INSPECTION DIVISION TO PROCEED WITH THE WORK AND HAS ARRANGED A MEETING WITH THE INSPECTOR AND CONSULTANT FOR THE WORK REQUIREMENTS. WORK COMPLETED BY THE CONTRACTOR WITHOUT AN APPROVED COUNTER PERMIT AND/OR A GCP WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTORS AND/OR THE DEVELOPER.
3. THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.
4. THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT 233-2973, ON NOTIFICATION PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY WORK.
5. LOCATION AND DEPTH 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 1 WEEK PRIOR TO CONSTRUCTION. 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 SAWS.
6. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES AT LEAST 1-2 WEEKS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. PLEASE ALLOW UP TO 7 BUSINESS DAYS FOR LOCATES REQUESTING PIPE LOCATION MARKERS ON SAWS FACILITIES. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:
   - SAWS UTILITY LOCATES: HTTP://WWW.SAWS.ORG/SERVICE/LOCATES
   - COSA DRAINAGE (210) 207-0724 OR (210) 207-6026
   - COSA TRAFFIC SIGNAL OPERATIONS (210) 206-8480
   - COSA TRAFFIC SIGNAL DAMAGES (210) 207-3951
   - TEXAS STATE WIDE ONE CALL LOCATOR 1-800-545-6005 OR 811
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.
8. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.
9. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
10. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.
11. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.

12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
13. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

SAWS PRESSURE ZONE 950W

Developer's Name	LENNAR HOMES				
Developer's Address	100 NE LOOP 410 SUITE 1155				
City	SAN ANTONIO	**State**	TX	**Zip**	78216
Phone #	(210) 403-6200	**Fax #**	-		
SAWS Block Map #	082-568 & 084-568	**Total EDU's**	172	**Total Acreage**	31.33
Total Linear Footage of Pipe	8" - 4,794 L.F. ; 2" H.D.P.E. - 289 L.F.	**Plat No.**	24-11800118		
Number of Lots	171	**SAWS Job No.**	25-1087		

WATER SECTION

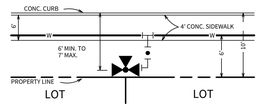
1. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY. FOR WATER MAINS 12" OR HIGHER: SAWS EMERGENCY OPERATIONS CENTER (210) 233-2014
2. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOSCONTAINING MATERIAL (ACM), MAY BE LOCATED WITHIN THE PROJECT LIMITS. SPECIAL WASTE MANAGEMENT PROCEDURES AND HEALTH AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS. SUCH WORK IS TO BE MADE UNDER SPECIAL SPECIFICATION ITEM NO. 3000, "SPECIAL SPECIFICATION FOR HANDLING ASBESTOS CEMENT PIPE".
3. VALVE REMOVAL: WHERE THE CONTRACTOR IS TO ABANDON A WATER MAIN, THE CONTROL VALVE LOCATED ON THE ABANDONING BRANCH WILL BE REMOVED AND REPLACED WITH A CAP/PLUG. (NSPI)
4. SUITABLE ANCHORAGE/THRUST BLOCKING OR JOINT RESTRAINT SHALL BE PROVIDED AT ALL OF THE FOLLOWING MAIN LOCATIONS: DEAD ENDS, PLUGS, CAPS, TEES, CROSSES, VALVES, AND BENDS, IN ACCORDANCE WITH THE STANDARD DRAWINGS DD-839 SERIES AND ITEM NO. 839, IN THE SAWS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. ALL VALVES SHALL READ "OPEN RIGHT".
6. PRVS REQUIRED: CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 745 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 745 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF *PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. *NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).
7. PIPE DISINFECTION WITH DRY HTH FOR PROJECTS LESS THAN 800 LINEAR FEET. (ITEM NO. 847.3): MAINS SHALL BE DISINFECTED WITH DRY HTH WHERE SHOWN IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE INSPECTOR, AND SHALL NOT EXCEED A TOTAL LENGTH OF 800 FEET. THIS METHOD OF DISINFECTION WILL ALSO BE FOLLOWED FOR MAIN REPAIRS. THE CONTRACTOR SHALL UTILIZE ALL APPROPRIATE SAFETY MEASURE TO PROTECT HIS PERSONNEL DURING DISINFECTION OPERATIONS.
8. BACKFLOW PREVENTION DEVICES:
   - ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS ARE REQUIRED TO HAVE BACKFLOW PREVENTION DEVICES.
   - ALL COMMERCIAL BACKFLOW PREVENTION DEVICES MUST BE APPROVED BY SAWS PRIOR TO INSTALLATION.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, AND SAWS HAS RELEASED THE MAIN FOR TIE-IN AND USE.
10. DIVISION VALVES SHOWN ON PLANS OR NOT SHOWN ON PLANS BUT FOUND IN THE FIELD SHALL ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF AND ONLY WITH PRIOR WRITTEN APPROVAL OF THE SAWS DIRECTOR OF PRODUCTION AND OPERATIONS AND PROPER COORDINATION WITH ALL SAWS DEPARTMENTS. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE INSPECTOR A MINIMUM OF TWO WEEKS IN ADVANCE TO START THE COORDINATION PROCESS AND WILL BE INFORMED BY THE INSPECTOR WHEN THE DIVISION VALVE WILL BE OPERATED BY THE SAWS DISTRIBUTION AND COLLECTION STAFF. THE DIVISION VALVE CAN ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF MEMBER NOT THE INSPECTOR OR THE CONTRACTOR. OPERATION OF A DIVISION VALVE WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE SAWS DISTRIBUTION AND COLLECTION STAFF WILL CONSTITUTE A MATERIAL BREACH OF ANY WRITTEN SAWS CONTRACT OR PERMIT IN ADDITION TO SUBJECTING THE CONTRACTOR TO LIABILITY FOR ANY AND ALL FINES, FEES, OR OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, THAT MAY ARISE FROM OR BE CAUSED BY THE OPERATION OF THE VALVE WITHOUT PRIOR WRITTEN PERMISSION. PLEASE BE INFORMED THAT THE APPROVAL OF THE OPERATION OR OPENING OR CLOSING OF A DIVISION VALVE CAN TAKE SEVERAL WEEKS FOR APPROVAL. DIVISION VALVES WILL ALSO HAVE A VALVE LID LABELED DIVISION VALVE AND A LOCKING MECHANISM INSTALLED WITH A KEY. THE LOCK AND KEY MECHANISM WILL BE PAID FOR BY THE CONTRACTOR BUT WILL BE INSTALLED BY SAWS DISTRIBUTION AND COLLECTION STAFF
11. IN AN EFFORT TO MEET THE CITY OF SAN ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1000 G.P.M. AT 25 P.S.I. RESIDUAL PRESSURE. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED DURING THE BUILDING PERMIT PROCESS IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL
12. ALL PIPES SHALL BE C900 CLASS 235 DR-18, UNLESS OTHERWISE NOTED.
13. ALL METERS SHALL BE 5/8", UNLESS OTHERWISE NOTED.

CAUTION!!!

THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND WATER AND SEWER LINES EXIST ALONG RANGER OAK RIDGE, KISSING OAK COVE, CEDARWOOD COVE AND RED OAK BEND. 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.

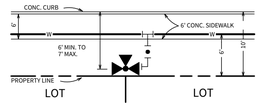
TRENCH EXCAVATION SAFETY PROTECTION

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.



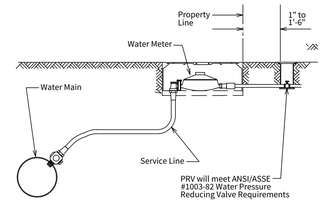
NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK/ 50' ROW)
N.T.S.

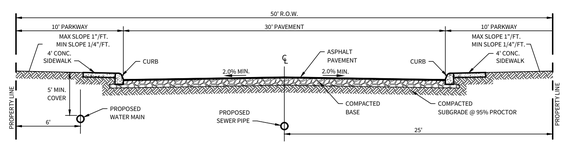


NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
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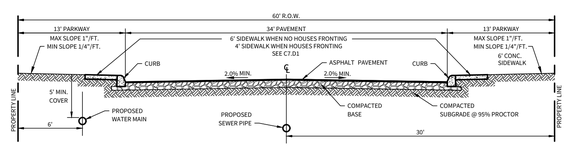
TYPICAL FIRE HYDRANT DETAIL (6' SIDEWALK/ 60' ROW)
N.T.S.



3/4" THRU 2" SERVICE PRESSURE REDUCING VALVE
N.T.S.



LOCAL "A" STREET CROSS-SECTION



LOCAL "B" STREET CROSS-SECTION

CUDEENGINEERS.COM

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

TRES LAURELS UNIT 4B

WATER DISTRIBUTION SYSTEM GENERAL NOTES

DATE 10/23/2025
PROJECT NO. 03050.019
DRAWN BY IV/RM/JS
CHECKED BY MT/CC

REVISIONS
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10/23/2025

STATE OF TEXAS · MATTHEW A. TRINKLE · 147558 · LICENSED PROFESSIONAL ENGINEER

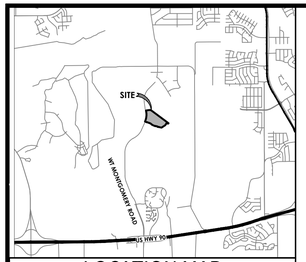
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 24-11800290
SAWS JOB NO. 25-1087

C5.D1

P:\03050\2025\5-Utilities Plans\WW\WW-WGDP.dwg 2025/10/23 3:19:51pm Isida

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LOCATION MAP
N.T.S.

Project Name: Tres Laurels – Unit 4B | **Precipitation** | **PA4**

Calculation Summary for Time of Concentrations & Proposed Flow (USED FOR SIZING CURB INLET AND VERIFYING STREET CAPACITY)

HYDROLOGY					Sheet Flow Tc Computations						Shallow Conc. Tc Computations					Concentrated Tc Computations					Overall	INTENSITY			Q FLOW			
Drainage Shed/ Computation Point	Structure/ Description	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*	n-value	S (ft./ft.)	R (ft.)	Time of Concentration	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
1	River Birch Bend	7.10	= 1	0.77	*100*	N	763	757	6.23%	10	*950*	Y	742	1.53%	6						16	5.06	6.99	8.71	27.66	38.21	47.62	1
2	White Pine Cove	7.35	= 2	0.77	*100*	N	776	772	3.85%	11	*1244*	Y	744	2.20%	7						18	4.76	6.56	8.16	26.94	37.13	46.18	2
3	Red Oak Bend Curb Inlet 4E-1 20' Curb Inlet (In Sag)	0.33	= 3	0.96							*143*	Y	743		1						5	7.76	10.83	13.54	2.46	3.43	4.29	3
4	Red Oak Bend Curb Inlet 4F-1 20' Curb Inlet (In Sag)	0.34	= 4	0.96							*130*	Y	744		1						5	7.76	10.83	13.54	2.53	3.53	4.42	4
5		6.82	= 5	0.51	*100*	N	771	767	3.80%	11						*1275*	0.035	0.014	0.51	6.70	17	4.91	6.76	8.42	17.08	23.51	29.29	5
CP1		7.43	= 1+3	0.78	*100*	N	763	757	6.23%	10	*1005*	Y	743	1.44%	7						16	5.06	6.99	8.71	29.27	40.43	50.38	CP1
CP2		7.69	= 2+4	0.78	*100*	N	769	765	4.05%	11	*1184*	Y	744	1.80%	7						18	4.76	6.56	8.16	28.49	39.27	48.84	CP2

OWNER/DEVELOPER:

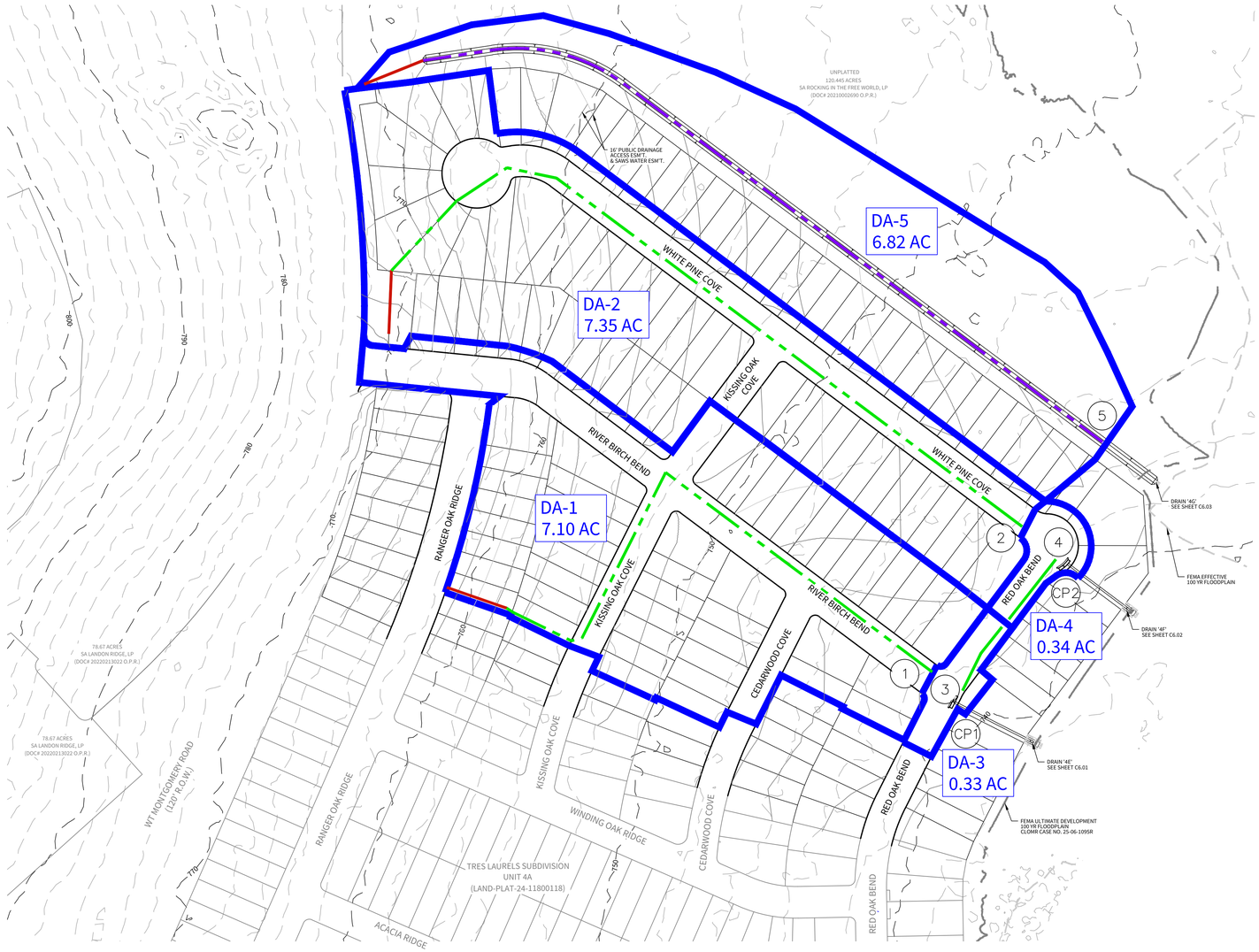
LENNAR HOMES OF TEXAS LAND
ANDCONSTRUCTION, LTD.
A TEXAS LIMITED PARTNERSHIP
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT: CHRIS CHAFFEE, P.E.
4122 POND HILL RD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951

LEGEND

- SITE BOUNDARY
- DRAINAGE AREA
- Tc FLOW PATH (SHEET FLOW)
- Tc FLOW PATH (SHALLOW CONC.)
- Tc FLOW PATH (CONCENTRATED)
- FLOW ARROW PROP. GROUND
- FLOW ARROW EX. GROUND
- ACCUMULATION POINT (XX)



SCALE: 1"=100'
100 50 0 100

CUDEENGINEERS.COM

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

TRES LAURELS UNIT 4B

PROPOSED DRAINAGE MASTER PLAN

DATE
07/09/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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07/01/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C6.00

P:\03050\2025\2.DWG\4.4\Plans\06_GRAD\Dwg.2025-07-09 9:58am by Ivan

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 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.

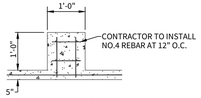
3. THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

NOTES:

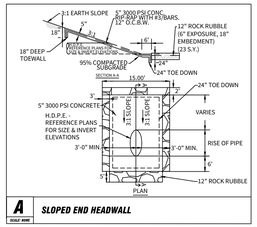
1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT 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 THE CITY OF SAN ANTONIO & 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 XX.
9. A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY R.O.W.
10. CONTRACTOR TO RECONSTRUCT EXISTING SIDEWALK, AS NECESSARY, FOR PROPOSED SIDEWALK TRANSITION.
11. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF SEWER MANHOLES AND/OR CURB INLETS AS NECESSARY TO PROVIDE POSITIVE DRAINAGE

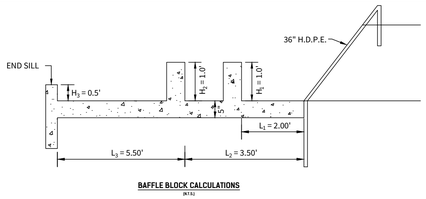
TRENCH EXCAVATION PROTECTION

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.



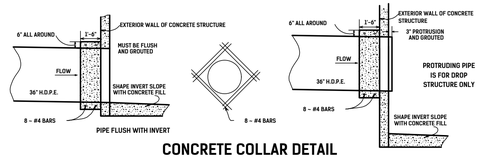
BAFFLE BLOCK DRAIN '4E' REINFORCEMENT DETAIL
(N.T.S.)



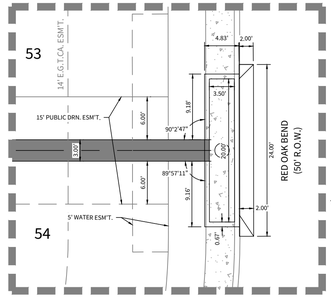


BAFFLE BLOCK CALCULATIONS
(WTS)

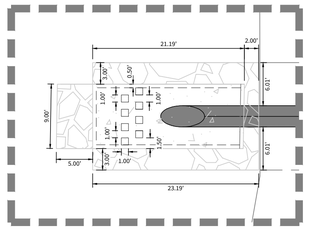
TAILWATER DEPTH = 2.52'
Fr = 0.84
Y_c = 0.83 FT
Y_2 = 1.79 FT
Y_3 = 0.73 FT
BASIN OUTLET VELOCITY = 4.96 FT/S



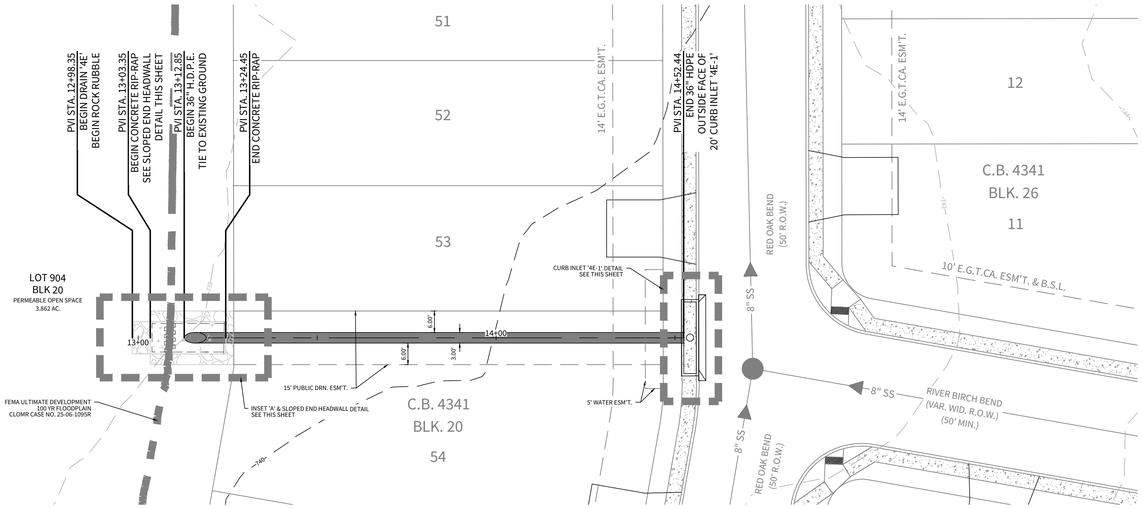
CONCRETE COLLAR DETAIL
(N.T.S.)



CURB INLET '4E-1' DETAIL
(SCALE 1" = 10')



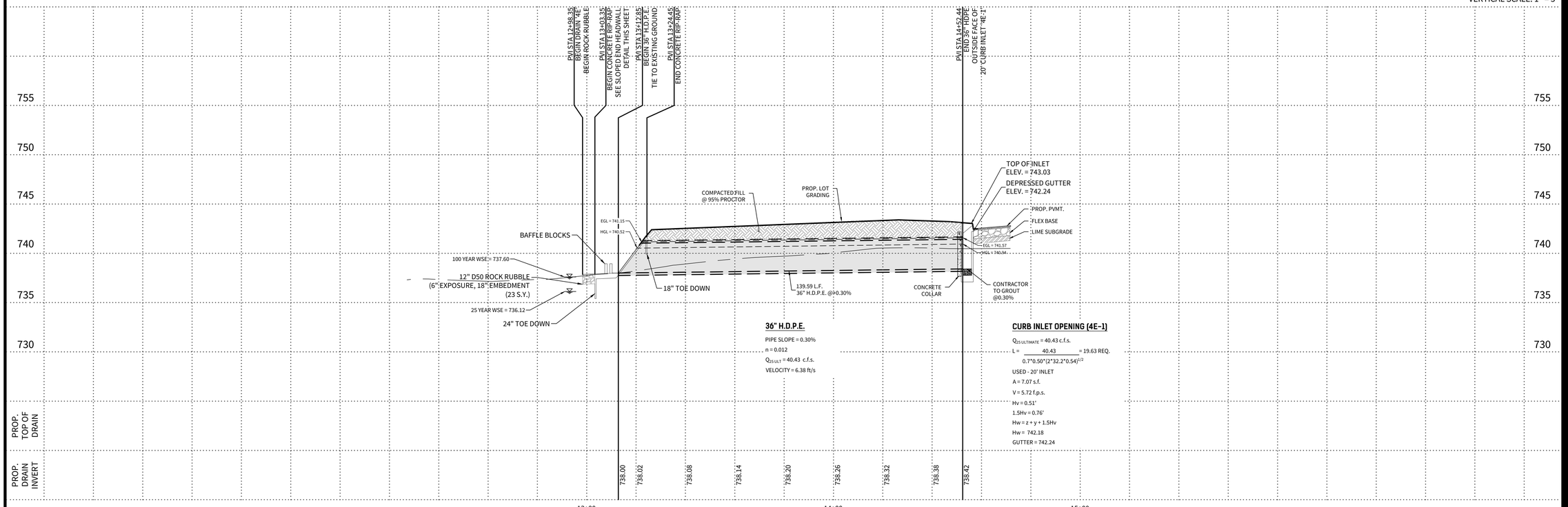
INSET 'A'
(SCALE 1" = 10')



DRAIN 4E

STA. 12+98.35 TO STA. 14+52.44

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



36" H.D.P.E.

PIPE SLOPE = 0.30%
n = 0.012
$Q_{25\ ULT}$ = 40.43 c.f.s.
VELOCITY = 6.38 ft/s

CURB INLET OPENING (4E-1)

$Q_{25\ ULTIMATE}$ = 40.43 c.f.s.

$$L = \frac{40.43}{0.7*0.50*(2*32.2*0.54)^{1/2}} = 19.63 \text{ REQ.}$$

USED - 20' INLET
A = 7.07 s.f.
V = 5.72 f.p.s.
Hv = 0.51'
1.5Hv = 0.76'
Hw = z + y + 1.5Hv
Hw = 742.18
GUTTER = 742.24

CUDEENGINEERS.COM

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

TRES LAURELS UNIT 4B

DRAINAGE PLAN & PROFILE - DRAIN '4E'

DATE
07/09/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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07/01/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C6.01

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.

P:\03050.019\2-Docs\4-Plans\06_Exhibits\4E_Reg.Exh\25.09.12 Plan Insets

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.

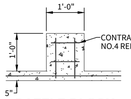
3. THE FILL MATERIAL SHALL BE COMPACTED AT THE APPROPRIATE MOISTURE CONTENT SPECIFIED FOR THE SOILS BEING USED. APPROPRIATE MOISTURE CONTENT IS DEFINED, TYPICALLY, AS OPTIMUM MOISTURE CONTENT; HOWEVER, FOR EXPANSIVE SOILS IT MAY BE GREATER THAN OPTIMUM MOISTURE CONTENT, AND OTHER MOISTURE CONTENTS MAY BE NECESSARY TO PRODUCE THE DESIRED RESULTS WITH CERTAIN SOILS.

NOTES:

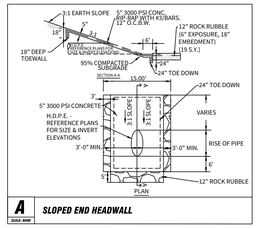
1. REFER TO GENERAL NOTES AND SPECIFICATIONS C0.00.
2. CONTRACTOR TO ENSURE POSITIVE DRAINAGE AT ALL GRADE BREAKS.
3. THE CONTRACTOR SHALL NOTIFY A UTILITY COORDINATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF AN ON-SITE DRAINAGE FACILITIES TO PROTECT 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 THE CITY OF SAN ANTONIO & 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 XX.
9. A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY R.O.W.
10. CONTRACTOR TO RECONSTRUCT EXISTING SIDEWALK, AS NECESSARY, FOR PROPOSED SIDEWALK TRANSITION.
11. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF SEWER MANHOLES AND/OR CURB INLETS AS NECESSARY TO PROVIDE POSITIVE DRAINAGE

TRENCH EXCAVATION PROTECTION

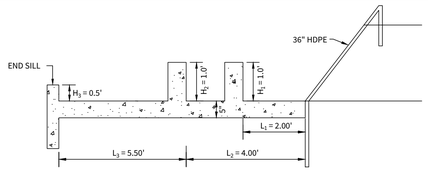
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BAFFLE BLOCK DRAIN '4E' REINFORCEMENT DETAIL
(N.T.S.)

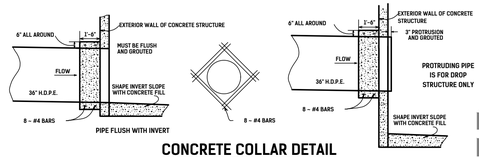


A SLOPED END HEADWALL

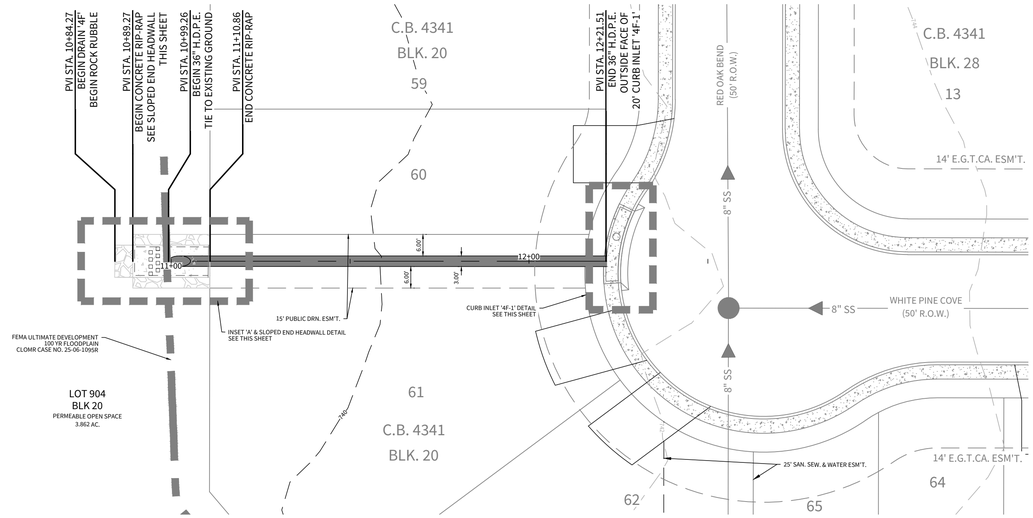


BAFFLE BLOCK CALCULATIONS
(N.T.S.)

TAILWATER DEPTH = 2.04'
Fr = 1.07
Y_c = 0.81 FT
Y_2 = 2.01 FT
Y_3 = 0.81 FT
BASIN OUTLET VELOCITY = 4.92 FT/S



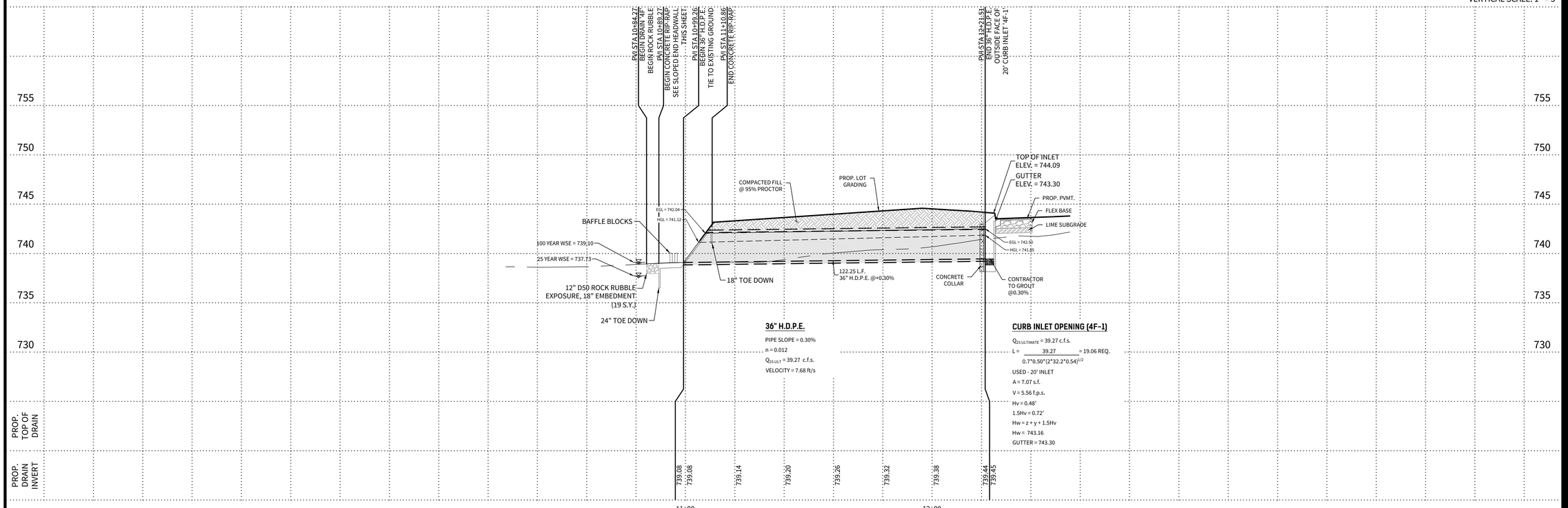
CONCRETE COLLAR DETAIL
(N.T.S.)



