AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between Pulte Homes of Texas, L.P. on behalf of Kendall County Water Control and Improvement District No. 3A ("Owner") and

V.K. Knowlton Construction & Utilities, Inc. ("Contractor") in the awarded amount of $7,106,022.80

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

A. Under this Contract, Contractor shall furnish all materials, appliances, tools, equipment, transportation, services, and all labor and superintendence necessary for the construction of the Work as described in these Technical Specification and as shown on the Plans. The completed installation shall not lack any part that can be reasonably implied as necessary to its proper functioning or any subsidiary item that is customarily furnished, and Contractor shall deliver the installation to Owner in operating condition.

B. Work, in general, under this Contract consists of furnishing, installing, and constructing all structures, equipment, and materials, including appurtenances, as indicated on the Plans.

C. Contractor is employed by Owner as an independent contractor to perform the Work. Contractor represents and warrants that, to the extent required by "Law" (as defined in Paragraph 6.09 of the General Conditions) in connection with the performance of the Work, Contractor is duly licensed to perform the Work under the Laws of the State in which the applicable Project is located ("State") and that Contractor's license number, if applicable, is set forth on the signature page of this Subcontract.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

A. Biedenharn Subdivision Unit 1

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ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Cude Engineers (Engineer), which is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Days to Achieve Substantial Completion and Final Payment

A. The Contract Time to substantially complete the Items will be _512_ calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions.

4.03 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner $1,000 for each day that expires after the times specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner $1,000 for each day that expires after the times specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A:

A. For all Work, at the prices stated in Contractor's Bid, provided in Section 00 4100 – Bid Form.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

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6.02 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment ~~on or about the~~ no later than the 20th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.

a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of 12% percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

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D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph ~~SC-~~ 4.02 of the ~~Supplementary~~ General Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph ~~SC-~~4.06 of the ~~Supplementary~~ General Conditions as containing reliable "technical data."

E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor acknowledges that Owner's architectural, structural, civil and landscape drawings, plans and specifications, and all other design materials with respect to the Work (the "Design Documents") are and shall remain the property of Owner whether or not any Work is completed. Contractor acknowledges and agrees that the Design Documents are privileged and proprietary in nature and that Owner has and maintains copyrights to the Design Documents under applicable state and federal Law. Contractor shall return all Design Documents and all copies thereof to Owner at the request of Owner at the completion of the Work or earlier termination of this Agreement. Except as necessary to complete the Work, Contractor shall not copy or otherwise reproduce the Design Documents in any way without the express written permission of Owner. Further, submission or distribution to meet official regulatory requirements or for all other governmental approval purposes in connection with the Work shall not be construed as a publication that undermines or otherwise derogates Owner's ownership rights.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

A. The Contract Documents consist of the following:

1. This Agreement.

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2. Performance bond.

3. Payment bond.

4. Other bonds.

5. General Conditions.

6. Supplementary Conditions.

7. Specifications as listed in the table of contents of the Contract Documents & Specifications.

8. Drawings consisting of _____.

9. Addenda (numbers 1 to 1, inclusive).

10. Exhibits to this Agreement (enumerated as follows):

    a. Contractor's Bid.

    b. Documentation submitted by Contractor prior to Notice of Award.

11. Wage Rate Scale for Construction Projects.

12. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:

    a. Notice(s) to Proceed.

    b. Work Change Directives.

    c. Change Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

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10.02 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

B. Contractor acknowledges that Owner is relying upon the experience, expertise and ability of the present officers, stockholders, members and/or partners of Contractor to cause all of the terms and provisions of this Agreement to be fulfilled. Contractor shall not further subcontract the whole or any material part of this Agreement beyond the subcontracts presented in the final Bid submitted by Contractor to Owner, without first obtaining the written consent of Owner, which consent Owner may withhold in its sole and absolute discretion. In the event of any material change in any of the officers, stockholders, members or partners of Contractor prior to the completion of the Work, Owner shall have the right, at its option, to terminate this Agreement pursuant to Paragraph 15.03 of the General Conditions.

10.03 Successors and Assigns

A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

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4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 Other Provisions

A. Failure to Exercise. The failure of either party hereto to insist, in any one or more instances, upon the performance of any of the terms, covenants or conditions of this Agreement or to exercise any right herein, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right as respects further performance.

B. Attorneys' Fees. Should either party employ an attorney to institute suit, demand mediation, demand arbitration or institute any other procedure for the resolution of a dispute in order to enforce any of the provisions hereof, to protect its interest in any matter arising under this Agreement, or to collect damages for the breach of this Agreement or to recover on a surety bond given by a party under this Agreement, the prevailing party shall be entitled to recover its attorneys' fees, consultants and experts fees, costs, charges and expenses expended or incurred therein. Specifically, the parties hereto agree that should a dispute proceed to arbitration the arbitrator is empowered to award attorneys' fees to the prevailing party.

C. Entire Agreement. This Agreement and the Exhibits and Schedules attached hereto, and the Contracts Documents entered into pursuant hereto, are solely for the benefit of the parties hereto and together represent the entire and integrated agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior negotiations, representations, or agreements, either written or oral.

D. Authorization. The signature of any person on behalf of a party to this Agreement shall be deemed a personal warranty by that person that such person has the power and authority to bind any corporation, limited liability company, partnership or any other business entity for whom that person purports to act.

E. Amendments. No oral statement of any person shall in any manner or degree modify or otherwise affect the terms of this Agreement. It is agreed that nothing done by Owner in the performance of its obligations hereunder or in directing performance by Contractor shall be construed in any manner or to any extent whatsoever as a waiver by Owner of any default in or a failure of performance of the terms and conditions of this Agreement by Contractor. It is agreed that no person has or shall hereinafter have any power or authority to waive, modify, alter or rescind any provision of this Agreement on behalf of Owner except the person or persons whose names are affixed to this Agreement as representatives of Owner and except further, such persons who are authorized by the President or Secretary of Owner, in writing, to agree to such waiver, modification, alterations or rescission and in the case of these latter persons, their authority shall be strictly limited to the terms of the writing granting them such authority.

F. No Presumption or Construction Against Drafter. The terms of this Agreement to be entered into pursuant hereto are and will be contractual and the result of negotiation between the parties hereto. Accordingly, any rule of construction of contracts that ambiguities are to be construed against the drafting party shall not be employed in the interpretation of this Agreement.

G. No Waiver. Neither the final payment nor any provision in any document shall relieve Contractor of responsibility for faulty materials or workmanship and Contractor shall, when notified of any such defects, promptly remedy the same and pay for any damage to any Project and/or other Work resulting therefrom.

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H. Notice. Any and all notices required or permitted hereunder shall be given in writing and be either personally delivered, sent by facsimile (delivery of which must be evidenced by a confirmation of successful transmission printed by the transmitting facsimile machine), sent by first class United States mail with postage prepaid or sent by prepaid overnight courier service providing evidence of receipt. All notices to be sent to Contractor shall be sent to the address shown below. All notices to be sent to Owner shall be sent to the address shown below, and to be effective, a copy of any such notice constituting a notice of default hereunder must also be sent to Owner by a method or methods permitted above to: Pulte Homes of Texas, L.P., c/o Kendall County Water Control and Improvement District No. 3A, Attn.: Felipe Gonzalez, 1718 Dry Creek Way, Suite 120, San Antonio, Texas 78259; phone _(210) 581-8812; email: Felipe.Gonzalez@PulteGroup.com .

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on 6/22/2021 (which is the Effective Date of the Agreement).

OWNER: Kendall County Water Control and Improvement District No. 3A

Felipe Gonzalez

By: [signature]

Title: VP of Land Development

Attest: Sarah Wood

Title: Sr. Project Coordinator

Address for giving notices:

1718 Dry Creek Way, Suite 120

San Antonio, Texas 78259

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

CONTRACTOR: V.K. Knowlton Construction & Utilities, Inc.

[signature]

By: SHAKOTAH KNOWLTON

Title: VICE PRESIDENT

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: [signature]

Title: STEVEN W. SPREEN
DIRECTOR OF EST. & P.M.

Address for giving notices:

18225 FM 2252

SAN ANTONIO, TX 78266

License No.: _____
(where applicable)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

PROHIBITION ON BOYCOTTING ISRAEL AND CONTRACTING WITH TERRORIST ORGANIZATIONS VERIFICATION

This verification is hereby incorporated into the terms of the contract by and between Pulte Homes of Texas, L.P., on behalf of Kendall County Water Control and Improvement District No. 3A and V.K. KNOWLTON CONSTRUCTION + UTILITIES, INC. entered into this the 22 day of June, 2021.

1.01 V.K. KNOWLTON CONSTRUCTION + UTILITIES, INC., in conjunction with the execution of the above referenced contract and in accordance with Chapter 2271 of the Texas Government Code, , does hereby agree, confirm, and verify that it:

A. Does not Boycott Israel; and

B. Will not Boycott Israel during the term of the contract

"Boycott Israel" has the meaning given to it in Chapter 808 of Subtitle A, Title 8 of the Texas Government Code. As of the effective date of the statute, the term means "refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action make for ordinary business purposes."

1.02 Contractor hereby certifies that it is not an entity that contracts with or provides supplies or services to a foreign terrorist organization, as defined by Section 2252.151(2), Texas Government Code, and has not been identified as a company known to have contracts with or provide supplies or services to a foreign terrorist organization as identified on a list prepared and maintained under Section 2252.153, Texas Government Code.

1.03 Contractor hereby acknowledges and agrees that this verification is a material term of the contract and Owner is expressly relying on this verification in agreeing to enter into the contract with Contractor.

1.04 TO THE MAXIMUM EXTENT PERMITTED BY LAW, CONTRACTOR AGREES TO INDEMNIFY, DEFEND AND HOLD HARMLESS OWNER FROM ALL CLAIMS, CAUSES OF ACTION, LEGAL PROCEEDINGS, DAMAGES, COSTS, FEES AND EXPENSES ARISING OUT OF OR RELATED TO AN ACTUAL OR ALLEGED MISREPRESENTATION BY CONTRACTOR PROVIDED HEREUNDER.

Contractor Signature

THE STATE OF TEXAS §
§
COUNTY OF COMAL §

Before me, a notary public, on this day personally appeared SHAKOTAH KNOWLTON, known to me to be the person whose name is subscribed to the foregoing document and, being by me first duly sworn, declared that the statements therein contained are true and correct.

MAUREEN K McNERTNEY
NOTARY PUBLIC
ID# 125791366
State of Texas
Comm. Exp. 08-08-2022

MAUREEN McNERTNEY
Notary Public, State of Texas

(SEAL)

Receipt and incorporation into the above-referenced contract hereby agreed to and acknowledged by:

Owner Signature

BOND NO. SUR0065963

PERFORMANCE BOND

STATE OF TEXAS

Contract Date 6/22/21

COUNTY OF Kendall

Date Bond Executed

PRINCIPAL V.K. Knowlton Construction & Utilities, Inc.

SURETY Argonaut Insurance Company

OWNER Pulte Homes of Texas, L.P., on behalf of Kendall County Water Control and Improvement District No. 3A

PENAL SUM OF BOND (in words and figures) Seven Million One Hundred Six Thousand Twenty Two Dollars and 80 ($7,106,022.80)

being 100 percent of the Contract Price.

CONTRACT for Biedenharn Subdivision Unit 1 for Kendall County Water Control and Improvement District No. 3A, Kendall County, Texas (the "Contract").

KNOW ALL PERSONS BY THESE PRESENTS, that we, Principal and Surety above named, are held and firmly bound unto Owner, its successors and assigns, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves and our respective heirs, executors, administrators, officers, directors, shareholders, partners, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal entered into that certain Contract with Owner, which Contract is expressly incorporated herein for all purposes.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if Principal well and truly performs the work in accordance with the plans, specifications and any other contract documents, during the original term of the Contract and any extensions thereof that may be granted by Owner, with or without notice to Surety, and during the life of any guaranty or warranty required under the Contract, then this obligation is void; otherwise it is to remain in full force and effect. Should the Principal fail to faithfully and strictly perform the work as required by the Contract in all its terms, the Surety will be liable for all damages, losses, expenses and liabilities that the Owner may suffer in consequence thereof.

This Bond is given in compliance with the provisions of Chapter 2253 of the Texas Government Code, as amended, which is incorporated herein by this reference. However, all of the express provisions contained herein and in the Contract are applicable whether or not within the scope of said statute.

Surety hereby agrees, for value received, that no change, extension of time, alteration or addition to the terms of the Contract or to work performed under the Contract, or to the plans, specifications or drawings accompanying the Contract, will in any way affect its obligations on this Bond and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder.

The bound parties have executed this instrument pursuant to authority of their respective governing body, to be effective on the same date of the Contract.

V.K. Knowlton Construction & Utilities, Inc.
PRINCIPAL

By _____

Name SHAKOTAH KNOWLTON

Title Vice President

Address 18225 FM 2252
San Antonio, Texas 78266

ATTEST

By _____

Name STEVEN W. SPREEN

Title DIRECTOR OF EST. & P.M.

(SEAL)

Argonaut Insurance Company
SURETY

By _____

Name Scott D. Chapman

Title Attorney-In-Fact

(SEAL)

ATTEST

By _____

Name Stacy Owens

Title Surety Witness

Physical Address:
225 W. Washington Street, 24th Floor
Chicago, IL 60606

Mailing Address:
225 W. Washington Street, 24th Floor
Chicago, IL 60606

Telephone: (833) 820-9137

Local Recording Agent Personal Identification Number:
837728

Agency Name: USI Insurance Services, LLC

Agency Address 25025 IH-45 N. Freeway, Ste. 525, The Woodlands, Texas 77380

Agency Telephone (832) 702-8350

Surety must attach its original Power of Attorney to this Bond.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, SAM KNOWLTON, certify that I am the secretary of the corporation named as Principal in the Bond; that SHAKOTAH KNOWLTON, who signed the Bond on behalf of Principal, was then VICE PRESIDENT of the corporation; that I know his or her signature, and his or her signature is genuine; and that the Bond was duly signed for and on behalf of the corporation by authority of its governing body.

Sam Knowlton

Signature of Corporate Secretary

(Corporate Seal)

ATTACH POWER OF ATTORNEY

Argonaut Insurance Company
Deliveries Only: 225 W. Washington, 24th Floor
Chicago, IL 60606
United States Postal Service: P.O. Box 469011, San Antonio, TX 78246
POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the Argonaut Insurance Company, a Corporation duly organized and existing under the laws of the State of Illinois and having its principal office in the County of Cook, Illinois does hereby nominate, constitute and appoint:

Scott D. Chapman, Cheryl R. Colson, Timothy J. Maley, Kevin McQuain, Rosalyn D. Hassell, Misty Witt

Their true and lawful agent(s) and attorney(s)-in-fact, each in their separate capacity if more than one is named above, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed any and all bonds, contracts, agreements of indemnity and other undertakings in suretyship provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

$95,000,000.00

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of Argonaut Insurance Company:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the Company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the Argonaut Insurance Company, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, Argonaut Insurance Company has caused its official seal to be hereunto affixed and these presents to be signed by its duly authorized officer on the 8th day of May, 2017.

Argonaut Insurance Company

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

by: _____

Joshua C. Betz , Senior Vice President

STATE OF TEXAS
COUNTY OF HARRIS SS:

On this 8th day of May, 2017 A.D., before me, a Notary Public of the State of Texas, in and for the County of Harris, duly commissioned and qualified, came THE ABOVE OFFICER OF THE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of same, and being by me duly sworn, deposed and said that he is the officer of the said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation, and that Resolution adopted by the Board of Directors of said Company, referred to in the preceding instrument is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the County of Harris, the day and year first above written.

KATHLEEN M. MEEKS
Notary Public, State of Texas
Comm. Expires 07-15-2021
Notary ID 557902-8

Kathleen M. Meeks
(Notary Public)

I, the undersigned Officer of the Argonaut Insurance Company, Illinois Corporation, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand, and affixed the Seal of said Company, on the _____ day of _____, _____.

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

_____
James Bluzard , Vice President-Surety

IF YOU HAVE QUESTIONS ON AUTHENTICITY OF THIS DOCUMENT CALL (833) 820 - 9137.

ARGO POWER OF ATTORNEY

BOND NO. SUR0065963

PAYMENT BOND

STATE OF TEXAS

Contract Date 6/22/21

COUNTY OF Kendall

Date Bond Executed _____

PRINCIPAL V.K. Knowlton Construction & Utilities, Inc.

SURETY Argonaut Insurance Company

OWNER Pulte Homes of Texas, L.P., on behalf of Kendall County Water Control and Improvement District No. 3A

PENAL SUM OF BOND (in words and figures) Seven Million One Hundred Six Thousand Twenty Two Dollars and 80 ($7,106,022.80)

being 100 percent of the Contract Price.

CONTRACT for Biedenharn Subdivision Unit 1 for Kendall County Water Control and Improvement District No. 3A, Kendall County, Texas.

KNOW ALL PERSONS BY THESE PRESENTS, that we, Principal and Surety above named, are held and firmly bound unto Owner, its successors and assigns, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves and our respective heirs, executors, administrators, officers, directors, shareholders, partners, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal entered into the Contract with Owner, which Contract is expressly incorporated herein for all purposes.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if Principal shall promptly pay claimants for all labor, subcontracts, materials and specially fabricated materials performed or furnished under or by virtue of the Contract, and duly authorized modifications and normal and usual extras thereto, notice of which modifications to Surety being hereby waived, then this obligation shall be void, otherwise to remain in full force and effect. Should Principal fail to promptly pay claimants for all labor, subcontracts, materials and specially fabricated materials performed or furnished under or by virtue of the Contract, Surety is hereby bound to make such payments on behalf of Principal up to a total aggregate amount equal to the penal sum of the Bond. Labor, subcontracts, materials, and specially fabricated materials shall be construed in accordance with Chapter 2253, Texas Government Code.

PROVIDED, HOWEVER, that Owner having required Principal to furnish this Bond in order to comply with the provisions of Chapter 2253, Texas Government Code, all rights and remedies on this Bond shall inure solely to such claimants and shall be determined in accordance with the provisions, conditions, and limitations of the aforesaid Government Code to the same extent as if they were copied at length herein.

The bound parties have executed this instrument pursuant to authority of their respective governing body, to be effective on the same date of the Contract.

V.K. Knowlton Construction & Utilities, Inc.
PRINCIPAL

By _____

Name SHAKOTAH KNOWLTON

Title Vice President

Address 18225 FM 2252
San Antonio, Texas 78266

ATTEST

By _____

Name STEVEN W. SPREEN

Title DIRECTOR OF EST. & P.M.

(SEAL)

Argonaut Insurance Company
SURETY

By _____

Name Scott D. Chapman

Title Attorney-In-Fact

(SEAL)

ATTEST

By _____

Name Stacy Owens

Title Surety Witness

Physical Address:
225 W. Washington Street, 24th Floor
Chicago, IL 60606

Mailing Address:
225 W. Washington Street, 24th Floor
Chicago, IL 60606

Telephone: (833) 820-9137

Local Recording Agent Personal Identification Number:
837728

Agency Name: USI Insurance Services, LLC

Agency Address 25025 IH-45 N. Freeway, Ste. 525, The Woodlands, Texas 77380

Agency Telephone (832) 702-8350

Surety must attach its original Power of Attorney to this Bond.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, SAM KNOWLTON, certify that I am the secretary of the corporation named as Principal in the Bond; that SHAKOTAH KNOWLTON, who signed the Bond on behalf of Principal, was then VICE PRESIDENT of the corporation; that I know his or her signature, and his or her signature is genuine; and that the Bond was duly signed for and on behalf of the corporation by authority of its governing body.

Sam Knowlton

Signature of Corporate Secretary

(Corporate Seal)

ATTACH POWER OF ATTORNEY

Argonaut Insurance Company
Deliveries Only: 225 W. Washington, 24th Floor
Chicago, IL 60606
United States Postal Service: P.O. Box 469011, San Antonio, TX 78246
POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the Argonaut Insurance Company, a Corporation duly organized and existing under the laws of the State of Illinois and having its principal office in the County of Cook, Illinois does hereby nominate, constitute and appoint:

Scott D. Chapman, Cheryl R. Colson, Timothy J. Maley, Kevin McQuain, Rosalyn D. Hassell, Misty Witt

Their true and lawful agent(s) and attorney(s)-in-fact, each in their separate capacity if more than one is named above, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed any and all bonds, contracts, agreements of indemnity and other undertakings in suretyship provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

$95,000,000.00

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of Argonaut Insurance Company:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the Company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the Argonaut Insurance Company, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, Argonaut Insurance Company has caused its official seal to be hereunto affixed and these presents to be signed by its duly authorized officer on the 8th day of May, 2017.

Argonaut Insurance Company

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

by: _____

Joshua C. Betz , Senior Vice President

STATE OF TEXAS
COUNTY OF HARRIS SS:

On this 8th day of May, 2017 A.D., before me, a Notary Public of the State of Texas, in and for the County of Harris, duly commissioned and qualified, came THE ABOVE OFFICER OF THE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of same, and being by me duly sworn, deposed and said that he is the officer of the said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation, and that Resolution adopted by the Board of Directors of said Company, referred to in the preceding instrument is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the County of Harris, the day and year first above written.

KATHLEEN M. MEEKS
Notary Public, State of Texas
Comm. Expires 07-15-2021
Notary ID 557902-8

_____
(Notary Public)

I, the undersigned Officer of the Argonaut Insurance Company, Illinois Corporation, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand, and affixed the Seal of said Company, on the _____ day of _____, _____.

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

_____
James Bluzard , Vice President-Surety

IF YOU HAVE QUESTIONS ON AUTHENTICITY OF THIS DOCUMENT CALL (833) 820 - 9137.

ARGO POWER OF ATTORNEY

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Argonaut Insurance Company and its affiliates by telephone for information or to make a complaint:

ARGONAUT INSURANCE COMPANY

Please send all notices of claim on this bond to:

Argonaut Insurance Company
Argo Surety Claims
225 W. Washington St., 24th Floor
Chicago, IL 60606

(833) 820-9137 (toll-free)

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

(512) 490-1007

You may write the Texas Department of Insurance:

P. O. Box 149104
Austin, TX 78714-9104
Fax: (512) 475-1771
Web: http://www.tdi.state.tx.us
E-mail: ConsumerProtection@tdi.state.tx.us

PREMIUM OR CLAIM DISPUTES:
Should you have a dispute concerning your premium or about a claim you should contact your agent or Argo Surety first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR BOND:
This notice is for information only and does not become a part or condition of the attached document and is given to comply with Texas legal and regulatory requirements.

BOND NO. _____

MAINTENANCE BOND

STATE OF TEXAS Contract Date _____

COUNTY OF Kendall Date Bond Executed _____

PRINCIPAL _____

SURETY _____

OWNER Pulte Homes of Texas, L.P., on behalf of Kendall County Water Control and Improvement District No. 3A

PENAL SUM OF BOND (in words and figures) _____,

being 100 percent of the Contract Price.

CONTRACT for Biedenharn Subdivision Unit 1 for Kendall County Water Control and Improvement District No. 3A, Kendall County, Texas (the "Contract").

KNOW ALL PERSONS BY THESE PRESENTS, that we, Principal and Surety above named, are held and firmly bound unto Owner, its successors and assigns, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves and our respective heirs, executors, administrators, officers, directors, shareholders, partners, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal entered into that certain Contract with Owner, which Contract is expressly incorporated herein for all purposes.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if Principal well and truly repair any and all defects in the work occasioned by or resulting from defects in materials furnished by, or workmanship of, the Principal in performing the work covered by the Contract, including any guaranty or warranty required under the Contract, then this obligation is void; otherwise it is to remain in full force and effect. Should the Principal fail to well and truly repair any and all defects in the work occasioned by or resulting from defects in materials furnished by, or workmanship of, the Principal in performing the work as required by the Contract in all its terms, the Surety will be liable for all damages, losses, expenses and liabilities that the Owner may suffer in consequence thereof.

The parties intend this maintenance bond to be a common law bond to be constructed in accordance with Texas law.

Surety hereby agrees, for value received, that no change, extension of time, alteration or addition to the terms of the Contract or to work performed under the Contract, or to the plans, specifications or drawings accompanying the Contract, will in any way affect its obligations on this Bond and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder.

The bound parties have executed this instrument pursuant to authority of their respective governing body, to be effective on the same date of the Contract.

_____	ATTEST
PRINCIPAL	
By _____	By _____
Name _____	Name _____
Title _____	Title _____
Address _____	
_____	(SEAL)
_____	ATTEST
SURETY	
By _____	By _____
Name _____	Name _____
Title _____	Title _____
(SEAL)	Physical Address: _____ _____ _____
	Mailing Address: _____ _____ _____
	Telephone: _____

Local Recording Agent Personal Identification Number:

_____

Agency Name:_____

Agency Address_____

Agency Telephone _____

Surety must attach its original Power of Attorney to this Bond.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the secretary of the corporation named as Principal in the Bond; that _____, who signed the Bond on behalf of Principal, was then _____ of the corporation; that I know his or her signature, and his or her signature is genuine; and that the Bond was duly signed for and on behalf of the corporation by authority of its governing body.