DRAIN 4F

STA. 10+84.27 TO STA. 12+21.51

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



36" H.D.P.E.

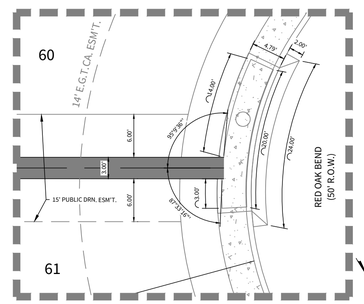
PIPE SLOPE = 0.30%
n = 0.012
$Q_{25\ ULT}$ = 39.27 c.f.s.
VELOCITY = 7.68 ft/s

CURB INLET OPENING (4F-1)

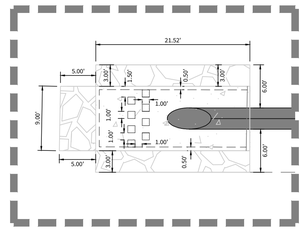
$Q_{25\ ULTIMATE}$ = 39.27 c.f.s.

$$L = \frac{39.27}{0.7*0.50*(2*32.2*0.54)^{1/2}} = 19.06 \text{ REQ.}$$

USED - 20' INLET
A = 7.07 s.f.
V = 5.56 f.p.s.
Hv = 0.48'
1.5Hv = 0.72'
Hw = z + y + 1.5Hv
Hw = 743.16
GUTTER = 743.30



CURB INLET '4F-1' DETAIL
(SCALE 1" = 10')



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

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CUDE ENGINEERS

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

TRES LAURELS UNIT 4B

DRAINAGE PLAN & PROFILE - DRAIN '4F'

DATE
06/11/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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07/01/2025

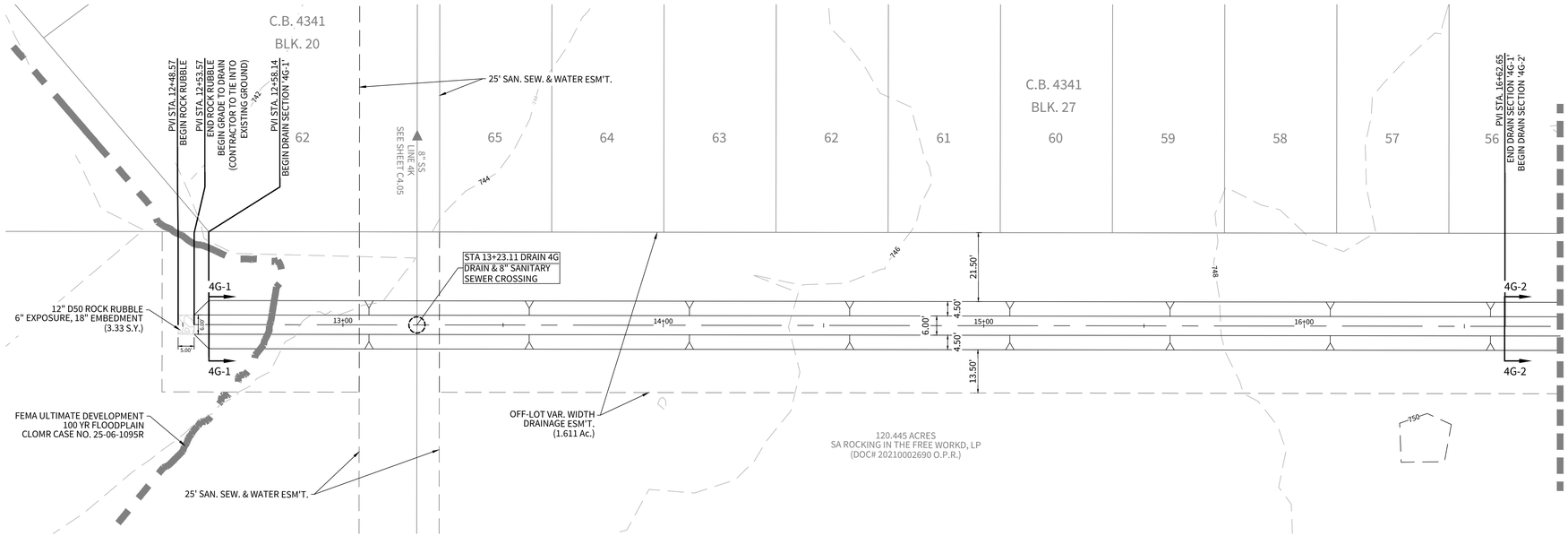
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C6.02

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.

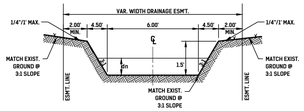


NOTES:

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 THE CITY OF SAN ANTONIO & 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 C6.03.
9. A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY R.O.W.
10. CONTRACTOR TO RECONSTRUCT EXISTING SIDEWALK, AS NECESSARY, FOR PROPOSED SIDEWALK TRANSITION.
11. CONTRACTOR TO GROUT BOTTOM/FLOW LINE OF SEWER MANHOLES AND/OR CURB INLETS AS NECESSARY TO PROVIDE POSITIVE DRAINAGE.
12. VEGETATION RETARDANCE CLASS TO BE DETERMINED UTILIZING CITY OF SAN ANTONIO UNIFIED DEVELOPMENT CODE TABLE 9.3.8.2. ACCEPTABLE FORMS OF VEGETATION FOR EACH RETARDANCE CLASS ARE IDETIFIED IN CITY OF SAN ANTONIO UNIFIED DEVELOPMENT CODE TABLE 9.3.8.1.

DRAIN '4G' INTERCEPTOR CHANNEL

STA. 12+53.57 TO STA. 16+80.00



DRAIN 4G (N.T.S.)

SECTION '4G-1' STA. 12+58.14 TO STA. 16+62.65
SECTION '4G-2' STA. 16+62.65 TO STA. 24+15.18
SECTION '4G-3' STA. 24+15.18 TO STA. 26+30.23

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.

NOTE:
CONTRACTOR TO VERIFY LOCATION AND INVERT OF EXISTING SANITARY SEWER MAIN AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

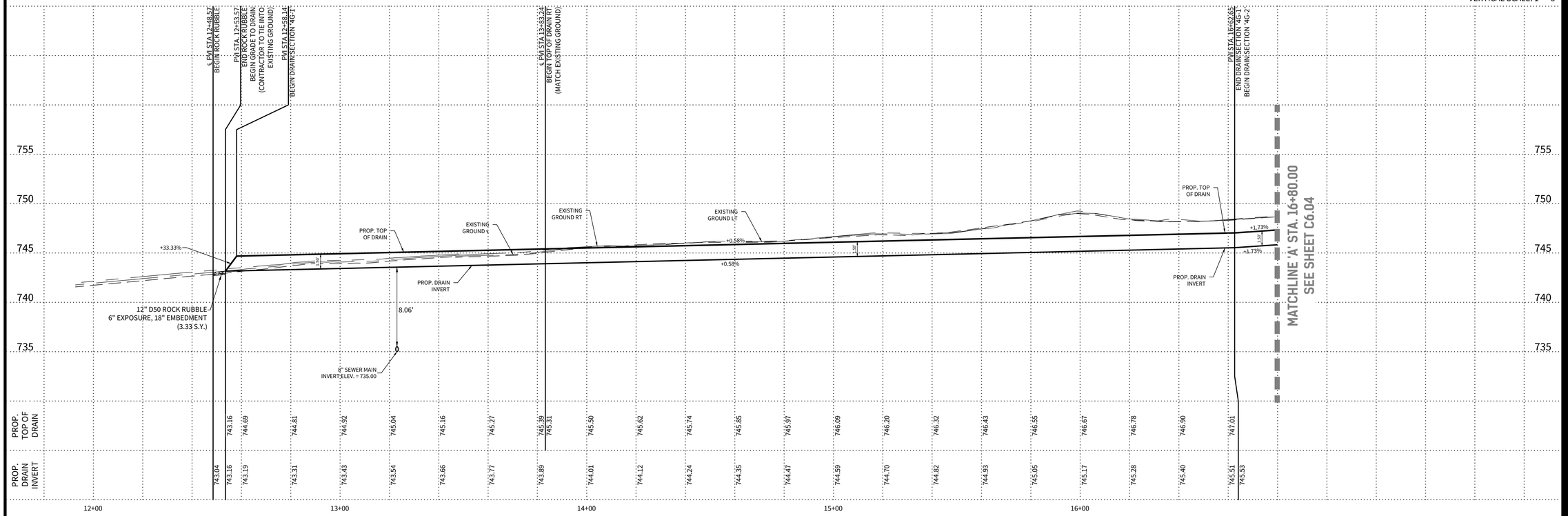
CAUTION!!!
THE CONTRACTOR SHALL BE AWARE THAT UNDERGROUND UTILITIES EXIST THROUGHOUT THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

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.

	"4G-1"	"4G-2"
$Q_{25\,P\&J}$ (cfs)	23.51	23.51
B (ft)	6.00'	6.00'
z w	3:1	3:1
n	0.035	0.035
S (%)	0.58	1.73
$d_{n\,25\,P\&J}$ (ft)	1.00	0.75
$V_{25\,P\&J}$ (fps)	2.61	3.80
MAX SHEAR STRESS $_{25\,P\&J}$	0.26	0.62
RETARDANCE CLASS	C	C

* ALL VEGETATION COVER TO BE BERMUDA GRASS

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



CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

TRES LAURELS
UNIT 4B

DRAINAGE PLAN & PROFILE - DRAIN '4G'

DATE
07/09/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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07/01/2025

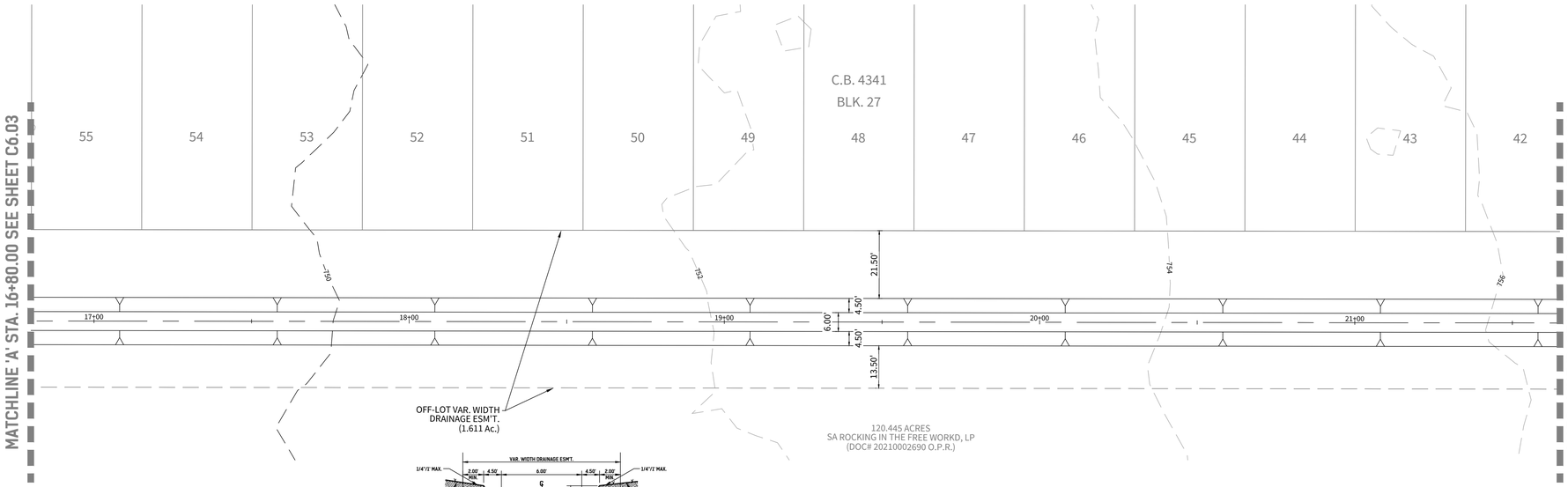
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

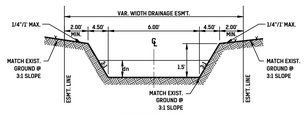
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C6.03

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DRAIN 4G (N.T.S.)

SECTION '4G-2' STA. 16+62.65 TO STA. 24+15.18

NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS CO.OG.
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 THE CITY OF SAN ANTONIO & 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 C6.03.
9. A BEXAR COUNTY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING BEXAR COUNTY R.O.W.
10. CONTRACTOR TO RECONSTRUCT EXISTING SIDEWALK, AS NECESSARY, FOR PROPOSED SIDEWALK TRANSITION.
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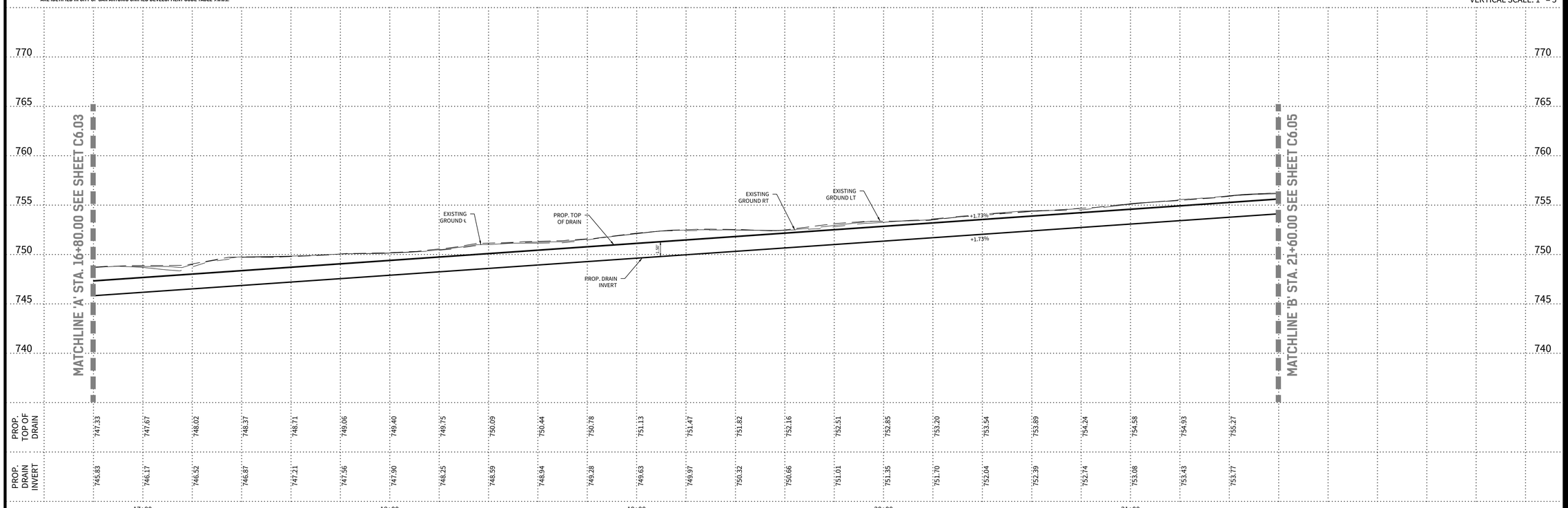
	"4G-2"
$Q_{25\,PB,I}$ (cfs)	23.51
B (ft)	6.00'
z_M	3:1
n	0.035
S (%)	1.73
$d_{n\,25\,PB,I}$ (ft)	0.75
$V_{25\,PB,I}$ (fps)	3.80
MAX SHEAR STRESS 25 PB,I	0.62
RETARDANCE CLASS	C

* ALL VEGETATION COVER TO BE BERMUDA GRASS

DRAIN '4G' INTERCEPTOR CHANNEL

STA. 16+80.00 TO STA. 21+60.00

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



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.

NOTE:
CONTRACTOR TO VERIFY LOCATION AND INVERT OF EXISTING SANITARY SEWER MAIN AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

CAUTION!!!
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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.

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

TRES LAURELS UNIT 4B

DRAINAGE PLAN & PROFILE - DRAIN '4G'

DATE
07/09/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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07/01/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

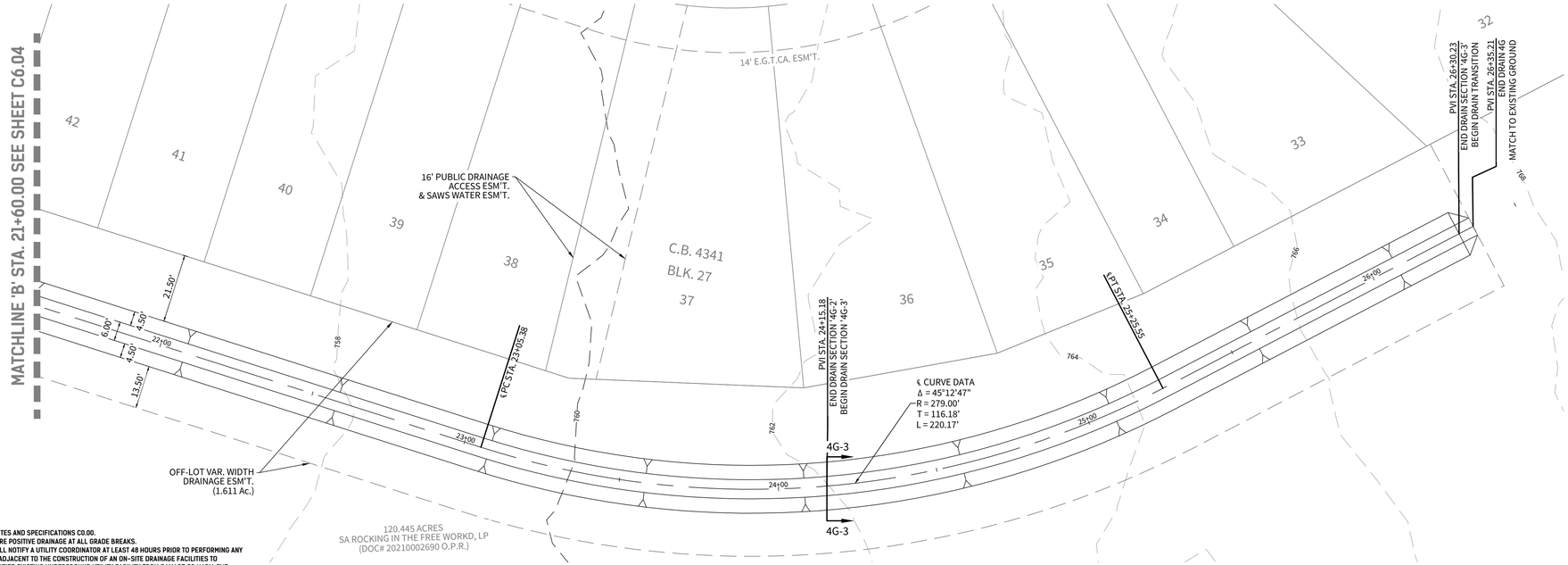
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C6.04

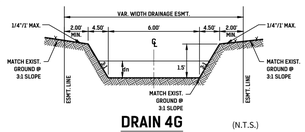
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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



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DRAIN 4G (N.T.S.)

SECTION '4G-2' STA. 16+35.97 TO STA. 24+15.18

SECTION '4G-3' STA. 24+15.18 TO STA. 26+30.23

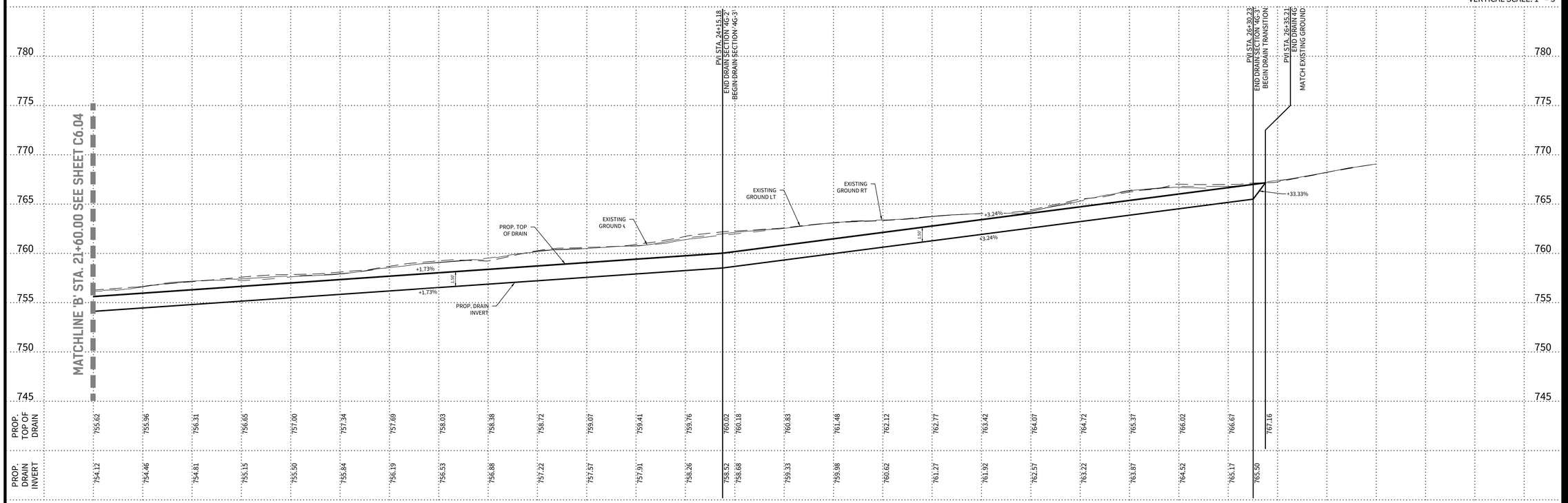
	"4G-2"	"4G-3"
$Q_{25\,FS}$ (cfs)	23.51	23.51
B (ft)	6.00'	6.00'
z ≈	3:1	3:1
n	0.035	0.035
S (%)	1.73	3.24
$d_{\Phi\,25\,FS}$ (ft)	0.75	0.63
$V_{25\,FS}$ (fps)	3.80	4.73
MAX SHEAR STRESS 25 PSF	0.62	1.00
RETARDANCE CLASS	C	C

* ALL VEGETATION COVER TO BE BERMUDA GRASS

DRAIN '4G' INTERCEPTOR CHANNEL

STA. 21+60.00 TO STA. 26+35.21

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



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CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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TRES LAURELS UNIT 4B

DRAINAGE PLAN & PROFILE - DRAIN '4G'

DATE
07/09/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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07/01/2025

STATE OF TEXAS
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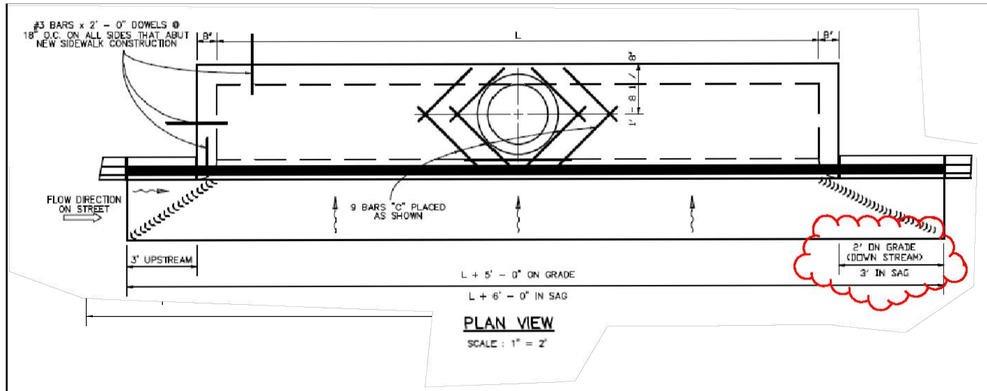
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

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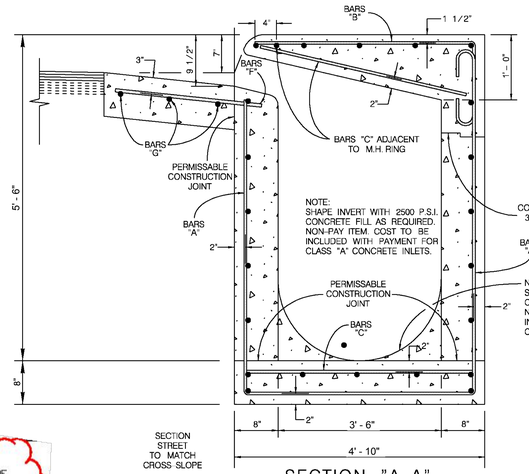
P:\03050\2025\5-Utility\4 Plans\06_Grading\C6.05 Drain 4G.dwg 2025/07/09 10:51 ivanmolina

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PLAN VIEW

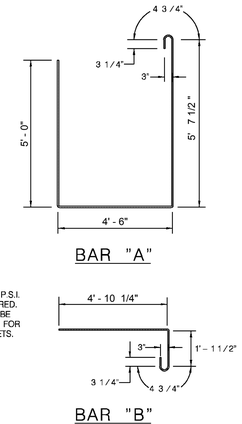
SCALE : 1" = 2'



SECTION STREET TO MATCH CROSS SLOPE

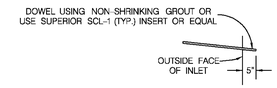
SECTION "A-A"

SCALE : 1" = 1'

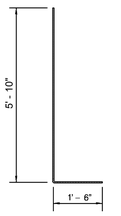


BAR "A"

BAR "B"



BAR "F"



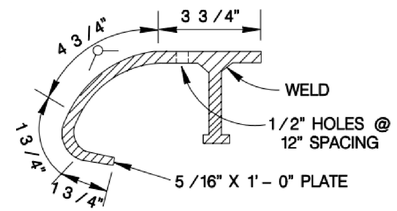
BAR "E"

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
	A	51	4	5' o.c.	15' 9 1/2"	537.99
DRAIN "4E"	B	51	4	5"	6' 7 3/4"	226.41
L= 20'	C	51	4	9"	4' 6"	153.31
DEPTH= 5.5'	D	25	4	10"	21' 1"	352.09
	E	12	4	10 1/2"	7' 4"	58.78
	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 = 11.77 C.Y. Manhole Casting = 260 lbs. Steel Total = 1698.33 lbs.

INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	No.	Size	Spa.	Length	Weight lbs.
	A	51	4	5' o.c.	15' 9 1/2"	537.99
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L= 20'	C	51	4	9"	4' 6"	153.31
DEPTH= 5.5'	D	25	4	10"	21' 1"	352.09
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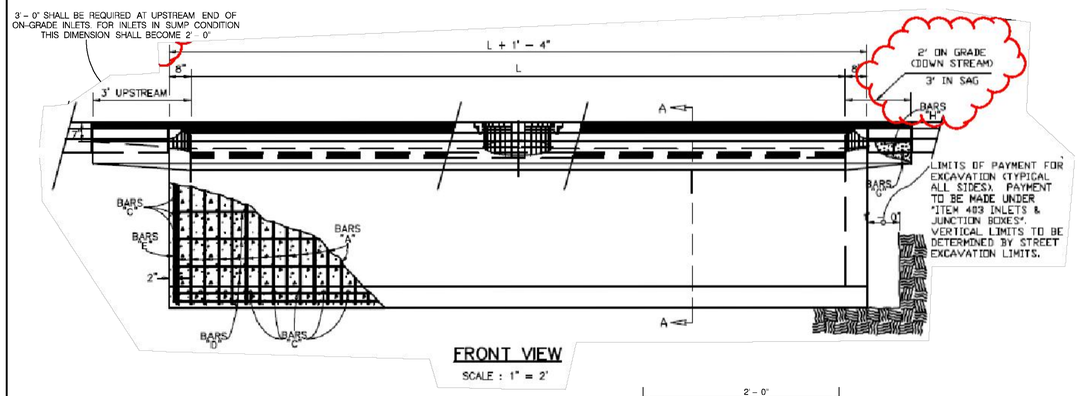
*Concrete Total = 11.77 C.Y. Manhole Casting = 260 lbs. Steel Total = 1698.33 lbs.



CURB ARMOR DETAIL

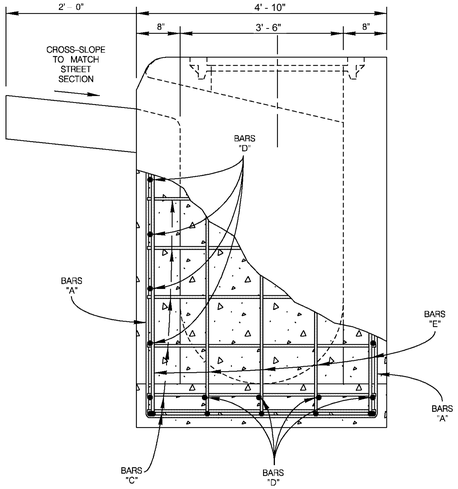
* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC. PIPE
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .05 C.Y. FOR INLETS IN SUMP.

3' - 0" SHALL BE REQUIRED AT UPSTREAM END OF ON-GRADE INLETS. FOR INLETS IN SUMP CONDITION THIS DIMENSION SHALL BECOME 2' - 0"



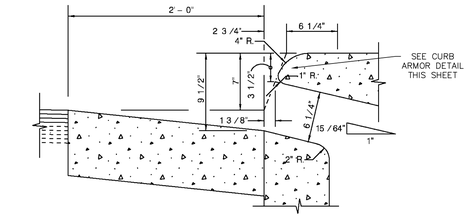
FRONT VIEW

SCALE : 1" = 2'



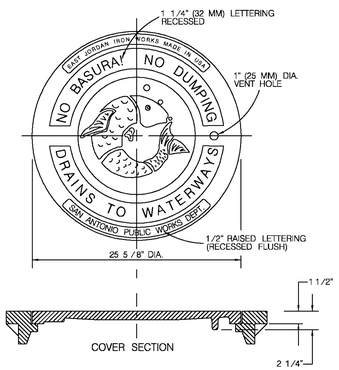
SIDE VIEW

SCALE : 1" = 1'



OPENING DETAIL FOR CURB SECTION

SCALE : 1" = 6"

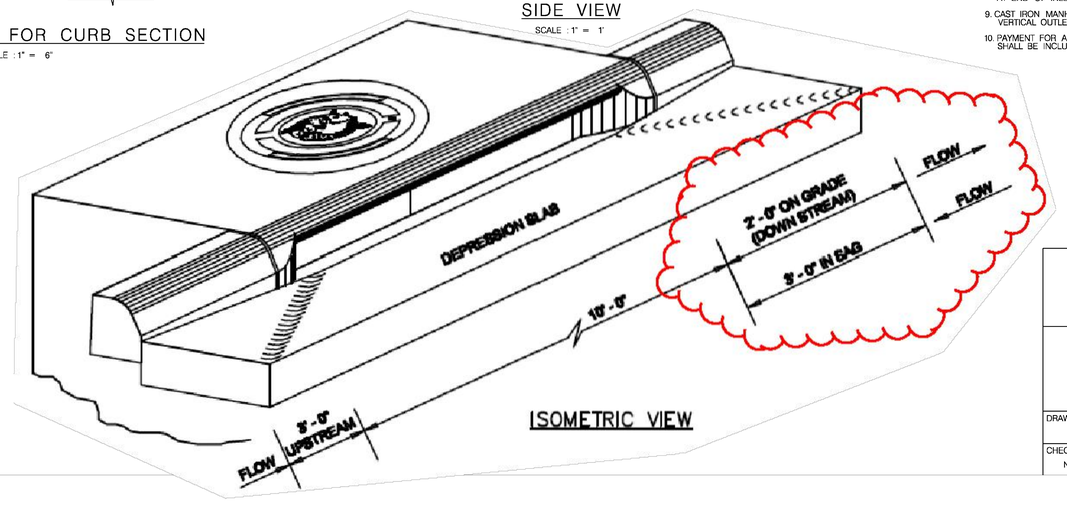


MANHOLE LID & RING DETAIL (ITEM 409)

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".

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

TRES LAURELS
UNIT 4B

DRAINAGE DETAILS

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

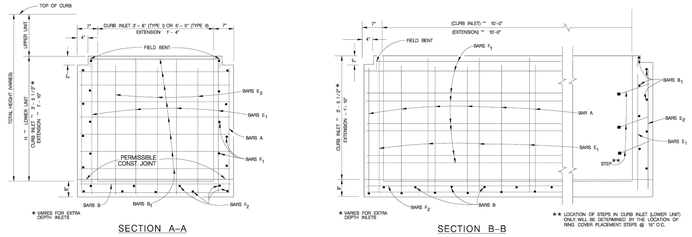
REVISIONS
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9.
10.

01/09/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C6.D1

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



SECTION A–A

SECTION B–B

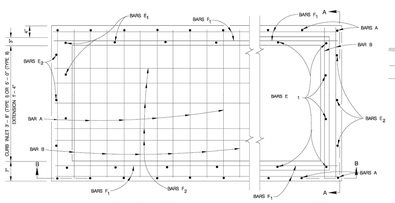
REINFORCING STEEL

LOWER UNIT 10' X 3'– 8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'-4"
B_1	VARIES	#4	12"	4'-6"
E_1	20	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	10"±	10'-10"
F_2	9	#4	——	10'-10"

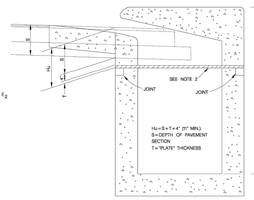
LOWER UNIT 10' X 5'– 0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'-10"
B_1	VARIES	#4	12"	5'-10"
E_1	22	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	10"±	10'-10"
F_2	11	#4	——	10'-10"

GENERAL NOTES

1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST "NDOT CURB INLET TYPE 12" AND EXTENSION TYPE E (L-C).
2. TYPE C-4 INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A",3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M A-615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 /4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK-FILLING,CONCRETE, REINFORCING STEEL, RING AND COVER,CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS.WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3' BEYOND THE OUTER SHELL OF THE PIPE,TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 8".



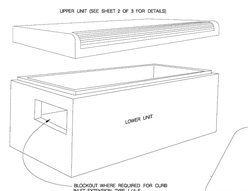
FLOOR STEEL WALL STEEL

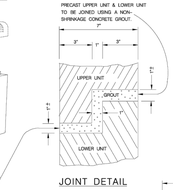


PHASE CONSTRUCTION

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

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



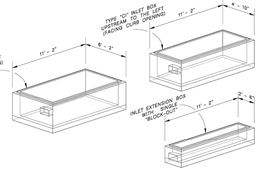


JOINT DETAIL

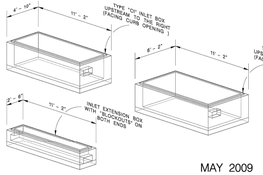
WHEN USING PRECAST UPPER UNIT,THIS SPACE IS FOR MAKING MINOR HORIZONTAL AND VERTICAL ADJUSTMENTS TO ACCOMODATE A FIT BETWEEN THE UPPER AND LOWER UNIT THAT ALLOWS FOR A MATCH LINE AND GRADE BETWEEN THE ROADWAY CURB AND THE UPPER UNIT OF THE INLET.



BARS A
(LOWER UNIT)



CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)



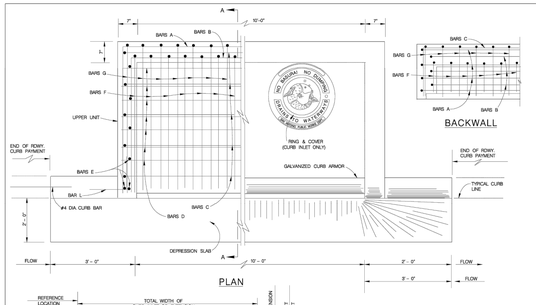
CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)

MAY 2009

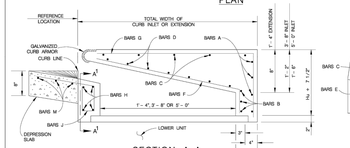
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

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

☐ SUBMITTAL PROJECT NO.:_____ DATE:_____
DRWN. BY:V. VASQUEZ DSGN. BY:L.E. MALTOS, P.E. CHKD. BY:R.S. HOSSEIN, P.E. SHEET NO.:____OF:____



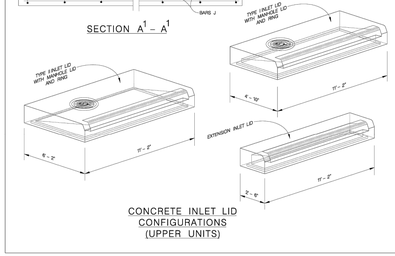
PLAN



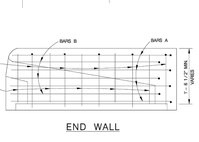
SECTION A–A



SECTION A1 – A1

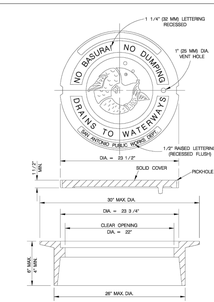


CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



END WALL

BACKWALL

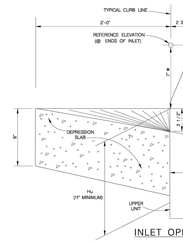


MANHOLE LID & RING DETAIL (ITEM 409)

NOTES FOR MANHOLE LID AND RING

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

SEE SHEET 1 OF 3 FOR GENERAL NOTES.



INLET OPENING DETAIL

REINFORCING STEEL (FOR Hu = 11")

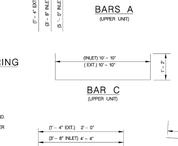
UPPER UNIT 10' X 3'–8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	33'-8"	60
B	3	#4	——	16'-10"	38
C	5	#4	11"	13'-2"	62
D	7	#4	6"	10'-10"	51
E	10	#4	11"	1'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#6	6"	5'-8"	187
H	4	#4	——	13'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	——	3'-0"	5
M	3	#4	——	14'-8"	29
TOTAL WEIGHT					620 LBS.

UPPER UNIT 10' X 5'-0" (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	33'-8"	60
B	3	#4	——	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	231
H	4	#4	——	15'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	——	3'-0"	5
M	3	#4	——	14'-8"	29
TOTAL WEIGHT					759 LBS.

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

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

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



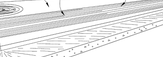


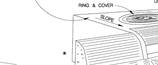


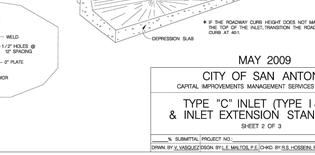










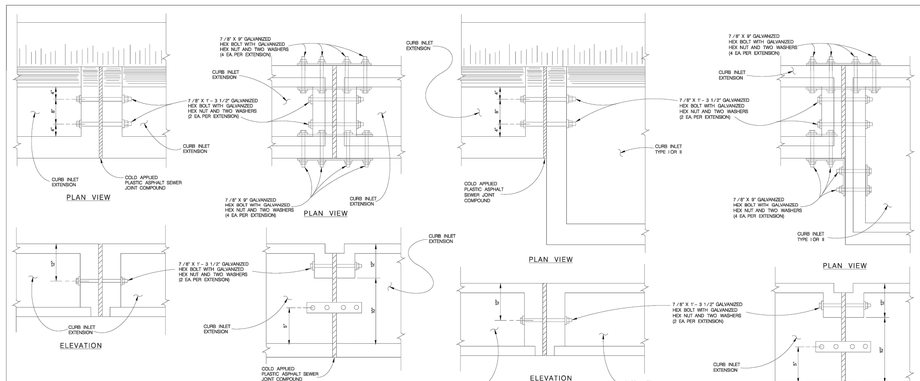


MAY 2009

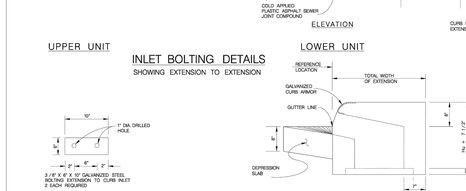
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

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

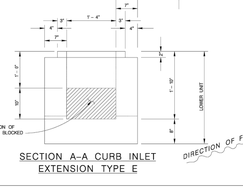
☐ SUBMITTAL PROJECT NO.:_____ DATE:_____
DRWN. BY:V.VASQUEZ/FERDA. BY:L.E. MALTOS, P.E. CHKD. BY:R.S. HOSSEIN, P.E. SHEET NO.:____OF:____



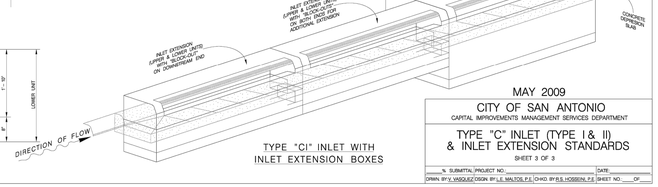
INLET BOLTING DETAILS
SHOWING EXTENSION TO EXTENSION



PLATES



SECTION A–A CURB INLET EXTENSION TYPE E



TYPE "CI" INLET WITH INLET EXTENSION BOXES

INLET BOLTING DETAILS
SHOWING CURB INLET TO EXTENSION

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

LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	10	#4	12"	6'– 2"	49
B	11	#4	12"	2'– 2"	16
B_1	3	#4	12"	2'– 2"	4
E_1	18	#4	18" ±	2'– 3"	27
E_2	4	#4	18" ±	2'– 1"	6
F_1	16	#4	10" ±	10'– 10"	116
F_2	5	#4	——	10'– 10"	36
REINFORCING STEEL				LBS.	254
CLASS "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

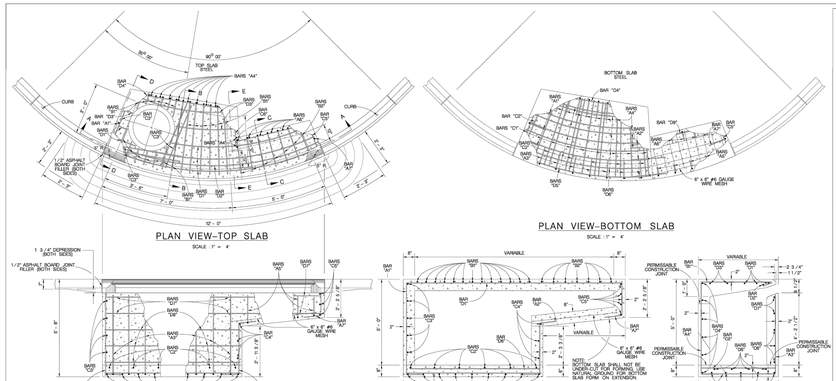
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSIONS SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET REFER TO SHEETS 1 & 2.

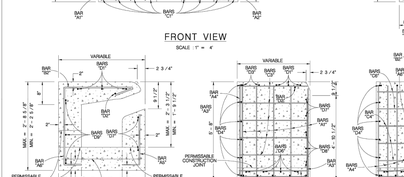
MAY 2009

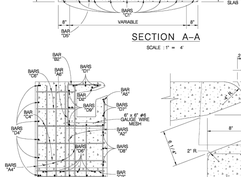
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

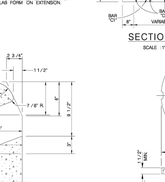
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 3 OF 3

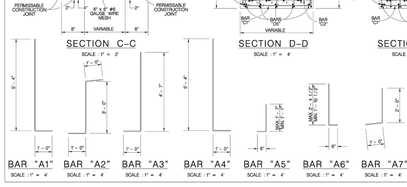
☐ SUBMITTAL PROJECT NO.:_____ DATE:_____
DRWN. BY:V. VASQUEZ DSGN. BY:L.E. MALTOS, P.E. CHKD. BY:R.S. HOSSEIN, P.E. SHEET NO.:____OF:____

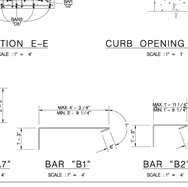


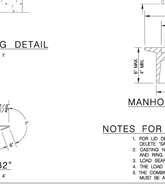












MANHOLE LID & RING DETAIL (ITEM 409)
SCALE: 1" = 10"

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.

REINFORCING STEEL SCHEDULE

SHAPE	BAR	NO.	SIZE	SPACE	LENGTH	WEIGHT
	A1	5	4	12" C-C	6'– 4"	21
	A2	3	4	12"	5'– 0"	10
	A3	8	4	12"	5'– 7"	30
	A4	16	5	6 1/2"	6'– 4"	106
	A5	5	3	12"	MAX = 3'– 1" MIN = 2'– 1 1/2"	3
	A6	7	4	8"	MAX = 3'– 1 1/2" MIN = 2'– 1 1/2"	12
	A7	3	3	12"	3'– 0"	3
	B1	13	5	6 1/2"	MAX = 5'– 10 3/4" MIN = 5'– 2 1/4"	80
	B2	7	4	6"	MAX = 3'– 3 1/2" MIN = 2'– 3 1/2"	17
STRAIGHT	C1	9	4	12"	MAX = 3'– 3 1/2" MIN = 2'– 3 1/2"	24
STRAIGHT	C2	6	4	18"	MAX = 4'– 3 1/2" MIN = 3'– 3 1/2"	17
STRAIGHT	C3	9	4	12"	3'– 11"	23
STRAIGHT	C4	3	4	12"	3'– 11"	8
STRAIGHT	C5	4	3	7 1/2"	2'– 0"	3
STRAIGHT	C6	2	4	AS SHOWN	2'– 3"	3
	D1	3	4	12"	MAX = 12'– 10" MIN = 12'– 2"	24
	D2	1	4	AS SHOWN	12'– 7"	8
	D3	2	4	12"	MAX = 8'– 6" MIN = 8'– 2"	9
STRAIGHT	D4	6	4	12"	6'– 1"	24
	D5	5	4	12"	MAX = 8'– 0" MIN = 7'– 6"	24
	D6	4	4	12"	MAX = 9'– 5" MIN = 8'– 5"	19
	D7	2	3	12"	12'– 10"	10
	D8	3	4	12"	8'– 0"	16
STRAIGHT	D9	3	3	12"	4'– 5"	5
					TOTAL =	499 LBS.

ESTIMATED QUANTITIES

ITEM	UNIT	NEAT QUANTITY
CLASS "A" CONCRETE	C.Y.	
REINFORCING STEEL	LBS.	499
STORM SEWER CASTINGS	LBS.	260

* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY REINFORCED CONCRETE PIPE AND MANHOLE / COVER.

GENERAL NOTES

1. ALL BARS INTERCEPTING REINFORCED CONCRETE PIPE & MANHOLE RINGS SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURE SHALL BE CLASS "A", 3000 P.S.I IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 /4".
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE OPTION OF THE CONTRACTOR. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL MEET A.S.T.M. SPECIFICATION A-615, GRADE 60.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL (2500 P.S.I. MINIMUM) TO EFFECT DRAINAGE TO OUTLET PIPE.
8. ALL CONSTRUCTION JOINTS SHALL BE KEYED 3 /4" x 3 1/2".
9. PAYMENT FOR ALL EXCAVATION; BACKFILLING, CONCRETE, REINFORCING STEEL, RING & COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

JANUARY 2005

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "D" INLET STANDARDS

☐ SUBMITTAL PROJECT NO.:_____ DATE:_____
DRWN. BY:V. VASQUEZ DSGN. BY:_____ CHKD. BY:_____ SHEET NO.:____OF:____

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

TRES LAURELS
UNIT 4B

DRAINAGE DETAILS

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

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01/09/2025

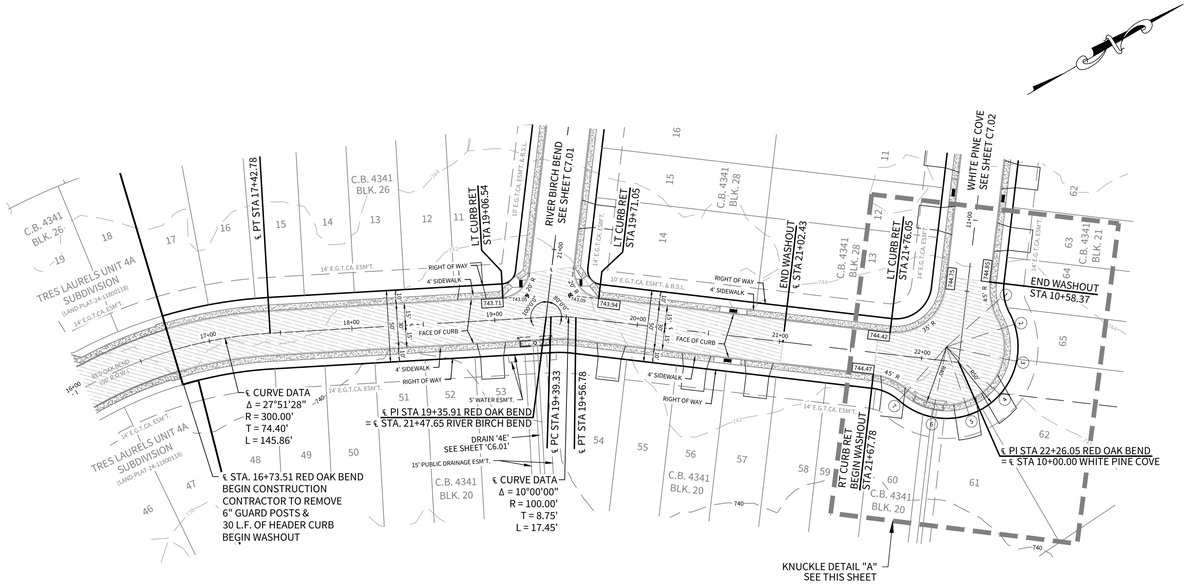
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

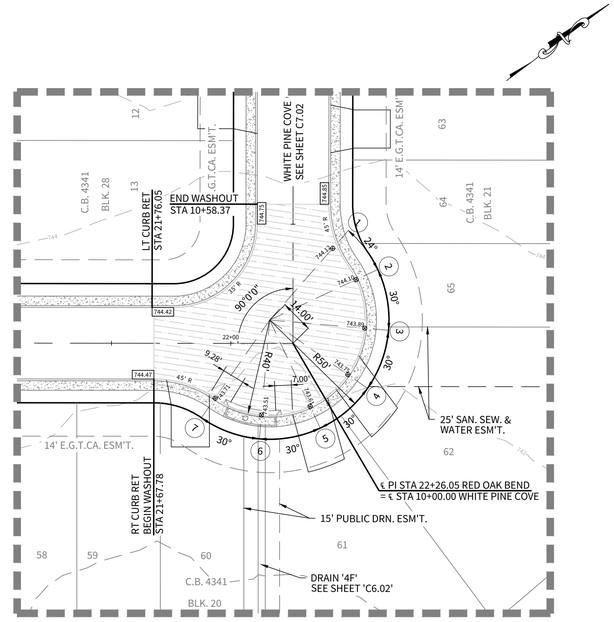
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C6.D2

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KNUCKLE DETAIL "A"

SCALE: 1" = 30'

LEGEND:

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 (DEVELOPER RESPONSIBLE)

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D1)

TYPE "10" DIRECTIONAL WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D1)

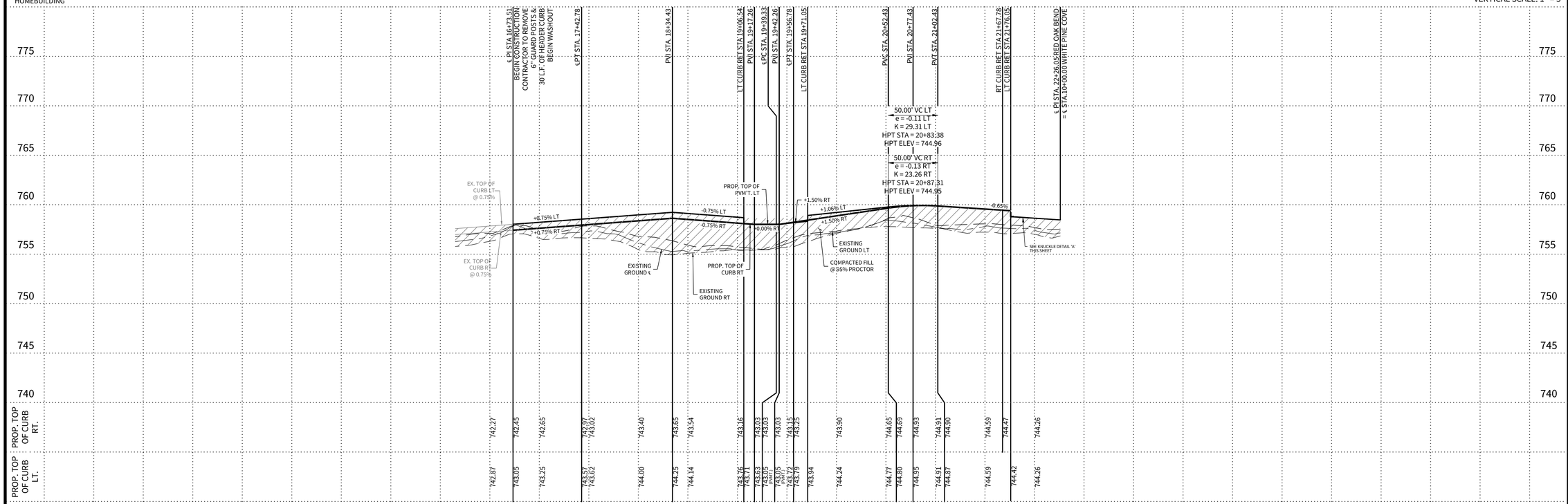
FOR ADA RAMPS AT SIDEWALK INTERSECTIONS DETECTABLE WARNING PAVER WITH TRUNCATED DOMES ONLY. ADA RAMPS TO BE CONSTRUCTED WITH INFRASTRUCTURE. WHERE RESIDENTIAL LOT FRONTAGE DOES NOT EXIST, ALL ADA RAMPS ADJACENT TO A RESIDENTIAL LOT SHALL BE CONSTRUCTED AT THE TIME OF HOMEBUILDING

RED OAK BEND

STA. 16+73.51 TO STA. 22+26.05

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

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



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TRES LAURELS UNIT 4B

STREET PLAN & PROFILE - RED OAK BEND

DATE 03/10/2025

PROJECT NO. 03050.019

DRAWN BY IV/RM/JS

CHECKED BY MT/CC

REVISIONS

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03/13/2025

STATE OF TEXAS · MATTHEW A. TRINKLE · 147558 · LICENSED PROFESSIONAL ENGINEER

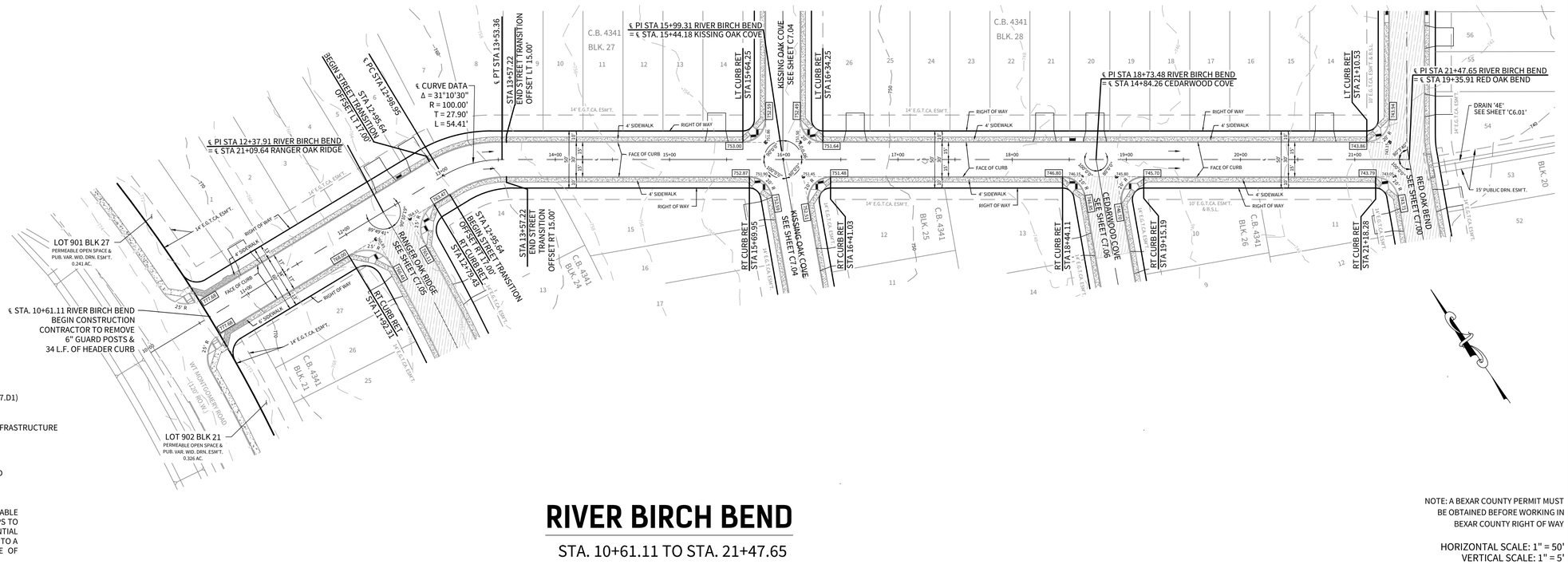
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO. 24-11800290

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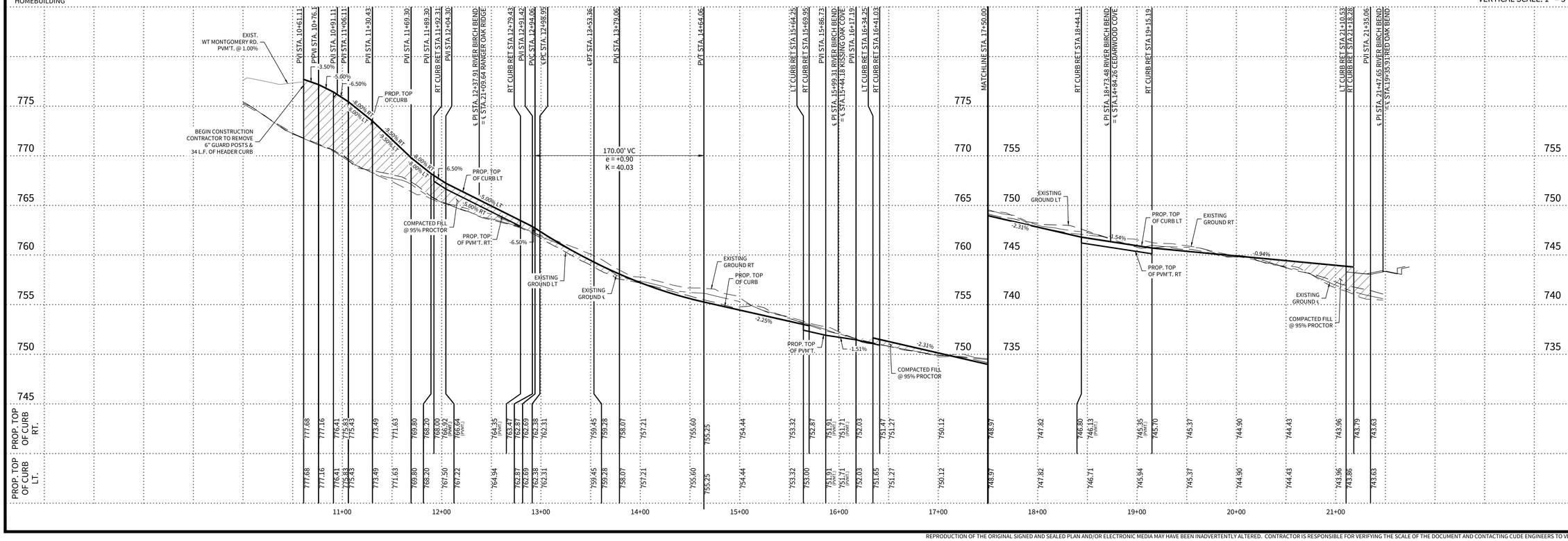
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REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



RIVER BIRCH BEND

STA. 10+61.11 TO STA. 21+47.65



LEGEND:

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 (DEVELOPER RESPONSIBLE)

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D1)

TYPE "10" DIRECTIONAL WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.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 CONSTRUCTED AT THE TIME OF HOMEBUILDING

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

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

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TRES LAURELS UNIT 4B

STREET PLAN & PROFILE - RIVER BIRCH BEND

DATE
04/08/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

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04/21/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

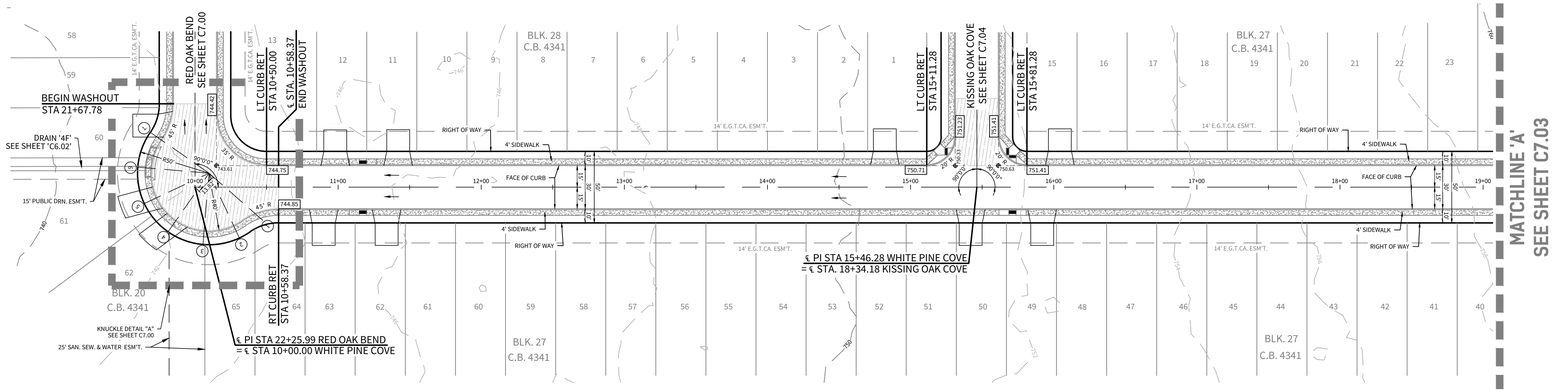
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C7.01

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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.