_____ (Corporate Seal)

Signature of Corporate Secretary

ATTACH POWER OF ATTORNEY

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

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12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*—The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

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27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

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40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

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addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

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E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

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2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on

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Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

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3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

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1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or

2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

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4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

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contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data;

b. locating all Underground Facilities shown or indicated in the Contract Documents;

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

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consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

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C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

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meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

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a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

a. Such insurance shall remain in effect for two years after final payment.

b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

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5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

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members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

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1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's

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interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

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B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

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2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

3) it has a proven record of performance and availability of responsive service.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

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c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services; and

4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

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required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

   1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor

   2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

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Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

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6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought

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by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and

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shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is

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required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

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2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

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6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

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B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

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E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

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B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

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8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or

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continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

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9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not

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exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

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10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

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shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

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1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of

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said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

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limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to

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the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

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C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

   a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

   b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

   c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

   d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

   e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

   f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

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neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

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13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

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C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

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1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

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13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an

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Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or

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involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work, or

   b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

   c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

   d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

   e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

   a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

   d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

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D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

   a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

   b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

   c. there are other items entitling Owner to a set-off against the amount recommended; or

   d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

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final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

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4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

   b. consent of the surety, if any, to final payment;

   c. a list of all Claims against Owner that Contractor believes are unsettled; and

   d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying

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documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

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ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when

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so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days

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to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

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1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 00 7300

SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 7200 and other provisions of the Contract Documents as indicated below. The following paragraphs and subparagraphs take precedence over the General Conditions. All provisions that are not so amended or supplemented remain in full force and effect.

B. As detailed in 1.04 below, these Supplementary Conditions modify, change, delete from or add to the General Conditions and shall apply to each and every Section of the Work as though written in full therein.

C. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

D. Paragraph numbers and titles refer to like numbers and titles in the General Conditions.

E. In the event of a conflict between provisions in the Agreement, the General Conditions, or these Supplementary Conditions, the most restrictive provision shall govern.

1.02 RELATED SECTIONS

A. Section 00 5000 - Contracting Forms and Supplements.

1.03 REFERENCE STANDARDS

A. EJCDC C-800 - Guide to the Preparation of Supplementary Conditions; 2007.

1.04 MODIFICATIONS TO GENERAL CONDITIONS

SC-1.01. Add Paragraph 1.01.A.52:

52. *Contracting Information* – Contracting Information means the following:

(1) information in a voucher or contract relating to the receipt or expenditure of public funds by a governmental body;

(2) solicitation or bid documents relating to a contract with a governmental body;

(3) communications sent between a governmental body and a vendor, contractor, potential vendor, or potential contractor during the solicitation, evaluation, or negotiation of a contract;

(4) documents, including bid tabulations, showing the criteria by which a governmental body evaluates a vendor, contractor, potential vendor, or potential contractor responding to a solicitation and, if applicable, an explanation of why the vendor or contractor was selected; and

(5) communications and other information sent between a governmental body and a vendor or contractor related to the performance of a final contract with the governmental body or work performed on behalf of the governmental body.

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following in its place:

A. Owner shall furnish to Contractor up to 6 printed or hard copies of the Drawings and Project Manual and one set in electronic format. Additional copies will be furnished upon request at the cost of reproduction.

SC-2.03 Delete Paragraph 2.03.A in its entirety and insert the following in its place:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. The Notice to Proceed may be given at any time within 90 days after the Effective Date of the Agreement.

SC-3.07. Add Paragraph 3.07 to read as follows:

3.07 *Contracting Information*

If the Contract Price is equal to or greater than $1,000,000, Contractor, pursuant to the Government Code Section 552.372 shall:

(1) preserve all Contracting Information related to the Contract as provided by the records retention requirements applicable to the Owner for the duration of the Contract;
(2) promptly provide to the Owner any Contracting Information related to the Contract that is in the custody or possession of the Contractor on request of the Owner; and
(3) on final completion of the Contract, provide at no cost to Owner all Contracting Information related to the Contract that is in the custody or possession of the Contractor or preserve the Contracting Information related to this Contract as provided by the records retention requirements of the Owner.

The requirements of Subchapter J, Chapter 552, Government Code, may apply to this Bid and/or Contract and the Contractor agrees that the Contract can be terminated if the Contractor knowingly or intentionally fails to comply with the requirement of that subchapter.

SC-4.02.A. Delete Paragraph 4.02.A in its entirety and insert the following in its place, leaving subparagraphs 1. and 2. of said section unaltered:

A. *Reports and Drawings*: Section 00-3100 – Available Project Information of the Contract Documents identifies:

SC-4.02.B. Amend the second sentence of Paragraph 4.02.B. by striking out the following words:

Such “technical data” is identified in the Supplementary Conditions.

SC-4.06.A. Delete Paragraph 4.06.A in its entirety and insert the following in its place:

A. *Reports and Drawings*: Section 00-3100 – Available Project Information of the Contract Documents identifies those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the site.

SC-4.06.B. Amend the second sentence of Paragraph 4.06.B. by striking out the following words:

Such "technical data" is identified in the Supplementary Conditions.

SC-4.06.G. Delete Paragraph 4.06.G and 4.06.H in their entirety and replace them with the following paragraph:

G. TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS OWNER, KENDALL COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 3A, AND ENGINEER, AND THE OFFICERS, DIRECTORS, PARTNERS, EMPLOYEES, AGENTS, CONSULTANTS, AND SUBCONTRACTORS OF EACH AND ANY OF THEM FROM AND AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO A HAZARDOUS ENVIRONMENTAL CONDITION CREATED BY CONTRACTOR OR BY ANYONE FOR WHOM CONTRACTOR IS RESPONSIBLE. NOTHING IN THIS PARAGRAPH SHALL OBLIGATE CONTRACTOR TO INDEMNIFY ANY INDIVIDUAL OR ENTITY FROM AND AGAINST THE CONSEQUENCES OF THAT INDIVIDUAL'S OR ENTITY'S OWN NEGLIGENCE.

SC-5.04 Delete Section 5.04 in its entirety and insert the following in its place:

5.04 *Contractor's Insurance*

A. Contractor shall, at Contractor's sole cost and expense, comply with the insurance requirements set forth in Paragraph 5.04.B for the entire term of the Agreement and thereafter, as set forth below.

1. Prior to the start of any Work, and prior to entering onto any Project Site, Contractor shall document compliance with the insurance requirements of this Agreement, including without limitation Paragraph 5.04.B. Contractor shall furnish Owner with copies of certificates of insurance, waiver of subrogation endorsement(s), additional insured endorsement(s), and primary and non-contributory endorsements as required in the Agreement for all of such policies showing the insurance carriers, policy numbers, Contractor as the named insured, Owner and Kendall County Water Control and Improvement District No. 3A, as additional insured's and expiration dates. Contractor shall promptly provide Owner with certified copies of insurance policies upon request of Owner. In addition to any other conditions to payment by Owner hereunder, no payments of the Contract Price will be due to Contractor unless and until Contractor has documented compliance with all insurance requirements in this Agreement, including without limitation Paragraph 5.04.B, to the satisfaction of Owner. If at any time Contractor's insurance fails to meet the requirements under the Agreement, all payments may be held until the deficiency has been resolved acceptably to Owner. Notwithstanding the foregoing, commencement or continuation of Work by Contractor and/or payment by Owner shall not be deemed to relieve Contractor of any of the requirements under the Agreement. Renewal certificates and endorsements shall be delivered to Owner prior to the expiration of the existing policy or policies.

2. No acceptance of insurance certificates or additional insured endorsements and no other act or omission by Owner shall in any way limit or relieve Contractor of its duties and responsibilities under the Agreement. Nothing in this Paragraph 5.04.A shall in any way

limit or relieve Contractor of its indemnification obligations under Paragraph 6.20 or otherwise. Any provision on any certificate of insurance provided by Contractor that states anything to the effect that the certificate does not confer any rights to insurance upon the certificate holder is hereby deemed deleted from said certificate.

3. Contractor hereby agrees to immediately notify (or cause its insurers or insurance broker to notify) Owner of any receipt of a notice (and provide to Owner a copy of any such notice) of cancellation, non-renewal or rescission received from an insurance carrier referring to or relating to a policy which names Owner or any of the other parties named as additional insureds or which may otherwise impact the ability of Contractor to fully perform its obligations hereunder or under any Agreement (including, without limitation, the indemnity obligations of Contractor set forth in Paragraph 6.20 below).
4. If Contractor fails to obtain, secure and/or maintain any of the insurance coverages required by the Agreement, Owner shall have the right (without any obligation to do so, however) (i) to terminate the Agreement and any and all outstanding Work Agreements pursuant to

Paragraph 15.03 hereof or (ii) to secure same in the name of and for the account of Contractor, in which event, Contractor shall pay the cost thereof (which Owner may deduct from sums due Contractor under the Agreement) and shall furnish, upon demand, all information that may be required in connection therewith. Notwithstanding anything to the contrary, waiver or modification of any of these insurance requirements, including the amount or extent of coverage, may only be obtained upon Owner's written consent, which consent Owner may limit or withhold in its sole and absolute discretion and which consent shall only be effective if provided in writing by an authorized officer of Owner.

5. If Contractor is out of business or otherwise unavailable at the time a claim or demand is presented to Owner, to the extent permitted by Law, Contractor hereby assigns to Owner each and every and all of its rights under all potentially applicable policies of insurance.
6. Contractor hereby waives any right of subrogation which it or its insurers may have against Owner or any of the other additional named insureds described in Paragraph 5.04.B with regard to any loss, injury or damage arising out of or incident to any Work or any Project. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not such person or entity had an insurable interest in the property damaged.
7. Contractor shall require all of its subcontractors and suppliers of every tier to: (i) procure and maintain all of the same insurance coverages which are required of Contractor under the Agreement; and (ii) furnish Owner with certificates of insurance which evidence all of the coverages required under the Agreement, which include all required attachments and additional insured endorsements, and which afford the same guarantee of notice of cancellation, non-renewal, rescission or reduction or restriction of coverage as is required of Contractor under the Agreement.

B. Insurance Requirements:

1. All insurance certificates need to list Owner and Kendall County Water Control and Improvement District No. 3A, as certificate holders, and must be on Form Acord 25 S (7/97) or later.
2. The insurance policy must cover the Project (as defined in the Agreement) or "All Work performed for Certificate Holders" and so state in the Description of Operations.
3. The Insurance Carrier(s) must be A. M. Best A:VI rated or better. All insurance carriers must be rated by A. M. Best as 'A' in Financial Strength and 'VI' or higher in Financial Size. (ambest.com)
4. The insurance certificate(s) must have a thirty (30) day Cancellation Notice.
5. Failure to meet any of the Insurance Requirements may result in an "Insurance Hold", placing a block on payment(s) by Owner under the Agreement, regardless of provisions presented in Article 14.
6. Any deductible or self-insured retention on any policy required hereunder shall not exceed $10,000 per occurrence unless this requirement is waived in writing by Owner.
7. General Liability Policy Requirements:
   a. The minimum limits of the policy shall be $1,000,000 per occurrence; $2,000,000 general aggregate; $2,000,000 products/completed operations; and $1,000,000 personal injury/advertising.
   b. The policy must be an Occurrence policy. Owner does not accept 'Claims-Made' general liability policies.

c. The policy must include a Primary & Non-contributory Endorsement. This policy endorsement requires the Contractor's General Liability Policy be primary and that Owner's own policy(ies) will not be required to contribute to a loss. Any reference to Contractor's coverage being excess to other additional insured coverage available to the additional insureds shall be deleted unless said additional insured carrier agrees to share with other additional insured carriers.

d. The policy must include Additional Insured Form CG2010 (11/85) (if available) or commercially available equivalent. Other acceptable forms include 2010 1001 plus 2037 1001 and 2010 0704 plus 2037 0704. Owner and Kendall County Water Control and Improvement District No. 3A must be named as additional insureds on the General Liability Policy. Blanket endorsements are acceptable if in the proper form. If form requires additional insureds to be scheduled, the aforementioned entities shall be scheduled. The actual endorsement must be provided to Owner. The endorsement must include coverage arising out of both Contractor's ongoing and completed operations. The endorsement must identify named insured and additional insureds and must include policy number and expiration date.
Coverage provided to additional insureds must be at least as broad as that provided to Contractor and may not contain any additional exclusionary language or limitations applicable to the additional insureds.

e. The form of the policy must be a Comprehensive Form, or it must include all of the following:

Blanket Contractual Liability
Broad Form Property Damage
Collapse / Structural Injury
Damage by Blasting & Explosion
Damage to Property
Independent Contractors
Owners / Contractors
Personal / Advertising Injury
Premises / Operations
Products / Completed Operations
Protective
Subsidence
Underground
"XCU" Coverage

f. Policies containing exclusions for residential construction, condominiums, multi-family, townhomes, and/or attached product are not acceptable.

8. Automobile Policy Requirements $1,000,000 Minimum Limits

a. The minimum limits of the policy shall be $1,000,000 for bodily injury per person; $1,000,000 property damage; and $1,000,000 combined single limit per accident, including uninsured and under-insured motorist coverage.

b. The policy must include Any Auto, or all of the following: All Owned, Leased Autos, Non-Owned Autos, and Hired Autos.

9. Workers' Compensation and Employer's Liability Policy Requirements

a. The minimum limits of the policy shall be $1,000,000.

b. The policy must include Employer's Liability - Each Accident; Disease – Policy Limits; Disease – Each Employee, and a Waiver of Subrogation in favor of Owner on Form WC 00 03 13 (4/84) or equivalent.

c. For elective workers' compensations states, Contractor shall procure worker's compensation insurance, have a qualified self insured plan, or submit details regarding how employee injuries are handled for Owner's review. If leased workers are used, Alternate Employer endorsement from leasing company naming Contractor as alternate employer is required (Form WC 00 03 01 A, or equivalent).

10. Umbrella Liability shall be in the amount of $2,000,000 per occurrence; $2,000,000 general aggregate.

SC-5.11. Add the following new Paragraph immediately after Paragraph 5.10:

5.11. Workers' Compensation Insurance Coverage.

In addition to other insurance requirements stipulated herein, the Contractor shall comply with all requirements of 28 TAC 110.110 and other requirements outlined in this section. Definitions contained in this section are for this section only."

5.11.A. Definitions:

Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or Owner's employees providing services on a project, for the duration of the project."
Duration of the project - includes the time from the beginning of the work on the project until the Contractor's/person's work on the project has been completed and accepted by the Owner.

"Persons providing services on the project ("subcontractor") - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the project regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. Services include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project.

"Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets."

5.11.B. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the Contractor providing services on the project, for the duration of the project."

5.11.C. The Contractor must provide a certificate of coverage to the Owner prior to being awarded the contract."

5.11.D. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner showing that coverage has been extended."

"5.11.E. The Contractor shall obtain from each person providing services on a project, and

provide to the Owner:

(1) a certificate of coverage, prior to that person beginning work on the project, so the Owner will have on file certificates of coverage showing coverage for all persons providing services on the project; and

(2) no later than seven calendar days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project."

5.11.F. The Contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter."

5.11.G. The Contractor shall notify the Owner in writing by certified mail or personal delivery, within 10 calendar days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project."

5.11.H. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage."

5.11.I. The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

(1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;

(2) provide to the Contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

(3) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(4) obtain from each other person with whom it contracts, and provide to the Contractor:

(a) a certificate of coverage, prior to the other person beginning work on the project; and

(b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(6) notify the Owner in writing by certified mail or personal delivery, within 10 calendar days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

(7) contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (7), with the certificates of coverage to be provided to the person for whom they are providing services."

5.11.J. By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the TWCC's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions."

5.11.K. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the Owner to declare the contract void if the Contractor does not remedy the breach within ten calendar days after receipt of the notice of breach from the Owner."

5.11.L. The text for the notice prescribed in 5.11.G. shall read as follows:

REQUIRED WORKERS' COMPENSATION COVERAGE

The law requires that each person working on this site or providing services related to this construction project must be covered by workers' compensation insurance. This includes persons providing, hauling, or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee."

"Call the Texas Workers' Compensation Commission at 512-440-3789 to receive information on the legal requirement for coverage, to verify whether your employer has provided the required coverage, or to report an employer's failure to provide coverage."

5.11.M. Contractor shall require that all insurance policies in any way related to the Work and maintained by Contractor, as well as by all subcontractors of every tier, be endorsed specifically to name Owner, Developer and Engineer and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of Owner, Developer and Engineer as additional insureds, excluding however Worker's Compensation Insurance, and to provide that each underwriter waives its right of subrogation against the additional insureds. All of the aforesaid policies shall be further endorsed to provide that they are primary coverages and not in excess of any other insurance available to Owner, and without rights of contribution or recovery against any of the insureds or from any such other insurance available to Owner. Evidence of such specific endorsements shall be furnished with Contractor's Certificate of Insurance.

SC-6.02 Add the following new paragraph immediately after Paragraph 6.02.A.:

C. Contractor shall, in addition to all of the other obligations imposed by the Agreement and the Contract Documents upon Contractor, and at Contractor's own cost and expense, work such overtime as may be necessary, in the opinion of Owner to meet the progress schedule issued by Owner from time to time and approved, or deemed approved, by Contractor

SC-6.03 Add the following new paragraph immediately after Paragraph 6.03.C.:

D. Except as otherwise provided herein, all materials, workmanship and Work, if not otherwise designated by the Contract Documents, shall be subject to inspection, examination and testing by or for Owner at any and all times during manufacture and/or construction and at any and all places when such manufacturing and/or construction are carried on. Contractor shall cooperate with Owner, and any third party inspectors retained by Owner, to permit a thorough inspection

of the Work and to correct any deficiencies discovered during such inspections. Owner shall have the right to reject improper or defective material, workmanship or Work or require correction without charge to Owner. Contractor shall promptly segregate and remove rejected material from a Project Site. Nothing contained in this Paragraph 6.03.D. shall in any way restrict the rights of Owner under any warranty by Contractor of material, workmanship or Work. Contractor acknowledges and agrees that Owner has no obligation or duty to perform continuous or comprehensive inspections of any such materials, workmanship or Work. No such inspection, examination, testing or approval by or for Owner shall be construed as an inspection or approval of material, workmanship or Work not in compliance with the Agreement, the Contract Documents or applicable Laws. Neither the inspections referred to in this Paragraph 6.03.D., nor the failure to inspect, shall in any way relieve Contractor of its sole responsibility for properly performing the Work in accordance with the Agreement, the Contract Documents and applicable Laws, or relieve Contractor of any of its liabilities or obligations, under the Agreement, under Law or otherwise. Contractor agrees to reimburse Owner for any lender, Department of Veterans Affairs ("VA") and/or Federal Housing Administration ("FHA"), city, county, or any other public agency reinspection fees caused by its incomplete or faulty workmanship and/or materials.

SC-6.10 Delete Paragraph 6.10.A in its entirety and insert the following in its place:

A. The Contract Price shall be deemed to include any obligation Contractor may have to pay Federal, State and local taxes, tariffs and duties with respect to the Agreement. All taxes levied or assessed against Owner arising out of the Agreement or the performance of any Work shall be paid by Contractor. If Contractor is not required to pay or is able to obtain a refund in whole or in part of any such tax which was expressly included in the Contract Price, the Contract Price shall be correspondingly decreased for the benefit of Owner.

SC 7.01 Add the following new paragraph immediately after Paragraph 7.01.C.:

D. In carrying out the Work, Contractor shall take all necessary precautions to protect the Work and the work of others from damage caused by Contractor's operations. In the event that Contractor causes damage to any Project or to the property of Owner or others, Contractor shall promptly remedy such damage to the satisfaction of Owner and any other applicable party. In the event Contractor fails to remedy such damage to Owner's reasonable satisfaction within five (5) days of notice thereof from Owner, Owner may so remedy the damage itself and deduct the cost thereof from the Contract Price.

SC-10.01 Add the following new paragraph immediately after Paragraph 10.01.A. and renumber existing Paragraph 10.01.B to Paragraph 10.01.C:

B. Prior to the commencement of any Changes in the Work, Contractor shall submit a written claim for any required adjustment to the Contract Price based upon either (i) the unit prices as established in Paragraph 1.09 of the Contractor's Bid as attached to the Agreement, or (ii) the percentages as established in Paragraph 1.10 of the Contractor's Bid. Such adjustment shall be accepted in writing by Owner unless Owner believes such adjustment to be inequitable. If Owner and Contractor cannot agree on the amount of the addition or deletion, Contractor shall nonetheless timely perform the Work unless it receives Owner's written direction to the contrary.

SC-10.02 Add the following new paragraph immediately after Paragraph 10.02.A.:

B. Notwithstanding Paragraph 10.02.A, if Contractor makes any other changes to the Work without written direction from Owner, such change constitutes an agreement by Contractor that it will not be paid for that changed work even if Contractor claims to have received verbal direction from Owner or any form of direction, written or otherwise, from any other person or entity. In addition, Contractor shall be liable for any and all losses, costs, expenses, damages, and liabilities of any nature whatsoever associated with or in any way arising out of any such change made without written direction from Owner. The parties hereto specifically contemplate and agree that no verbal or oral modifications will be binding to the Agreement.

SC-11.01 Add the following new paragraph immediately after Paragraph 11.01.A.5.i.:

j. Contractor shall obtain and pay for any permits required to complete the Work.

SC-14.02 Add the following new paragraphs immediately after Paragraph 14.02.A.3.:

4. Unless otherwise prohibited by Law, any invoices or other requests for payment, in whatever form, received six (6) months or more after Work has been completed shall not be honored.

5. In order for any invoice or other request for payment for Work (all such invoices or requests for payment being referred to herein as an "invoice") to be "properly prepared", all of the applicable requirements set forth in the Agreement must have been satisfied with respect to such invoice and all the following must be true with respect to such invoice:

a. Contractor's insurance policies are in full force and effect in compliance with Paragraph 5.04.

b. The portion of the Work which is the subject of the invoice is satisfactorily complete and in conformity with the Contract Documents in the opinion of Engineer at the time of receipt of the invoice. All material and workmanship furnished or performed by Contractor shall be further subject to final inspection, tests, and acceptance by or for Owner upon completion of all Work and whether or not previously paid for by Owner. At any and all proper times during the manufacture or performance of the Work, all materials and workmanship furnished or performed by Contractor shall be subject to inspection, tests, and approval by an inspector of Owner, at any and all places where such manufacture or performance shall be carried on. Failure to make inspections or tests or to discover faulty workmanship or materials shall not prejudice the rights of Owner on final inspection and tests. All expenses of tests and inspections to prove or establish the acceptability of performance of Work or material hereunder and any damage caused by such test shall, if the material or Work fails the test, be borne by Contractor.

c. The invoice must contain the identifying number of this Agreement (and addendum number, if applicable) as assigned by Owner.

d. All prices contained in the invoice must agree in all respects with the applicable price schedule set forth in the Agreement, as the same may be modified pursuant to the Agreement.

e. The invoice must show the gross amount billed, the amount of the retainage, if applicable, and the net amount billed.

f. Neither tax, freight nor other similar charges shall be added to the invoice. The parties recognize that the Contract Price includes all such costs.

g. The invoice shall not demand any progress payment other than those permitted in the Agreement.

h. The invoice shall be accompanied by appropriate conditional lien releases from all persons or entities who might claim liens arising out of Contractor's performance of the Work to date (see Paragraph 14.09).

6. Owner shall have no obligation to pay Contractor for labor, materials, equipment or services or for any Changes in the Work unless the invoice for such Changes in the Work comply with Paragraph 14.02.A.5., other than clause d. thereof. Any Changes in the Work must be documented in a change order or addendum to this Agreement signed by Owner ("Change Order"), which executed Change Order must be obtained by Contractor prior to its commencement of such Changes in the Work. In emergency situations only, Owner may give a verbal Change Order approval and request Contractor immediately start such emergency work. Contractor may proceed on that basis; however, it is Contractor's responsibility to secure an appropriate Change Order prior to invoicing the emergency Changes in the Work.

7. Except where prohibited by Law, Owner has the right to make any payment due to Contractor hereunder by joint check to Contractor and its subcontractors, material suppliers or employees which have performed work or furnished materials under this Agreement without regard to whether or not lien releases have been submitted to Owner.