LEGEND:

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 (DEVELOPER RESPONSIBLE)

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D1)

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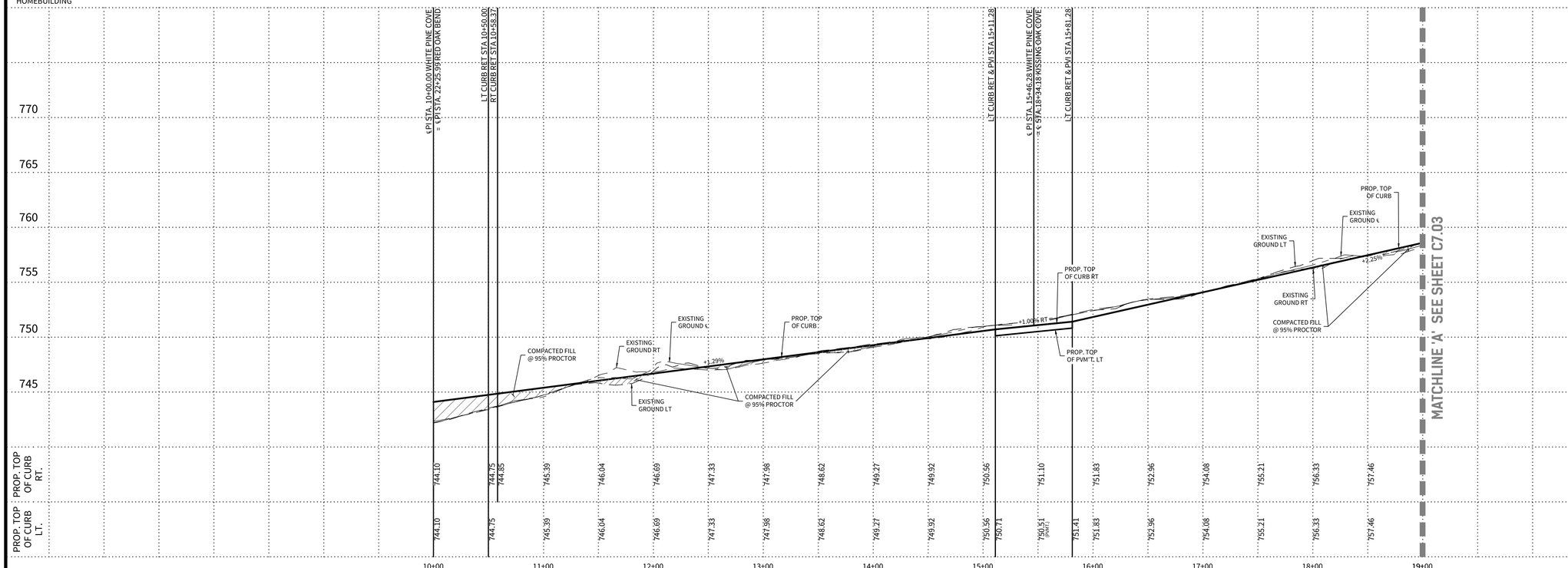
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WHITE PINE COVE

STA. 10+00.00 TO STA. 19+00.00

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

4122 Pond Hill Road, Suite 101
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P:(210) 681.2951

TRES LAURELS
UNIT 4B

STREET PLAN & PROFILE - WHITE PINE COVE

DATE
04/08/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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04/21/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C7.02

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.

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LEGEND:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

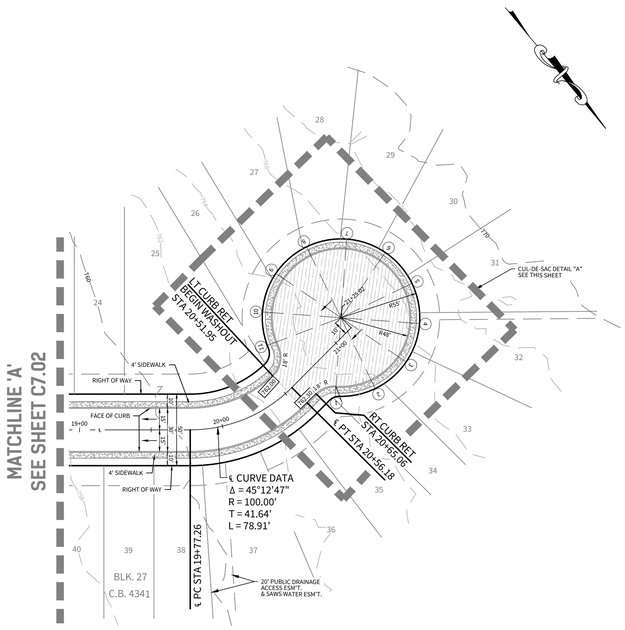
- STREET WASHOUT (SEE DETAIL SHEET C7.D1)

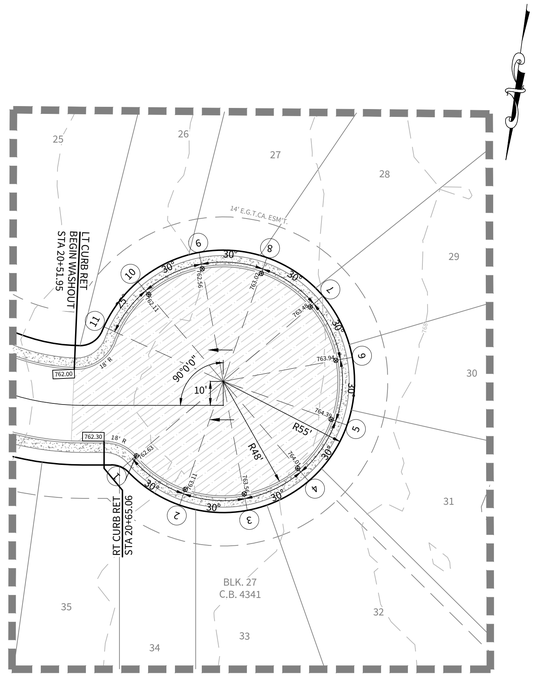
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE (DEVELOPER RESPONSIBLE)

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CUL-DE-SAC DETAIL "A"

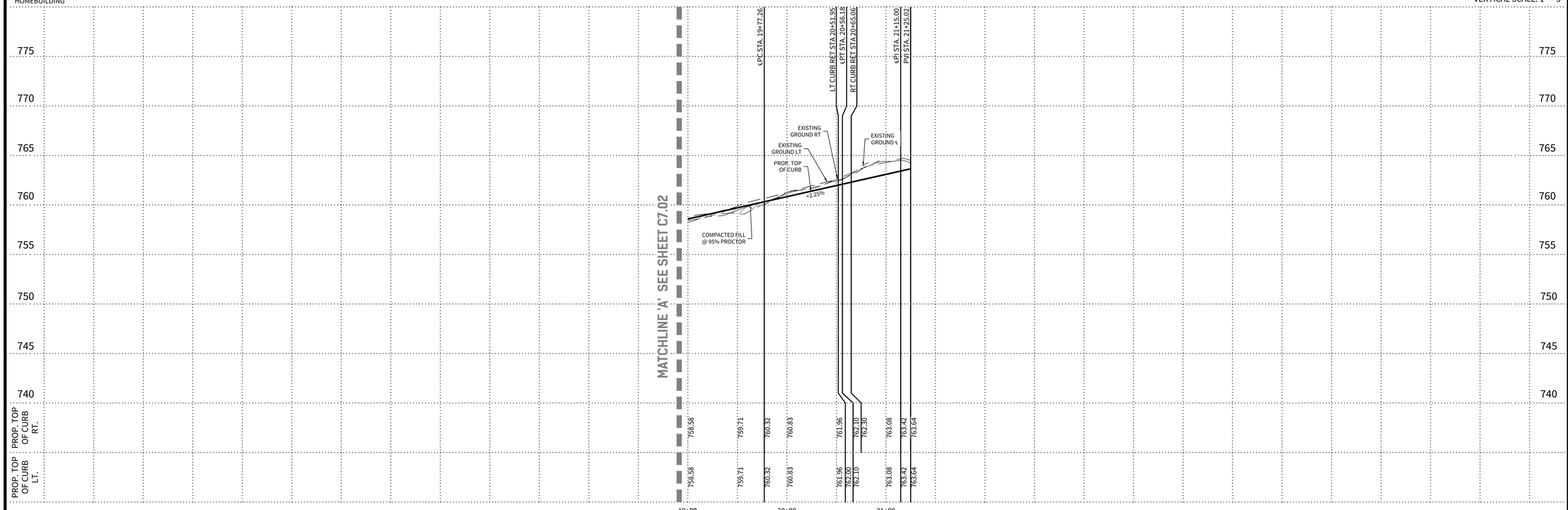
SCALE: 1" = 30'

WHITE PINE COVE

STA. 19+00.00 TO STA. 21+25.02

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

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



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TRES LAURELS UNIT 4B

STREET PLAN & PROFILE - WHITE PINE COVE

DATE
04/08/2025

PROJECT NO.
03050.019

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IV/RM/JS

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MT/CC

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04/21/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

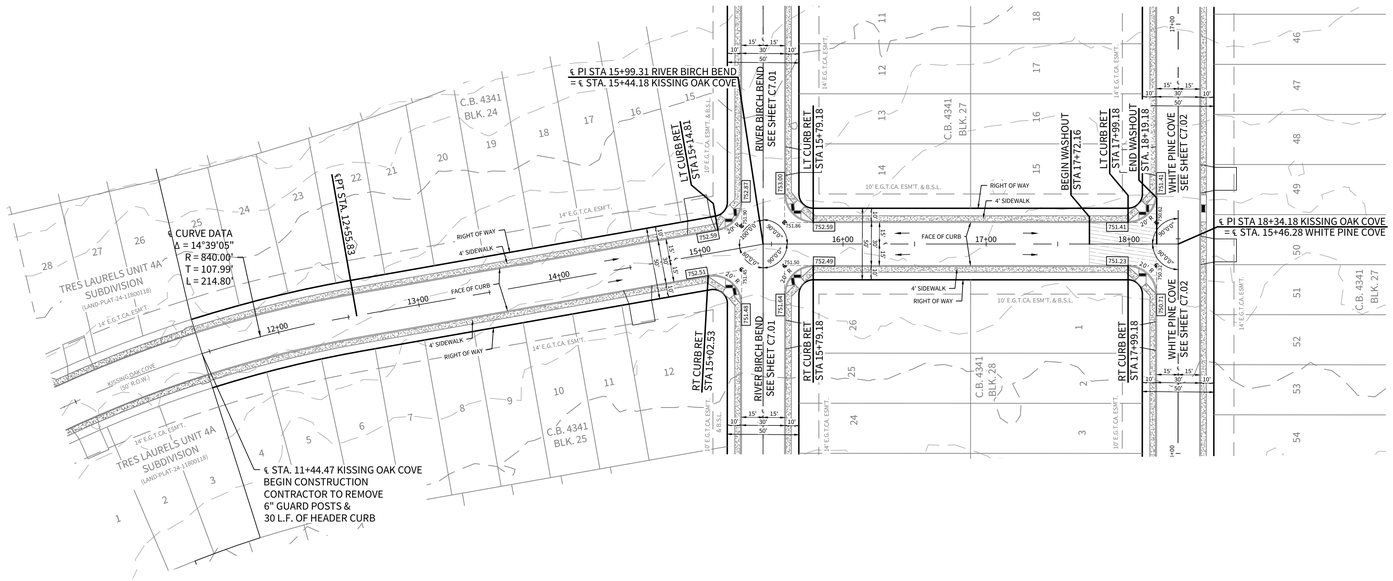
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

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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.



LEGEND:

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 (DEVELOPER RESPONSIBLE)

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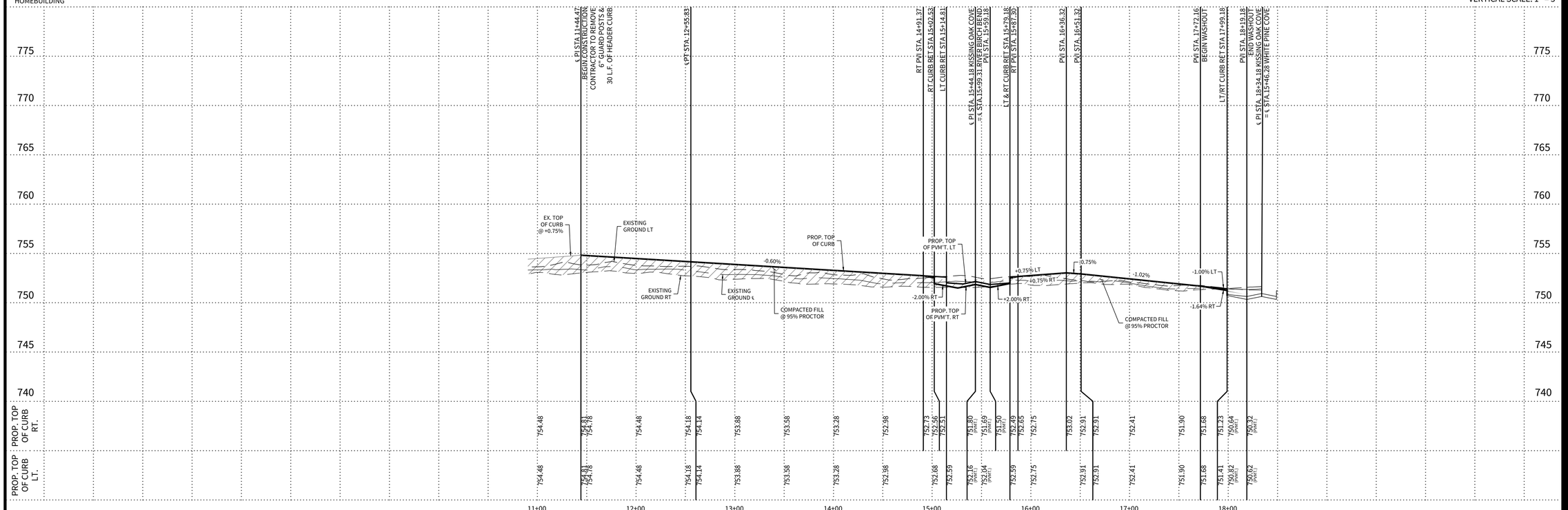
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KISSING OAK COVE

STA. 11+44.47 TO STA. 18+34.18

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

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

TRES LAURELS UNIT 4B

STREET PLAN & PROFILE - KISSING OAK COVE

DATE
04/08/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

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MT/CC

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04/21/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

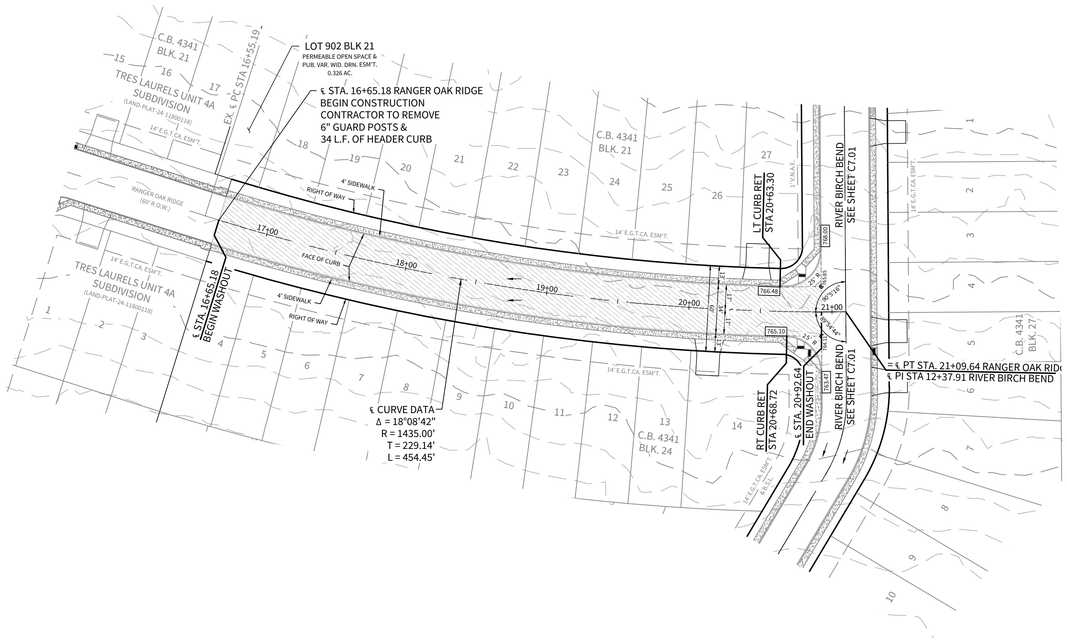
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

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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.



LEGEND:

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 (DEVELOPER RESPONSIBLE)

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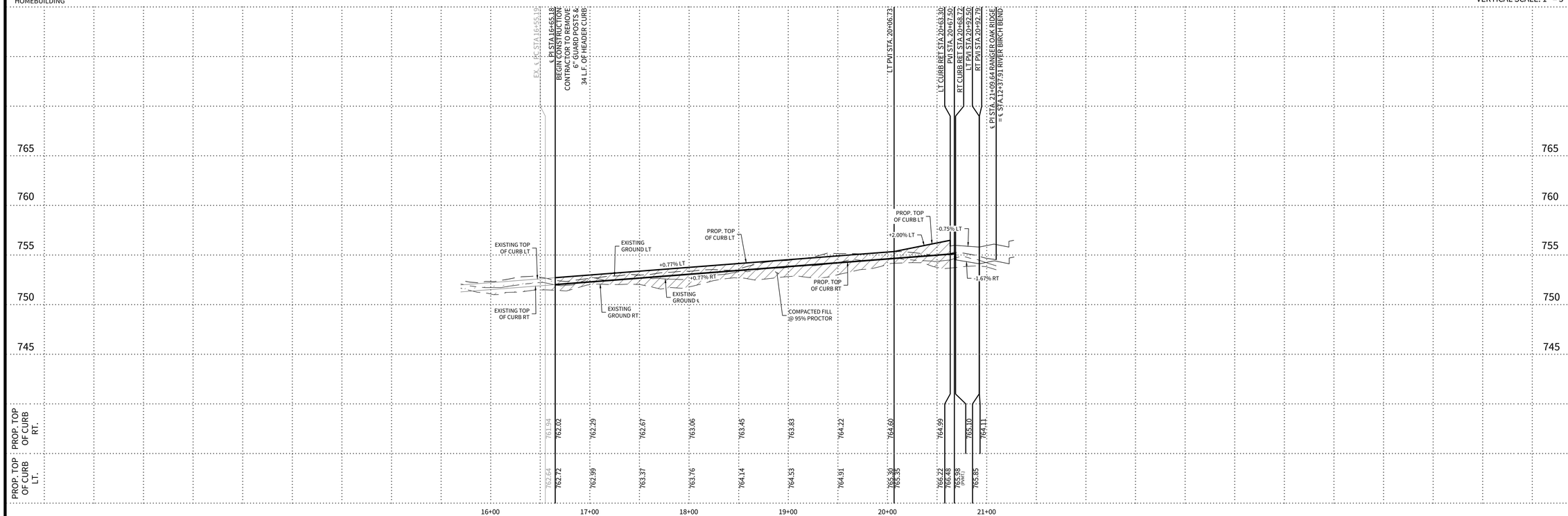
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RANGER OAK RIDGE

STA. 16+65.18 TO STA. 21+09.64

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

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



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TRES LAURELS UNIT 4B

STREET PLAN & PROFILE - RANGER OAK RIDGE

DATE
04/08/2025

PROJECT NO.
03050.019

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IV/RM/JS

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MT/CC

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04/21/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C7.05

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LEGEND:

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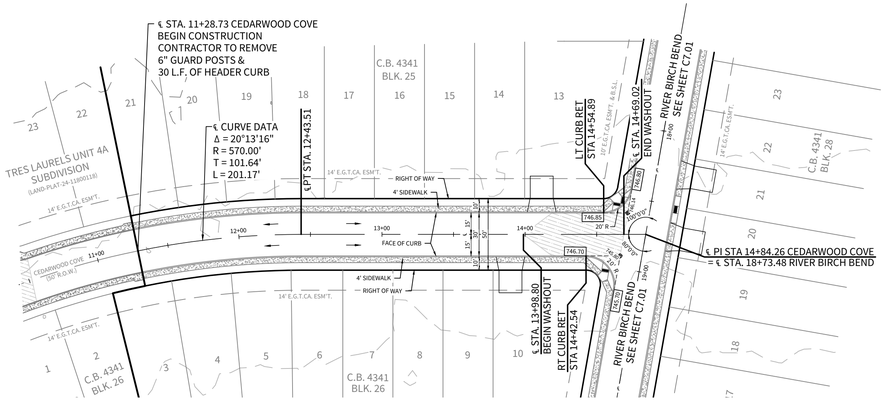
- STREET WASHOUT (SEE DETAIL SHEET C7.D1)

- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE (DEVELOPER RESPONSIBLE)

TxDOT TYPE "2" WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D1)

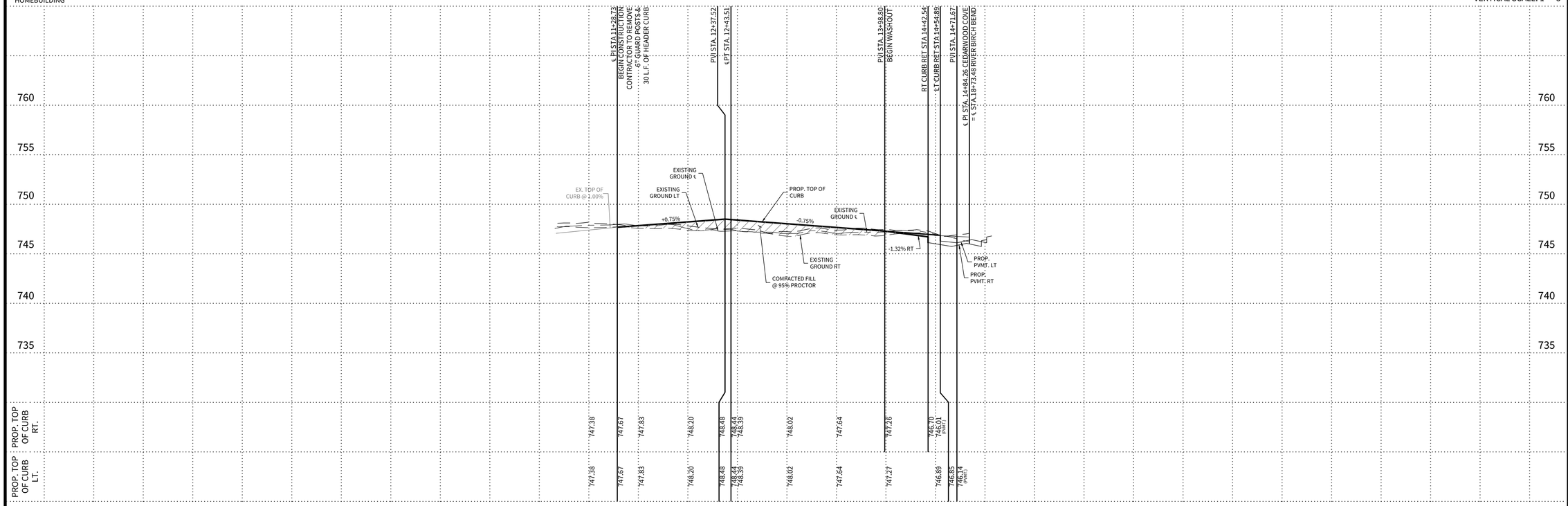
TYPE "10" DIRECTIONAL WHEEL CHAIR RAMPS ARE INDICATED THUS " " UNLESS OTHERWISE NOTED. (SHEET C7.D1)

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 CONSTRUCTED AT THE TIME OF HOMEBUILDING



CEDARWOOD COVE

STA. 11+28.73 TO STA. 14+84.26



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

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

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P:(210) 681.2951

TRES LAURELS UNIT 4B

STREET PLAN & PROFILE - CEDARWOOD COVE

DATE
01/09/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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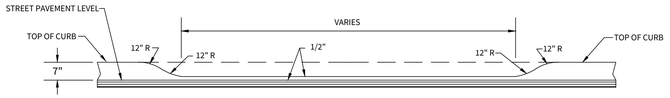
01/09/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

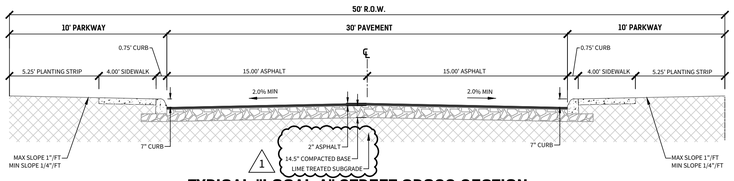
PLAT NO.
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C7.06

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.