SC-14.02 Delete Paragraph 14.02.C.1 in its entirety and insert the following in its place:

1. Fifteen days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

SC-14.07 Add the following new paragraph immediately after Paragraph 14.07.C.1.:

D. Maximum Payments:

1. Notwithstanding the provisions of Article 14 hereof, but excluding the payment of retainage, which shall be governed by Paragraph 6.02 of the Agreement, Owner shall not be obligated to pay any amount to Contractor if such payment would render the balance in the Contract Price then due to Contractor to be less than the sum of (i) the retainage plus (ii) the amount necessary for Contractor to complete or correct all of its then-remaining obligations for the Work. Owner shall have no obligation to pay Contractor for labor, materials, equipment or services or for any Changes in the Work unless such Changes in the Work are expressly covered by a Change Order signed by Owner, which executed Order was obtained by Contractor prior to its commencement of such Changes in the Work.

SC-14.10 Add the following new paragraph immediately after Paragraph 14.09.A.2.:

14.10 Withholding Payments

A. Owner may withhold, or on account of subsequently-discovered evidence nullify, the whole or part of any payment under the Agreement to the extent necessary to protect Owner from loss, including costs and attorneys' fees, expenses and court costs, on account of (i) defective Work not remedied; (ii) claims or liens filed or reasonable evidence indicating the

probable filing of claims or liens; (iii) failure of Contractor to make payments promptly to its subcontractors, vendors, suppliers or laborers for material, labor or fringe benefits; (iv) reasonable doubt that the Work can be completed for the balance then unpaid; (v) damage to the work of another contractor; (vi) claims made or penalties assessed against Owner or Contractor for failure of Contractor to comply with Laws; (vii) any dispute or controversy between the parties hereto concerning the Agreement, or any dispute concerning Contractor and another contractor or vendor; (viii) breach of the Agreement; (ix) failure to pay, on behalf of any employee, federal or State withholding, FICA, employee benefits (including union trust fund or cooperative committee payments, SIIS and ESD, if applicable), or any other required payments on behalf of any employee to a governmental agency; (x) any monies that are claimed by Owner or any third party against Contractor for injuries incurred as a result of any Work performed by Contractor; or (xi) any other ground for withholding payment allowed by Law or as otherwise provided in the Agreement. When and to the extent that the above matters are satisfactorily rectified in the sole judgment and discretion of Owner, such withheld amounts as may then be due and owing shall be paid or credited to Contractor.

SC-14.11 Add the following new paragraph immediately after Paragraph 14.10.A. (as inserted above):

14.11 Backcharges

A. Applicable backcharges shall include: (a) the costs of replacement, repair or warranty work performed by Owner or third parties for the benefit of Owner in Owner's reasonable judgment and (b) any increases in the cost of any Work incurred by Owner in excess of the prices for such Work as agreed with Contractor in the Agreement in Owner's retention of replacement contractors. In addition, in order to cover, among other things, the projected cost of warranty work which may be required to be performed by third parties (other than Contractor) and Owner's administrative costs associated with retention of replacement contractor(s), Contractor acknowledges that Owner will be adding to any backcharges assessed under the terms of the Agreement an administrative charge in an amount equal to fifteen percent (15%) of each such backcharge and Contractor agrees to pay such administrative charge to Owner concurrently with the payment of such backcharge. In the event that the retainage or amount of any other final payment is insufficient to satisfy the backcharge(s), including administrative charges, Owner shall have the right to require Contractor to pay Owner the amount of the backcharge(s) (including the applicable administrative charges) within fifteen (15) days after Contractor's receipt of an invoice therefor. Contractor's failure to make such payment in the prescribed period shall constitute a default in the Agreement.

SC-15.05 Add the following new paragraphs immediately after Paragraph 15.04.B.:

15.05 Bankruptcy.

A. In the event of the appointment of a receiver for Contractor or in the event Contractor makes an assignment for the benefit of creditors, Owner may terminate the Agreement by giving three (3) business days written notice to Contractor and its surety, if any. If a voluntary or involuntary petition under any federal or state bankruptcy or debtor protection Law is filed with respect to Contractor, Owner may terminate the Agreement by giving three (3) business days written notice, to Contractor.

B. If Contractor is not performing the Work in accordance with the Agreement at the time of any bankruptcy filing or the entering an order for relief, or at any subsequent time, Owner, while awaiting the decision of Contractor or its trustee to reject or to accept and provide adequate assurance of its ability to perform hereunder, may immediately avail itself of such remedies as are reasonably necessary to maintain the progress of the completion of any

Project or Projects which are the subject of the Agreement. Owner may offset against the Contract Price all costs incurred in pursuing any of the remedies provided hereunder, including, but not limited to, reasonable overhead, profit and attorneys' fees, expenses and court costs. Contractor shall be liable for the payment of any amount by which such expense may exceed the unpaid balance of the Contract Price.

C. In the event that Contractor has proceeded to file a petition with the Bankruptcy Court under the applicable bankruptcy Laws during the pendency of any Claim, Contractor agrees that, upon request of Owner, it shall immediately stipulate to an order granting relief from any automatic stay then in effect so as to allow Owner to proceed against any insurance carrier covering Contractor for the Work or any obligations described in the Agreement as well as any insurance carrier having issued certificates or endorsements to Owner, its parent, subsidiaries and/or affiliates as additional insureds.

SC-15.06 Add the following new paragraph immediately after Paragraph 15.05.C. (as inserted above):

15.06 Breach of One Contract is Breach of All

A. Contractor and Owner acknowledge that during its performance of any Work entered into pursuant to the Agreement, Contractor may also be under contract with Owner or one or more of its affiliates for work at Owner's (or such affiliates) other projects or subdivisions under other agreements. At Owner's sole election, a breach in the performance of any of Contractor's obligations under the Contract Documents pursuant to the Agreement shall constitute a breach in Contractor's obligations under any other agreement(s) with Owner or its affiliates and a breach under any other agreement(s) with Owner shall also constitute a breach of Contractor's obligations under the Contract Documents pursuant to the Agreement. In such event, and in addition to Owner's rights and remedies under the Agreement, Owner or such affiliates may terminate any or all of such other agreements, may withhold monies due or to become due on any of such other agreements and apply the same toward payment of any damages suffered on that or any other agreement.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SUPPLEMENTARY CONDITIONS

Developer as Owner for Purposes of Payment

DEVELOPER AS OWNER FOR PURPOSES OF PAYMENT. Notwithstanding any other items, conditions, or provisions of the general or special conditions or any other provisions of the Contract Documents to the contrary Kendall County Water Control and Improvement District No. 3A, the ('District") shall be deemed and considered as Owner for all purposes under the Contract Documents, except that Pulte Homes of Texas, L.P. ("Developer") shall be considered the "Owner" for purposes of making payments to the Contractor or to any other party pursuant to or In relation to the Contract Documents of all or any portion of the Contract Price and for paying all or any costs or damages that might ever be due, including any costs associated with any change orders to the Contract. The District and Developer shall each approve all of the invoices, certificates and supporting documentation in connection with a request for payment. The Contractor agrees to and shall look solely to Developer for payment of all invoices, change orders, or other sums or claims, of whatever nature, due or to become due under or related to the Contract, and the District shall never be responsible or liable to the Contractor or any other party for such payments. Developer agrees to make all payments due under the Contract in accordance with its terms and agrees to all conditions and provisions herein. Failure by Developer to make such payments to the Contractor shall constitute a default by Owner and shall entitle the Contractor to all rights and remedies arising under the Contract Documents for a default in payment of sums due the Contractor pursuant to the Contract Documents; provided, however, the District shall have no obligation for payment of sums due or to become due under the Contract including any damages and Contractor shall look solely to the Developer for any such payment.

Developer reserves the right to assign its obligations hereunder to District, subject to written acceptance thereof by the District (at District's sole option). A copy of any such assignment and the acceptance thereof by the District shall be provided to the Contractor and thereafter the District shall be obligated to make all payments thereafter becoming due to the Contractor pursuant to this Contract and the obligations of Developer contained in the first paragraph of these Special Conditions shall terminate.

For purposes of convenient administration of this Contract, District may require Developer to advance funds due from time to time in order to make payments due the Contractor pursuant to this Contract from such funds; provided, however, no such payment by District will obligate District to make further payments due the Contractor pursuant to this Contract unless and until District has accepted an assignment of Developer's obligations hereunder and a copy of the assignment and the District's acceptance is delivered to the Contractor, whereupon the District shall become liable for payment to the extent of the assignment.

If Owner breaches its obligations in any respect under the Contract, before exercising any remedy the Contractor shall give written notice to Developer and District at the addresses below specifying the breach and the steps necessary to cure the breach and Developer shall have the right and power, within thirty (30) days after receipt of such notice, to cure or cause the breach to be cured, if it so elects, before Contractor exercises any of its remedies under the Contract.

Kendall County Water Control and Improvement District No. 3A
c/o SK Law
Attn: Julianne Kugle
1980 Post Oak Boulevard, Suite 1380
Houston, Texas 77056

Pulte Homes of Texas, L.P.
a Texas limited partnership
c/o Coats Rose
Attn: John Cannon
9 Greenway Plaza, Suite 1000
Houston, Texas 77046

The District, Developer and Contractor hereby acknowledge that these Special Conditions to the Agreement are accepted regarding the project described as Biedenharn Subdivision Unit 1.

Effective April ____, 2021.

Kendall County Water Control and Improvement District No. 3A

By: _____

Name: Felipe Gonzalez

Title: VP of Land Development

Date: 6/22/21

V. K. Knowlton Construction & Utilities, Inc.
Contractor

By: _____

Name: SHAKOTAH KNOWLTON

Title: VICE PRESIDENT

Date: 6/17/21

Pulte Homes of Texas, L.P.
a Texas limited partnership

By: Felipe Gonzalez,
Texas,
its authorized agent

By: _____

Name: Felipe Gonzalez

Title: VP of Land Dev.

CONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

Project: Biedenharn Subdivision Unit 1_____ Job No. _____

On receipt by the signer of this document of a check from _____ (maker of check) in the sum of $_____ payable to _____ (payee or payees of check) and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective to release any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position that the signer has on the property of Kendall County Water Control and Improvement District No.3A (owner) located at Corley Road & Vallerie Lane (location) for the Project described above to the following extent: the installation of streets, drainage, sanitary sewer, water, dry utility conduit, and SW3P infrastructure of single-family residential subdivision. (job description).

This release covers a progress payment for all labor, services, equipment, or materials furnished to the property or to_____(person with whom signer contracted) as indicated in the attached statement(s) or progress payment request(s), except for unpaid retention, pending modifications and changes, or other items furnished.

Before any recipient of this document relies on this document, the recipient should verify evidence of payment to the signer.

The signer warrants that the signer has already paid or will use the funds received from this progress payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project in regard to the attached statement(s) or progress payment request(s).

The undersigned hereby represents and warrants that he or she is duly authorized agent of the signer and is fully authorized to sign this Lien Waiver and Release.

It is the intent of this release to comply with the provisions of Subchapter L of Chapter 53 of the Property Code of the State of Texas.

_____.
Date: _____
By: _____
Printed Name: _____
Title:_____

STATE OF _____ §
COUNTY OF _____ §

This instrument was acknowledged before me on the ___ day of _____, 20___ by _____, _____ of _____, a limited company, for the consideration herein expressed, on behalf of same.

_____
Notary Public in and for the
STATE OF _____

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. IT IS PROHIBITED FOR A PERSON TO REQUIRE YOU TO SIGN THIS DOCUMENT IF YOU HAVE NOT BEEN PAID THE PAYMENT AMOUNT SET FORTH BELOW. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

UNCONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

Project: _Biedenharn Subdivision Unit 1_____

Job No. _____

The signer of this document has been paid and has received a progress payment in the sum of **$_____** for all labor, services, equipment, or materials furnished to the property or to _____(person with whom signer contracted) on the property of Kendall County Water Control and Improvement District No.3A (owner) located at Corley Road and Vallerie Lane (location) to the following extent: the installation of streets, drainage, sanitary sewer, water, dry utility conduit, and SW3P infrastructure of single-family residential subdivision. (job description).

The signer therefore waives and releases any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position that the signer has on the above referenced project to the following extent:

This release covers a progress payment for all labor, services, equipment, or materials furnished to the property or to _____ (person with whom signer contracted), as indicated in the attached statement(s) or progress payment request(s), except for unpaid retention, pending modifications and changes, or other items furnished.

The signer warrants that the signer has already paid or will use the funds received from this progress payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project in regard to the attached statement(s) or progress payment request(s).

The undersigned hereby represents and warrants that he or she is duly authorized agent of the signer and is fully authorized to sign this Lien Waiver and Release.

It is the intent of this release to comply with the provisions of Subchapter L of Chapter 53 of the Property Code of the State of Texas.

_____.
Date: _____
By: _____
Printed Name: _____
Title:_____

STATE OF _____ §

COUNTY OF _____ §

This instrument was acknowledged before me on the ___ day of _____, 20___ by _____, _____ of **_____.**, a limited company, for the consideration herein expressed, on behalf of same.

_____
Notary Public in and for the
STATE OF _____

CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

Project: Biedenharn Subdivision Unit 1 Job No. _____

On receipt by the signer of this document of a check from _____ (maker of check) in the sum of **$**_____ payable to _____ (payee or payees of check) and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective to release any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position that the signer has on the property of Kendall County Water Control and Improvement District No.3A. (owner) located at Corley Road and Vallerie Lane to the following extent: the installation of streets, drainage, sanitary sewer, water, dry utility conduit, and SW3P infrastructure of single-family residential subdivision. (job description).

This release covers the final payment to the signer for all labor, services, equipment, or materials furnished to the property or to _____(person with whom signer contracted).

Before any recipient of this document relies on this document, the recipient should verify evidence of payment to the signer.

The signer warrants that the signer has already paid or will use the funds received from this final payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project up to the date of this waiver and release.

The undersigned hereby represents and warrants that he or she is duly authorized agent of the signer and is fully authorized to sign this Lien Waiver and Release.

It is the intent of this release to comply with the provisions of Subchapter L of Chapter 53 of the Property Code of the State of Texas.

_____
Date: _____
By: _____
Printed Name: _____
Title:_____

STATE OF _____ §
COUNTY OF _____ §

This instrument was acknowledged before me on the ___ day of _____, 20___ by _____, _____ of _____., a corporation, for the consideration herein expressed, on behalf of same.

_____
Notary Public in and for the
STATE OF _____

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. IT IS PROHIBITED FOR A PERSON TO REQUIRE YOU TO SIGN THIS DOCUMENT IF YOU HAVE NOT BEEN PAID THE PAYMENT AMOUNT SET FORTH BELOW. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

UNCONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

Project: Biedenharn Subdivision Unit 1 Job No. _____

The signer of this document has been paid in full for all labor, services, equipment, or materials furnished to the property or to _____ (person with whom signer contracted) on the property of Kendall County Water Control and Improvement District No.3A. (owner) located at Corley Road and Vallerie Lane (location) to the following extent the installation of streets, drainage, sanitary sewer, water, dry utility conduit, and SW3P infrastructure of single-family residential subdivision. (job description).

The signer therefore waives and releases any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position**.**

The signer warrants that the signer has already paid or will use the funds received from this final payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project up to the date of this waiver and release.

The undersigned hereby represents and warrants that he or she is duly authorized agent of the signer and is fully authorized to sign this Lien Waiver and Release.

It is the intent of this release to comply with the provisions of Subchapter L of Chapter 53 of the Property Code of the State of Texas.

_____**.**
Date:_____
By: _____
Printed Name: _____
Title:_____

STATE OF _____ §
COUNTY OF _____ §

This instrument was acknowledged before me on the ___ day of _____, 20___ by _____, _____ of_____**.**, a limited company, for the consideration herein expressed, on behalf of same.

_____
Notary Public in and for the
STATE OF _____

GOVERNING CONSTRUCTION SPECIFICATIONS

All specifications applicable to this project are identified as follows:

- Kendall County local development guidelines and specifications within County right of way.
- City of Boerne local development guidelines and specifications within City right of way.
- Bandera Electric Coop local development guidelines and specifications for electric infrastructure.
- All construction to follow general TCEQ construction guidelines.

STREET AND DRAINAGE CONSTRUCTION PLANS

- C1 - ULTIMATE MASTER DRAINAGE PLAN
- C2 - ULTIMATE MASTER DRAINAGE PLAN - RATIONAL METHOD CALCULATIONS
- C3 - SCENIC LOOP IMPROVEMENTS
- C4 - SCENIC LOOP IMPROVEMENTS
- C4A - SCENIC LOOP IMPROVEMENTS STRIPING PLAN
- C5 - STREET PLAN & PROFILE - CORLEY FARMS DRIVE - LEFT
- C6 - STREET PLAN & PROFILE - CORLEY FARMS DRIVE - LEFT
- C7 - STREET PLAN & PROFILE - CORLEY FARMS DRIVE - RIGHT
- C8 - STREET PLAN & PROFILE - CORLEY FARMS DRIVE - RIGHT
- C9 - STREET PLAN & PROFILE - CORLEY FARMS DRIVE
- C10 - STREET PLAN & PROFILE - CORLEY RIDGEWAY
- C11 - STREET PLAN & PROFILE - WHITE BARN COVE
- * C12 - CITY OF BOERNE STANDARD STREET DETAILS
- * C13 - TRAFFIC SIGNAGE AND STRIPING PLAN
- * C14 - TRAFFIC SIGNAGE AND STRIPING PLAN
- * C15 - TXDOT PAVEMENT MARKING DETAILS
- C16 - TURN LANE PLAN
- C17 - TURN LANE PLAN
- C18 - TURN LANE PLAN
- C18A - TURN LANE PLAN
- C19 - DRAIN "A" PLAN AND PROFILE
- C19A - DRAIN "G" PLAN AND PROFILE
- C20 - DRAIN "C" PLAN AND PROFILE
- C21 - DRAIN "B" & "D" PLAN AND PROFILE
- C22 - DRAIN "E" PLAN AND PROFILE
- C23 - DRAIN "F" PLAN AND PROFILE
- C23A - DRAIN "H" & "I" PLAN AND PROFILE
- C23B - DRAIN "J" PLAN AND PROFILE
- * C23C - SIDEWALK BOX DRAIN PLAN AND PROFILE
- * C23D - SIDEWALK BOX DRAIN PLAN AND PROFILE
- * C24 - TXDOT PRECAST 3',4'&5' CULVERT BOXES & COB CONC. RIP-RAP DETAILS
- * C25 - TXDOT FLARED WING DETAIL
- * C26 - TXDOT PARALLEL WING DETAIL
- * C27 - TXDOT SAFETY END TREATMENT DETAILS
- * C28 - SINGLE BOX CULVERTS CAST-IN-PLACE DETAIL
- * C29 - TXDOT SAFETY END TREATMENT PARALLEL DRAINAGE 12" TO 72"
- * C30 - TXDOT CONCRETE HEADWALLS NON-SKEWED DETAIL
- C31 - DETENTION POND "SOUTHWEST POND"
- C31A - DETENTION POND "SOUTHWEST POND"
- C31B - DETENTION POND "SOUTHWEST POND"
- C32 - DETENTION POND "SOUTHWEST POND"
- C33 - DETENTION POND PLAN "SOUTHEAST POND"
- C34 - DETENTION POND PLAN "SOUTHEAST POND"

* STANDARD DETAILS ADOPTED FOR THIS CONSTRUCTION SET.

LOCATION MAP

VICINITY MAP

CORLEY FARMS UNIT 1

STREET AND DRAINAGE CONSTRUCTION PLANS

DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO, TX 78259
TEL: (210) 496-1985
FAX: (210) 496-0449

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

DRAWN BY	DATE	
C3	04/27/2021	
CHECKED BY	PROJECT NO.	
JC/DDC	03481.000	

STATE OF TEXAS
DAVID D. CUPIT II
103070
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

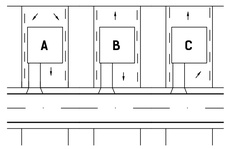
CIVIL ENGINEER:

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

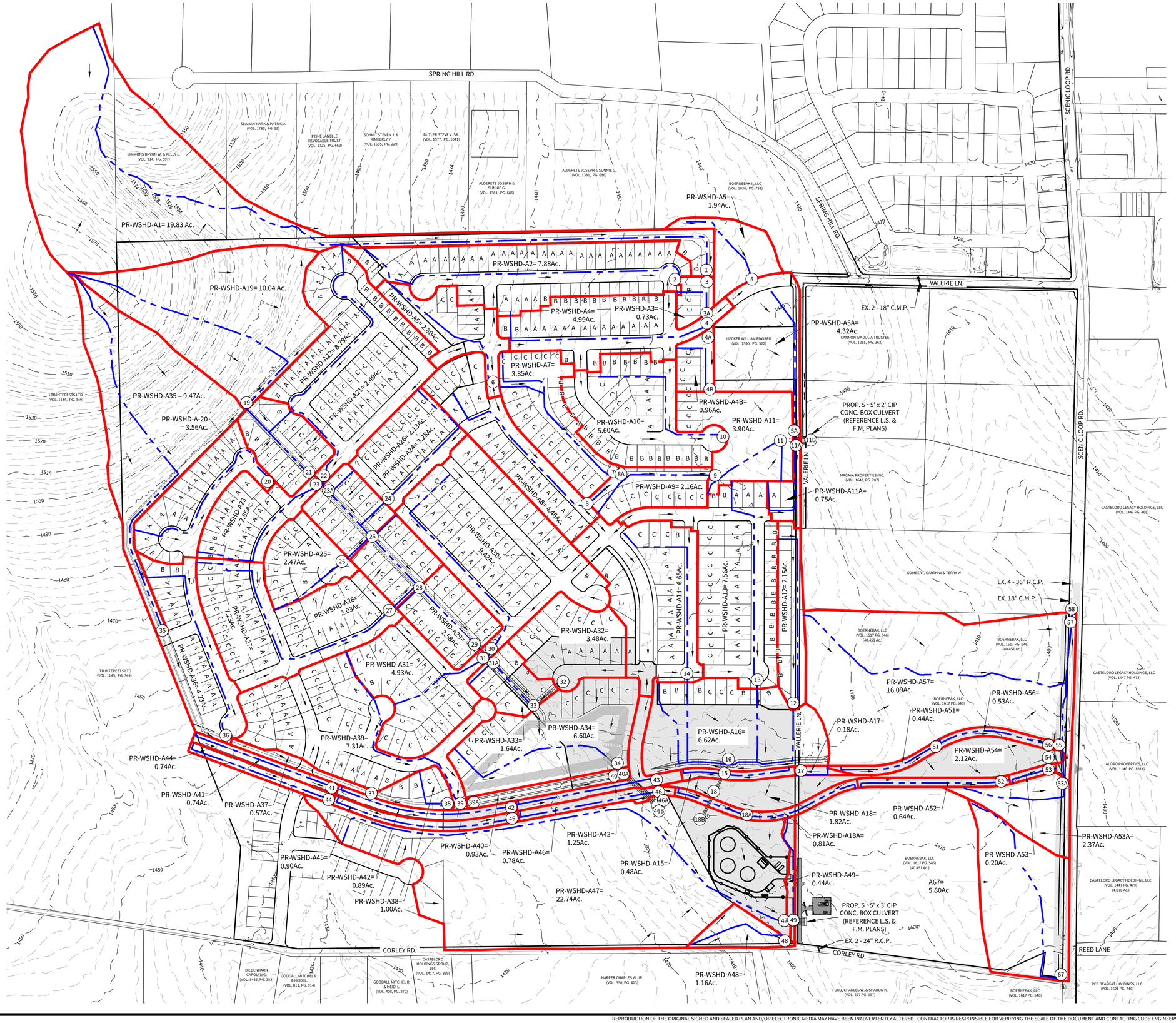
SCALE: 1" = 200'

LEGEND

- UNIT BOUNDARY
- DRAINAGE AREA
- Tc FLOW PATH
- ACCUMULATION POINT (XX)
- FLOW PATH



TYPICAL LOT SITE PLAN
N.T.S.



CUDEENGINEERS.COM

CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

ULTIMATE MASTER DRAINAGE PLAN

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

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

STATE OF TEXAS
DAVID D. CUPIT II
122876
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1

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:\03481\DWG\Drawings\C1 ULTIMATE MASTER DRAINAGE PLAN.dwg 4/29/2021 9:29:33 AM cuelgadmin

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

Project Name: CORLEY FARMS SUBDIVISION

HYDROLOGY					Overall	INTENSITY			Q FLOW			
Drainage Shed/ Computation Point	Area (Ac.)	AREA OF ACCUMULATION (Ac.)	Rational Shed Area (Ac.)	C	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed/ Computation Point
A1/1	19.83	A1	19.83	0.66	33.00	3.54	5.42	7.76	46.38	70.99	101.59	A1/1
A2/2	7.88	A2	7.88	0.66	23.00	4.32	6.60	9.43	22.47	34.32	49.02	A2/2
-/3	0.00	A1:A2	27.71	0.66	33.00	3.54	5.42	7.76	59.08	90.39	129.30	-/3
A3A/-	0.73	A3A	0.73	0.66	9.00	6.58	10.15	14.53	3.17	4.89	7.00	A3A/-
-/3A	0.00	A1:A3A	0.00	0.66	33.00	3.54	8.16	7.76	59.08	90.39	129.30	-/3A
A4/4	4.99	A4	4.99	0.66	15.00	5.33	-	11.65	17.55	26.87	38.37	A4/4
-/4A	0.00	A1:A4	33.43	0.66	23.00	4.32	6.60	9.43	62.98	96.34	137.73	-/4A
A4B/-	0.96	A4B	0.96	0.66	10.00	6.20	9.55	13.65	3.93	6.05	8.65	A4B/-
-/4B	0.00	A1:A4B	34.39	0.66	23.00	4.32	6.60	9.43	62.98	96.34	137.73	-/4B
A5/5	1.94	A5	1.94	0.66	20.00	4.64	7.09	-	5.94	9.08	12.92	A5/5
A5A/-	4.32	A5A	4.32	0.66	19.00	4.76	7.28	10.39	13.58	20.75	29.62	A5A/-
-/5A	0.00	A5:A5A	6.26	0.66	19.00	4.76	7.28	10.39	19.22	29.37	41.94	-/5A
A6/6	2.80	A6	2.80	0.66	17.00	5.03	7.69	10.97	9.29	14.20	20.28	A6/6
A7/-	3.85	A7	3.85	0.66	14.00	5.50	8.42	12.03	13.97	21.40	30.56	A7/-
-/7	0.00	A6:A7	6.65	0.66	14.00	5.50	8.42	12.03	21.62	33.10	47.27	-/7
A8/8	4.46	A8	4.46	0.66	15.00	5.33	7.44	11.65	15.69	24.02	34.29	A8/8
-/8A	0.00	A6:A8	11.11	0.66	14.00	5.50	8.42	12.03	36.85	56.42	80.57	-/8A
A9/-	2.16	A9	2.16	0.66	13.00	5.68	8.71	12.44	8.10	12.42	17.74	A9/-
-/9	0.00	A6:A9	13.27	0.66	14.00	5.50	8.42	12.03	43.73	66.98	95.64	-/9
A10/10	5.60	A10	5.60	0.66	19.00	4.76	7.28	10.39	17.60	26.90	38.40	A10/10
A11/-	3.90	A11	3.90	0.66	12.00	5.88	9.02	12.89	15.12	23.22	33.18	A11/-
-/11	0.00	A1:A4B, A6:A11	22.77	0.66	14.00	5.50	8.42	12.03	69.3*	106.14*	151.59*	-/11
A11A/11A	0.75	A11A	0.75	0.66	11.00	6.09	9.36	13.38	3.01	4.64	6.63	A11A/11A
-/11B	0.00	A1:A11A	23.52	0.66	15.00	5.33	7.44	11.65	81.57*	124.91*	178.38	-/11B
A12/12	2.15	A12	2.15	0.66	9.00	6.58	10.15	14.53	9.33	14.41	20.62	A12/12
A13/13	7.56	A13	7.56	0.66	16.00	5.17	7.91	11.30	25.81	39.49	56.38	A13/13
A14/14	6.65	A14	6.65	0.66	22.00	4.42	6.75	9.65	19.40	29.64	42.33	A14/14
A15/15	0.48	A15	0.48	0.66	5.00	7.91	12.39	17.83	2.51	3.92	5.65	A15/15
A16/-	6.62	A16	6.62	0.66	18.00	4.89	7.48	10.67	21.36	32.66	46.63	A16/-
-/16	0.00	A12:A16	23.46	0.66	16.00	5.17	7.91	11.30	60.98	93..28	133.19	-/16
A17/17	0.18	A17	0.18	0.66	5.00	7.91	12.39	17.83	0.94	1.47	2.12	A17/17
A18/-	1.82	A18	1.82	0.66	19.00	4.76	7.28	10.39	5.72	8.74	12.48	A18/-
-/18	0.00	A17:A18	2.00	0.66	19.00	4.76	7.28	10.39	5.72	8.74	12.48	-/18
A18A/18A	0.81	A18A	0.81	0.66	5.00	7.91	12.39	17.83	4.23	6.62	9.53	A18A/18A
-/18B	0.00	A12:A18A	26.27	0.66	16.00	5.17	7.91	11.30	65.80	100.64	143.70	-/18B
A19/19	10.04	A19	10.04	0.44	20.00	4.64	7.09	10.13	20.50	31.33	44.73	A19/19
A20/20	3.56	A20	3.56	0.66	13.00	5.68	8.71	12.44	13.34	20.46	29.23	A20/20
A21/-	2.49	A21	2.49	0.66	12.00	5.88	9.02	12.89	9.66	18.83	21.18	A21/-
-/21	0.00	A19:A21	16.09	0.66	13.00	5.68	8.71	12.44	35.52	54.42	77.72	-/21
A22/22	8.79	A22	8.79	0.66	16.00	5.17	7.91	11.30	30.01	45.91	65.55	A22/22
A23/23	2.85	A23	2.85	0.66	13.00	5.68	8.71	12.44	10.68	16.38	23.40	A23/23
-/23A	0.00	A19:A23	27.73	0.66	16.00	5.17	7.91	11.30	71.32	109.20	155.94	-/23A
A24/24	3.28	A24	3.28	0.66	21.00	4.53	6.92	9.88	9.80	14.98	21.38	A24/24
A25/25	2.47	A25	2.47	0.66	20.00	4.64	7.09	10.13	7.57	11.56	16.51	A25/25
A26/-	2.13	A26	2.13	0.66	12.00	5.88	9.02	12.89	8.26	12.68	18.12	A26/-
-/26	0.00	A19:A26	35.61	0.66	16.00	5.17	7.91	11.30	90.35	138.31	197.52	-/26
A27/27	7.23	A27	7.23	0.66	21.00	4.53	6.92	9.88	21.61	33.01	47.14	A27/27
A28/-	2.03	A28	2.03	0.66	15.00	5.33	7.44	11.65	7.14	10.93	15.61	A28/-
-/28	0.00	A19:A28	44.87	0.66	16.00	5.17	7.91	11.30	113.47	173.67	248.00	-/28
A29/-	2.58	A29	2.58	0.66	14.00	5.50	8.42	12.03	9.36	14.34	20.48	A29/-
-/29	0.00	A19:A29	47.45	0.66	16.00	5.17	7.91	11.30	121.50	185.96	265.56	-/29
A30/30	9.42	A30	9.42	0.66	25.00	4.13	6.32	9.02	25.70	39.26	56.09	A30/30
A31/31	4.93	A31	4.93	0.66	22.00	4.42	6.75	9.65	14.38	21.98	31.38	A31/31
-/31A	0.00	A19:A31	61.80	0.66	16.00	5.17	7.91	11.30	148.40	227.07	324.28	-/31A
A32/32	3.48	A32	3.48	0.66	21.00	4.53	6.92	9.88	10.40	15.89	22.69	A32/32
A33/-	1.64	A33	1.64	0.66	11.00	6.09	9.36	13.38	6.59	10.13	14.49	A33/-
-/33	0.00	A19:A33	66.92	0.66	16.00	5.17	7.91	11.30	159.92	244.70	349.47	-/33
A34/-	6.60	A34	6.60	0.66	13.00	5.68	8.71	12.44	24.73	37.94	54.19	A34/-
-/34	0.00	A19:A34	73.52	0.66	16.00	5.17	7.91	11.30	178.98*	273.98*	391.29*	-/34
A35/35	9.47	A35	9.47	0.66	19.00	4.76	7.28	10.39	19.84	30.32	43.29	A35/35
A36/-	4.23	A36	4.23	0.66	18.00	4.89	7.48	10.67	13.65	20.87	29.79	A36/-
-/36	0.00	A35:A36	13.70	0.66	19.00	4.76	7.28	10.39	32.73	50.03	71.43	-/36
A37/-	0.18	A37	0.18	0.66	5.00	7.91	12.39	17.83	0.94	1.47	2.12	A37/-
-/37	0.00	A35:A37	13.88	0.66	19.00	4.76	7.28	10.39	32.73	20.03	71.43	-/37
A38/-	1.00	A38	1.00	0.66	12.00	5.88	9.02	12.89	3.88	5.95	8.51	A38/-
-/38	0.00	A35:A38	14.88	0.66	18.00	4.89	7.48	10.67	34.39	52.57	75.06	-/38
A39/39	7.31	A39	7.31	0.66	23.00	4.32	6.60	9.43	20.84	31.84	45.48	A39/39
-/39A	0.00	A35:A39	22.19	0.66	19.00	4.76	7.28	10.39	51.56	78.81	112.54	-/39A
A40/-	0.83	A40	0.83	0.66	5.00	7.91	12.39	17.83	4.33	6.79	9.77	A40/-
-/40	0.00	A35:A40	23.02	0.66	19.00	4.76	7.28	10.39	51.56	78.81	112.54	-/40
-/40A	0.00	A19:A40	96.54	0.66	16.00	5.17	7.91	11.30	223.16*	341.47*	487.66*	-/40A
A41/41	0.74	A41	0.74	0.66	6.00	7.52	11.72	16.83	3.67	5.72	8.22	A41/41
A42/42	0.89	A42	0.89	0.66	7.00	7.17	11.13	15.97	4.21	6.54	9.38	A42/42
A43/43	1.25	A43	1.25	0.66	11.00	6.09	9.36	13.38	5.02	7.72	11.04	A43/43
A44/44	0.74	A44	0.74	0.66	6.00	7.52	11.72	16.83	3.67	5.72	8.22	A44/44
A45/45	0.90	A45	0.90	0.66	7.00	7.17	11.13	15.97	4.26	6.61	9.49	A45/45
A46/46	0.78	A46	0.78	0.66	6.00	7.52	11.72	16.83	3.87	6.03	8.67	A46/46
-/46A	0.00	A43+A46	2.03	0.66	6.00	7.52	11.72	16.83	6.61	10.25	14.69	-/46A
-/46B	0.00	A19:A40+A43+A46	98.57	0.66	16.00	5.17	7.91	11.30	225.90	345.68	493.68	-/46B
A47/-	22.74	A47	22.74	0.74	38.00	3.27	5.01	7.17	54.94	84.25	120.69	A47/-
-/47	0.00	A19:A40+A43+A46:A47	121.31	0.66	16.00	5.17	7.91	11.30	314.83	481.79	688.20	-/47
A48/48	1.16	A48	1.16	0.66	12.00	5.88	9.02	12.89	4.50	6.91	9.87	A48/48
A49/-	0.44	A49	0.44	0.66	12.00	5.88	9.02	12.89	1.71	2.62	3.74	A49/-
-/49	0.00	A19:A40+A43+A46:A49	122.91	0.66	16.00	5.17	7.91	11.30	318.97*	488.14*	697.27*	-/49
A51/51	0.44	A51	0.44	0.66	5.00	7.91	12.39	17.83	2.30	3.60	5.18	A51/51
A52/52	0.51	A52	0.51	0.66	5.00	7.91	12.39	17.83	2.66	4.17	6.00	A52/52
A53/53	0.20	A53	0.20	0.66	5.00	7.91	12.39	17.83	1.04	1.64	2.35	A53/53
A54/54	2.12	A54	2.12	0.66	26.00	4.05	6.18	8.84	5.66	5.65	12.36	A54/54
-/55	0.00	A52:A54	2.83	0.66	26.00	4.05	6.18	8.84	5.66	5.65	12.36	-/55
A56/56	0.53	A56	0.53	0.66	5.00	7.91	12.39	17.83	2.77	4.33	6.24	A56/56
A57/57	16.09	A57	16.09	0.77	29.00	3.81	5.83	8.33	47.22	72.20	103.23	A57/57
-/58	0.00	A52:A54+A56:A57	19.45	0.77	29.00	3.81	5.83	8.33	52.23	79.86	114.17	-/58
A59/59	5.80	A59	5.80	0.77	29.00	3.81	5.83	8.33	17.02	26.03	37.21	A59/59

*REFERENCE STORMWATER REPORT FOR DETENTION POND INFLOW AND OUTFLOW RATES (& SCS HYDROLOGY)

TABLE 6-3: RUNOFF COEFFICIENT ADJUSTMENT FACTORS FOR RATIONAL METHOD

Storm Frequency (years)	C_f
25	1.1
50	1.2
100	1.25

Note: Use $C_f = 1$ *for 10-year form frequency or less.*

NOTE:
RUNOFF COEFFICIENT ADJUSTMENT FACTOR WAS APPLIED TO CITY OF BOERNE RAINFALL INTENSITIES (TABLE 6-5 CITY OF BOERNE SUBDIVISION ORDINANCE)

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 1

ULTIMATE MASTER DRAINAGE PLAN - RATIONAL METHOD CALCULATIONS

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

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

STATE OF TEXAS
DAVID D. CUPIT II
92076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C2

P:\03481\0001\2-Drawings\C2 ULTIMATE MASTER DRAINAGE PLAN - RATIONAL METHOD CALCULATIONS.dwg 2021/04/29 10:04am mwagner

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:

- EXISTING ROW/PROPERTY LINE
- PROPOSED ROW LINE
- EXISTING STREET CENTERLINE
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING GAS LINE — GAS
- EXISTING EDGE OF PAVEMENT
- PROPOSED DRAIN FLOW
- EXISTING FIBER OPTIC MANHOLE
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING PAVEMENT
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRIVEWAY
- EXISTING TREES

CAUTION NOTE:

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC, UNDERGROUND FIBER OPTIC, GAS, AND TELEPHONE UTILITIES EXIST ALONG SCENIC LOOP ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

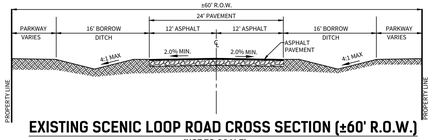
NOTES:

1. ALL PAVEMENT MARKINGS AND STRIPING SHALL BE HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS PER CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD ELECTRIC AND UNDERGROUND CABLE TV UTILITIES EXIST ALONG SCENIC LOOP ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
3. CONTRACTOR IS REQUIRED TO REPLACE ALL EXISTING FENCES AND/OR DRIVEWAYS TO EXISTING OR BETTER CONDITION.
4. CONTRACTOR IS REQUIRED TO PROVIDE ACCESS TO ALL ADJACENT HOMEOWNERS AND DRIVEWAYS AT ALL TIMES.
5. CONTRACTOR IS RESPONSIBLE FOR 85% REVEGETATION OF ALL DISTURBED AREAS WITHIN THE ROW UPON INFRASTRUCTURE COMPLETION.
6. CONTRACTOR IS RESPONSIBLE FOR ENSURING POSITIVE SITE DRAINAGE AT ALL TIMES DURING AND UPON COMPLETION OF INFRASTRUCTURE.
7. A KENDALL COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN KENDALL COUNTY RIGHT OF WAY.

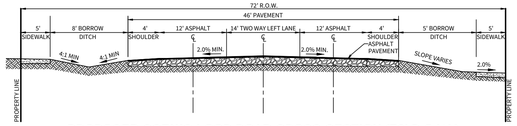
KEYNOTES:

1. CONTRACTOR TO DEMO AND RELOCATE EXISTING FENCE
2. CONTRACTOR TO REMOVE EX. GRATE INLET AND PLUG EXISTING STORM PIPE
3. CONTRACTOR TO DEMO EX. DRIVEWAY AND REPLACE WITH ASPHALT - (8.87 S.Y.)
4. CONTRACTOR TO MATCH PROP. PAVEMENT TO DRIVEWAY ELEVATION
5. CONTRACTOR TO DEMO EX. DRIVEWAY AND REPLACE WITH ASPHALT - (69.35 S.Y.)
6. CONTRACTOR TO DEMO EX. DRIVEWAY AND REPLACE WITH ASPHALT - (14.28 S.Y.)
7. CONTRACTOR TO INSTALL 22.5" FLEX BASE, 2" HMAC TYPE "C" AND HMAC TYPE "D" (NORTHBOUND 205 S.Y.)
8. CONTRACTOR TO SAWCUT AND MATCH EXISTING PAVEMENT WITH THE PROPOSED PAVEMENT
9. CONTRACTOR TO OBLITERATE THE EXISTING 4" DOUBLE YELLOW PAVEMENT MARKINGS (1,287 L.F. OVERALL)
10. CONTRACTOR TO INSTALL 22.5" FLEX BASE, 2" HMAC TYPE "C" AND HMAC TYPE "D" (SOUTHBOUND 3,247 S.Y.)
11. EX. CABLE BOX TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT BY OTHERS
12. EX. MAILBOX TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT
13. EX. SIGNAGE TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT
14. EX. POWER POLE TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT (BY OTHERS - BANDERA ELECTRIC COMPANY)
15. EX. VENT PIPE TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT BY OTHERS
16. TRAFFIC SIGNAL PLEASE SEE BIEDENHARN TRACT TRAFFIC SIGNAL PLAN FOR MORE DETAILS

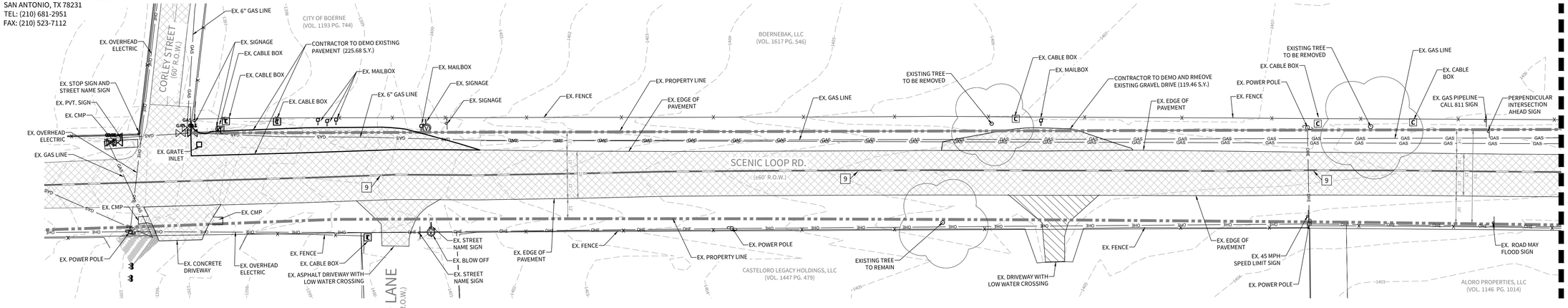
SCALE: 1"=30'
0 30 60



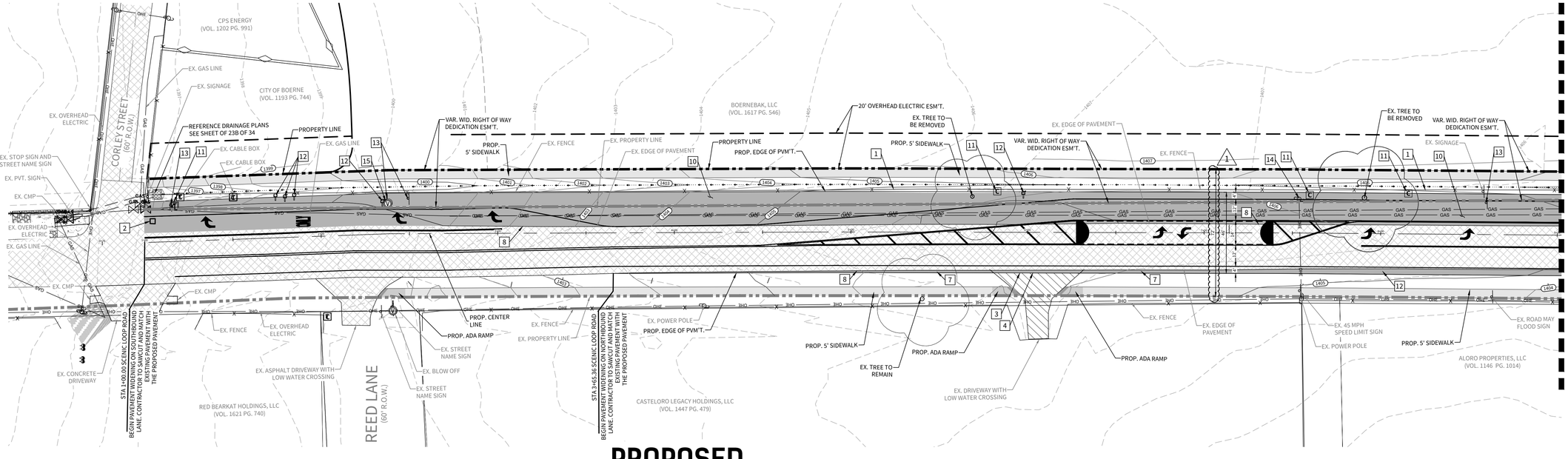
EXISTING SCENIC LOOP ROAD CROSS SECTION (±60' R.O.W.)
(NOT TO SCALE)



PROPOSED SCENIC LOOP ROAD CROSS SECTION (72' R.O.W.)
(NOT TO SCALE)



EXISTING



PROPOSED

OWNER/DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

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

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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
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CORLEY FARMS UNIT 1
SCENIC LOOP IMPROVEMENTS

DATE
04/26/2021
PROJECT NO.
03481.004
DRAWN BY
C3
CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-23 - UPDATED PAVEMENT SECTION REFERENCE, ADDED ROW DIMENSION
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
DAVID D. CUPIT II
124076
LICENSED
PROFESSIONAL ENGINEER
04.30.21
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C3
3 OF 34

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:

- EXISTING ROW/PROPERTY LINE
- PROPOSED ROW LINE
- EXISTING STREET CENTERLINE
- EXISTING OVERHEAD ELECTRIC (OHE)
- EXISTING GAS LINE (GAS)
- EXISTING EDGE OF PAVEMENT
- PROPOSED DRAIN FLOW
- EXISTING FIBER OPTIC MANHOLE
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- EXISTING PAVEMENT
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRIVEWAY
- EXISTING TREES

CAUTION NOTE:

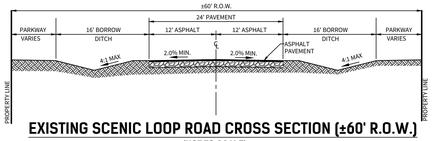
THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC, UNDERGROUND FIBER OPTIC, GAS, AND TELEPHONE UTILITIES EXIST ALONG SCENIC LOOP ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

NOTES:

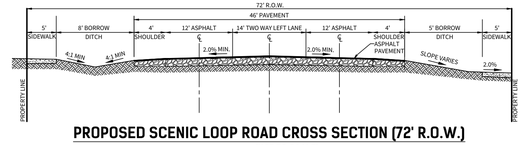
1. ALL PAVEMENT MARKINGS AND STRIPING SHALL BE HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS PER CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD ELECTRIC AND UNDERGROUND CABLE TV UTILITIES EXIST ALONG SCENIC LOOP ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
3. CONTRACTOR IS REQUIRED TO REPLACE ALL EXISTING FENCES AND/OR DRIVEWAYS TO EXISTING OR BETTER CONDITION.
4. CONTRACTOR IS REQUIRED TO PROVIDE ACCESS TO ALL ADJACENT HOMEOWNERS AND DRIVEWAYS AT ALL TIMES.
5. CONTRACTOR IS RESPONSIBLE FOR 85% REVEGETATION OF ALL DISTURBED AREAS WITHIN THE ROW UPON INFRASTRUCTURE COMPLETION.
6. CONTRACTOR IS RESPONSIBLE FOR ENSURING POSITIVE SITE DRAINAGE AT ALL TIMES DURING AND UPON COMPLETION OF INFRASTRUCTURE.
7. A KENDALL COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN KENDALL COUNTY RIGHT OF WAY.