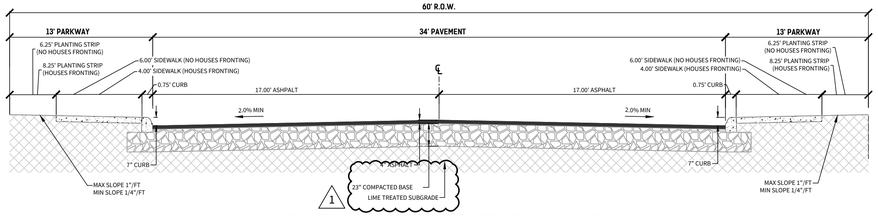


TYPICAL DRIVEWAY CUT SECTION



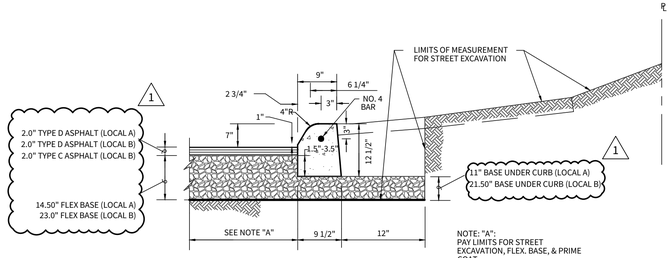
TYPICAL "LOCAL A" STREET CROSS SECTION

1" = 5'



TYPICAL LOCAL "B" STREET CROSS SECTION

1" = 5'



CURB SECTION

1

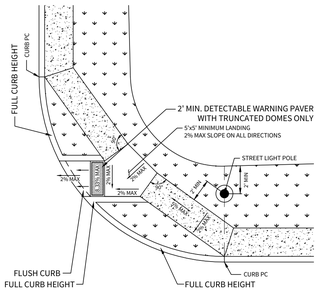
STREET PAVEMENT DESIGN OPTIONS

GEOTECH ENGINEER WILL BE PRESENT TO DETERMINE IF LIME STABILIZATION IS REQUIRED. IF LIME STABILIZATION IS REQUIRED, BEXAR COUNTY PUBLIC WORKS WILL BE INFORMED OF ALL CHANGES. REVISIONS WILL BE SUBMITTED INDICATING WHERE LIME STABILIZATION WAS USED, ALONG WITH STATIONING. CONTRACTOR TO REVIEW GEOTECH RECOMMENDATIONS PRIOR TO FINAL SUBGRADE PREP. (REF. INTEC PROJECT NO. S251271-R1 SEPTEMBER 26, 2025)

STREET TYPE	HMAC TYPE "D"	HMAC TYPE "C"	FLEX BASE (TY A GR 2)	LIME TREATED SUBGRADE	BASE UNDER CURB	STRUCTURAL NUMBER
LOCAL "A" (C.B.R. = 4.5)	2.0"		14.50"	6.0" (32 LBS/SY)	11"	2.91
LOCAL "B" (C.B.R. = 4.5)	2.0"	2.0"	23.00"	6.0" (32 LBS/SY)	21.50"	4.98

SELECT FILL & SUBGRADE NOTES FROM INTEC PROJECT NO. S251271-R1 SEPTEMBER 26, 2025 :

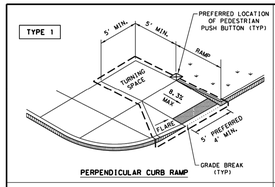
1. FOR SELECT FILL MATERIAL USE CRUSHED LIMESTONE WITH LL < 40, PI = 5-20, AND <30% PASSING NO. 200 SIEVE. MAX PARTICLE SIZE: 3 INCHES. PLACE IN 6-INCH COMPACTED LIFTS AND COMPACT TO 95% OF ASTM D 698 DRY DENSITY WITHIN ± 2% OF OPTIMUM MOISTURE. EACH LIFT MUST BE TESTED AND APPROVED BY INTEC.
2. FILL USED TO RAISE THE GRADE IN CLAY AREAS: APPROVED FILL MATERIAL SHOULD HAVE A MINIMUM CBR VALUE OF 2.0 AND A MAXIMUM PLASITCITY INDEX VALUE OF 45 (ON SITE MATERIAL). LIME APPLICATION RATES SHOULD BE RE-EVALUATED AND TESTED FOR SULFATE CONTENT PRIOR TO USE OF THE FILL MATERIAL.
   THE FILL MATERIAL SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER, FREE OF DELETERIOUS MATERIAL, AND THE GRAVEL SIZE SHOULD NOT EXCEED 3 INCHES IN SIZE. THE MATERIAL SHOULD BE PLACED AND COMPACTED AS PER APPLICABLE CITY/COUNTY GUIDELINES.
   THE SUBGRADE, PRIOR TO PLACEMENT OF FILL, SHOULD BE PROOF ROLLED TO IDENTIFY WEAK AREAS. ANY IDENTIFIED WEAK AREAS SHOULD BE RECOMPACTED.
3. FILL USED TO RAISE THE GRADE IN CALCAREOUS CLAY/MARL AREAS: EXISTING CLAYS SHOULD BE REMOVED TO MARL/LIMESTONE STRATUM PRIOR TO PLACEMENT OF FILL.
   APPROVED FILL MATERIAL FREE SHOULD HAVE A MINIMUM CBR VALUE OF 5.0 AND A MAXIMUM PLASTICITY INDEX VALUE OF 20.
4. BASED ON THE THICKNESS OF THE CLAYS ENCOUNTERED IN THE TEST PITS, WE ANTICIPATE THE FINAL PAVEMENT SUBGRADE PLASTICITY INDEX VALUE TO BE EITHER LESS THAN OR EQUAL TO 20 OR GREATER THAN 20.
5. IF THE SUBGRADE PLASTICITY INDEX VALUES ARE LESS THAN OR EQUAL TO 20, AS PER CITY OF SAN ANTONIO OR BEXAR COUNTY REQUIREMENTS, SUBGRADE TREATMENT IS NOT NEEDED.
6. SUBGRADE SHOULD BE TREATED USING LIME OR CEMENT. LIME APPLICATION RATES ARE PRESENTED HERE. PLEASE CONTACT INTEC FOR CEMENT APPLICATION RATES.
   - TREATED TO A DEPTH OF 6 INCHES USING 6 PERCENT LIME CONTENT.
   - THE SUBGRADE SOILS SHOULD BE TESTED FOR SOIL SULFATE CONTENT PRIOR TO LIME APPLICATION. IF THE SOIL SULFATE CONTENT IS HIGHER THEN 300 PPM, AN ALTERNATE PROCEDURE WILL BE NEEDED.
   - LIME APPLICATION RATE OF 32 LBS PER SQ YARD FOR 6-INCH DEPTH OF TREATMENT IS RECOMMENDED.
   - CEMENT MAY BE USED IN LIEU OF LIME. CEMENT APPLICATION RATE SHOULD BE DETERMINED AT THE TIME OF CONSTRUCTION.


FULL CURB HEIGHT
CURB PC
2' MIN. DETECTABLE WARNING PAVER
WITH TRUNCATED DOMES ONLY
5'x5' MINIMUM LANDING
2% MAX SLOPE ON ALL DIRECTIONS
STREET LIGHT POLE
2% MAX
4.5% MAX
2% MAX
2% MAX
4.5% MAX
2% MAX
2% MAX
4.5% MAX
2% MAX

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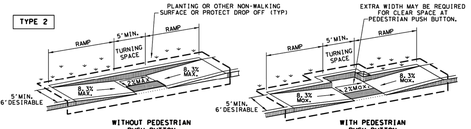
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

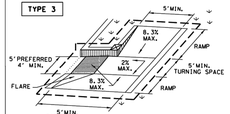


WITHOUT PEDESTRIAN PUSH BUTTON

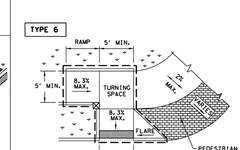
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

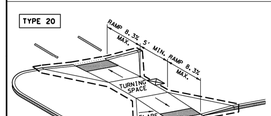


TYPE 6



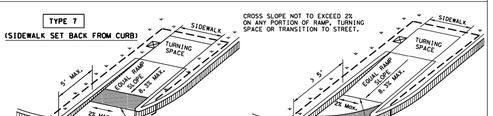
COMBINATION CURB RAMPS

TYPE 20

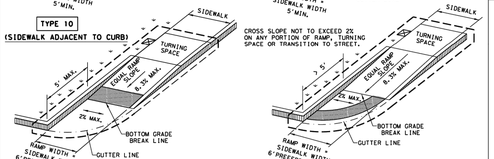


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7
(SIDEWALK SET BACK FROM CURB)

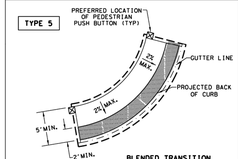


TYPE 10
(SIDEWALK ADJACENT TO CURB)



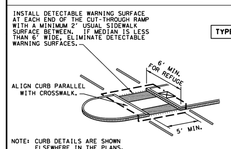
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



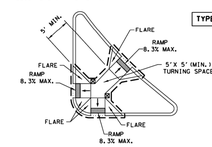
BLENDED TRANSITION
(FLUSH LANDING)

TYPE 21

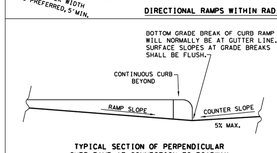


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	DW:VP	CK:KM	CK:PK & JS
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
REVISED ON: 2010				
REVISED ON: 2012				
REVISED ON: 2014				

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DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

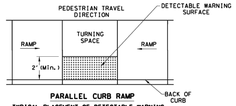
DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

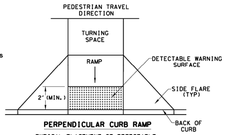
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section 406b.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

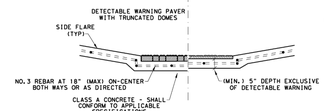
DETECTABLE WARNING SURFACE DETAILS



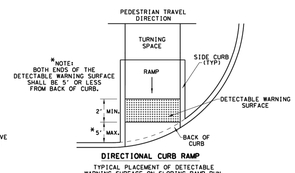
PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

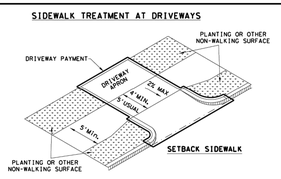
PED-18

FILE: ped18	DN:TxDOT	DW:VP	CK:KM	CK:PK & JS
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
REVISED ON: 2010				
REVISED ON: 2012				
REVISED ON: 2014				

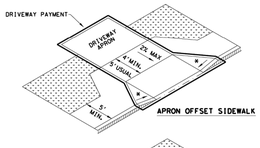
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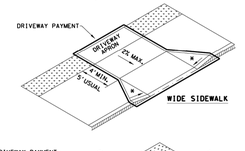
SIDEWALK TREATMENT AT DRIVEWAYS



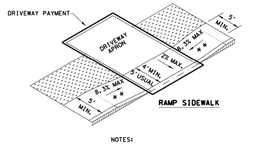
SETBACK SIDEWALK



APRON OFFSET SIDEWALK

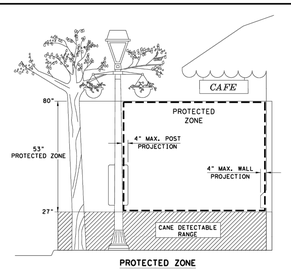


WIDE SIDEWALK



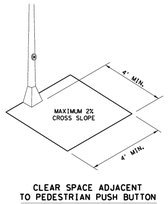
RAMP SIDEWALK

NOTES:
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

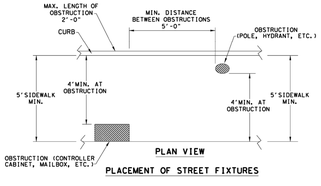


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.

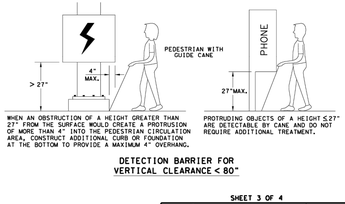


CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW
PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

PROTRUDING OBJECTS OF A HEIGHT ≤27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

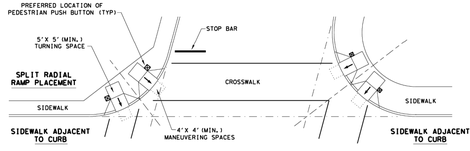
PED-18

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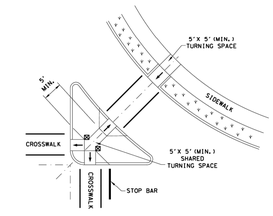
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DATE:
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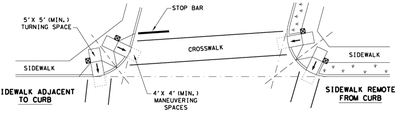
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



SKEWED INTERSECTION WITH "LARGE" RADIUS

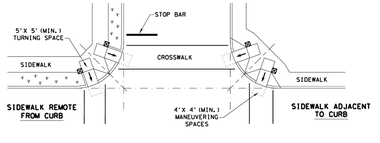


AT INTERSECTION W/FREE RIGHT TURN & ISLAND



SKEWED INTERSECTION WITH "SMALL" RADIUS





NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE.

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE).

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	DW:VP	CK:KM	CK:PK & JS
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
REVISED ON: 2010				
REVISED ON: 2012				
REVISED ON: 2014				

CUDEENGINEERS.COM

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

TRES LAURELS
UNIT 4B

STREET DETAILS

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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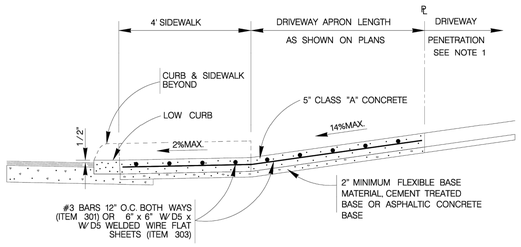
01/09/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

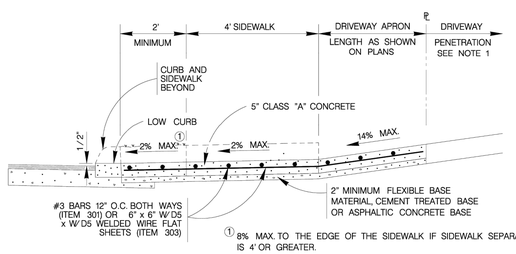
C7.D2

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.



TYPICAL RESIDENTIAL DRIVEWAY SECTION

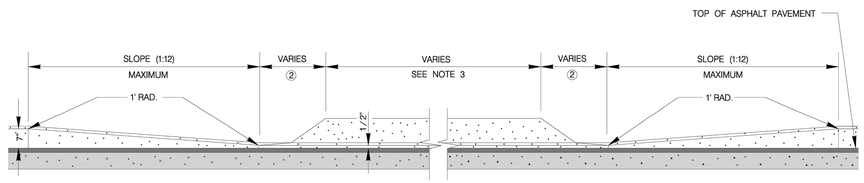
WITH SIDEWALK ABUTTING CURB
ITEM 503.1



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

TYPICAL RESIDENTIAL DRIVEWAY SECTION

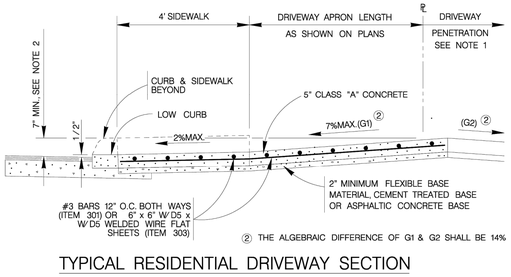
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1



② RESIDENTIAL : 2' MAXIMUM;
COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

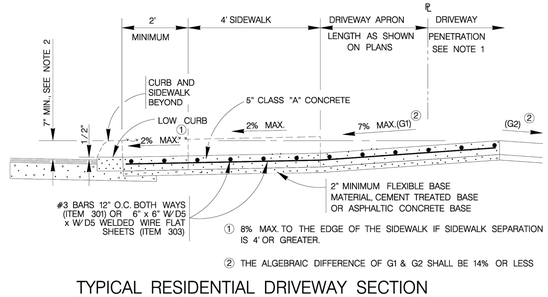
WITH SIDEWALK ABUTTING CURB



② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB
ITEM 503.1

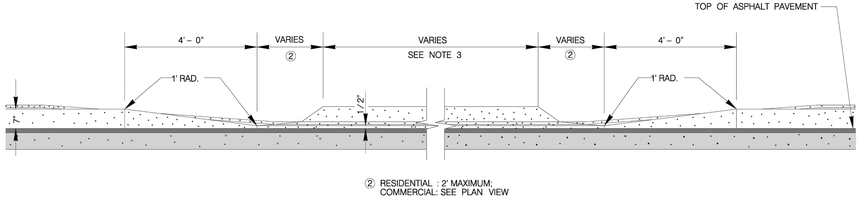


① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

TYPICAL RESIDENTIAL DRIVEWAY SECTION

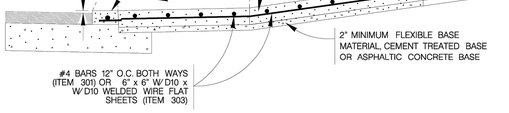
WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS SEPARATED FROM CURB
ITEM 503.1



② RESIDENTIAL : 2' MAXIMUM;
COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

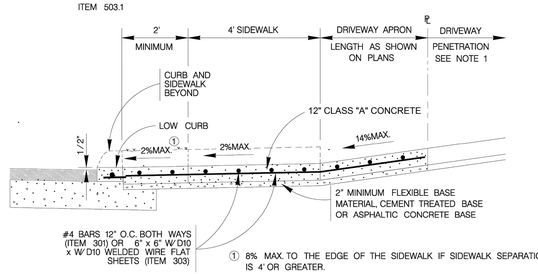
WITH SIDEWALK SEPARATED FROM CURB



TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.2

*REVISED AT THE REQUEST OF
BEXAR COUNTY ENGINEER 11/14/2024



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

*REVISED AT THE REQUEST OF
BEXAR COUNTY ENGINEER 11/14/2024

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.

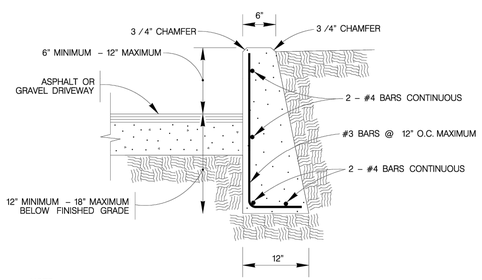
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.

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%.

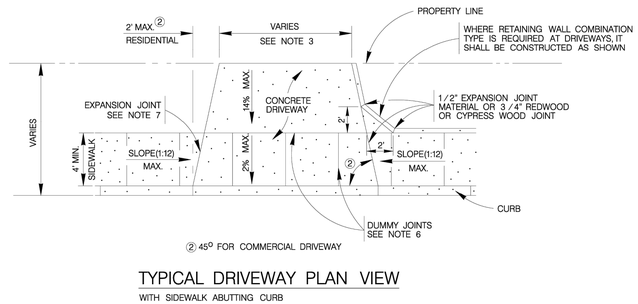
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.



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



② 45° FOR COMMERCIAL DRIVEWAY

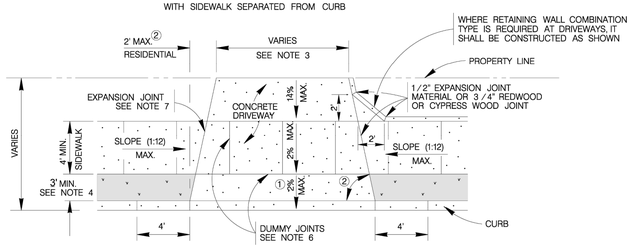
TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB

② RESIDENTIAL : 2' MAXIMUM;
COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB

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

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

TRES LAURELS
UNIT 4B

STREET DETAILS

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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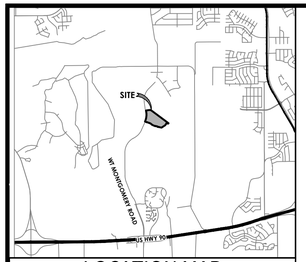
01/09/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C7.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:

LENNAR HOMES OF TEXAS LAND
ANDCONSTRUCTION, LTD.
A TEXAS LIMITED PARTNERSHIP
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT: CHRIS CHAFFEE, P.E.
4122 POND HILL RD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951

NOTE:

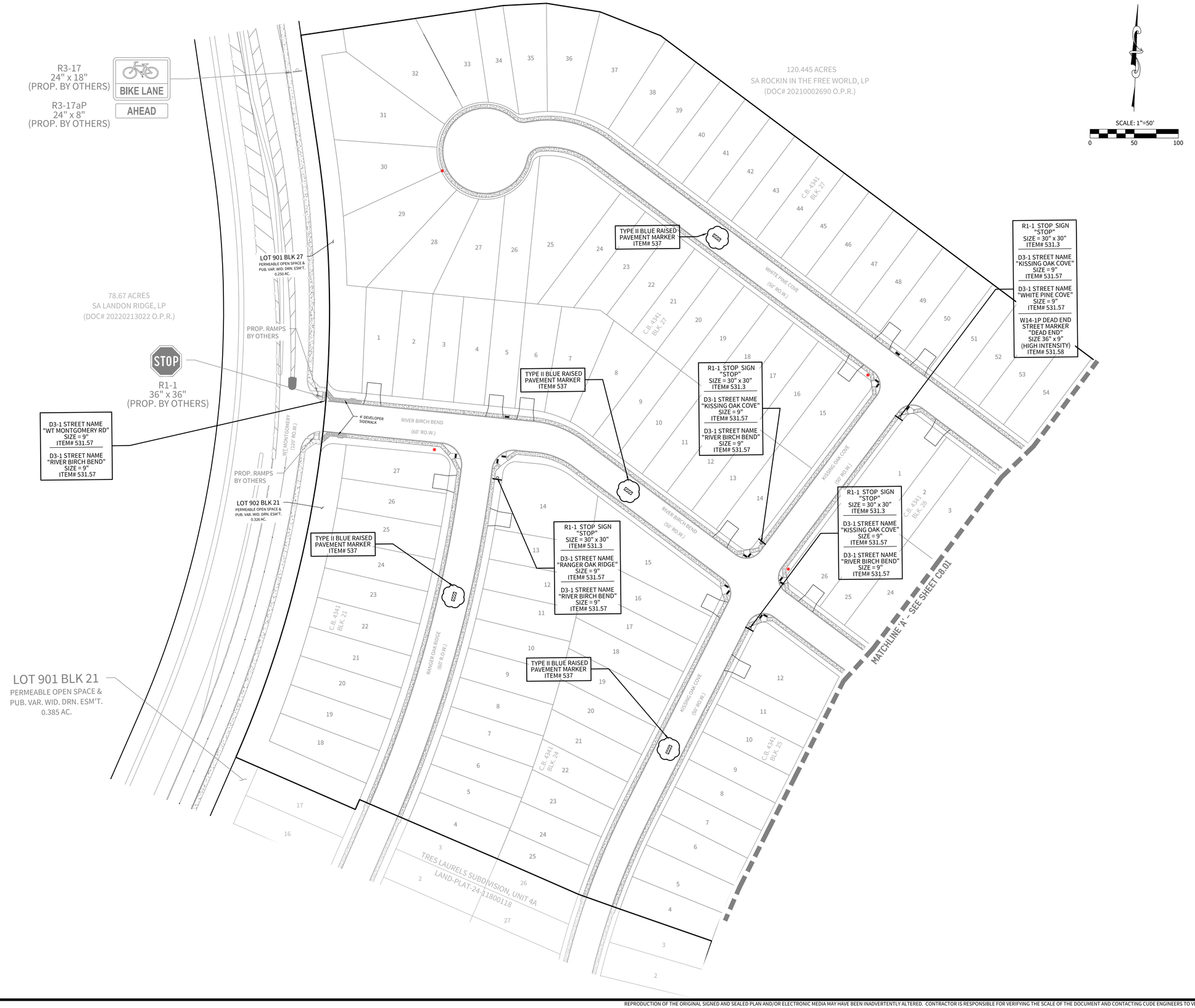
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHT-OF-WAY.

DRIVEWAY NOTE:

DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

NOTE:

CONTRACTOR TO COORDINATE SIGN PLACEMENT WITH SIDEWALK/ADA RAMP CONSTRUCTION TO AVOID ANY POSSIBLE CONFLICTS.



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TRES LAURELS UNIT 4B

TRAFFIC SIGNAGE PLAN

DATE
03/12/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

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03/13/2025

STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED PROFESSIONAL ENGINEER

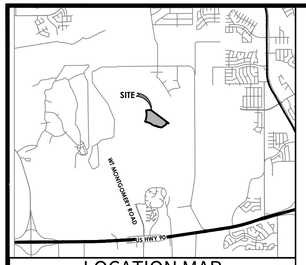
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C8.00

P:\03050\03050.019\01-Plans\00_01 TRAF Aug 2025\03050.019 Signage Plans

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NOTE:

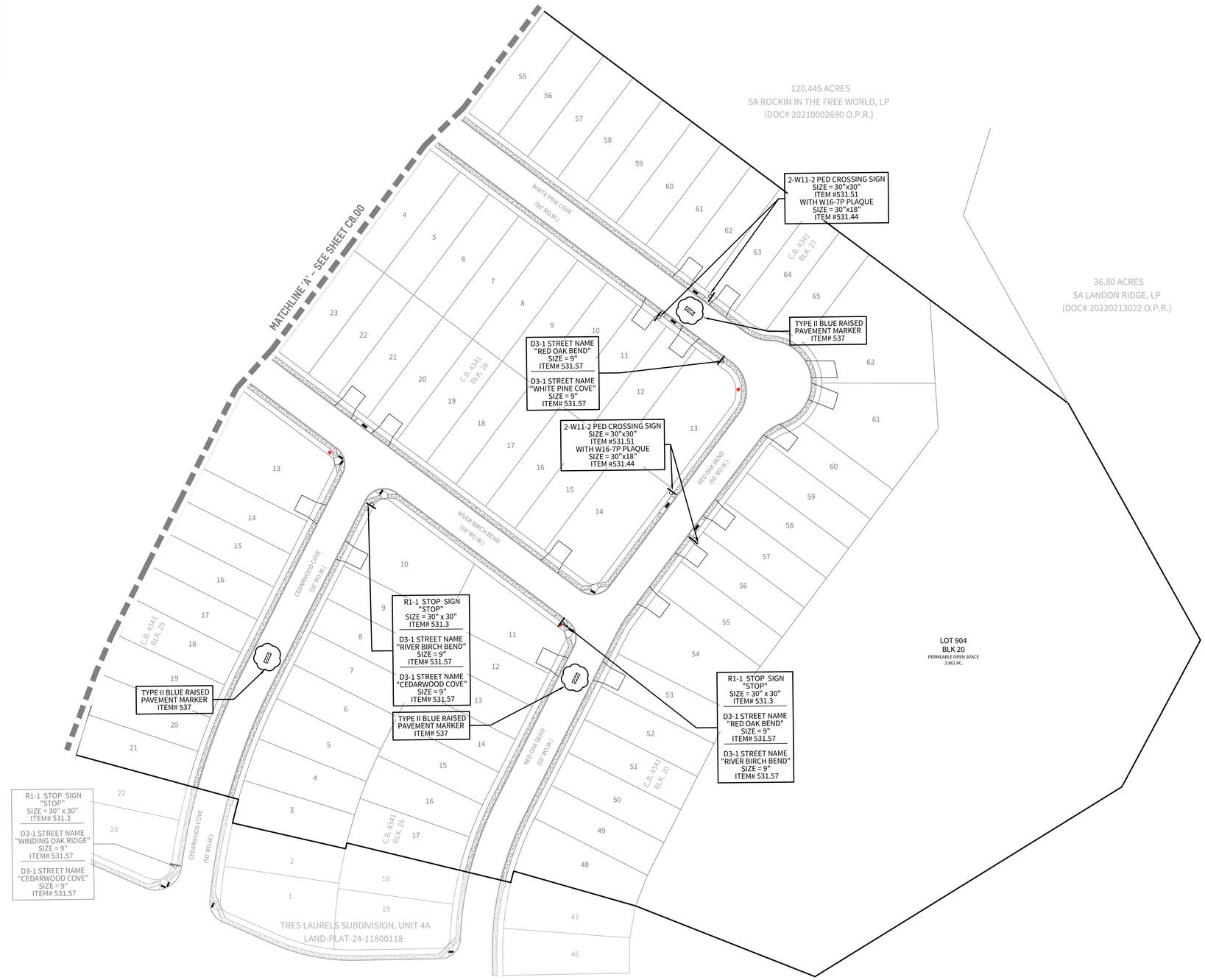
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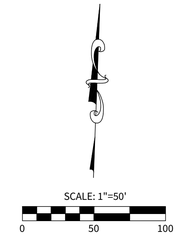
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TRAFFIC SIGNAGE PLAN

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

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TBPELS No. 10048500

PLAT NO.
24-11800290

C8.01

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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)

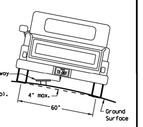
Post Type
- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TNT = Thin-Walled Tubing (see SMD(TNT))
- 10SWG = 10 SWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- SB0 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

Anchor Type
- UA = Universal Anchor - Concreted (see SMD(FRP) and (TNT))
- UB = Universal Anchor - Bolted down (see SMD(FRP) and (TNT))
- WS = Wedge Anchor Steel - (see SMD(TNT))
- WP = Wedge Anchor Plastic (see SMD(TNT))
- 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), (TNT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TNT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
- IF REQUIRED
- (EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TNT))
- BW = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1,12 Wyft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

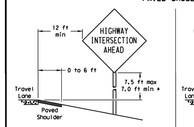
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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.

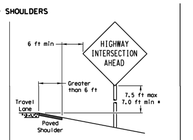
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

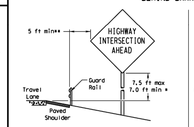
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



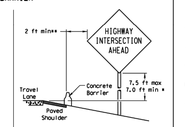
GREATER THAN 6 FT. WIDE

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



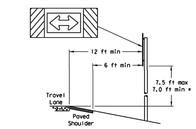
BEHIND GUARDRAIL



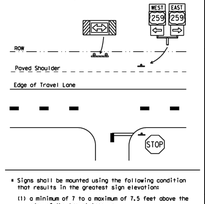
BEHIND CONCRETE BARRIER

*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.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

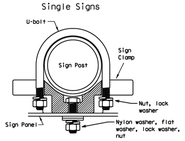
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

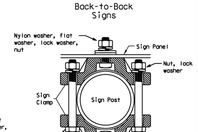
The website address is: http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



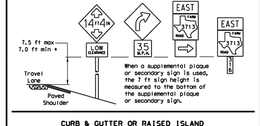
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

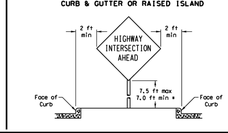
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

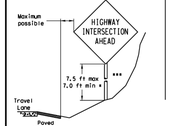


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

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Traffic Operations Division

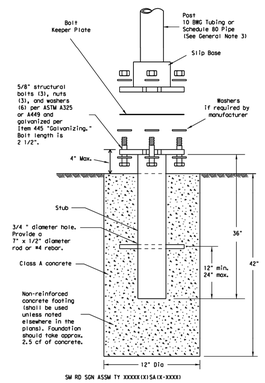
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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26A

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

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

GENERAL NOTES:

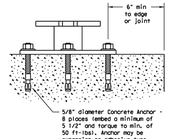
1. Slip base shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   - 10 SWG Tubing (2.375" outside diameter)
     - 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 2.867" to 2.883"
     - 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 B
     - 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
       - 60,000 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, mortar-type mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe and of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the traveleay (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 traveleay. The nut 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.

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 pbl, respectively.

Texas Department of Transportation
Traffic Operations Division

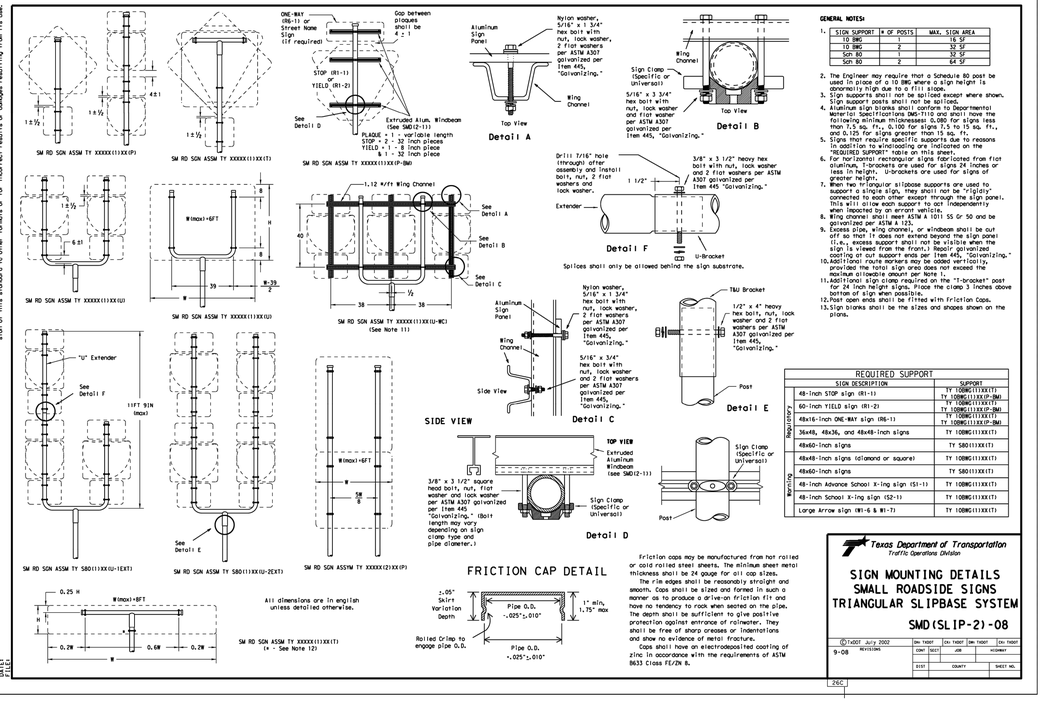
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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26B

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GENERAL NOTES:

1. See 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
2. The Engineer may require that a Schedule 80 post be used in place of a 10 SWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. Sign blanks shall be supported by brackets fabricated from flat aluminum. Brackets used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Unless sign, wing channel, or windbeam shall be cut off to 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 amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

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

FRICTION CAP DETAIL

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

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

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

All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T) (* - See Note 12)

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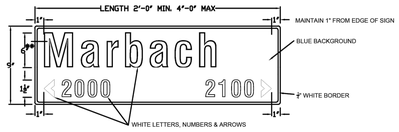
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

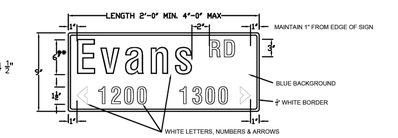
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26C

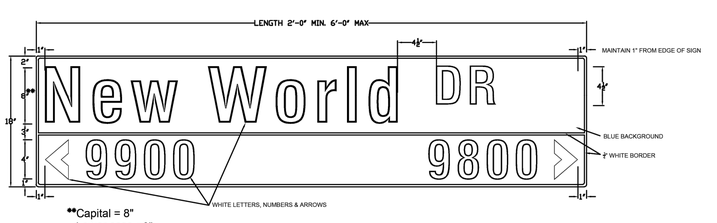
9" GROUND MOUNT STREET NAME SIGNS



9" GROUND MOUNT STREET NAME SIGNS WITH STREET DESIGNATION

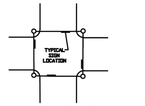


18" OVERHEAD STREET NAME SIGNS

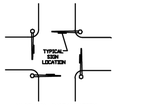


	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (228 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH	24" (600 mm) MIN. 48" (1200 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH
THICKNESS	0.125" (3 mm)	
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209 GOLD CHROMATE FINISH	
SIGN FACE MATERIALS	BLUE FILM ✱ OVER DIAMOND GRADE - ASTM Type XI Non-Fluorescent	BLUE FILM ✱ OVER HIGH INTENSITY PRISMATIC- ASTM Type IV
LEGENDS AND SYMBOLS	SERIES D, B OR C IF NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH	
COLOR	WHITE LEGEND ON BLUE BACKGROUND	
LETTER TRACKING	17% (USUAL) 10% (MIN.)	10%

✱ ACRYLIC ELECTRONIC CUTTABLE FILM



SPAN WIRE INSTALLATION



MAST ARM INSTALLATION

SIGN FACE MATERIALS SHALL CONFORM TO:

1. STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS & BRIDGES ON FEDERAL HIGHWAY PROJECTS - FP-03 U.S. CUSTOMARY UNITS SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 05e1

INFRASTRUCTURE SERVICES DEPARTMENT
PUBLIC WORKS DIVISION

STREET NAME SIGNING DETAILS

REVISIONS	
DESIGNED BY: MT	DRAWN BY: MT
CHECKED BY: MT	QA/QC BY: IV/RM/JS
PLAT NO. 24-11800290	
SHEET 1	

CUDEENGINEERS.COM

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

TRES LAURELS
UNIT 4B

TXDOT & BEXAR COUNTY DETAILS - SIGN MOUNTING

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
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STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER
01/09/2025

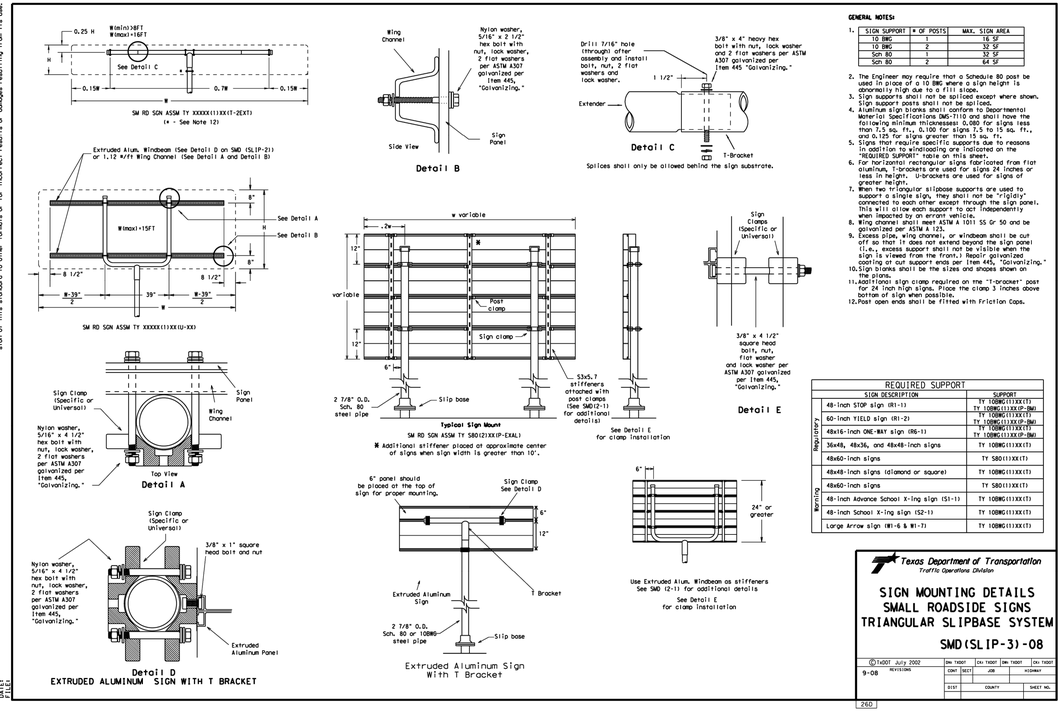
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C8.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.

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GENERAL NOTES:

1. SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA
   - 10 BWG | 1 | 16 SF
   - 10 BWG | 2 | 32 SF
   - Sch 80 | 1 | 32 SF
   - Sch 80 | 2 | 64 SF
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons other than height or area shall be designed on the "REQUIRED SUPPORT" table given on the sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

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

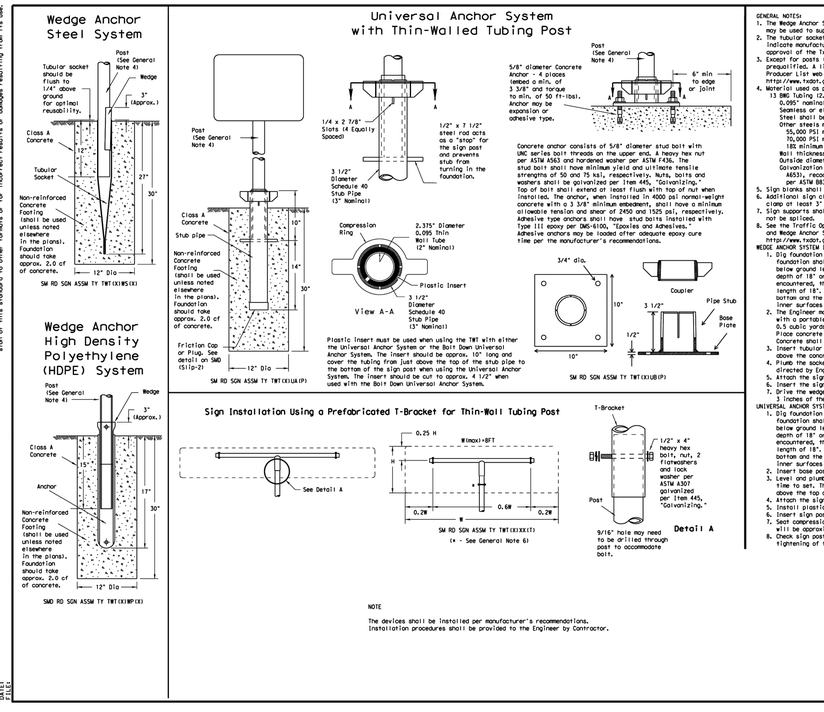
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-3)-08

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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 113 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 within 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 precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing 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/traffic.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(SIGN) 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(SIGN) 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. 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.
3. Attach the sign to the sign post.
4. Install plastic insert around bottom of post.
5. Insert sign post into base post. Lower until the post comes to rest on steel rod.
6. 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.

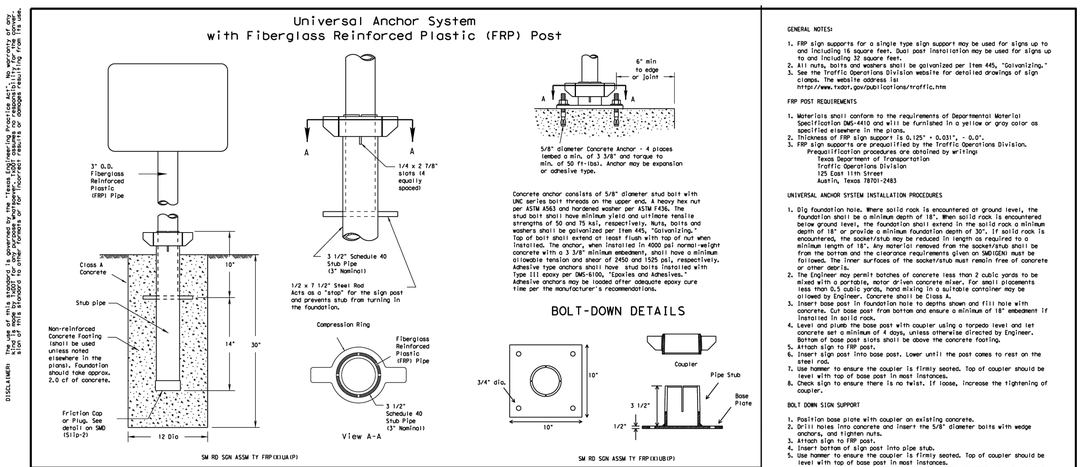
Texas Department of Transportation
Traffic Operations Division

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

266

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 errors or omissions resulting from the use of these standards.



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/traffic.htm

FRP POST REQUIREMENTS

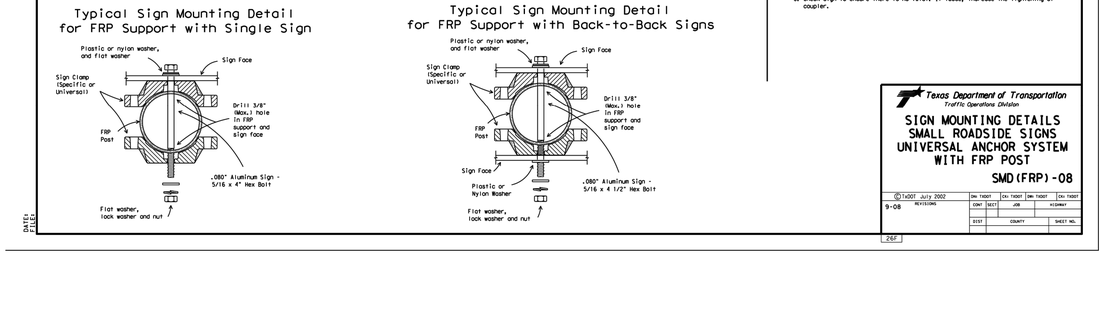
1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations 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(SIGN) 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. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. 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.



Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST
SMD(FRP)-08

©TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

267

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

TRES LAURELS
UNIT 4B

TXDOT DETAIL - SIGN MOUNTING

DATE
12/16/2024

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

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

01/09/2025
STATE OF TEXAS
MATTHEW A. TRINKLE
147558
LICENSED
PROFESSIONAL ENGINEER
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

C8.D2

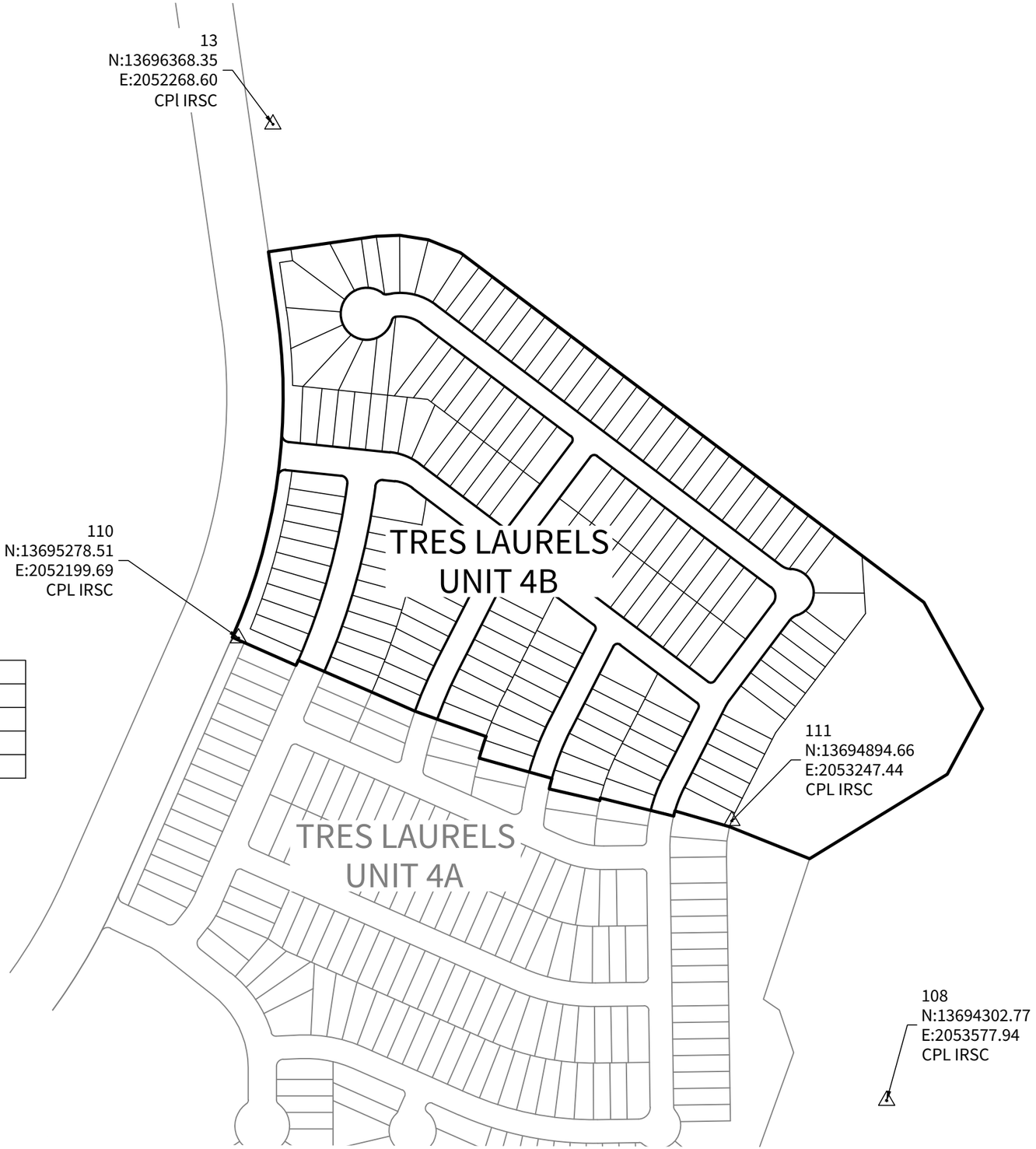
P:\03050\019\2 DWG\4 Sheet\D2.dgn Wed, Aug 20,2025 2:26pm mmata
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

CONTROL POINT EXHIBIT

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)

SCALE: 1"=250'

250 125 0 250



NO.	NORTHING	EASTING	DISCRIPTION
13	13696368.35	2052268.60	CPI IRSC
108	13694302.77	2053577.94	CPI IRSC
110	13695278.51	2052199.69	CPI IRSC
111	13694894.66	2053247.44	CPL IRSC

CUDEENGINEERS.COM

CUDE ENGINEERS

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

TRES LAURELS – UNIT 4B

CONTROL POINT EXHIBIT

DATE
08/21/2025

PROJECT NO.
03050.019

DRAWN BY
IV

CHECKED BY
MAT

CUDE ENGINEERS
TBPE No. 455

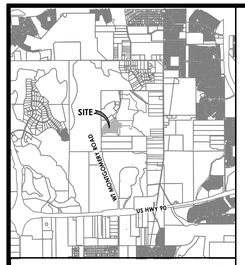
EX-CP

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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.

CONSTRUCTION PERMITS

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)



LOCATION MAP

OWNER/DEVELOPER:

LENNAR HOMES
CONTACT PERSON: RICHARD MOTT
100 NE LOOP 410 SUITE 1155
SAN ANTONIO, TX 78216
TEL: (210) 403-6200

CIVIL ENGINEER:

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

SCALE: 1"=200'
200 100 0 200

LEGEND

- PROJECT BOUNDARY
- REMOVED CANOPY
- PRESERVED CANOPY
- 100-YEAR EFFECTIVE FLOODPLAIN
- 30' ENVIRONMENTALLY SENSITIVE AREA
- HERITAGE TREE TO BE PRESERVED
- HERITAGE TREE TO BE REMOVED
- EXEMPT TREE TO BE REMOVED
- 800 PROPOSED CONTOUR
- 800 EXISTING CONTOUR

TRE-APP-APP22-38801338

TREE PRESERVATION
APPROVED
DATE 12/23/2024
BY Eric Rodriguez

Amendment #3

TRES LAURELS UNIT 6
TRES LAURELS UNIT 5B
TRES LAURELS UNIT C2
TRES LAURELS UNIT 3B
TRES LAURELS UNIT C1
TRES LAURELS UNIT 5A
TRES LAURELS UNIT 4B
TRES LAURELS UNIT 3A
TRES LAURELS UNIT 4A
TRES LAURELS UNIT 1A
TRES LAURELS UNIT 2A
TRES LAURELS UNIT 1B
TRES LAURELS UNIT 2B
WT MONTGOMERY ROAD
MONTGOMERY ROAD (120' R.O.W.)
ENVIRONMENTALLY SENSITIVE AREA
1% ANNUAL CHANCE FLOODPLAIN PER FEMA PANEL #48029C
25' TEMPORARY CONSTRUCTION ACCESS EASEMENT
12' PERMANENT WATER EASEMENT 0.7954 OF AN ACRE (DOC# 20220077152)
OFF-LOT 25' TEMPORARY CONSTRUCTION ACCESS EASEMENT (0.91 AC.)
12' PERMANENT WATER EASEMENT 0.2511 OF AN ACRE (DOC# 20220118889)
OFF-LOT 17' SANITARY SEWER (0.085 AC.)
OFF-LOT TEMPORARY 50' SAN. SEW., WAT., & DRN. ESM'T. TO EXPIRE UPON INCORPORATION INTO PLATTED PUBLIC STREET R.O.W. (1.36 AC.)
OFF-LOT 15' TEMPORARY CONSTRUCTION ACCESS ESM'T (0.072 AC.)
12' PERMANENT WATER EASEMENT 0.4274 OF AN ACRE (DOC# 20220104841)
1013 26" MESQUITE
1023 OAK LIVE 40.5"
30003 OAK 33" MT
1020 ELM" CEDAR 29.5
1015 ELM" CEDAR 31.5
1022 26" MESQUITE
1021 26.5" MESQUITE
1016 ELM" CEDAR 27
1030 ELM" CEDAR 25
1017 ELM" CEDAR 24.5
1003 26" MESQUITE
1018 ELM" CEDAR 24
1025 26" MESQUITE
1028 OAK" LIVE 33
1027 ELM" CEDAR 24
1026 ELM" CEDAR 27
30001 MESQUITE 29"
30002 CEDAR ELM 24"
1032 ELM" CEDAR 24
1031 ELM" CEDAR 27.5
1005 24" MESQUITE
1008 24" MESQUITE
1007 24" MESQUITE
1006 24" MESQUITE
1010 24" MESQUITE

MATCHLINE A

MATCHLINE A

DEVELOPMENT SERVICES
TREE PROTECTION SECTION
REVIEWED FOR COMPLIANCE

DEVELOPMENT SERVICES
Tree Pre-Construction Meeting
Required prior to Site Work

It shall be the responsibility of the permit holder to maintain a copy of the approved tree plans, approved tree permit and the conditions of approval readily available at all times.

Failure to schedule a fencing inspection prior to start of work may result in a stop Work order or a Penalty of $1,000.00 or both. UDC §35-523 (k)(2)

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

TRES LAURELS

TREE CANOPY PRESERVATION PLAN

DATE
12/05/2024

PROJECT NO.
03050.006

DRAWN BY
MAT/IRV/DAF

CHECKED BY
SPM/CJC

REVISIONS
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8.

City of San Antonio Plan Reviewed
Development Services Dept

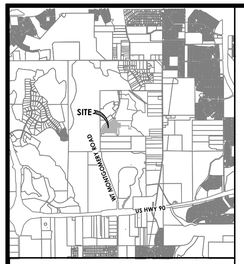
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
22-11800270

TPP–1

1 OF 2

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



LOCATION MAP

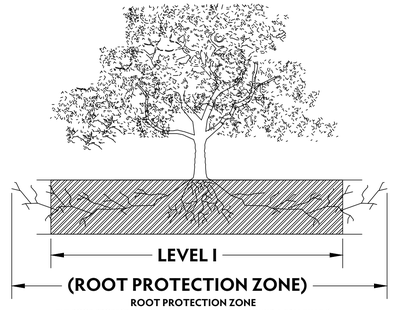
OWNER/DEVELOPER:

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CIVIL ENGINEER:

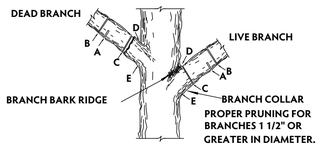
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: CHRIS CHAFFEE, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

TREE CANOPY PRESERVATION REQUIREMENTS AND CALCULATIONS (RESIDENTIAL)			
	VALUE	UNIT	COMMENTS
Overall Preservation			
Total	1,017,680.00	Sq. Ft.	
Removed	152,406.00	Sq. Ft.	
Preserved	865,274.00	Sq. Ft.	85.02%
100 yr Floodplain			
Protected			
Total	608,941.00	Sq. Ft.	
Removed	66,925.00	Sq. Ft.	
Preserved	542,016.00	Sq. Ft.	89.01%
Required 80%		0.00%	Mitigation
Heritage			
Total	369.00	in.	
Removed	75.00	in.	
Preserved	294.00	in.	79.67%
Required 100%		20.33%	Mitigation
VARIANCE REQUIRED FOR MITIGATION IN FLOODPLAIN			
Enviromentally Sensitive Areas			
Protected			
Total	48,189.00	Sq. Ft.	
Removed	18,503.00	Sq. Ft.	
Preserved	29,686.00	Sq. Ft.	61.60%
Required 80%		18.40%	Mitigation
Heritage			
Total	24.00	in.	
Removed (Non-Exempt)	24.00	in.	
Preserved	-	in.	0.00%
Required 100%		100.00%	Mitigation
VARIANCE REQUIRED FOR MITIGATION IN ESA			
Outside of Floodplain			
Protected			
Total	360,550.00	Sq. Ft.	
Removed	79,530.55	Sq. Ft.	
Preserved	281,019.45	Sq. Ft.	77.94%
Required 30%		0.00%	Mitigation
Heritage			
Total	126.00	in.	
Removed (Non-Exempt)	73.50	in.	
Preserved	52.50	in.	41.67%
Required 100%		58.33%	Mitigation
PRESERVATION MITIGATION REQUIRED			
100 yr Floodplain - Protected Required Mitigation	-	Sq. Ft.	
100 yr Floodplain - Heritage Required Mitigation	75.00	in.	(removed)
	225.00	in.	(removed x 3)
Enviromentally Sensitive Areas - Protected Required Mitigation	8,866.00	Sq. Ft.	
Enviromentally Sensitive Areas - Heritage Required Mitigation	24.00	in.	(removed)
	72.00	in.	(removed x 3)
Outside of Floodplain - Protected Required Mitigation	-	Sq. Ft.	
Outside of Floodplain - Heritage Required Mitigation	74.00	in.	(removed)
	222.00	in.	(removed x 3)
Total - Protected Mitigation Required	**8,866.00**	**Sq. Ft.**	
**Assumed M-L trees from Appendix E	169.21	in.	(Sq. Ft. / 875)*16.7
Total - Heritage Mitigation Required	**519.00**	**in.**	
TOTAL MITIGATION REQUIRED	**688.21**	**in.**	
PRESERVATION MITIGATION PROVIDED			
Total Inches Planted	**2,631.00**	**in.**	
TOTAL MITIGATION (in.) FROM THE "TOTAL PLANTED TREES" TABLE			
Total Inches to be Paid	-	in.	**No payment is required based off mitigation.**
	$ -		($200 per inch)
POST CONSTRUCTION TREE CANOPY REQUIRED (RESIDENTIAL)			
Total Area Outside of Floodplain	242.47	Ac.	
Number of Residential Dwellings	1,325	Dwellings	
Required Canopy (38%)	**4,013,557.42**	**Sq. Ft.**	
Preserved Canopy (ESA & Outside of Floodplain)	**310,705.45**	**Sq. Ft.**	
Preserved Heritage Canopy (ESA & Outside of Floodplain)	**1,100.00**	**Sq. Ft.**	
Required Canopy to be Planted	**3,701,751.97**	**Sq. Ft.**	
POST CONSTRUCTION TREE CANOPY REQUIRED (COMMERCIAL)			
Total Area Outside of Floodplain	8.00	Ac.	
Required Canopy (25%)	**87,120.00**	**Sq. Ft.**	
Preserved Canopy (ESA & Outside of Floodplain)		**Sq. Ft.**	
Required Canopy to be Planted	**87,120.00**	**Sq. Ft.**	
POST CONSTRUCTION TREE CANOPY MITIGATION PROVIDED			
Total Canopy Planted	**4,158,787.50**	**Sq. Ft.**	
TOTAL MITIGATION (SQ. FT.) FROM THE "TOTAL PLANTED TREES" TABLE			
Total Required Canopy	**3,788,871.97**	**Sq. Ft.**	
Canopy Mitigation	-	**Sq. Ft.**	
Total inches to be paid	-	**in.**	**No payment is required based off canopy requirements.**
	$ -		($200 per inch)
TOTAL MITIGATION			
Total inches to be paid	-	**in**	
	$ -		



ROOT PROTECTION ZONE

THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.

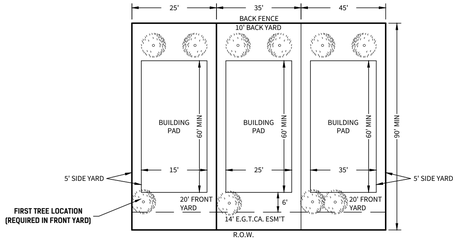


PROPER PRUNING FOR BRANCHES 1 1/2" OR GREATER IN DIAMETER.

NOTE: DO NOT CUT FROM D to E.

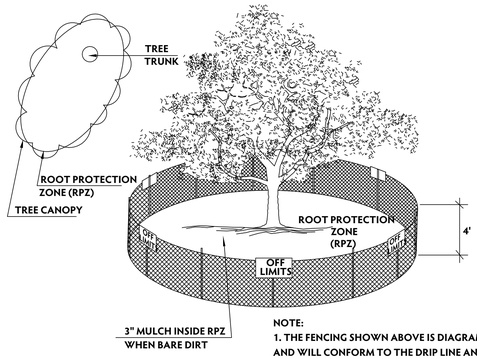
A. FIRST CUT - TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT - TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT - ALLOW FOR HEALING COLLAR BUT NO STUBS
D. BRANCH RIDGES - INDENT PROPERLY BRANCH RIDGES WHICH ARE SITE FOR DECAY.

FOR OAKS ONLY: PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN TO PREVENT THE SPREAD OF OAK WILT.



LOT PLANTING DETAIL

NOTES:
1. TREES MUST BE FROM THE CITY OF SAN ANTONIO PREFERRED PLANT LIST. TWO TREES MINIMUM ARE REQUIRED TO BE PLANTED FOR EACH
2. RESIDENTIAL LOT WITH ONE OF THOSE TREES REQUIRED TO BE PLANTED IN THE FRONT YARD.
3. TREES PLANTED IN THE SOUTH OR WEST OF PROPOSED HOME SHALL RECEIVE ENERGY CREDIT PER UDC SECTION 35-523.