KEYNOTES:

1. CONTRACTOR TO DEMO AND RELOCATE EXISTING FENCE
2. CONTRACTOR TO REMOVE EX. GRATE INLET AND PLUG EXISTING STORM PIPE
3. CONTRACTOR TO DEMO EX. DRIVEWAY AND REPLACE WITH ASPHALT - (8.87 S.Y.)
4. CONTRACTOR TO MATCH PROP. PAVEMENT TO DRIVEWAY ELEVATION
5. CONTRACTOR TO DEMO EX. DRIVEWAY AND REPLACE WITH ASPHALT - (18.43 S.Y.)
6. CONTRACTOR TO DEMO EX. DRIVEWAY AND REPLACE WITH ASPHALT - (14.28 S.Y.)
7. CONTRACTOR TO INSTALL 22.5" FLEX BASE, 2" HMAC TYPE "C" AND HMAC TYPE "D" (NORTHBOUND 206 S.Y.) (1)
8. CONTRACTOR TO SAWCUT AND MATCH EXISTING PAVEMENT WITH THE PROPOSED PAVEMENT
9. CONTRACTOR TO OBLITERATE THE EXISTING 4" DOUBLE YELLOW PAVEMENT MARKINGS (1,287 L.F. OVERALL)
10. CONTRACTOR TO INSTALL 22.5" FLEX BASE, 2" HMAC TYPE "C", AND TYPE "D" (SOUTHBOUND 3,201 S.Y.)
11. EX. CABLE BOX TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT BY OTHERS
12. EX. MAILBOX TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT
13. EX. SIGNAGE TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT
14. EX. POWER POLE TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT (BY OTHERS - BOERNE ELECTRIC COMPANY)
15. EX. VENT PIPE TO BE RELOCATED OUTSIDE OF PROPOSED PAVEMENT BY OTHERS
16. TRAFFIC SIGNAL PLEASE SEE BIEDENHARN TRACT TRAFFIC SIGNAL PLAN FOR MORE DETAILS



EXISTING SCENIC LOOP ROAD CROSS SECTION (±60' R.O.W.)
(NOT TO SCALE)



PROPOSED SCENIC LOOP ROAD CROSS SECTION (72' R.O.W.)
(NOT TO SCALE)

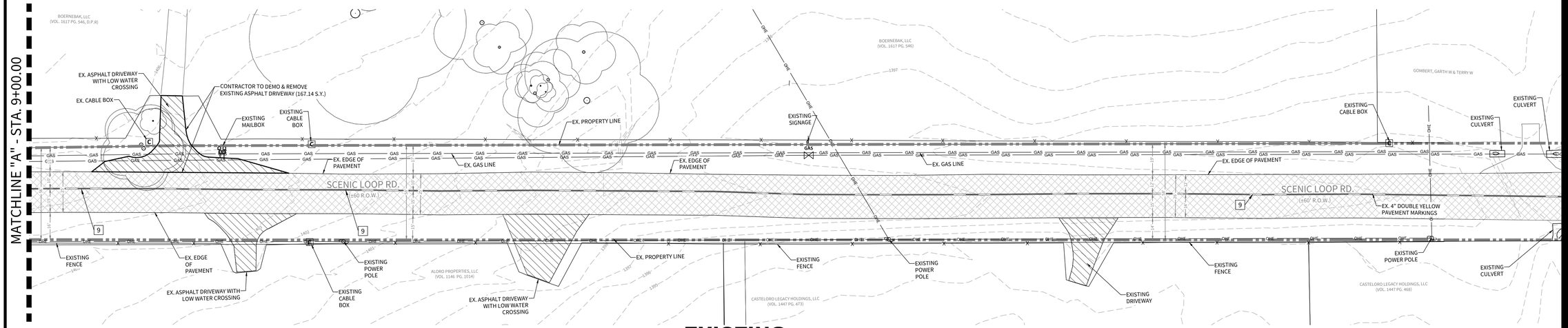
SCALE: 1"=30'
0 30 60

OWNER/DEVELOPER:

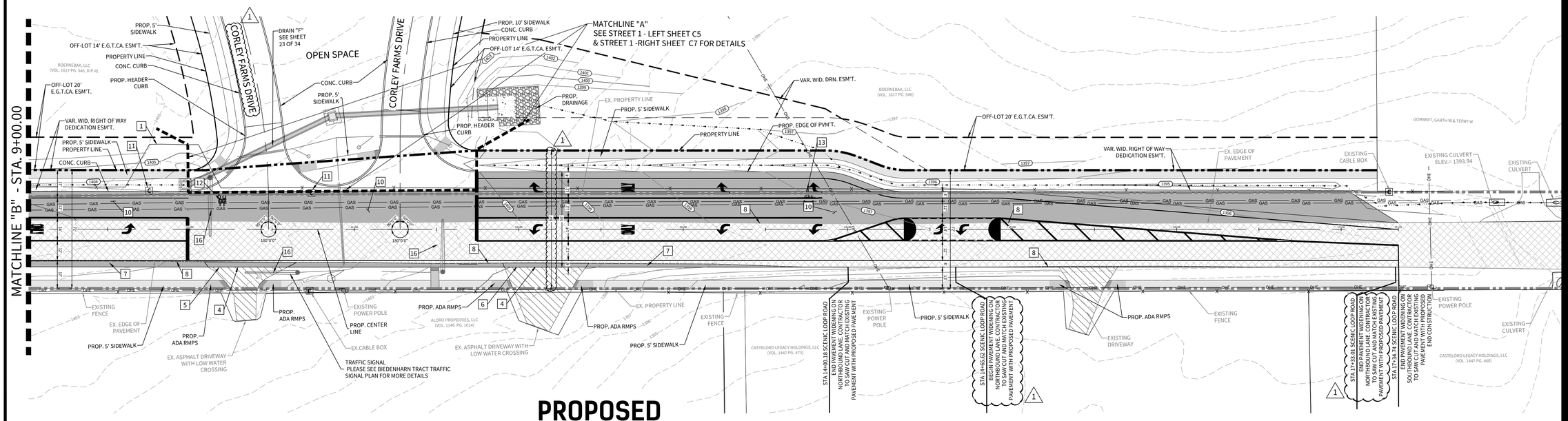
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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



EXISTING



PROPOSED

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 1

SCENIC LOOP IMPROVEMENTS

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-23 - UPDATED PAVEMENT SECTION REFERENCE, ADDED ROW DIMENSION, IDENTIFIED NORTHBOUND BEGINNING & END PAVEMENT WIDENING, PROVIDED STREET NAME.
2.
3.
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4

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

C:\03481\004\Civil\Dwg\C4-SCENIC LOOP IMPROVEMENTS.dwg, 2021/04/26 4:40pm, Adolph Kirkland

LOCATION MAP
N.T.S.

LEGEND:

- EXISTING ROW/PROPERTY LINE
- PROPOSED ROW LINE
- EXISTING STREET CENTERLINE
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING GAS LINE — GAS
- EXISTING EDGE OF PAVEMENT
- PROPOSED DRAIN FLOW
- EXISTING FIBER OPTIC MANHOLE
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING SIGN
- STREET PAVEMENT
- PROPOSED SIDEWALK
- EXISTING DRIVEWAY

NOTES:

1. ALL PAVEMENT MARKINGS AND STRIPING SHALL BE HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS PER CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. THE CONTRACTOR SHALL BE AWARE THAT EXISTING OVERHEAD ELECTRIC AND UNDERGROUND CABLE TV UTILITIES EXIST ALONG SCENIC LOOP ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
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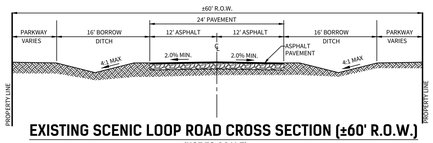
6. CONTRACTOR IS RESPONSIBLE FOR ENSURING POSITIVE SITE DRAINAGE AT ALL TIMES DURING AND UPON COMPLETION OF INFRASTRUCTURE.
7. A KENDALL COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN KENDALL COUNTY RIGHT OF WAY.
8. UPON REMOVAL OF EXISTING STRIPING AND INSTALLATION OF NEW STRIPING, THE CONTRACTOR SHALL INSTALL A FINAL SEAL COAT OVERLAY OVER THE ENTIRE LIMITS OF THE EXISTING AND NEW ASPHALT FROM STA 1+00.00 TO STA 17+34.75

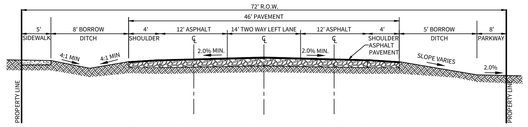
KEYNOTES:

1. STA 4+48.17 TO STA 6+27.70 4" SINGLE SOLID YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (180 L.F.)
2. STA 4+48.17 TO STA 6+27.70 4" SINGLE SOLID YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (180 L.F.)
3. YELLOW REFLECTIVE PAVEMENT MARKER TYPE II (MED NOSE)
4. REFLECTIVE PAVEMENT MARKING TYPE I WHITE LEFT "ARROW"
5. STA 1+00.00 TO STA 4+48.17 4" DOUBLE YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (348 L.F.)
6. STA 14+90.57 TO STA 16+67.78 4" SINGLE SOLID YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (178 L.F.)
7. STA 14+90.57 TO STA 16+67.78 4" SINGLE SOLID YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II-A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (177 L.F.)
8. STA 14+32.20 TO STA 17+34.74 8" SINGLE WHITE SOLID LINE THERMOPLASTIC PAVEMENT MARKING (302 L.F.)
9. STA 16+67.78 TO STA 17+34.74 4" DOUBLE YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (67 L.F.)
10. STA 1+00.00 TO STA 17+34.74 8" SINGLE WHITE SOLID LINE THERMOPLASTIC PAVEMENT MARKING (1,635 L.F. (OVERALL))
11. STA 3+67.25 TO STA 9+98.60 8" WHITE SOLID LINE THERMOPLASTIC PAVEMENT MARKING (632 L.F. (OVERALL))
12. 87 L.F. - 12" SINGLE YELLOW SOLID LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II-A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C.
13. 91 L.F. - 12" SINGLE YELLOW SOLID LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II-A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C.
14. STA 6+27.70 TO STA 7+39.03 4" SOLID YELLOW LINE AND 4" BROKEN YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (111 L.F.)
15. STA 6+27.70 TO STA 7+39.03 4" SOLID YELLOW LINE AND 4" BROKEN YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (111 L.F.)
16. STA 14+34.38 TO STA 14+92.75 4" SOLID YELLOW LINE AND 4" BROKEN YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (111 L.F.)
17. STA 14+34.38 TO STA 14+92.75 4" SOLID YELLOW LINE AND 4" BROKEN YELLOW LINE THERMOPLASTIC PAVEMENT MARKING & TYPE II - A-A RAISE REFLECTIVE PAVEMENT MARKERS @ 20' O.C. (111 L.F.)

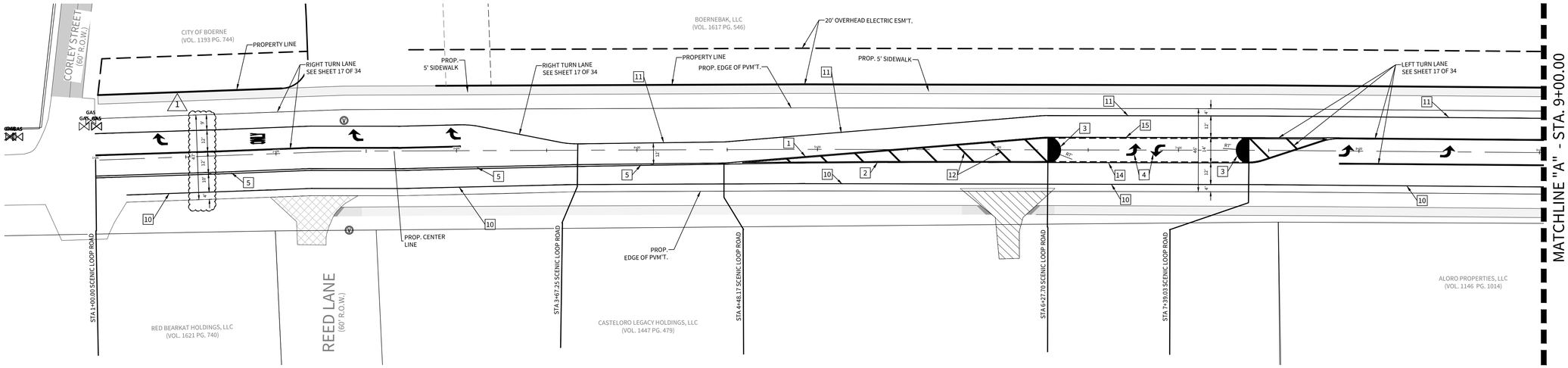
SCALE: 1"=30'
0 30 60

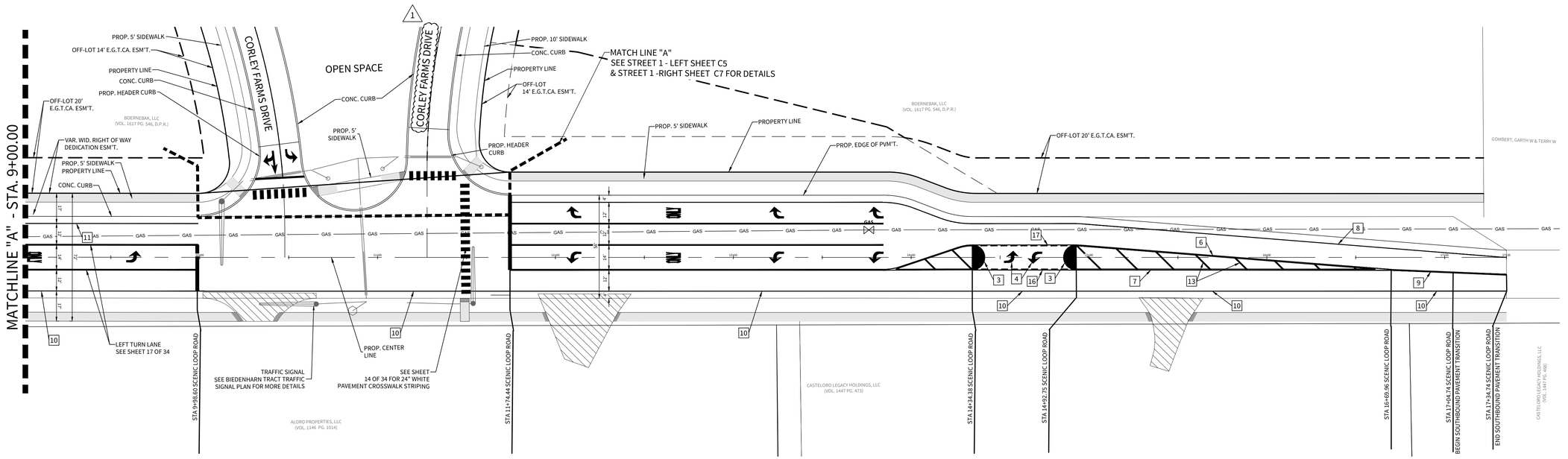


EXISTING SCENIC LOOP ROAD CROSS SECTION (±60' R.O.W.)
(NOT TO SCALE)



PROPOSED SCENIC LOOP ROAD CROSS SECTION (72' R.O.W.)
(NOT TO SCALE)





OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

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CUDE ENGINEERS

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CORLEY FARMS UNIT 1

SCENIC LOOP IMPROVEMENTS STRIPING PLAN

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-23 - UPDATED STRIPING END STATION, ADDED ROW DIMENSION, PROVIDED STREET NAME
2.
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

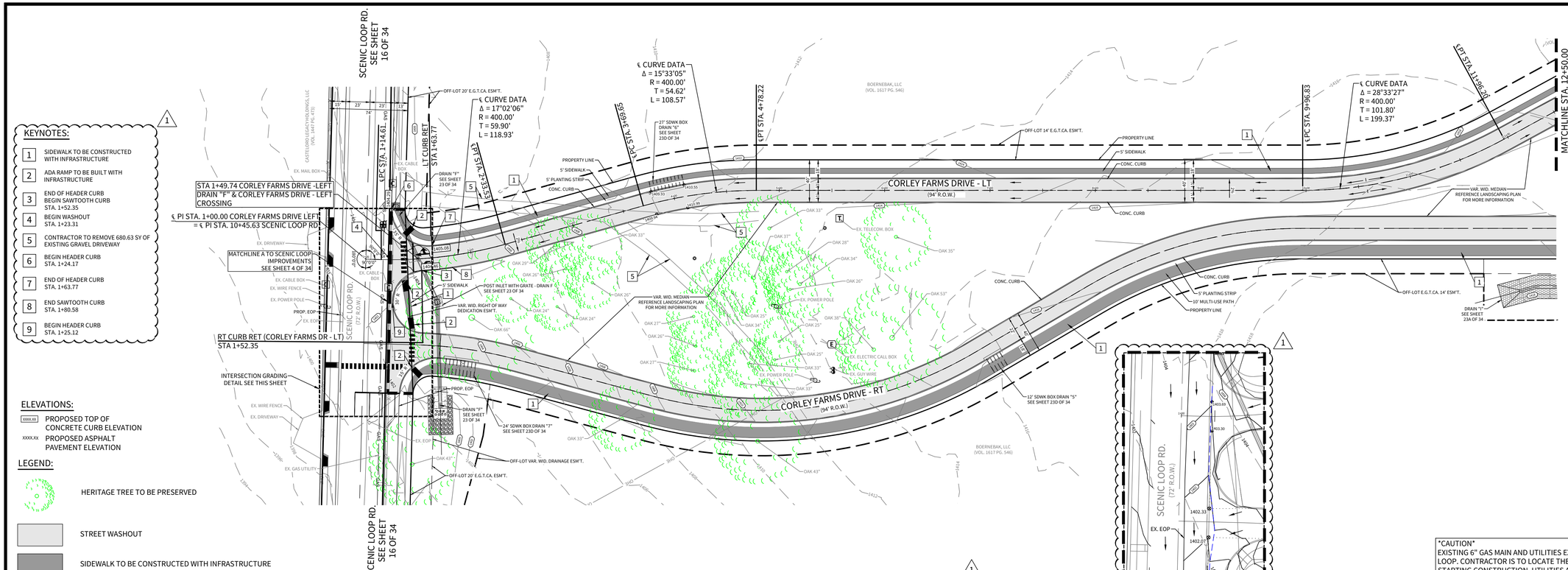
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C4A

4A OF 34

P:\03481.004\2-Drawings\C4A SCENIC LOOP IMPROVEMENTS STRIPING PLAN.dwg 2021.04.23 2:43pm xxxxxxx

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.



CORLEY FARMS DRIVE – LEFT

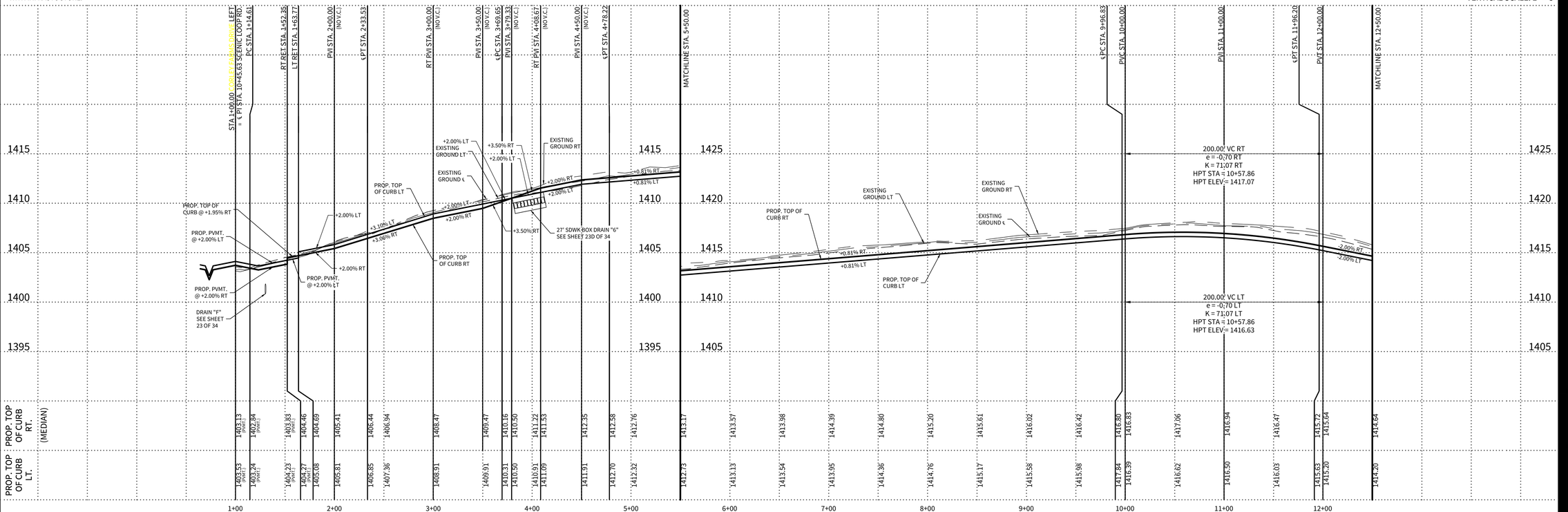
STA. 1+00.00 TO STA. 12+50.00

ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE WILL BE CONSTRUCTED WITH INFRASTUCTURE.

CAUTION
EXISTING 6" GAS MAIN AND UTILITIES EXIST THROUGH SCENIC LOOP. CONTRACTOR IS TO LOCATE THESE UTILITIES BEFORE STARTING CONSTRUCTION. UTILITIES ARE TO BE POTHOLED. TO VERIFY LOCATION AND DEPTH. IF UTILITIES ARE IN POSSIBLE CONFLICT WITH THE PROPOSED DEVELOPMENT, CONTRACTOR IS TO NOTIFY THE ENGINEERS IMMEDIATELY.

*NOTE: KENDALL COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED BEFORE WORKING ON KENDALL COUNTY RIGHT OF WAY

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



CUDEENGINEERS.COM

CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

STREET PLAN & PROFILE - CORLEY FARMS DRIVE - LEFT

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-23 - REVISED BEGINNING & END WASHOUT STATIONING, PROVIDED STREET NAMES, VERIFIED ADA CROSS SLOPES.
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C5

5 OF 34

P:\03481\DWG\Drawings\C5 STREET PLAN & PROFILE - CORLEY FARMS DRIVE - LEFT.dwg 2021/05/26 6:42pm kristyward

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

KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. ADA RAMP TO BE BUILT WITH INFRASTRUCTURE
3. BEGIN SIDEWALK TRANSITION STA. 20+26.79
4. END SIDEWALK TRANSITION STA. 20+38.85
5. BEGIN SIDEWALK TRANSITION STA. 21+09.29
6. END SIDEWALK TRANSITION STA. 21+31.80
7. BEGIN CONCRETE MEDIAN STA. 20+00.40
8. END CONCRETE MEDIAN STA. 20+60.56
9. MEDIAN TO BE CONSTRUCTED WITH CONCRETE RIP-RAP WHEN WIDTH IS 4' OR LESS. (THESE AREAS ARE HATCHED AS APPLICABLE)
10. END WASHOUT STA. 21+33.99 (1)

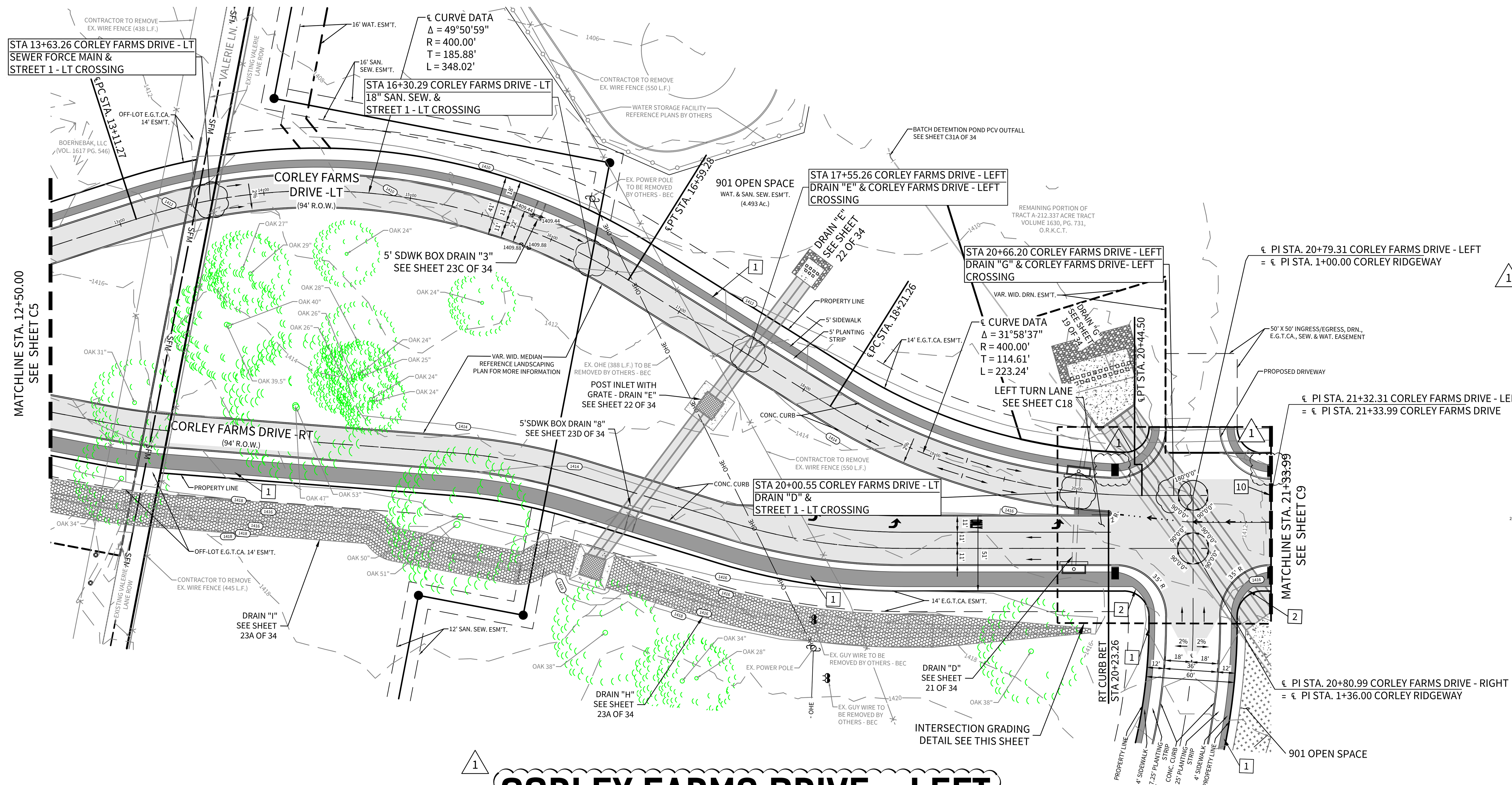
ELEVATIONS:

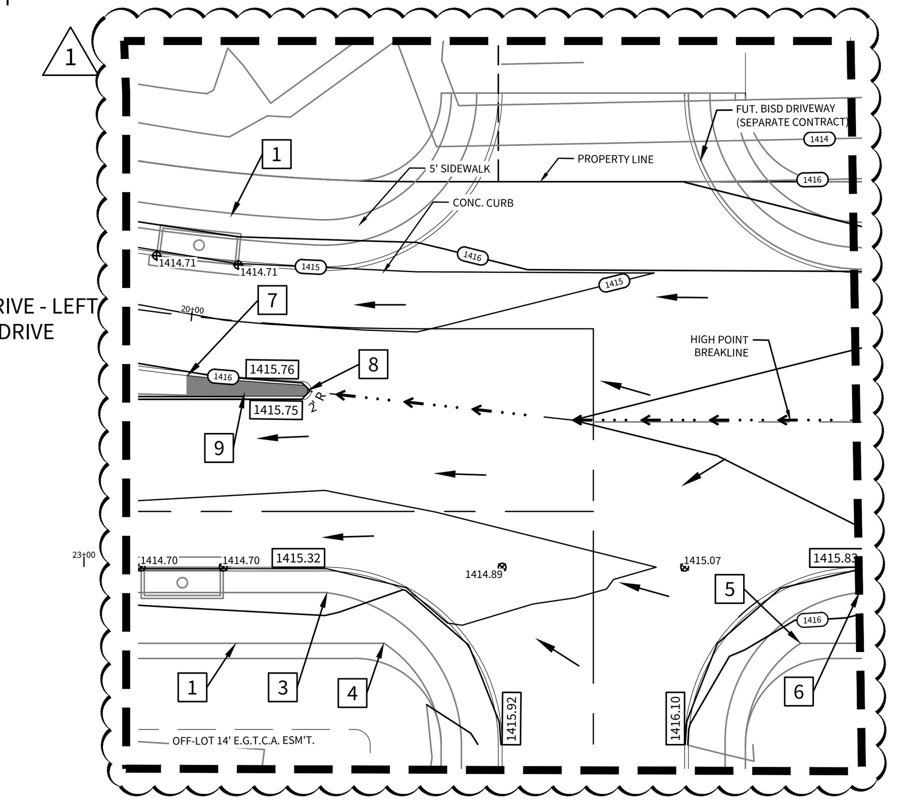
- xxxx.xx (boxed) PROPOSED TOP OF CONCRETE CURB ELEVATION
- xxxx.xx PROPOSED ASPHALT PAVEMENT ELEVATION

LEGEND:

- HERITAGE TREE TO BE PRESERVED
- CONCRETE RIP RAP
- STREET WASHOUT
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP

ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE WILL BE CONSTRUCTED WITH INFRASTUCTURE.





INTERSECTION GRADING DETAIL

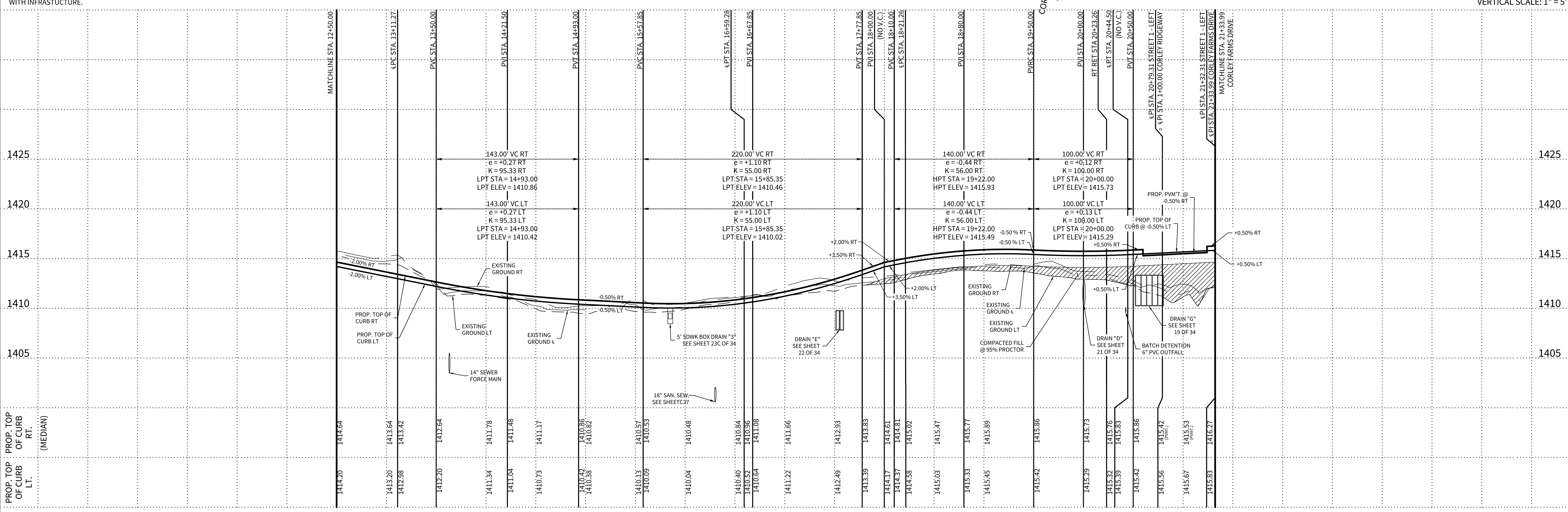
(SCALE 1" = 30')

CORLEY FARMS DRIVE – LEFT

STA. 12+50.00 TO STA. 21+32.31

CAUTION
EXISTING 14" SEWER FORCE MAIN AND UTILITIES EXIST THROUGH VALERIE LANE. CONTRACTOR IS TO LOCATE THESE UTILITIES BEFORE STARTING CONSTRUCTION. UTILITIES ARE TO BE POTHOLED. TO VERIFY LOCATION AND DEPTH. IF UTILITIES ARE IN POSSIBLE CONFLICT WITH THE PROPOSED DEVELOPMENT, CONTRACTOR IS TO NOTIFY THE ENGINEERS IMMEDIATELY.

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



CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 1

STREET PLAN & PROFILE - CORLEY FARMS DRIVE - LEFT

DATE	04/26/2021
PROJECT NO.	03481.004
DRAWN BY	C3
CHECKED BY	JC/DDC

REVISIONS

1. 2021-04-23 - REVISED BEGINNING & END WASHOUT STATIONING, PROVIDED STREET NAMES, VERIFIED ADA CROSS SLOPES.
2.
3.
4.
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6.
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9.

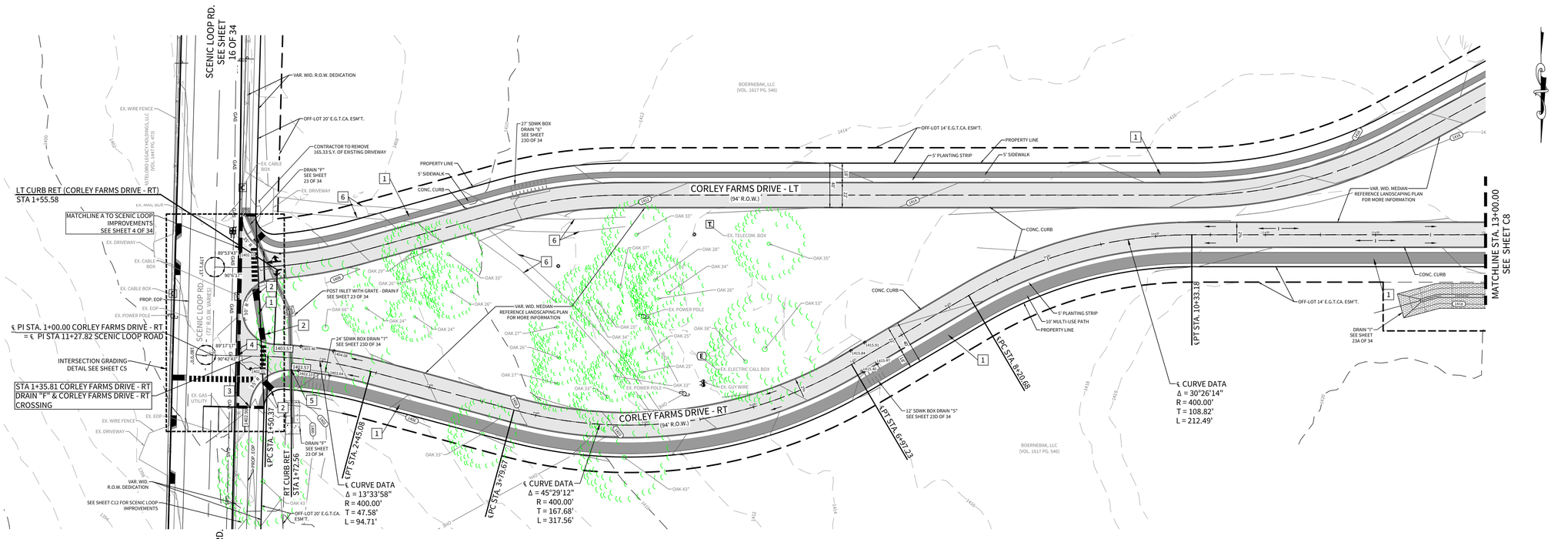
STATE OF TEXAS DAVID D. CUPIT II 122076 LICENSED PROFESSIONAL ENGINEER 04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6

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:\03481\004\2-Drawings\C6 STREET PLAN & PROFILE - CORLEY FARMS DRIVE - LEFT.dwg 2021/04/26 2:41pm xvasquez



KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. ADA RAMP TO BE BUILT WITH INFRASTRUCTURE
3. BEGIN HEADER CURB STA. 1+35.00
4. BEGIN WASHOUT STA. 1+23.00
5. END HEADER CURB STA. 1+72.56
6. CONTRACTOR TO REMOVE 680.63 SY OF EXISTING GRAVEL DRIVEWAY

ELEVATIONS:

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

LEGEND:

- HERITAGE TREE TO BE PRESERVED
- STREET WASHOUT
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP

ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE WILL BE CONSTRUCTED WITH INFRASTUCTURE.

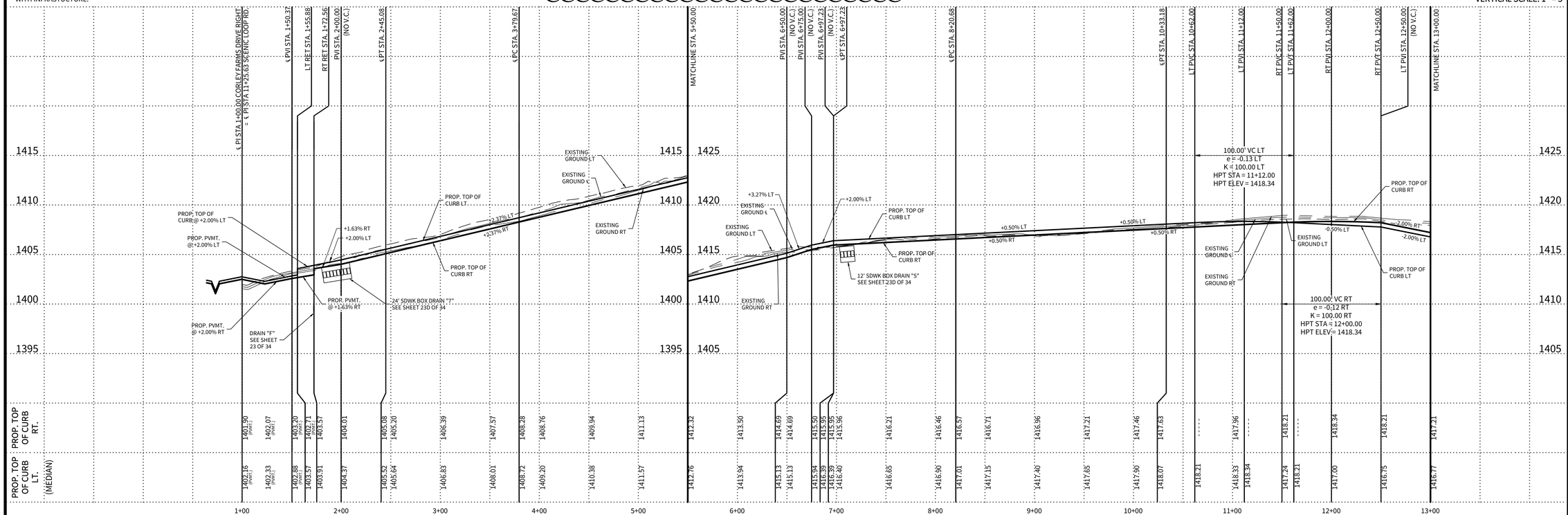
CORLEY FARMS DRIVE – RIGHT

STA. 1+00.00 TO STA. 13+00.00

CAUTION
EXISTING 6" GAS MAIN AND UTILITIES EXIST THROUGH SCENIC LOOP. CONTRACTOR IS TO LOCATE THESE UTILITIES BEFORE STARTING CONSTRUCTION. UTILITIES ARE TO BE POTHOLED TO VERIFY LOCATION AND DEPTH. IF UTILITIES ARE IN POSSIBLE CONFLICT WITH THE PROPOSED DEVELOPMENT, CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY.

*NOTE: KENDALL COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED BEFORE WORKING ON KENDALL COUNTY RIGHT OF WAY

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



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

CORLEY FARMS UNIT 1

STREET PLAN & PROFILE - CORLEY FARMS DRIVE - RIGHT

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021.04.23 - REVISED BEGINNING & END WASHOUT STATIONING, PROVIDED STREET NAMES
2.
3.
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7.
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STATE OF TEXAS
DAVID D. CUPIT II
92076
LICENSED PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C7

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

KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. ADA RAMP TO BE BUILT WITH INFRASTRUCTURE
3. BEGIN SIDEWALK TRANSITION STA. 20+26.79
4. END SIDEWALK TRANSITION STA. 20+39.65
5. BEGIN SIDEWALK TRANSITION STA. 21+21.86
6. END SIDEWALK TRANSITION STA. 21+33.93
7. MEDIAN TO BE CONSTRUCTED WITH CONCRETE RIP-RAP WHEN WIDTH IS 4' OR LESS. (THESE AREAS ARE HATCHED AS APPLICABLE)
8. END WASHOUT STA. 21+33.99 (1)
9. BEGIN CONCRETE MEDIAN STA. 20+00.88
10. END CONCRETE MEDIAN STA. 20+62.24
11. BEGIN SAWTOOTH CURB STA. 13+51.33
12. END SAWTOOTH CURB STA. 13+75.01

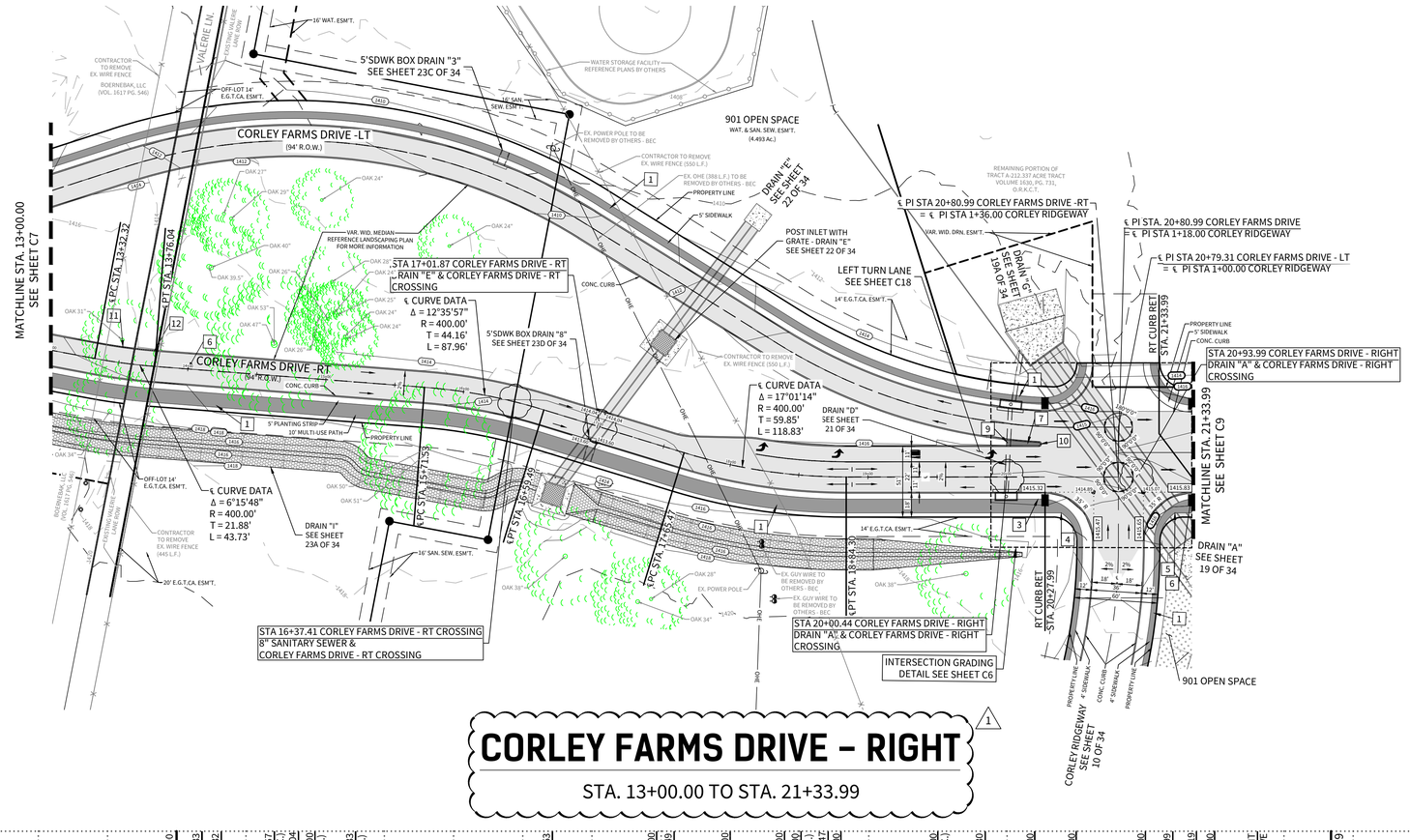
ELEVATIONS:

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

LEGEND:

- HERITAGE TREE TO BE PRESERVED
- STREET WASHOUT
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP

ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE WILL BE CONSTRUCTED WITH INFRASTUCTURE.

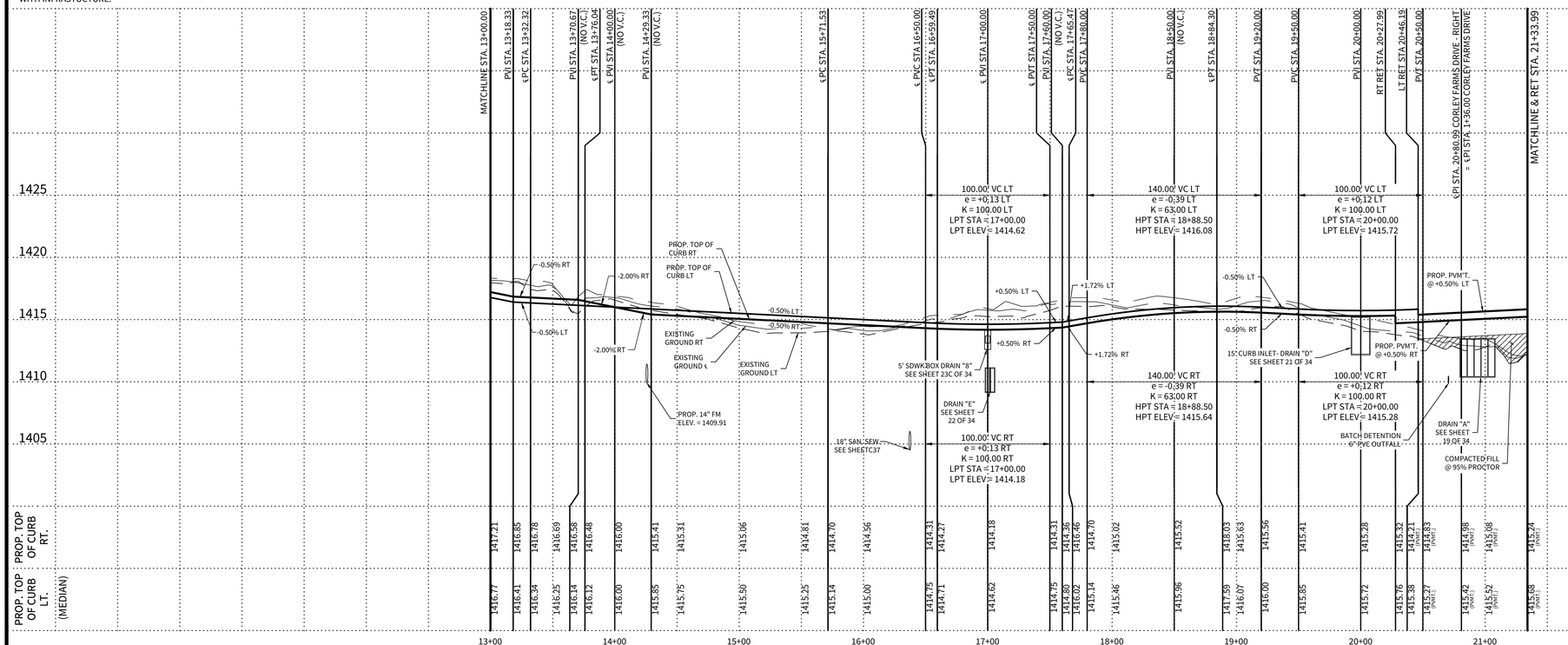


CORLEY FARMS DRIVE – RIGHT

STA. 13+00.00 TO STA. 21+33.99

CAUTION
EXISTING 14" SEWER FORCE MAIN AND UTILITIES EXIST THROUGH VALERIE LANE. CONTRACTOR IS TO LOCATE THESE UTILITIES BEFORE STARTING CONSTRUCTION. UTILITIES ARE TO BE POTHOLED TO VERIFY LOCATION AND DEPTH. IF UTILITIES ARE IN POSSIBLE CONFLICT WITH THE PROPOSED DEVELOPMENT, CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY.