NOTE:
1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY AND WILL CONFORM TO THE DRIP LINE AND LIMITED TO PROJECT BOUNDARY.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

1.1.2 LEVEL I & FENCE PROTECTION

N. T. S.

NOTES:

1. TRES LAURELS SUBDIVISION IS SUBJECT TO THE CITY OF SAN ANTONIO 2010 TREE ORDINANCE
2. NON-EXEMPT TREES ARE CLASSIFIED AS TREES LOCATED OUTSIDE EXEMPT AREAS (STREET R.O.W. & EASEMENTS) & ARE THE TREES USED IN CALCULATING MINIMUM PRESERVATION REQUIREMENTS PER THE 2010 TREE ORDINANCE.
3. ANY SUBSEQUENT NOTES DEALING WITH ROOT PROTECTION DO NOT APPLY TO RESIDENTIAL DEVELOPMENTS.
4. ALL EXISTING TREES DENOTED ON THIS PLAN TO BE PRESERVED AS SHOWN AND PROTECTED AT THE ROOT PROTECTION ZONE (RPZ). THE RPZ SHALL BE DETERMINED BY TREE SIZE (RECOMMENDED 12" RADIUS FROM TRUNK FOR EVERY 1" DIAMETER OF TRUNK AT 4.5' FROM GROUND) WITH A MINIMUM 5' DIAMETER FROM THE TRUNK.
5. A (CHAINLINK OR ORANGE MESH FENCE) BARRIER AROUND THE RPZ SHALL BE ERECTED AND MAINTAINED UNTIL CONSTRUCTION IS COMPLETED.
6. RPZ SHALL BE SUSTAINED IN A NATURAL STATE AND SHALL BE FREE FROM VEHICULAR OR MECHANICAL TRAFFIC; NO FILL, EQUIPMENT, LIQUIDS, OR CONSTRUCTION DEBRIS SHALL BE PLACED INSIDE THE PROTECTIVE BARRIER.
7. THE RPZ SHALL BE COVERED WITH 6" OF COARSE MULCH TO REDUCE MOISTURE STRESS.
8. ANY DAMAGE DONE TO EXISTING TREE CROWNS OR ROOT SYSTEMS SHALL BE REPAIRED IMMEDIATELY. ALL WOUNDS TO OAKS WILL BE PAINTED WITH PRUNING PAINT WITHIN 30 MINUTES AFTER DAMAGE. ROOTS EXPOSED DURING CONSTRUCTION OPERATIONS WILL BY CUT CLEANLY.
9. THE PROPOSED FINISH GRADE AND ELEVATION OF LAND WITHIN THE ROOT PROTECTION ZONE OF ANY TREE TO BE PRESERVED SHALL NOT BE RAISED OR LOWERED MORE THEN 3". WELLING AND RETAINING METHODS ARE ALLOWED OUTSIDE THE RPZ.
10. THE RPZ SHALL REMAIN PERVIOUS, I.E. GROUND COVER OR TURF AT COMPLETION OF LANDSCAPE DESIGN.
11. PROTECTED TREES SHALL BE PROTECTED UNTIL SUCH TIME AS THE CONCRETE WORK CAN BE STAKED TO DETERMINE ITS DISTANCE FROM SIGNIFICANT TREES. (IF FOUND THAT THE CONCRETE WORK WILL BE CLOSER THAN 5', THE CONTRACTOR WILL MEET WITH REPRESENTATIVES OF THE ENVIRONMENTAL REVIEW DEPARTMENT TO MINIMIZE IMPACT.)
12. CONTRACTOR TO UPDATE TREE PRESERVATION PLAN FOR CHANGES DURING CONSTRUCTION AND NOTIFY ENGINEER ACCORDINGLY. THE REVISED TREE PRESERVATION PLAN WILL BE RESUBMITTED AND APPROVED BY THE CITY OF SAN ANTONIO ARBORIST DEPARTMENT UPON FINAL ACCEPTANCE OF ALL SUBDIVISION IMPROVEMENTS.

DEVELOPMENT SERVICES
TREE PROTECTION SECTION
REVIEWED FOR COMPLIANCE

TRES LAURELS HERITAGE TREES									
		FLOOD PLAIN		ESA			OUTSIDE OF FLOOD PLAIN		
POINT #	SPECIES	PRESERVE	REMOVE	PRESERVE	REMOVE	EXEMPT TO BE REMOVED VERY POOR CONDITION	PRESERVE	REMOVE	EXEMPT TO BE REMOVED VERY POOR CONDITION
1003	MESQUITE								26
1005	MESQUITE	24							
1006	MESQUITE	24							
1007	MESQUITE	24							
1008	MESQUITE								24
1010	MESQUITE								24
1013	MESQUITE								26
1015	ELM	31.5							
1016	ELM	27							
1017	ELM	24.5							
1018	ELM	24							
1021	MESQUITE						26.5		
1022	MESQUITE						26		
1023	OAK							40.5	
1025	MESQUITE								26
1026	ELM		27						
1027	ELM		24						
1028	OAK	33							
1029	ELM	29.5							
1030	ELM	25							
1031	ELM	27.5							
1032	ELM		24						
30001	MESQUITE					29			
30002	ELM				24				
30003	OAK							33	
TOTAL		**294**	**75**	**0**	**24**	**29**	**52.5**	**73.5**	**126**

TOTAL PLANTED TREES										
Description	Number of Trees	Diameter (in.)	Required Diameter	Extra Diameter (in.)	Shade Value	(Sq. Ft.)	Energy Credit	Total Planted Diameter (in.)	TOTAL MITIGATION (in.)	TOTAL MITIGATION (Sq. Ft.)
Required 2 trees per lot (NON-E.C.)	2,650	1.5	1.5	-	875.0	-	3,975	-	2,086,875.00
1 extra tree per lot (25' lot width) (E.C.)	548	1.5	-	1.5	875.0	1.5	822	822	647,325.00
1 extra tree per lot (35' lot width) (E.C.)	348	1.5	-	1.5	875.0	1.5	522	522	411,075.00
2 extra tree per lot (45' lot width) (E.C.)	858	1.5	-	1.5	875.0	1.5	1,287	1,287	1,013,512.50
TOTAL	**4,404**							**6,606**	**2,631**	**4,158,787.50**

TOTAL PLANTED TREES			
Unit	25' LOTS	35' LOTS	45' LOTS
1A	0	0	124
1B	0	0	50
2A	167	0	0
2B	203	0	0
3A	0	0	119
3B	0	0	92
4A	0	177	0
4B	0	171	0
5A	0	0	44
5B	178	0	0
TOTAL	**548**	**348**	**429**
	1325		

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

TRES LAURELS

TREE CANOPY PRESERVATION PLAN

DATE
11/18/2024

PROJECT NO.
03050.006

DRAWN BY
MAT/IRV/DAF

CHECKED BY
SPM/CJC

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

City of San Antonio Plan Reviewed
Development Services Dept
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
22-11800270

TPP-2

2 OF 2

©2024MWCUDE L:\Drawings\03_Trees\Tpp.dwg 2024-11-18 12:52pm mtorres

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.

Permit Issuance Information

Report Date: 4/30/2025

Application No	TRE-APP-APP25-38800534
Permit No	TRE-PMT-25-38900534
Site Address	3411 GROSENBACHER RD, CITY OF SAN ANTONIO ETJ, TX 78245
Type of Record	Building/Permits/Tree Permit/Permit
Date Issued	04/30/2025
Record Status	Active
Primary Applicant	CUDE ENGINEERS, LLC
Scope of Work	PLAT-24-11800290 - Tres Laurels Unit 4B Platting & Residential Development.

Approval Comments

Completeness Review	Comments	All required documents have been submitted to begin Technical Tree Review (this is not considered a full approval of the tree application record). *Fees are required to be paid prior to proceeding to the Technical Tree Review Stage.

Permit Issuance Information

Report Date: 4/30/2025

Technical Review - Tree Land Development	Comments	Approved Unit 4B as A4, 2010 Tree Ordinance - reference Master Tree Permit TRE-APP-APP22-38801338. E. Rodriguez **Variance Approved by Planning Commission on 3/08/2023** Recent Amendment to Master Tree Preservation Plan: **Revised 12/23/2024 (Amendment #3) - E. Rodriguez *No Streetscape or Tree Canopy Bond required *Copy of approval and stamped plans must be posted on site during site work *Tree fencing inspection required before site work. Call to schedule at 207-1111. *PRIOR TO COMMENCEMENT OF ANY ACTIVITIES REQUIRING A TREE PERMIT, THE APPLICANT SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY ARBORIST TO REVIEW PROCEDURES FOR PROTECTION AND MANAGEMENT OF ALL SIGNIFICANT, HERITAGE OR MITIGATION TREES (CAN BE SCHEDULED WITH TREE FENCING INSPECTION) *TWO, 1.5 INCH CALIPER MEDIUM TO LARGE SHADE TREES PER LOT REQUIRED TO BE PLANTED ON ALL LOTS AT BUILDING STAGE.

*ONE ADDITIONAL TREE SHALL BE PLANTED ON 25' AND 35' WIDE LOTS (WITHIN UNITS 2A, 2B, 4A, 4B, & 5B) ON THE SOUTHERN OR WESTERN EXPOSURE OF HOUSE IN ORDER TO RECEIVE THE ENERGY CONSERVATION CREDIT - FOR A TOTAL OF THREE TREES PER LOT.

*TWO ADDITIONAL TREES SHALL BE PLANTED ON 45' WIDE LOTS (WITHIN UNITS 1A, 1B, 3A, 3B, & 5A) ON THE SOUTHERN OR WESTERN EXPOSURE OF HOUSE IN ORDER TO RECEIVE THE ENERGY CONSERVATION CREDIT - FOR A TOTAL OF FOUR TREES PER LOT.

*Must schedule and pass final tree inspection after other discipline holds are removed and/or within three (3) weeks prior to recordation. Schedule via Build SA or call 210-207-1111 to schedule inspection. Reference TRE-APP-APP25-38800534

*CONSTRUCTION ON INDIVIDUAL RESIDENTIAL LOTS OUTSIDE OF CITY LIMITS AND WITHIN EXTRATERRITORIAL JURISDICTION ARE REQUIRED TO SUBMIT A TREE PERMIT APPLICATION REFERENCING APPROVED TREE PRESERVATION PLAN TO VERIFY COMPLIANCE AT BUILDING STAGE. FAILURE TO DO SO COULD INCUR CESSATION OF ON-SITE CONSTRUCTION, ADDITIONAL MITIGATION,

AND/OR WORK WITHOUT PERMIT PENALTIES. A TREE FINAL INSPECTION IS REQUIRED TO BE SCHEDULED FOR EACH LOT TO VERIFY TREE PLANTINGS.

*TREE SAVE AREA TO BE LEFT UNDISTURBED IN ITS NATURAL CONDITION. TREE SAVE AREAS MUST BE DESIGNATED AS SUCH WHEN AREA IS PLATTED (35-523 (E)(3) TREE STAND DELINEATION ALTERNATIVE. A. STANDARDS)

*This subdivision is subject to a Master Tree Plan (TRE-APP-APP22-38801338) which requires compliance by the owners of all property within the plat boundary, and their employees and contractors, and shall be binding on all successors in title except for owners of single-family residential lots subdivided hereunder for which construction of a residential structure has been completed. The Master Tree Plan is on file at the City of San Antonio Arborists Office. No Trees or Understory shall be removed without prior approval of the City Arborist Office per 35-477(h).

*Use Master Tree Permit TRE-APP-APP22-38801338 on Tree Permits for future residential lot submittals to avoid permit fees. A $100.00 review fee will be assessed for each individual lot at building stage – tree permit required. Commercial/Non-residential

Permit Issuance Information

Report Date: 4/30/2025

Areas will be assessed permit fees on a per acre basis.

*SECTION 35-477 (h) Amendments. Notification and approval of the city arborist are required if changes need to be made to an approved tree preservation plan.

// NOTE: APPLICATION IS FOR PLATTING, SITE WORK AND TREE REMOVAL PURPOSES. TREE REVIEW APPROVAL IS FOR PLATTING AND TREE REMOVAL WITHIN UNIT 4B ONLY. A SEPARATE TREE APPLICATION IS REQURIED TO BE SUBMITTED AND APPROVED PRIOR TO START OF WORK IN AREA OUTSIDE OF UNIT 4B.

Required Inspections	Inspection Status
Tree - Fencing	Pending
Tree - Final	Pending
Tree - Pre-Construction Meeting	Pending

Related Records

(This is other Permits Created from the Applications, Amendments etc)

Record Number	Record Type	Status
LAND-PLAT-24-11800290	Major Plat	Under Review

COUNTY OF BEXAR
PUBLIC WORKS DEPARTMENT
1948 Probandt St.
San Antonio, TX 78214
(210) 335-6700 (voice)
(210) 335-6713 (fax)

Permit Holder Information

Mosaic Land Development
6812 West Ave Ste 100
San Antonio Tx 78213
210-764-9575 blake@mosaiclanddevelopment.com

Bexar County Inspector Contact Information

Name: Tyler Suaceda
Cell: 210-216-6932
Email: tyler.sauceda@bexar.org

Emergency Contact Information: John Bare 254-368-3518

Tres Laurels Unit 4B

Project Type: Single Family Residential

Acres of Disturbance: 28.13

Permit Number: **SWQ FY25_3383** Permit Issued: **7/16/2025**

Anticipated Work Start Date: **7/17/2025**

Anticipated Work Stop Date: **1/23/2026**

After the initial storm water quality protection measures (BMPs) identified in the permit are installed and before you begin disturbing the area within the BMPs, notify the Bexar County Storm Water Quality Inspector identified on this permit by text and e-mail SWQ@bexar.org at least two (2) working days before starting work.

The TCEQ Site Construction Notice or NOI, a copy of this permit, and all other required permits listed below on this permit MUST BE POSTED on the construction site. The inspector will verify that ALL REQUIRED PERMITS identified below have been obtained and the BMPs have been installed.

Activities Covered Under This Permit

Fill
Onsite Utility - Water Line
Offsite Utility - Electric
Infrastructure (Streets and Drains)
Offsite Utility - Sanitary Sewer
Onsite Utility - Sanitary Sewer
Clearing / Mass Grading

Other Required Permits

Floodplain Permit 25-190	**TCEQ NOI: TXR1507PH- Lennar Homes of Texas Land and Construction Ltd**
Post Construction Permit 2486	**Mitigation Required**

Storm Water Quality Permits do not expire. When work is complete, contact the Storm Water Quality Inspector to conduct a final inspection to verify the Post Construction Permit is finalized, all temporary storm water quality Best Management Practices (BMPs) have been removed, vegetation has been established to an acceptable level, and all permanent post construction BMPs have been installed. Sending the NOT to TCEQ does not automatically retire the Bexar County Permit. If you have any questions, please contact Kimberly Olivier at (210)309-9145.

POST THIS PERMIT ON SITE

COUNTY OF BEXAR
PUBLIC WORKS DEPARTMENT
1948 Probandt St
San Antonio, TX 78214
(210) 335-6700 (automated system)

Permit Holder Information

Mosaic Land Development
6812 West ave Ste 100
San Antonio, Tx 78213

Pre-Construction Storm Water Control Measure Permit

Tres Laurels Unit 4B

Permit Number: PC FY25_2486

Issued: 7/16/2025

The following items listed below are Documents required and/or permanent best management practices (BMPs) to be installed during the construction and/or implemented after completion of this development. In order to complete the Post-Construction portion of this permit, submit the documents identified in the Action to Complete Permit section for each BMP/document to Kimberly Olivier after construction and contact the Storm Water Inspector for a final inspection.

Please be aware this permit is NOT COMPLETE until the Post-Construction portion of the permit application has been approved.

Post Construction Documents & Best Management Practices (BMPs) to be Constructed or Implemented		
BMP Type to be Verified/Documents to be Provided	Location	Action to Complete Permit
FILO Payment Documentation		**Confirmation of CoSA FILO payment required prior to Post-Construction permit approval**
Tree Canopy	Residential Lots - Plant 4 Trees per Lot	- PC Inspector to verify tree planting at time of permit closure

A copy of this permit must be displayed at the construction site.

Failure to complete this permit is a violation of the 'Bexar County Storm Water Pollution Prevention' Court Order and will result in a citation or fine.

If you have any further questions, please contact Storm Water Quality Division at 210-335-6651.

Respectfully,

Joan Montgomery

Joan Montgomery PE
Storm Water Quality Engineer

COUNTY OF BEXAR

PUBLIC WORKS DEPARTMENT

1948 Probandt Street
San Antonio, Texas 78214
Main 210-335-6700

May 23, 2025

Mr. Matthew A. Trinkle, P.E.
CUDE Engineers F-455
4122 Pond Hill Rd, Ste 101
San Antonio, TX 78231

Re: Acceptance of Construction Plans for Tres Laurels Unit 4B, Plat No. 240290 (BuildSA No. LAND-PLAT-24-11800290)

Dear Mr. Trinkle:

Please accept this letter as notification that the street and drain plans for the aforementioned project has been accepted for construction by Bexar County Public Works as of 05/23/2025. Review of plans is for general conformance with design concepts and compliance with local regulations. It should be noted that the acceptance of these plans does not relieve the engineer or contractor of responsibility for deviation from requirements of County regulations nor for errors or omissions from said plans. Contractor is responsible for confirming and correlating dimensions at job site, for information that pertains to construction techniques, and for coordination of all work trades.

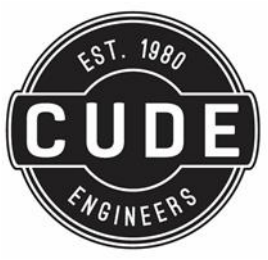
PLAN REVISIONS:

1. *Any* changes to the accepted construction plans shall be provided to Bexar County Public Works for review and approval prior to the construction of affected portion of project.
2. The revisions will be provided to Bexar County Public Works on 24” x 36” ‘plan size’ sheets, signed and sealed by a Professional Engineer, attesting to the conformity to generally accepted engineering and construction practices. A statement of revisions will be included on the plan sheets, detailing the proposed changes.
3. Written notification will be provided by Bexar County Public Works upon review and acceptance of proposed revisions.

If you have any questions regarding the conditions specified in this letter, feel free to contact me at 335-6700, ext. 3840.

Sincerely,

Joy Marie I. Pallay
Civil Engineering Assistant



CPS ELECTRIC OHE/URD DESIGN

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)

CUSTOMER ENGINEERING
RESIDENTIAL DEVELOPMENT

CPS ENERGY™

CONSTRUCTION COMPLETED

BY:

DATE:

CONST CTR:

FERG MAP PAGE 645, D1

OH DESIGN			PROJ #	A-0011
WORK REQUEST NO	WORK REQUEST TITLE / ADDRESS			
40993708	TRES LAURELS UNIT 4B / OH			
PLANNED BY	PHONE	CELL	DATE PLANNED	NOTES
R WILEY	5874	485-8309	02/26/25	EX. 3: POLES + 13: POLES + 4: CUTOUTS
REVIEWED BY	PHONE	CELL	DATE REVIEWED	
J RAMZINSKI	2931	288-6476	02/27/25	
PAGE				
SERVICE CENTER				PD13519-79_JH
SWD				
X,Y GRID COORDINATES			CIRCUIT NO	SCALE
X 2052431.000000	Y 13693158.000000		R422	1 " = 100 '

BURIED FACILITIES	CATV	WATER	TELEPHONE	SEWER	ELECTRIC	GAS	OTHER
CLEAR	☐	☐	☐	☐	☐	☐	☐
NOTED ON SKETCH	☐	☐	☐	☐	☐	☐	☐

COPIES TOTAL

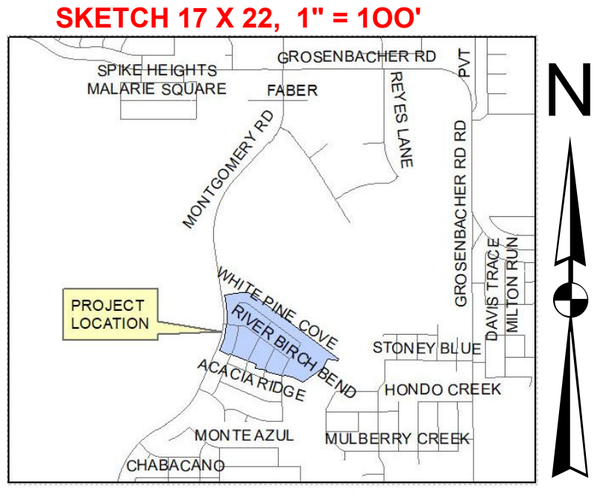
STATE OF TEXAS
DANA L. CUTTER
97400
LICENSED
PROFESSIONAL ENGINEER

4/24/2025

PAPE-DAWSON ENGINEERS
FIRM REGISTRATION #470

ASSOCIATED WITH:
URD WR# 40961182
STLT WR# 40993709

SKETCH 17 X 22, 1" = 100'



LOCATION MAP

NOTE TO DEVELOPER:

1. DEVELOPER IS RESPONSIBLE FOR COORDINATING WITH CPS PRIOR TO THE INSTALLATION OF DRAINAGE STRUCTURES TO ENSURE PROPER COVERAGE REQUIREMENTS CAN BE MAINTAINED FOR CPS FACILITIES. SLEEVES AND/OR CONCRETE ENCASEMENT MAY ALSO BE A REQUIREMENT OF THE DEVELOPER.

2. SEE CIVIL ENGINEERING OVERALL UTILITY AND DRAINAGE PLANS FOR THE LOCATION OF UTILITIES AND DRAINS IN THE CONSTRUCTION AREA.

3. FOREMAN TO LOCATE ALL BURIED UTILITIES.

FOR MISSING PINS CALL ENGINEER

ENGINEER: CUDE ENGINEERS
ADDRESS: 4122 POND HILL ROAD, SUITE 101
PHONE: 210-681-2951
CONTACT: MATTHEW TRINKLE

DEVELOPER: LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD
ADDRESS: 100 NE LOOP 410, SUITE 1155
PHONE: 210-889-5516
CONTACT: RICHARD MOTT

"ATTENTION FOREMAN"
PLEASE CONTACT SUPERVISOR PRIOR TO ENERGIZING!!

CREWS ARE TO IMMEDIATELY STOP WORK AND CONTACT CPS ENERGY ENVIRONMENTAL DEPARTMENT AT 210-353-2551 IF KARST (CAVE-LIKE OR VOIDS) FEATURES ARE IDENTIFIED DURING CONSTRUCTION ACTIVITIES

A STORMWATER PERMIT IS ACTIVE FOR THIS CONSTRUCTION SITE. PLEASE CALL STORMCON ENVIRONMENTAL AT LEAST 48 HOURS PRIOR TO ANY SOIL DISTURBANCE.

STORMCON POC: BRANDON BAXTER
210-771-1221 (CELL) brandon@stormcon.us

PROJECT NAME: TRES LAURELS UNIT 4B | DIRT: X | ROCK: | # OF POLES: 13

 # OF TRANSFORMERS: GY: | HV: X | 50KVA: | 75KVA | 100KVA:

OVERHEAD (OH) & EASEMENT REQUIREMENTS:
*Any single phase OH line requires a minimum of 20' (FT) easement with poles set in the center of the easement.
*Any multi-phase (2 or 3 phase) OH line requires a minimum of 28' (FT) easement with poles set in the center of the easement.
*Small conductor (W2AS) easement: to be cleared, to final grade and have drivable access.
*Large conductor (4/0, 336 & 556) easement: to be cleared, to final grade & have all-weather drivable access (per CPSE specifications)
*Guy wire/Anchors: require 25' to 30' past OH pole w/ 5' additional easement past anchor (30'-35' of easement required).
*URD/UG primary riser pole required to be set at/near a street(within 25' (FT) maximum from curb) or to have an all-weather drivable access (per CPSE specifications).
*Customer is responsible for staking all utility poles, anchors (for guy wires) and streetlights.

ATTENTION: DEVELOPERS / ENGINEERS / CONTRACTORS

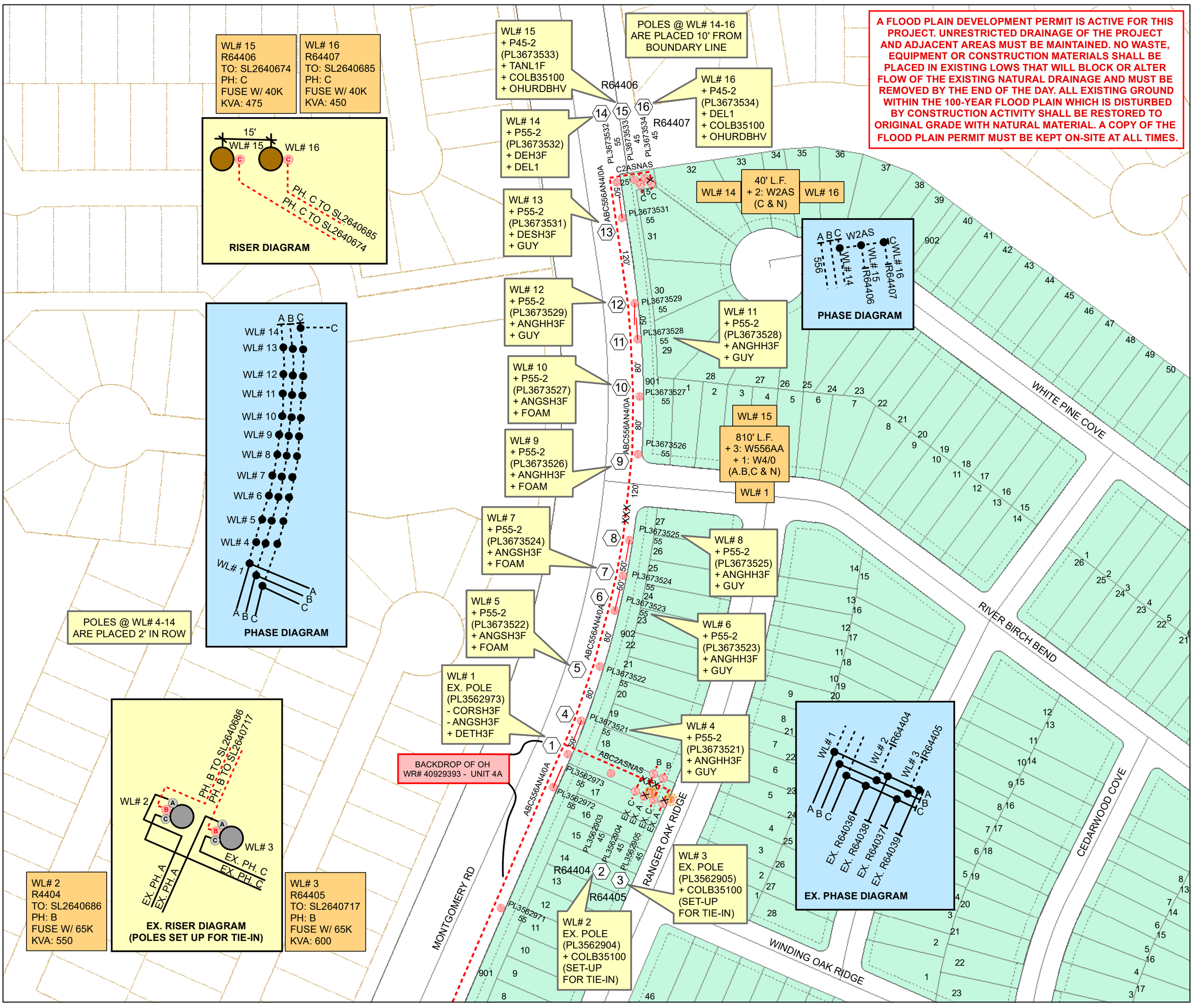
WHEN TRENCHING IS IN FRONT LOT CONSTRUCTION, WATER &/OR SEWER SERVICES ARE NOT TO BE PLACED UNTIL CPS ENERGY FACILITES ARE INSTALLED. WHEN TRENCHING IN RIGHT OF WAY, WATER & SEWER SERVICES WILL NEED TO BE ROLLED BACK &/OR OUT OF CPS ENERGY TRENCHLINE. CPSE WILL NOT ENERGIZE ANY SUBDIVISION UNTIL PERMANENT ALL-WEATHER DRIVABLE ACCESS TO PRIMARY RISER POLSES IS COMPLETED BY CUSTOMER

CPS ENERGY WILL NOT BE LIABLE FOR ANY DAMAGES TO WATER &/OR SEWER SERVICES

WHERE CPS ENERGY AND WATER SERVICES ARE CROSSING STREET CPS ENERGY REQUIRES A MINIMUM OF 6' (FEET) OF HORIZONTAL SEPARATION (when paralleling) AND 1' (FOOT) VERTICAL SEPARATION (when crossing) TO AVOID CONFLICTS/DAMAGE

* ANY FOREIGN UTILITY OTHER THAN CPS ENERGY WILL BE REQUIRED TO MAINTAIN A MINIMUM OF 6' (FT) PARALLEL SEPARATION FROM ANY CPS ENERGY INFRASTRUCTURE
* CPS ENERGY APPROVES THIS DRAWING FOR THIS PROJECT ONLY. CPS ENERGY RESERVES THE RIGHT TO APPROVE OR REJECT ANY DEVIATIONS ON ANY FUTURE PROJECTS

A FLOOD PLAIN DEVELOPMENT PERMIT IS ACTIVE FOR THIS PROJECT. UNRESTRICTED DRAINAGE OF THE PROJECT AND ADJACENT AREAS MUST BE MAINTAINED. NO WASTE, EQUIPMENT OR CONSTRUCTION MATERIALS SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW OF THE EXISTING NATURAL DRAINAGE AND MUST BE REMOVED BY THE END OF THE DAY. ALL EXISTING GROUND WITHIN THE 100-YEAR FLOOD PLAIN WHICH IS DISTURBED BY CONSTRUCTION ACTIVITY SHALL BE RESTORED TO ORIGINAL GRADE WITH NATURAL MATERIAL. A COPY OF THE FLOOD PLAIN PERMIT MUST BE KEPT ON-SITE AT ALL TIMES.