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



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San Antonio, Texas 78231
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CORLEY FARMS UNIT 1

STREET PLAN & PROFILE - CORLEY FARMS DRIVE - RIGHT

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-23 - REVISED BEGINNING & END WASHOUT STATIONING, PROVIDED STREET NAMES
2.
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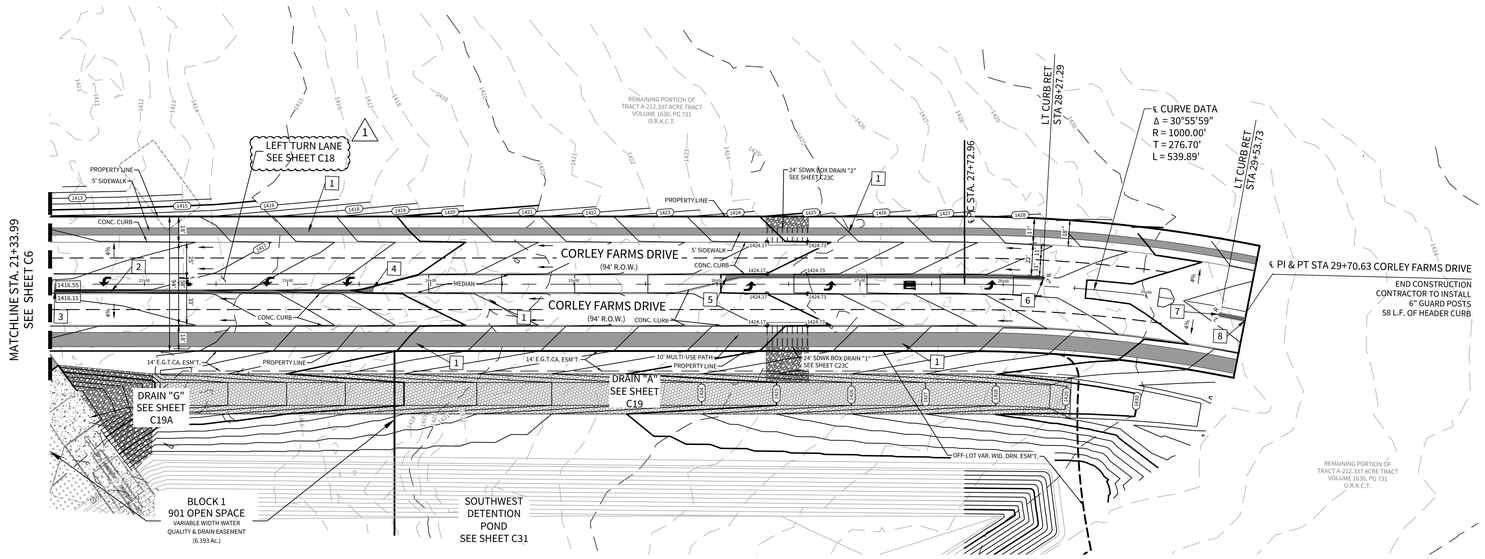
STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C8

P:\03481\004\3-Drawings\C8 STREET PLAN & PROFILE - CORLEY FARMS DRIVE - RIGHT.dwg 2021.04.26 3:47pm mstumpf

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



KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. MEDIAN TO BE CONSTRUCTED WITH CONCRETE RIP-RAP WHEN WIDTH IS 4' OR LESS. (THESE AREAS ARE HATCHED AS APPLICABLE)
3. BEGIN CONCRETE MEDIAN STA 21+37.30
4. END CONCRETE MEDIAN STA 23+59.69
5. BEGIN CONCRETE MEDIAN STA 26+06.24
6. END CONCRETE MEDIAN STA 28+27.96
7. BEGIN CONCRETE MEDIAN STA 29+52.22
8. END CONCRETE MEDIAN STA 29+70.63

ELEVATIONS:

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

LEGEND:

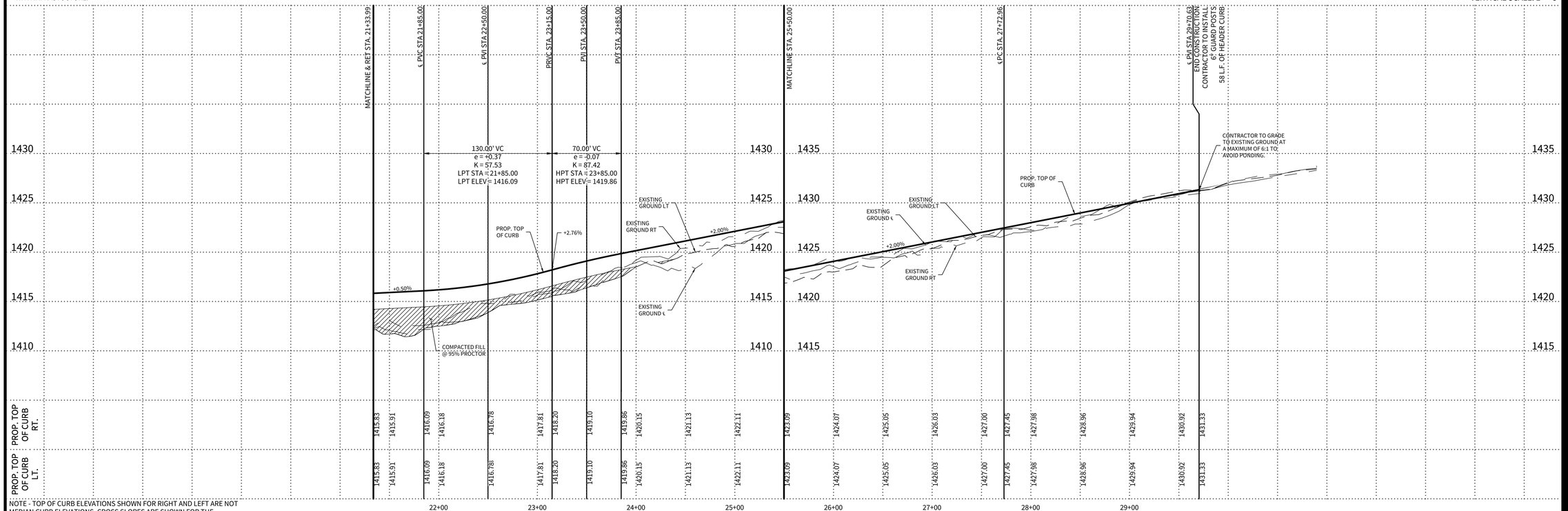
- STREET WASHOUT
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP

ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE WILL BE CONSTRUCTED WITH INFRASTUCTURE.

CORLEY FARMS DRIVE

STA. 21+33.99 TO STA. 29+70.63

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



NOTE - TOP OF CURB ELEVATIONS SHOWN FOR RIGHT AND LEFT ARE NOT MEDIAN CURB ELEVATIONS. CROSS SLOPES ARE SHOWN FOR THE CONTRACTOR TO CONSTRUCT THE MEDIAN.

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CORLEY FARMS UNIT 1

STREET PLAN & PROFILE - CORLEY FARMS DRIVE

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-23 - PROVIDED STREET NAMES, REVISED SHEET REFERENCE.
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C9

P:\03481\DWG\Drawings\C3 STREET PLAN & PROFILE - CORLEY FARMS DRIVE.dwg 2021.04.23 2:43pm xxxalpert

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

KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. ADA RAMP TO BE INSTALLED WITH INFRASTRUCTURE
3. BEGIN WASHOUT STA. 1+47.00
4. END WASHOUT STA. 2+14.00
5. BEGIN WASHOUT STA. 5+52.00
6. END WASHOUT STA. 6+89.75
7. 12' DRIVEWAY ACCESS TO DETENTION AND WATER QUALITY POND TO BE BUILT WITH INFRASTRUCTURE; TYPICAL COMMERCIAL DRIVEWAY SEE SHEETS C12 FOR DETAILS
8. BEGIN ALTERNATE DEEP CURB
9. END ALTERNATE DEEP CURB

NOTE: ALTERNATE DEEP CURB SHALL BE INSTALLED EVERYWHERE THAT A DRIVEWAY IS

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

LEGEND:

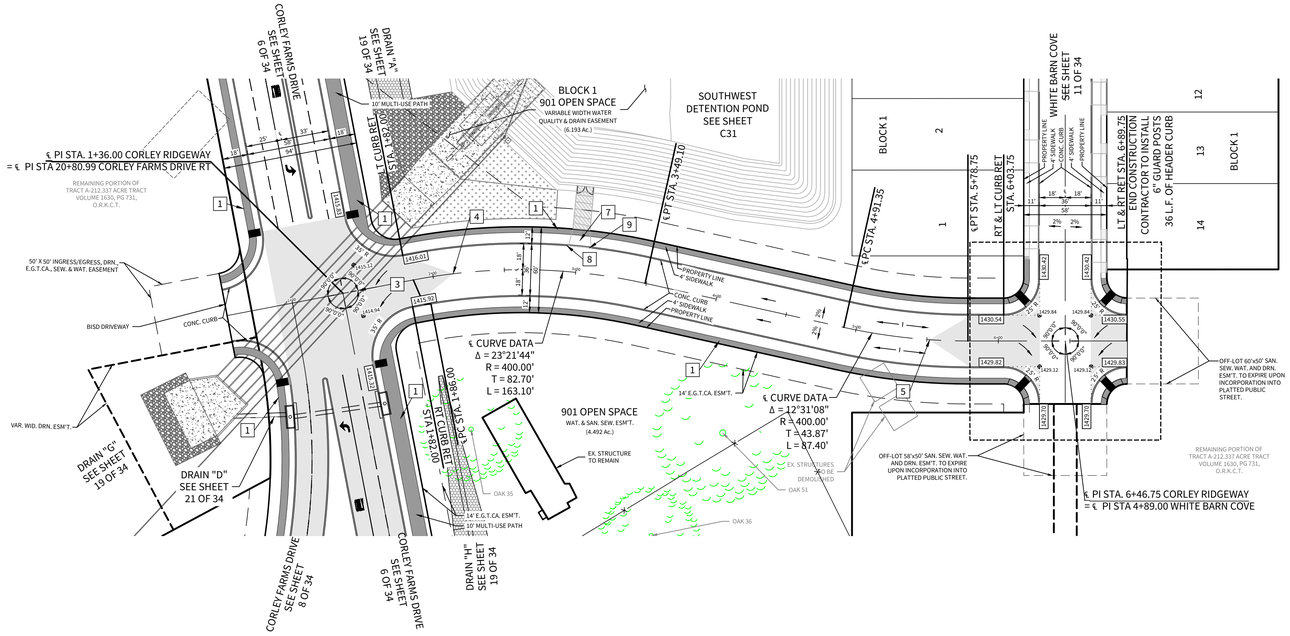
PROPOSED DRIVEWAY

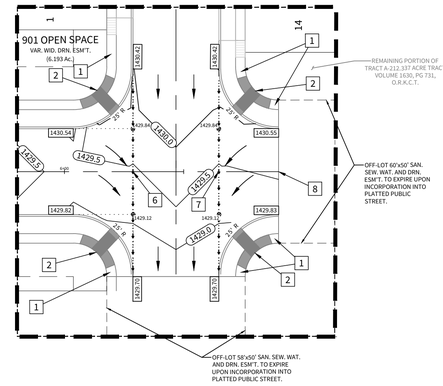
HERITAGE TREE TO BE PRESERVED

STREET WASHOUT

SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

ADA SIDEWALK CURB RAMP





INTERSECTION DETAIL

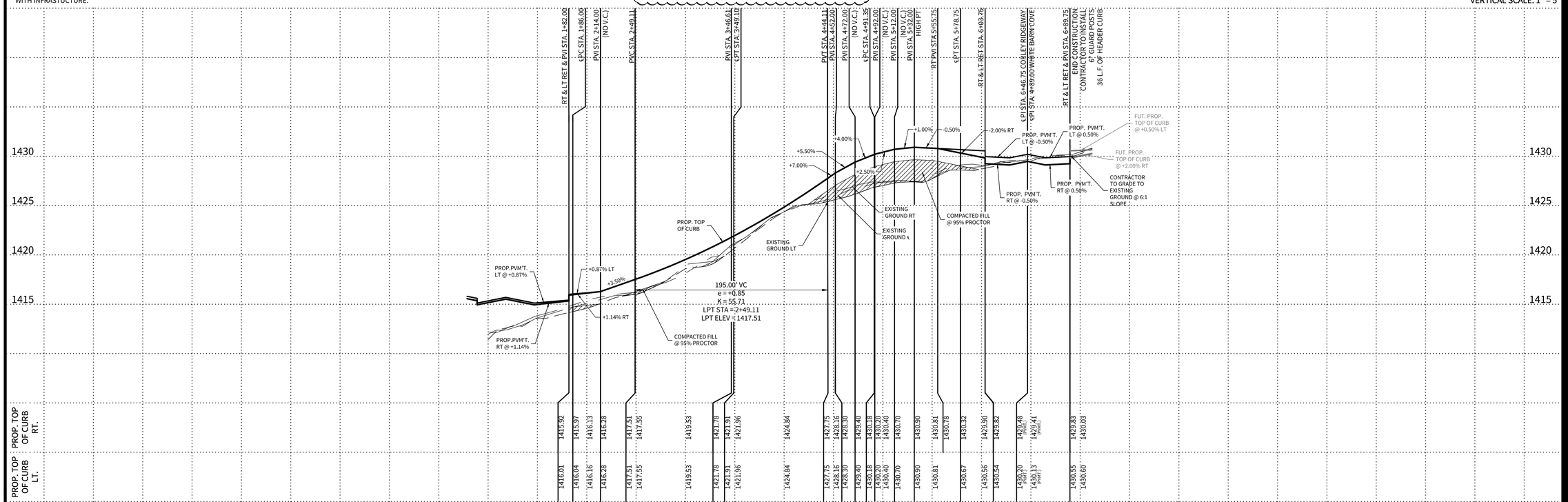
(SCALE 1" = 30')

CORLEY RIDGEWAY

STA. 1+36.00 TO STA. 6+89.75

ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE WILL BE CONSTRUCTED WITH INFRASTUCTURE.

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



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CORLEY FARMS UNIT 1

STREET PLAN & PROFILE - CORLEY RIDGEWAY

DATE
04/26/2021

PROJECT NO.
03481.004

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JC/DDC

REVISIONS
2021-04-23 - PROVIDED STREET NAMES
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9.

STATE OF TEXAS
DAVID D. CUPIT II
120076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C10

10 OF 34

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:\03481.004\03_Drawings\C3_STREET PLANS & PROFILE - CORLEY RIDGEWAY.dwg 2021.04.26 2:43pm kvasquez

KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. ADA RAMP TO BE INSTALLED WITH INFRASTRUCTURE
3. BEGIN ALTERNATE DEEP CURB
6. END ALTERNATE DEEP CURB

NOTE: ALTERNATE DEEP CURB SHALL BE INSTALLED FOR THE ENTIRE LIMITS OF STREET 3

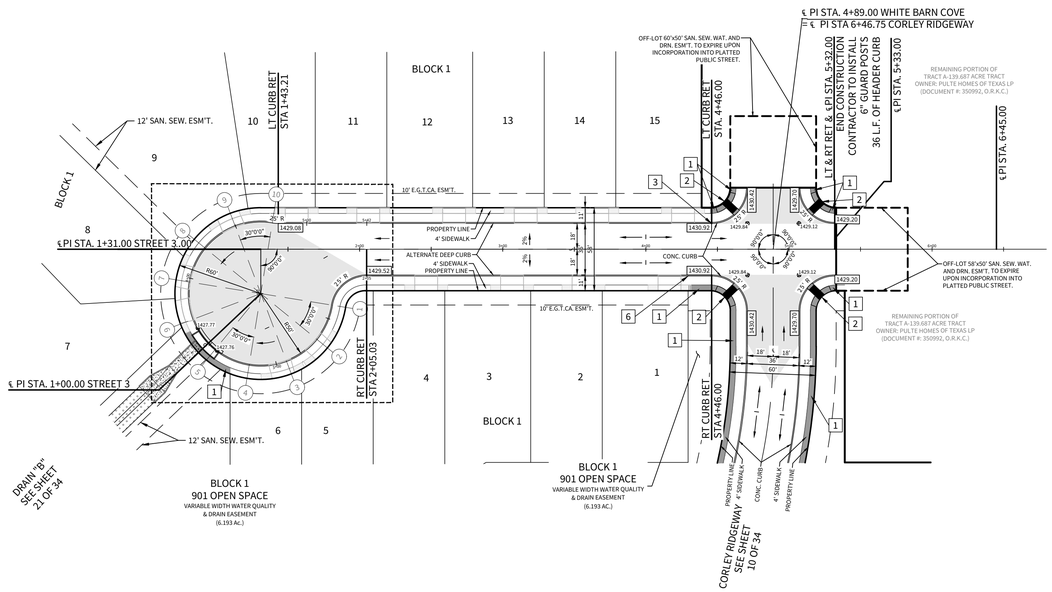
ELEVATIONS:

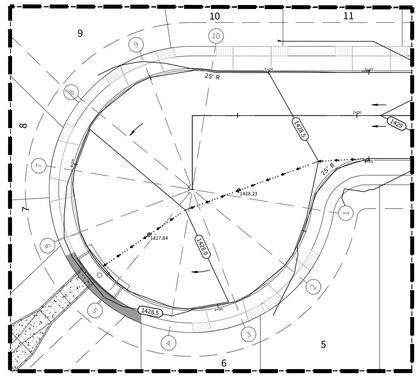
- XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

LEGEND:

- PROPOSED DRIVEWAY
- STREET WASHOUT
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP

ADA RAMPS WITHOUT RESIDENTIAL LOT FRONTAGE WILL BE CONSTRUCTED WITH INFRASTUCTURE.

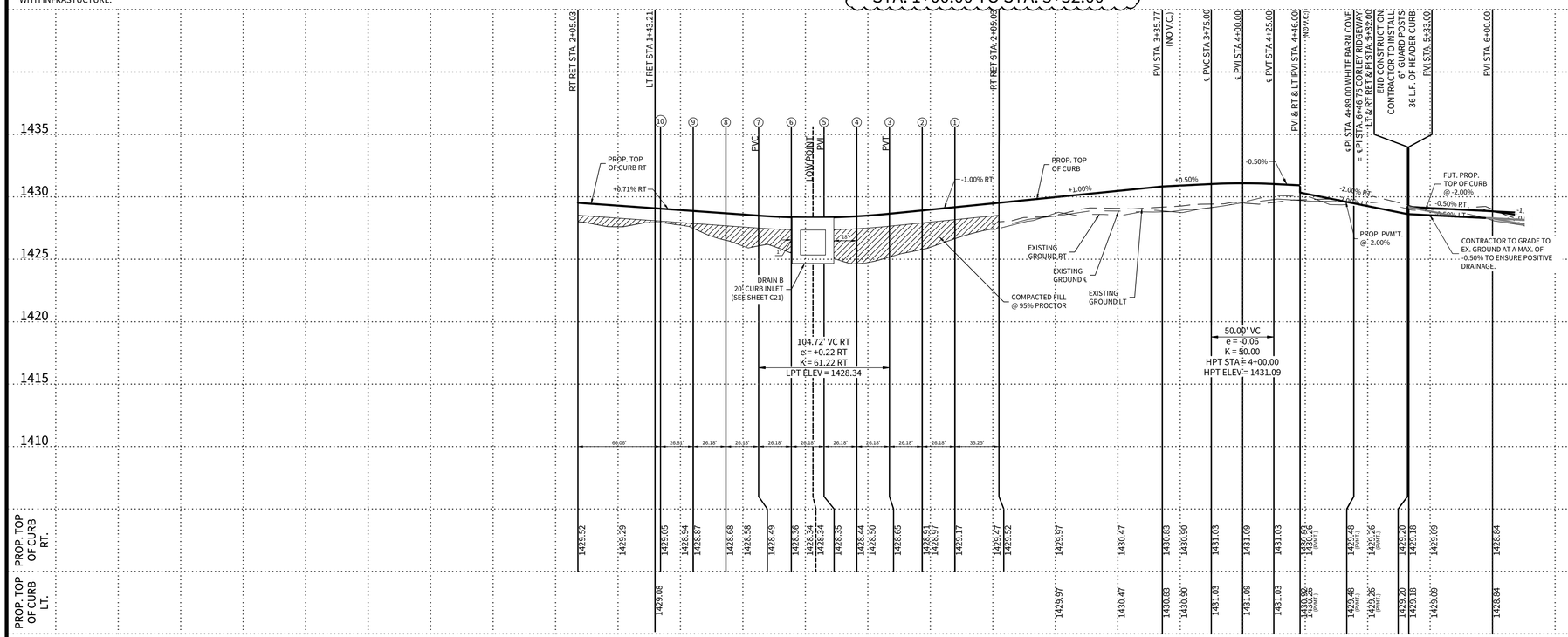




WHITE BARN COVE

STA. 1+00.00 TO STA. 5+32.00

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



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CORLEY FARMS UNIT 1

STREET PLAN & PROFILE - WHITE BARN COVE

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

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JC/DDC

REVISIONS
1. 2021-04-21 - PROVIDED STREET NAMES
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

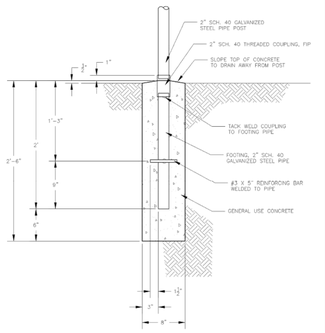
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C11

11 OF 34

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.

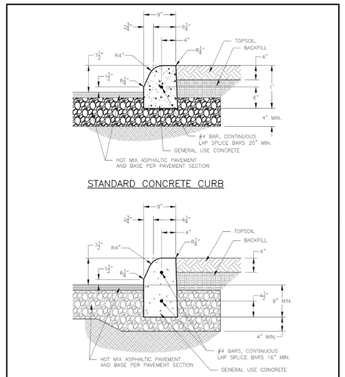
P:\03481\000\2-Drawings\03-STREET PLANS & PROFILE - WHITE BARN COVE.dwg 2021/04/30 2:45pm AV Hobbet



CITY OF BOERNE

SIGN POST AND FOUNDATION

SCALE: N.T.S. | STANDARD No.: 02514-1.1 | DATE: JULY 2015



STANDARD CONCRETE CURB

ALTERNATE DEEP CONCRETE CURB

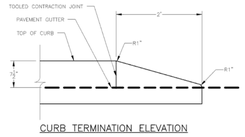
NOTE:
STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.

THE ALTERNATE DEEP CURB MAY BE SAW CUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.

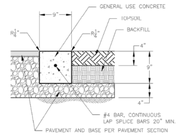
CITY OF BOERNE

CONCRETE CURB

SCALE: N.T.S. | STANDARD No.: 02502-2.0 | DATE: JULY 2015



CURB TERMINATION ELEVATION

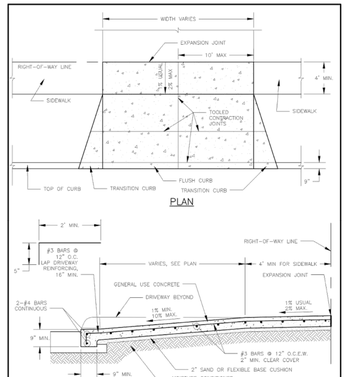


HEADER CURB SECTION

CITY OF BOERNE

CONCRETE CURB TERMINATION AND HEADER CURB

SCALE: N.T.S. | STANDARD No.: 02502-2 | DATE: JULY 2015



PLAN

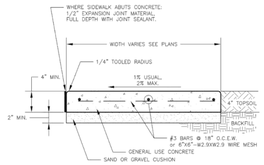
SECTION

NOTE: THE HEADER CURB CONSTRUCTION MAY BE DELETED WHEN CONSTRUCTING DRIVEWAY ADJACENT TO AN EXISTING HEADER CURB THAT IS A MINIMUM OF 9" DEEP WITH AT LEAST ONE HORIZONTAL BAR. INSTALL AN EXPANSION JOINT BETWEEN THE EXISTING HEADER CURB AND DRIVEWAY.

CITY OF BOERNE

CONCRETE DRIVEWAY APPROACH SIDEWALK AT ROW LINE

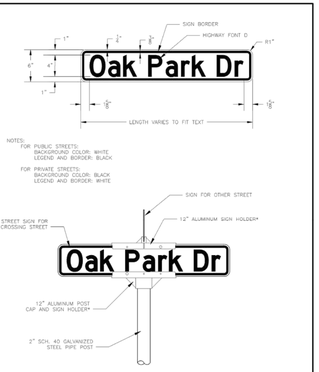
SCALE: N.T.S. | STANDARD No.: 02502-3 | DATE: JULY 2015



CITY OF BOERNE

CONCRETE SIDEWALK

SCALE: N.T.S. | STANDARD No.: 02502-4.0 | DATE: JANUARY 2011

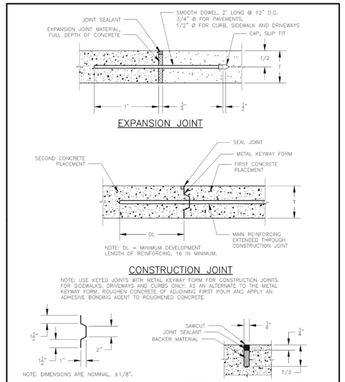


*USE 12" ALUMINUM SIGN HOLDERS FOR SIGNS > 24" IN LENGTH, FOR SHORTER SIGNS USE 5" HOLDERS.

CITY OF BOERNE

STREET SIGN

SCALE: N.T.S. | STANDARD No.: 02514-1.0 | DATE: JULY 2015

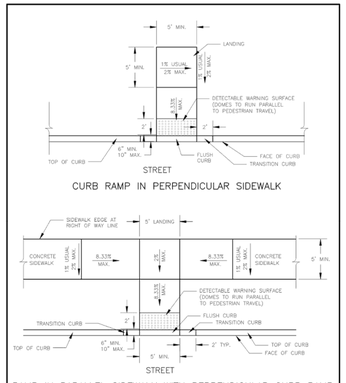


NOTE: SAWED CONTRACTION JOINTS MUST BE USED ON CONCRETE PAVING, ON DRIVEWAYS, SIDEWALKS AND CURB. TOOLED CONTRACTION JOINTS MAY BE USED. THE TOOLED JOINT MUST BE 1/2 INCH DEEP AND 1/2 INCH WIDE WITH A 1/4 INCH RADIUS ALONG THE EDGE.