CUSTOMER ENGINEERING
RESIDENTIAL DEVELOPMENT

CPS ENERGY™

CONSTRUCTION COMPLETED

BY:

DATE:

CONST CTR:

FERG MAP PAGE 645, D1

URD ELECTRIC DESIGN | PROJ # A-0012

WORK REQUEST NO	WORK REQUEST TITLE / ADDRESS
40961182	TRES LAURELS UNIT 4B / URD

PLANNED BY	PHONE	CELL	DATE PLANNED
R WILEY	5874	485-8309	02/26/25
REVIEWED BY	**PHONE**	**CELL**	**DATE REVIEWED**
J RAMZINSKI	2931	288-6476	02/27/25

NOTES: 171 LOTS

PAGE

SERVICE CENTER: SWD

PD13519-79_JH

X,Y GRID COORDINATES		CIRCUIT NO	SCALE
X 2052431.000000	Y 13693158.000000	R422	1 " = 100 '

BURIED FACILITIES

	CATV	WATER	TELEPHONE	SEWER	ELECTRIC	GAS	OTHER
CLEAR	☐	☐	☐	☐	☐	☐	☐
NOTED ON SKETCH	☐	☐	☐	☐	☐	☐	☐

COPIES TOTAL

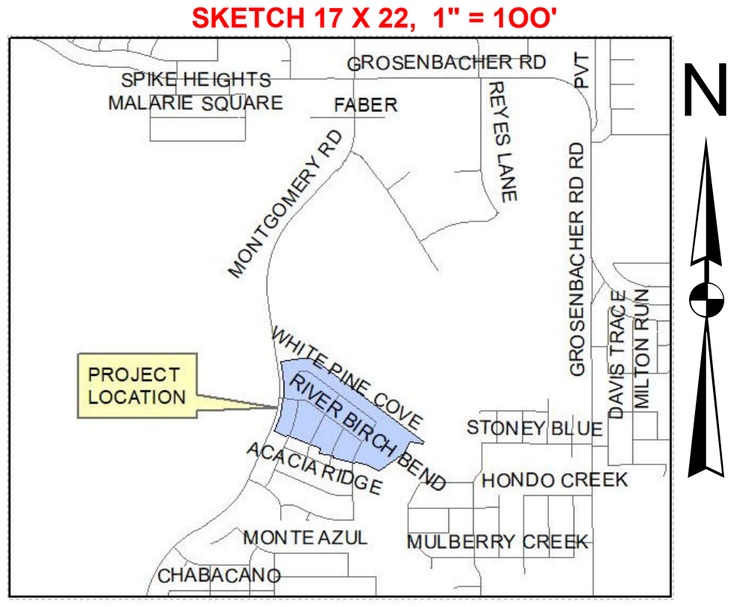
STATE OF TEXAS
DANA L. CUTTER
97400
LICENSED PROFESSIONAL ENGINEER

4/25/2025

PAPE-DAWSON ENGINEERS
FIRM REGISTRATION #470

ASSOCIATED WITH:
OH WR# 40993708
STLT WR# 40993709

SKETCH 17 X 22, 1" = 100'



LOCATION MAP

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3. FOREMAN TO LOCATE ALL BURIED UTILITIES.

FOR MISSING PINS CALL ENGINEER

ENGINEER: CUDE ENGINEERS
ADDRESS: 4122 POND HILL ROAD, SUITE 101
PHONE: 210-681-2951
CONTACT: MATTHEW TRINKLE

DEVELOPER: LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD
ADDRESS: 100 NE LOOP 410, SUITE 1155
PHONE: 210-889-5516
CONTACT: RICHARD MOTT

"ATTENTION FOREMAN"
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STORMCON POC: BRANDON BAXTER
210-771-1221 (CELL) brandon@stormcon.us

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PROJECT NAME: TRES LAURELS UNIT 4B | # OF LOTS / # OF UNITS: 171 / 171

DIRT: X | ROCK: | # OF SE6D: 67 | KVA PER LOT / TOTAL KVA: 14 / 2075 | HOME SQ FT: 1500

TOTAL TRENCH FOOTAGE: JOINT (ELEC & GAS): | ELEC. ONLY: 8858 | GAS ONLY:

STREET CROSSINGS: CUSTOMER SLEEVES: | CPS TRENCH/FLOWABLE FILL: X | TOTAL CROSSINGS: 37

 # OF STREETLIGHTS: 100W: 7 | 250W: | UNINCORPORATED: X | CITY: | ANSL:

 # OF URD PADMOUNT TRANSFORMERS:

GY:		HV:	
	:50KVA	3	:50KVA
	:75KVA	19	:75KVA
	:100KVA	5	:100KVA
	:167KVA		:167KVA
	:250KVA		:250KVA

* ANY FOREIGN UTILITY OTHER THAN CPS ENERGY WILL BE REQUIRED TO MAINTAIN A MINIMUM OF 6' (FT) PARALLEL SEPARATION FROM ANY CPS ENERGY INFRASTRUCTURE
* CPS ENERGY APPROVES THIS DRAWING FOR THIS PROJECT ONLY. CPS ENERGY RESERVES THE RIGHT TO APPROVE OR REJECT ANY DEVIATIONS ON ANY FUTURE PROJECTS

"ATTENTION"
DEVELOPERS / ENGINEERS / CONTRACTORS
WHEN TRENCHING IS IN FRONT LOT CONSTRUCTION, WATER &/OR SEWER SERVICES ARE NOT TO BE PLACED UNTIL CPS ENERGY FACILITES ARE INSTALLED
WHEN TRENCHING IN RIGHT OF WAY, WATER & SEWER SERVICES WILL NEED TO BE ROLLED BACK &/OR OUT OF CPS ENERGY TRENCHLINE
CPS ENERGY WILL NOT BE LIABLE
FOR ANY DAMAGES TO WATER &/OR SEWER SERVICES
WHERE CPS ENERGY AND SEWER/WATER SERVICES/MAIN ARE CROSSING STREET CPS ENERGY REQUIRES A MINIMUM OF 6' (FT) OF HORIZONTAL SEPARATION (when paralleling) AND 1' (FT) VERTICAL SEPARATION (when crossing) TO AVOID CONFLICTS

JOINT TRENCH & COMM'S

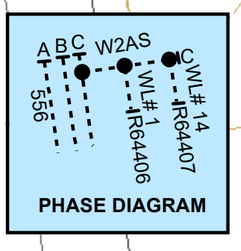
Joint Trench Participants:
- ☐ NONE
- ☐ Astound Broadband: (Footage)
- X Centric Fiber: (Footage)
- ☐ GVTC: (Footage)
- X Spectrum: (Footage)

Other COMM's (Non-J.T.): X ATT ☐ Hotwire

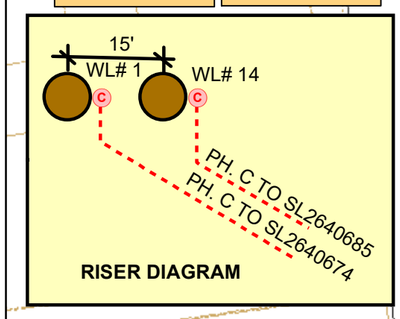
ATTENTION: DEVELOPERS / ENGINEERS / CONTRACTORS
IF NOT A JOINT TRENCH PARTICIPANT:
* Must be in separate trench
* Must maintain a foot parallel separation from CPS Energy underground infrastruture
* Street corssings & developer installed cnduit bundles must maintain a 6 foot parallel separation

WL# 1
R64406
TO: SL2640674
PH: C
FUSE W/ 40K
KVA: 475

WL# 14
R64407
TO: SL2640685
PH: C
FUSE W/ 40K
KVA: 450



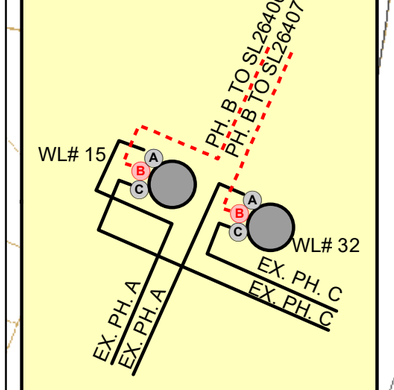
PHASE DIAGRAM



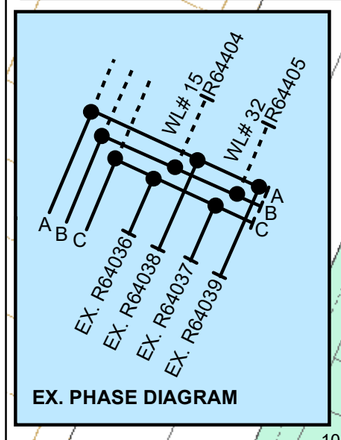
RISER DIAGRAM

WL# 15
R64404
TO: SL2640686
PH: B
FUSE W/ 65K
KVA: 550

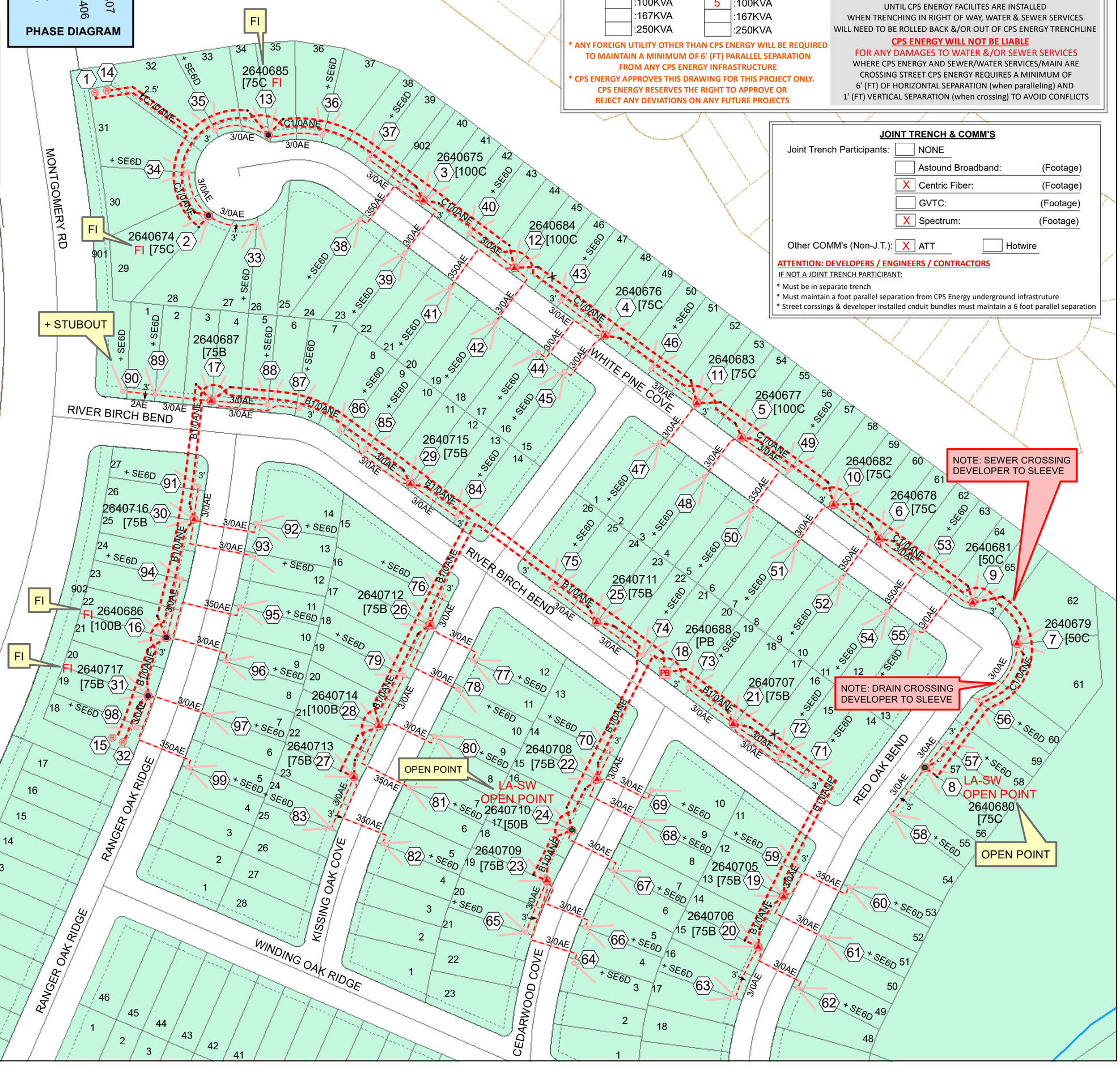
WL# 32
R64405
TO: SL2640717
PH: B
FUSE W/ 65K
KVA: 600



EX. RISER DIAGRAM (POLES SET UP FOR TIE-IN)



EX. PHASE DIAGRAM



CUSTOMER ENGINEERING
RESIDENTIAL DEVELOPMENT

CPS ENERGY

CONSTRUCTION COMPLETED

BY:

DATE:

CONST CTR:

FERG MAP PAGE 645, D1

STREET LIGHT DESIGN				PROJ # A-0008
WORK REQUEST NO	WORK REQUEST TITLE / ADDRESS			
40993709	TRES LAURELS UNIT 4B / STLT			
PLANNED BY	PHONE	CELL	DATE PLANNED	NOTES
R WILEY	5874	485-8309	02/26/25	
REVIEWED BY	PHONE	CELL	DATE REVIEWED	
J RAMZINSKI	2931	288-6476	02/27/25	+ 7: STLTS
PAGE				
SERVICE CENTER				PD13519-79_JH
X,Y GRID COORDINATES			CIRCUIT NO	SCALE
X 2052431.000000	Y 13693158.000000		R422	1 " = 100 '

BURIED FACILITIES

	CATV	WATER	TELEPHONE	SEWER	ELECTRIC	GAS	OTHER
CLEAR	☐	☐	☐	☐	☐	☐	☐
NOTED ON SKETCH	☐	☐	☐	☐	☐	☐	☐

COPIES TOTAL

STATE OF TEXAS
DANA L. CUTTER
97400
LICENSED PROFESSIONAL ENGINEER

4/24/2025

PAPE-DAWSON ENGINEERS
FIRM REGISTRATION #470

ASSOCIATED WITH:
URD WR# 40961182
OH WR# 40993708

"ATTENTION FOREMAN"
PLEASE CONTACT SUPERVISOR PRIOR TO ENERGIZING!!

CREWS ARE TO IMMEDIATELY STOP WORK AND CONTACT CPS ENERGY ENVIRONMENTAL DEPARTMENT AT 210-353-2551 IF KARST (CAVE-LIKE OR VOIDS) FEATURES ARE IDENTIFIED DURING CONSTRUCTION ACTIVITIES

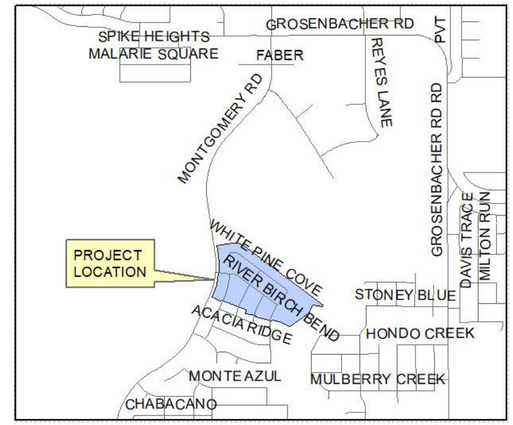
JOINT TRENCH & COMM'S

Joint Trench Participants:
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- X Centric Fiber: (Footage)
- ☐ GVTC: (Footage)
- X Spectrum: (Footage)

Other COMM's (Non-J.T.): X ATT ☐ Hotwire

ATTENTION: DEVELOPERS / ENGINEERS / CONTRACTORS
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* Must maintain a foot parallel separation from CPS Energy underground infrastruture
* Street corssings & developer installed cnduit bundles must maintain a 6 foot parallel separation

SKETCH 17 X 22, 1" = 1OO'



LOCATION MAP

A STORMWATER PERMIT IS ACTIVE FOR THIS CONSTRUCTION SITE. PLEASE CALL STORMCON ENVIRONMENTAL AT LEAST 48 HOURS PRIOR TO ANY SOIL DISTURBANCE.

STORMCON POC: BRANDON BAXTER
210-771-1221 (CELL) brandon@stormcon.us

NOTE TO DEVELOPER:

1. DEVELOPER IS RESPONSIBLE FOR COORDINATING WITH CPS PRIOR TO THE INSTALLATION OF DRAINAGE STRUCTURES TO ENSURE PROPER COVERAGE REQUIREMENTS CAN BE MAINTAINED FOR CPS FACILITIES. SLEEVES AND/OR CONCRETE ENCASEMENT MAY ALSO BE A REQUIREMENT OF THE DEVELOPER.

2. SEE CIVIL ENGINEERING OVERALL UTILITY AND DRAINAGE PLANS FOR THE LOCATION OF UTILITIES AND DRAINS IN THE CONSTRUCTION AREA.

3. FOREMAN TO LOCATE ALL BURIED UTILITIES.

FOR MISSING PINS CALL ENGINEER

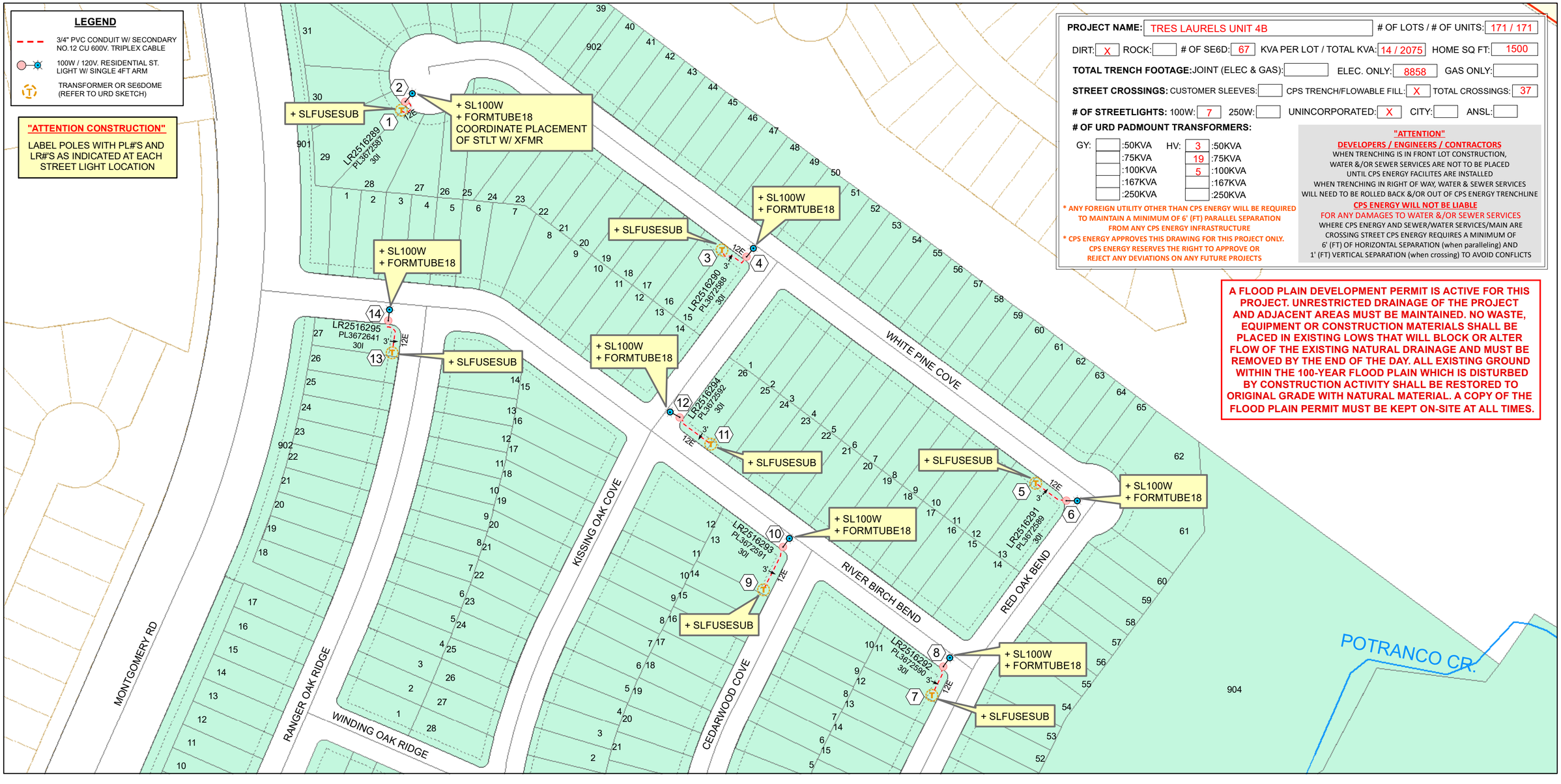
ENGINEER: CUDE ENGINEERS
ADDRESS: 4122 POND HILL ROAD, SUITE 101
PHONE: 210-681-2951
CONTACT: MATTHEW TRINKLE

LENNAR HOMES OF TEXAS LAND AND CONSTRUCTION, LTD
ADDRESS: 100 NE LOOP 410, SUITE 1155
PHONE: 210-889-5516
CONTACT: RICHARD MOTT

LEGEND

- 3/4" PVC CONDUIT W/ SECONDARY NO.12 CU 600V. TRIPLEX CABLE
- 100W / 120V. RESIDENTIAL ST. LIGHT W/ SINGLE 4FT ARM
- TRANSFORMER OR SE6DOME (REFER TO URD SKETCH)

"ATTENTION CONSTRUCTION"
LABEL POLES WITH PL#'S AND LR#'S AS INDICATED AT EACH STREET LIGHT LOCATION



PROJECT NAME: TRES LAURELS UNIT 4B # OF LOTS / # OF UNITS: 171 / 171

DIRT: X ROCK: ☐ # OF SE6D: 67 KVA PER LOT / TOTAL KVA: 14 / 2075 HOME SQ FT: 1500

TOTAL TRENCH FOOTAGE: JOINT (ELEC & GAS): ☐ ELEC. ONLY: 8858 GAS ONLY: ☐

STREET CROSSINGS: CUSTOMER SLEEVES: ☐ CPS TRENCH/FLOWABLE FILL: X TOTAL CROSSINGS: 37

 # OF STREETLIGHTS: 100W: 7 250W: ☐ UNINCORPORATED: X CITY: ☐ ANSL: ☐

 # OF URD PADMOUNT TRANSFORMERS:

GY: ☐	:50KVA	HV: 3	:50KVA
☐	:75KVA	19	:75KVA
☐	:100KVA	5	:100KVA
☐	:167KVA	☐	:167KVA
☐	:250KVA	☐	:250KVA

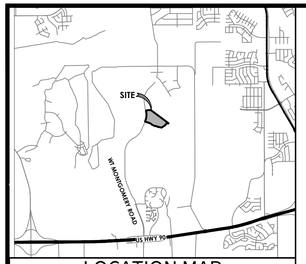
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FOR ANY DAMAGES TO WATER &/OR SEWER SERVICES
WHERE CPS ENERGY AND SEWER/WATER SERVICES/MAIN ARE CROSSING STREET CPS ENERGY REQUIRES A MINIMUM OF 6' (FT) OF HORIZONTAL SEPARATION (when paralleling) AND 1' (FT) VERTICAL SEPARATION (when crossing) TO AVOID CONFLICTS

A FLOOD PLAIN DEVELOPMENT PERMIT IS ACTIVE FOR THIS PROJECT. UNRESTRICTED DRAINAGE OF THE PROJECT AND ADJACENT AREAS MUST BE MAINTAINED. NO WASTE, EQUIPMENT OR CONSTRUCTION MATERIALS SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW OF THE EXISTING NATURAL DRAINAGE AND MUST BE REMOVED BY THE END OF THE DAY. ALL EXISTING GROUND WITHIN THE 100-YEAR FLOOD PLAIN WHICH IS DISTURBED BY CONSTRUCTION ACTIVITY SHALL BE RESTORED TO ORIGINAL GRADE WITH NATURAL MATERIAL. A COPY OF THE FLOOD PLAIN PERMIT MUST BE KEPT ON-SITE AT ALL TIMES.

CONDUIT PLAN

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)



LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

LENNAR HOMES OF TEXAS LAND
ANDCONSTRUCTION, LTD.
A TEXAS LIMITED PARTNERSHIP
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT: CHRIS CHAFFEE, P.E.
4122 POND HILL RD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951

SCALE: 1"=60'
0 60 120

NOTES:

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

AT&T AND TIME WARNER CABLE LINES TO GO INTO JOINT TRENCH WITH C.P.S. ENERGY
LOTS WITH CONFLICTING TRANSFORMER / SECONDARY ENCLOSURE ELECTRIC SERVICE AND WATER METER PLACED 5' FROM PROPERTY LINE WHERE THE CONFLICT OCCURS.

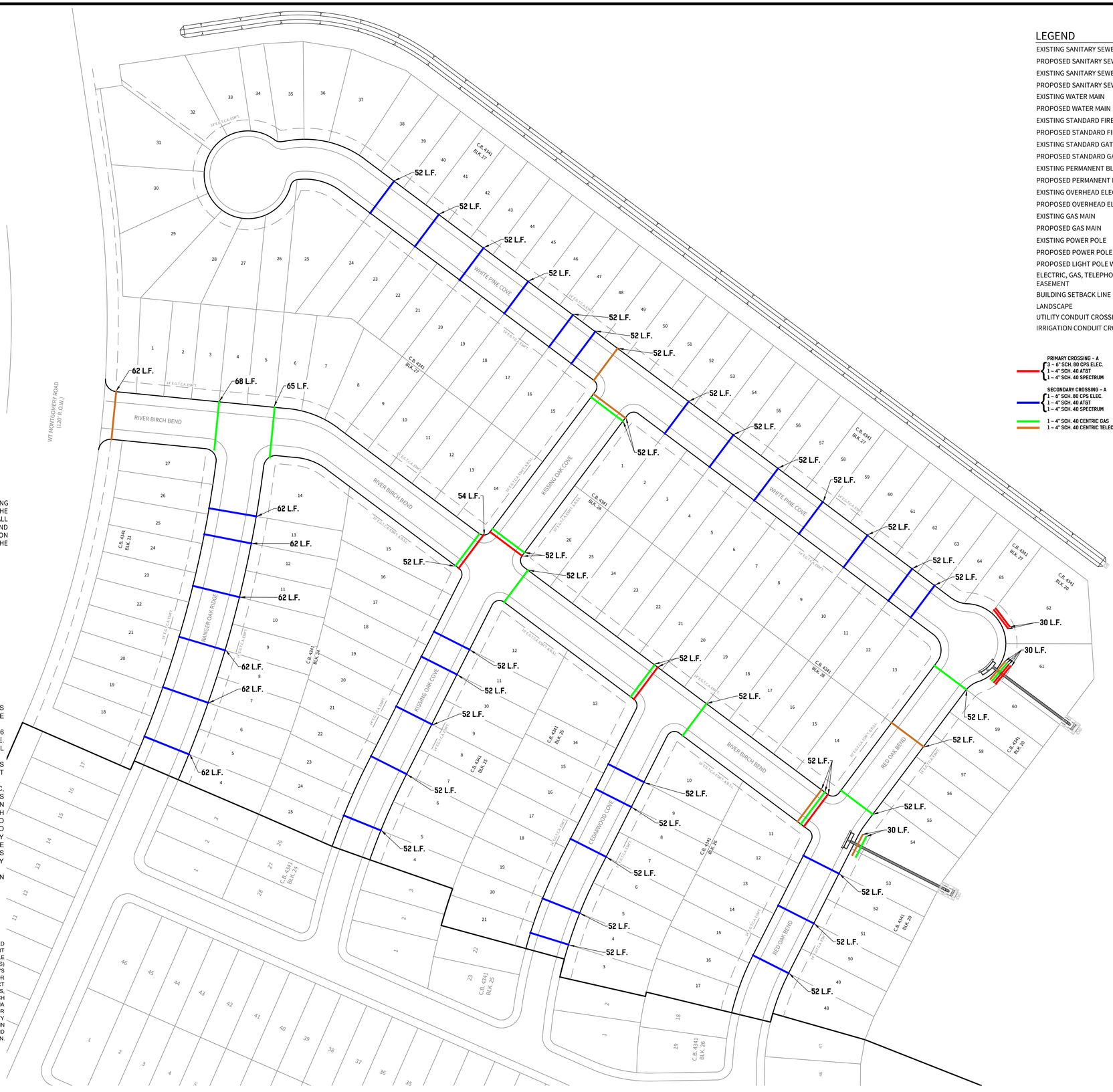
TYPICAL UTILITY CROSSINGS WILL HAVE
2 - 6" SCH 80 PVC CONDUIT WITH SWEEPS,
2 - 4" SCH 40 PVC CONDUIT WITH SWEEPS,
THE TOTAL AMOUNT OF CONDUIT TO BE USED WILL BE DETERMINED DURING CONSTRUCTION.

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

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

TRENCH EXCAVATION SAFETY PROTECTION

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



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	OHE
PROPOSED OVERHEAD ELECTRIC	OHE
EXISTING GAS MAIN	EX.2"GAS
PROPOSED GAS MAIN	4"GAS
EXISTING POWER POLE	
PROPOSED POWER POLE	
PROPOSED LIGHT POLE WITH 100W LED LIGHT	
ELECTRIC, GAS, TELEPHONE, & CABLE T.V. EASEMENT	E.G.T.CA. ESM'T
BUILDING SETBACK LINE	B.S.L.
LANDSCAPE	L.S.
UTILITY CONDUIT CROSSING	UTIL
IRRIGATION CONDUIT CROSSING	IRR

PRIMARY CROSSING - A
3 - 6" SCH. 80 CPS ELEC.
1 - 4" SCH. 40 AT&T
1 - 4" SCH. 40 SPECTRUM

SECONDARY CROSSING - A
1 - 6" SCH. 80 CPS ELEC.
1 - 4" SCH. 40 AT&T
1 - 4" SCH. 40 SPECTRUM

1 - 4" SCH. 40 CENTRIC GAS
1 - 4" SCH. 40 CENTRIC TELECOMMUNICATIONS

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

TRES LAURELS UNIT 4B

CONDUIT PLAN

DATE
10/23/2025

PROJECT NO.
03050.019

DRAWN BY
IV/RM/JS

CHECKED BY
MT/CC

REVISIONS
1.
2.
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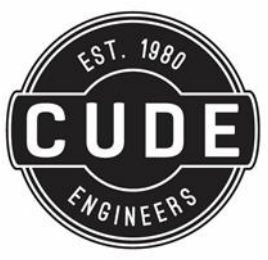
CUDE ENGINEERS
TBPELS No. 10048500

PLAT NO.
24-11800290

E1

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:\03050\019\3-DWG\1-Exhibit\3050-04-21 - Conduit Plan.dwg, 10/23/2025 11:15:01 AM, Isla



DIGITAL FILES

M.W. CUDE ENGINEERS, L.L.C 4122 Pond Hill Road, Suite 101 San Antonio, Texas 78231 210.681.2951 (tel) 210.523.7112 (fax)