CITY OF BOERNE

CONCRETE JOINTS

SCALE: N.T.S. | STANDARD No.: 02502-7.2 | DATE: JULY 2015

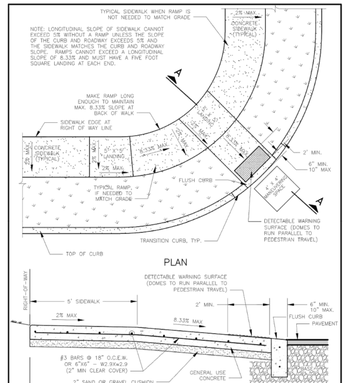


NOTE: LONGITUDINAL SLOPE OF SIDEWALK CANNOT EXCEED 5% WITHOUT A RAMP UNLESS THE SLOPE OF THE CURB AND ROADWAY EXCEEDS 5% AND THE SIDEWALK MATCHES THE CURB AND ROADWAY SLOPE. RAMPS CANNOT EXCEED A LONGITUDINAL SLOPE OF 8.33% AND MUST HAVE A FIVE FOOT SQUARE LANDING AT EACH END.

CITY OF BOERNE

SIDEWALK CURB RAMPS
SIDEWALK AT ROW LINE

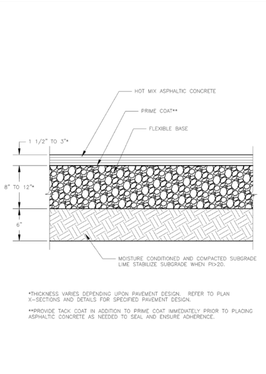
SCALE: N.T.S. | STANDARD No.: 02502-4 | DATE: JULY 2015



CITY OF BOERNE

SIDEWALK CURB RAMP ON RADIUS
SIDEWALK AT ROW LINE

SCALE: N.T.S. | STANDARD No.: 02502-4.2 | DATE: JULY 2015



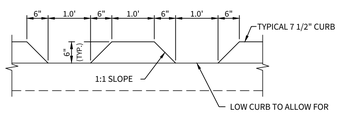
*THICKNESS VARIES DEPENDING UPON PAVEMENT DESIGN. REFER TO PLAN AND X-SECTIONS AND DETAILS FOR SPECIFIED PAVEMENT DESIGN.

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

CITY OF BOERNE

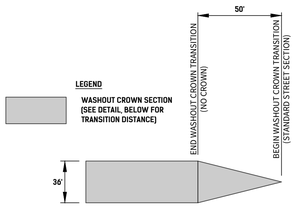
ASPHALTIC CONCRETE PAVEMENT SECTION

SCALE: N.T.S. | STANDARD No.: 02513-1.0 | DATE: JULY 2015

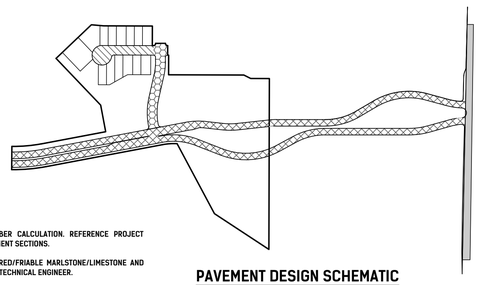


SAWTOOTH CURB DETAIL

(NOT TO SCALE)



WASHOUT CROWN TRANSITION DETAIL



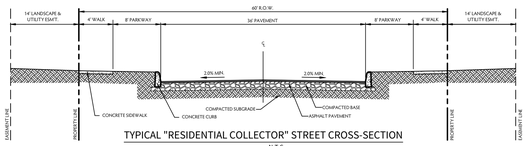
PAVEMENT DESIGN SCHEMATIC

NOTE:

1. REFERENCE GEOTECHNICAL REPORT ( ) FOR BORING INFORMATION AND CBR LOCATIONS.

LEGEND:

- TYPICAL "ARTERIAL" — CORLEY FARMS DRIVE — STA. 1+00.00 – 29+70.63
- TYPICAL "RESIDENTIAL COLLECTOR" — CORLEY RIDGEWAY — STA. 1+00.00 – 6+89.75
- TYPICAL "RESIDENTIAL LOCAL" — WHITE BARN COVE — STA. 1+00.00 – 5+33.00
- 72' R.O.W. "ARTERIAL" — SCENIC LOOP — STA.-1+00.00 – 17+33.00
- SAW TOOTH CURB — STREET 1 — STA. 1+52.35 – 1+80.58; STA. 13+51.33 – 13+75.01



TYPICAL "RESIDENTIAL COLLECTOR" STREET CROSS-SECTION

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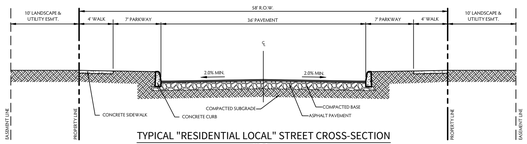

TYPICAL "RESIDENTIAL LOCAL" STREET CROSS-SECTION

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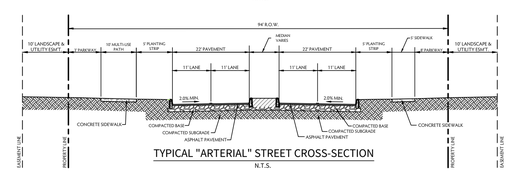

TYPICAL "ARTERIAL" STREET CROSS-SECTION

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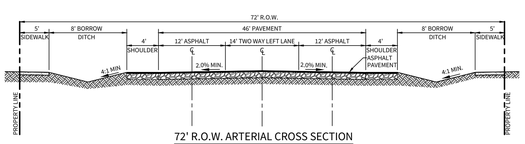

72' R.O.W. ARTERIAL CROSS SECTION

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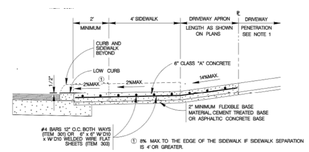

TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB
ITEM 500.3

NOTES:

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

STREET TYPE	HMAC TYPE "D"	HMAC TYPE "C"	FLEX BASE (TY A GR 2)	LIME TREATED SUBGRADE (42 LB/SY)	BASE UNDER CURB	STRUCTURAL NUMBER
RESIDENTIAL LOCAL STREET	2.0"	---	9.5"	8.0"	5.5"	2.85
RESIDENTIAL COLLECTOR STREET	3.0"	---	16.0"	8.0"	5.5"	4.20
72' R.O.W. ARTERIAL	2.0"	2.0"	22.5"	8.0"	----	5.55
94' R.O.W. ARTERIAL	2.0"	2.0"	22.5"	8.0"	5.5"	5.55

STREET PAVEMENT DESIGN OPTIONS

1. SUBGRADE – GEOTECH ENGINEER WILL BE PRESENT TO DETERMINE IF NATIVE MARL/ROCK SUBGRADE IS SUFFICIENT FOR PAVEMENT SECTION LISTED ABOVE.
2. CONTRACTOR SHALL APPLY CLAY SUBGRADE PAVEMENT SECTION ( ) IF GEOTECH ENGINEER DETERMINES NATIVE MARL/ROCK IS NOT SUFFICIENT. IF LIME TREATMENT IS REPLACED BY NATIVE MARL/ROCK, CITY OF BOERNE PUBLIC WORKS WILL BE INFORMED OF ALL CHANGES. REVISIONS WILL BE SUBMITTED INDICATING WHERE LIME TREATMENT WAS USED, ALONG WITH STATIONING. CONTRACTOR TO REVIEW GEOTECH RECOMMENDATIONS PRIOR TO FINAL SUBGRADE PREPARATION.
3. FILL MATERIAL – CONTRACTOR SHALL OVER-EXCAVATE STREET SUBGRADE AREAS CONTAINING SOILS HAVING A PLASTICITY INDEX GREATER THAN 20 AND REPLACE A MINIMUM OF 8" OF SUBGRADE WITH ON-SITE LIMESTONE MILLINGS THAT HAVE A PLASTICITY INDEX OF LESS THAN 20 OR USE FILL MATERIAL FROM AREAS OF SIMILAR SUBGRADE MATERIAL FOR ROADWAY EMBANKMENTS. GEOTECHNICAL ENGINEER WILL BE PRESENT AT THE TIME OF SUBGRADE PREPARATION TO DETERMINE THE EXTENTS OF APPLICABLE PAVEMENT SECTIONS BASED ON FINAL SUBGRADE.

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

CITY OF BOERNE STANDARD STREET DETAILS

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C12

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P:\03481\004\Drawings\C12 CITY OF BOERNE STANDARD STREET DETAILS.dwg 2021/04/26 2:44pm mstangle

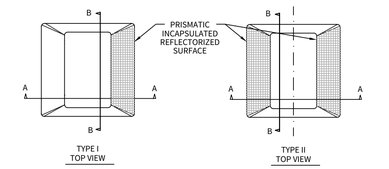
LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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



NOTE:
MINIMUM AREA OF MARKER EXPOSED TO TRAFFIC SHALL NOT BE LESS THAN 2.5 SQUARE INCHES.

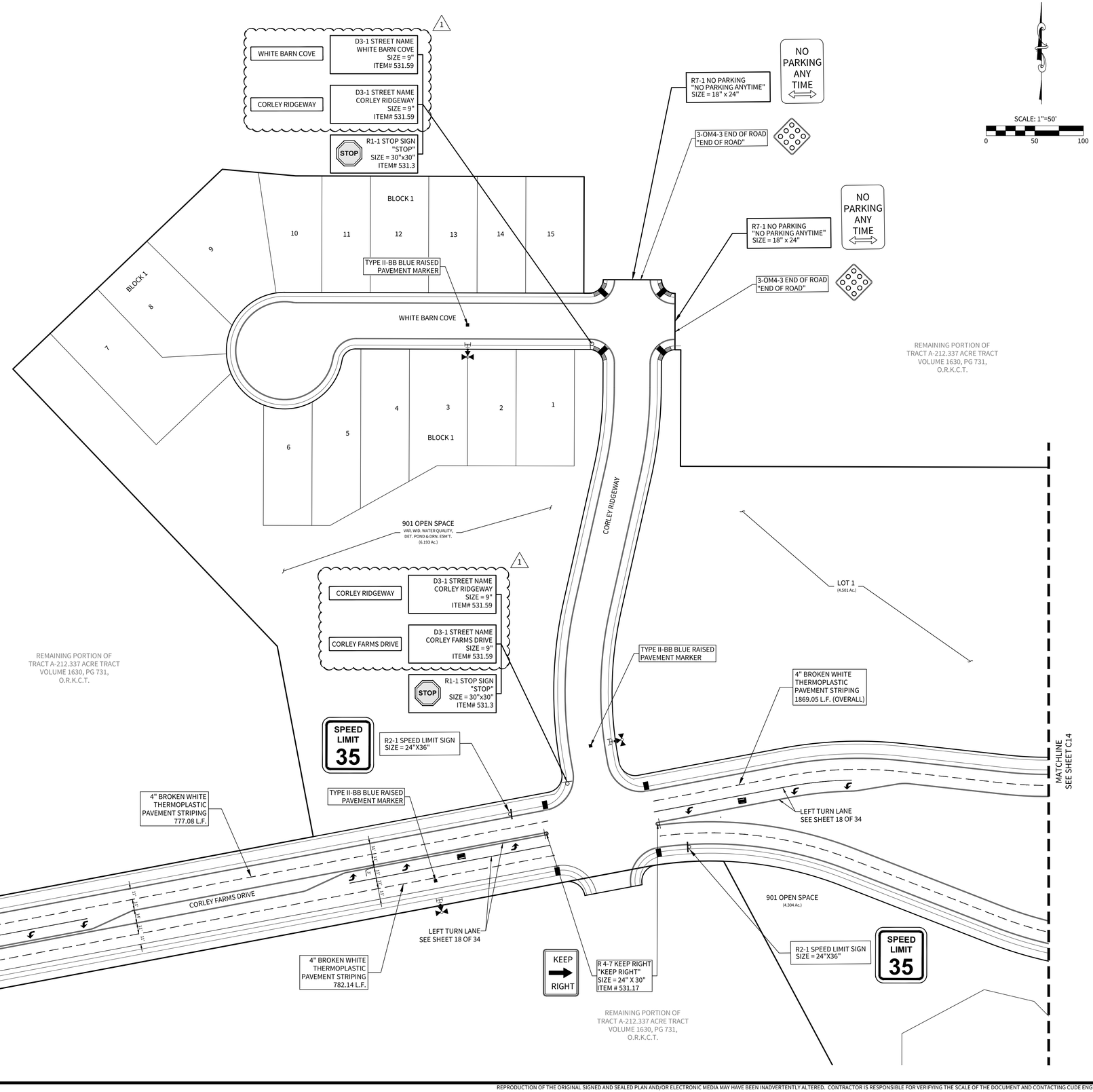
1) REFLECTORIZED BLUE - FIRE HYDRANT

2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
   a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
   b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.
   c) BITUMINOUS ADHESIVE FOR MARKERS ON BITUMIOUS PAVEMENTS. EPOXY ADHENSIVE FOR MARKERS ON PORTLAND CEMENT CONCRETE PAVEMENTS. EPOXY ADHESIVE SHALL BE MACHINE MIXED.

3) RAISED PAVEMENT MARKERS SHALL BE FREE OF RUST, SCALE, DIRT, OIL, GREASE, MOISTURE, OR CONTAMINATES WHICH MIGHT ADVERSELY AFFECT THE ADHESIVE BOND. ADHESIVE OR ANY OTHER MATERIAL THAT IMPAIRS THE FUNCTIONAL REFLECTIVITY WILL NOT BE ACCEPTABLE.

4) PLACEMENT OF RAISED PAVEMENT MARKERS SHALL BE 4 FEET OFF STREET CENTELINE TOWARD ITEM MARKED.

PAVEMENT REFLECTORS DETAIL
N.T.S.



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CORLEY FARMS UNIT 1

TRAFFIC SIGNAGE AND STRIPING PLAN

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-21 - PROVIDED STREET NAMES
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C13

P:\03481\DWG\2 Drawings\C13 TRAFFIC SIGNAGE AND STRIPING PLAN.dwg, 2021/05/26 2:44pm, mstallard

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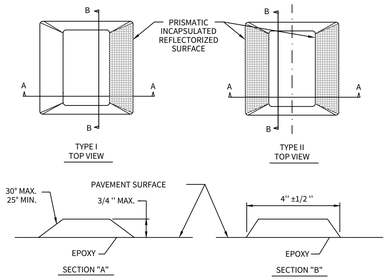

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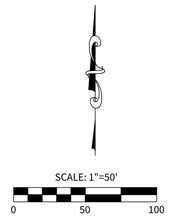

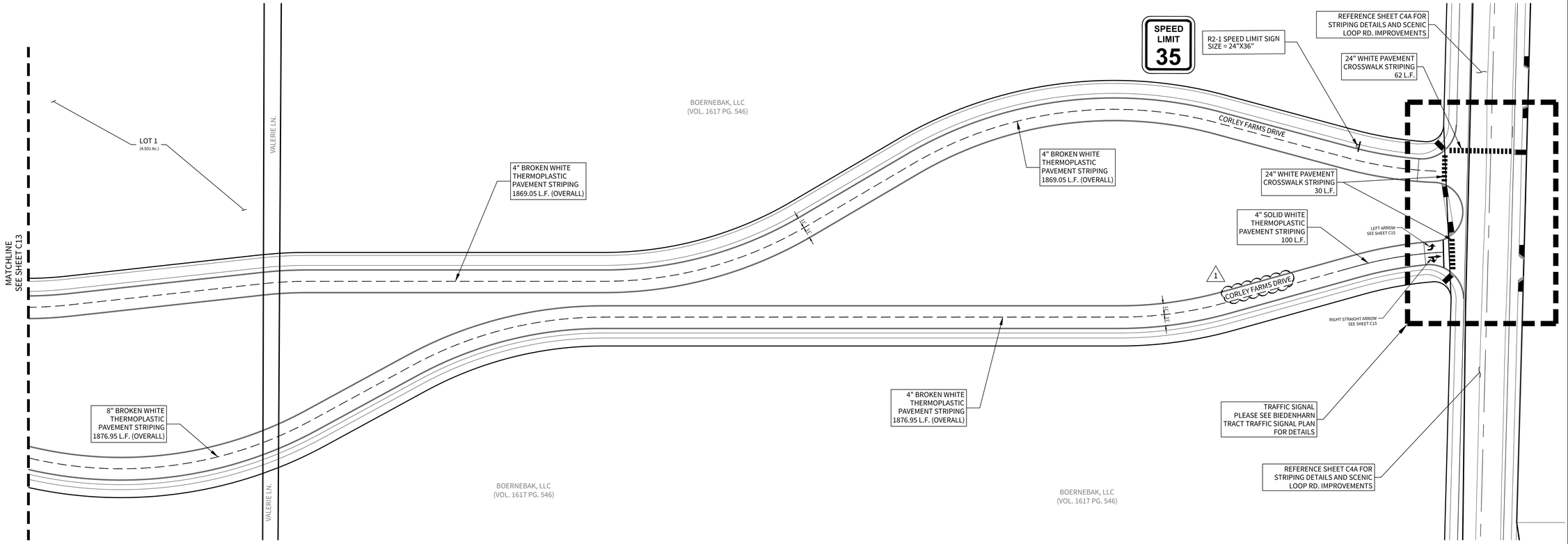

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CORLEY FARMS UNIT 1

TRAFFIC SIGNAGE AND STRIPING PLAN

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
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04.30.21

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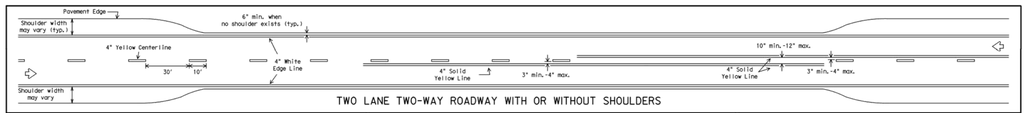
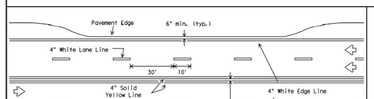
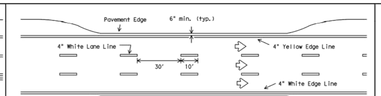


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

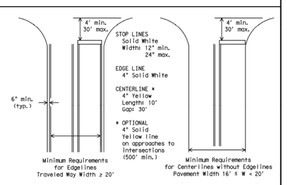


CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

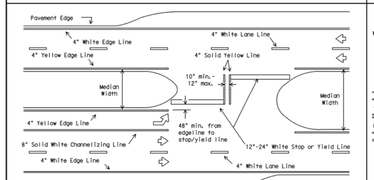
3" min.-4" usual
(12" max. for traveled way greater than 48' only)



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

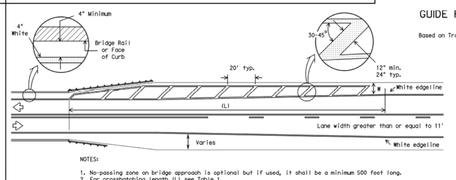


GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and at opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:
1. No passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER
WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed X	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

W-Width of Offset (FT.)
S-85th Percentile Speed may be used on roads where posted speed limits are 5 MPH below the legal speed limit. Crosshatching length shall be rounded up to nearest 5 foot increment.
L-Length of Crosshatching (FT.)

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:
L = 8 x 70 = 560 ft.

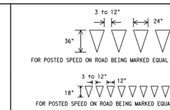
A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:
L = 4(40)ft ² / 60 = 106.67 ft, rounded to 110 ft.

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

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

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



YIELD LINES

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD
PAVEMENT MARKINGS

PM(1)-12

©TxDOT November 1978	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12				
5-00	DIST	COUNTY		SHEET NO.
8-00				
2-10				

22A

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DATE:
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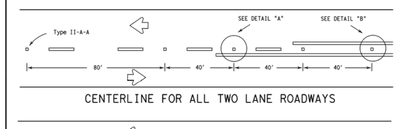
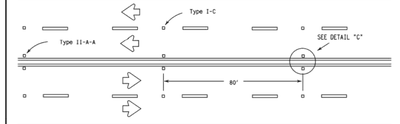
REFLECTIVE RAISED PAVEMENT MARKERS
FOR VEHICLE POSITIONING GUIDANCE

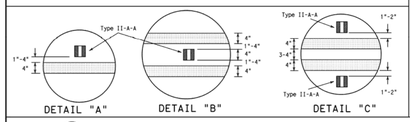


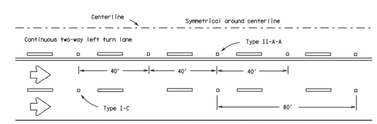
CENTERLINE FOR ALL TWO LANE ROADWAYS



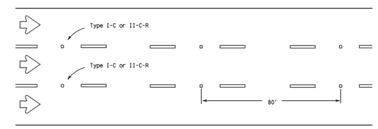
CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.



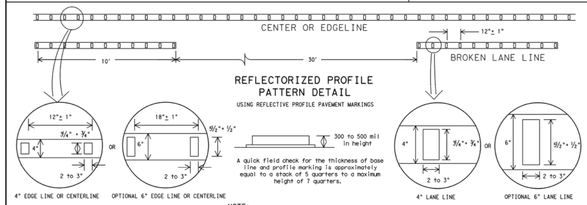


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



4" EDGE LINE OR CENTERLINE
OPTIONAL 6" EDGE LINE OR CENTERLINE
4" LANE LINE
OPTIONAL 6" LANE LINE

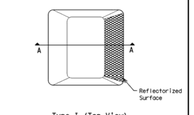
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

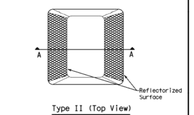
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

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



Type I (Top View)



Type II (Top View)

SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS

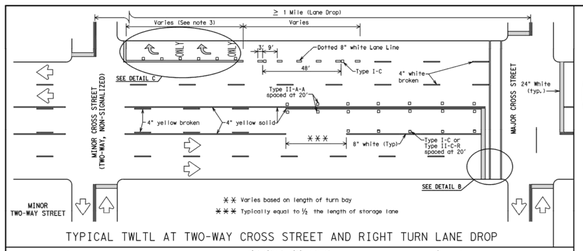
PM(2)-12

©TxDOT April 1977	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
4-92 2-10				
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00				
2-06				

22B

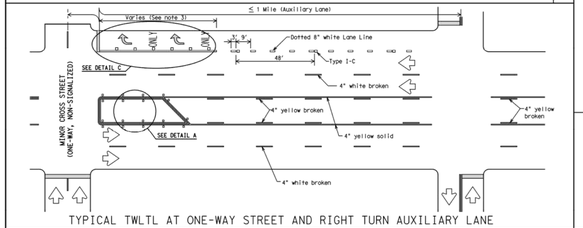
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Texas Department of Transportation for any purpose whatsoever. TxDOT assumes no responsibility for the use of this standard as to other formats or for incorrect results or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

DATE:
FILE:

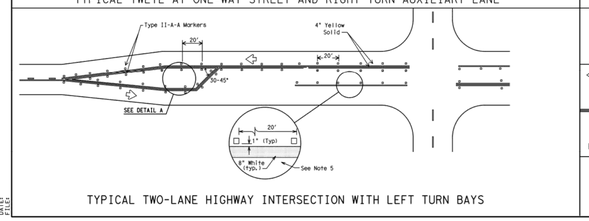


** Varies based on length of turn bay
*** Typically equal to ½ the length of storage lane

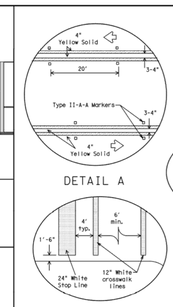
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



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

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

GENERAL NOTES

1. Refer elsewhere in plans for additional RPM placement and details.
2. Lane use word and arrow markings shall be used on the approach and approaching an intersection became mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and arrow only for emphasis. Details for lanes and arrows are shown in the Standard Highway Sign Designs for Texas.
3. When lane used word and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 100 feet. When a single lane use word or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
4. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection with a two-way left turn is not required unless stated elsewhere in the plans.

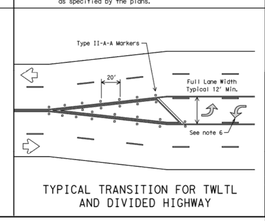
Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR
TWO-WAY LEFT TURN LANES
DIVIDED HIGHWAYS AND
RURAL LEFT TURN BAYS

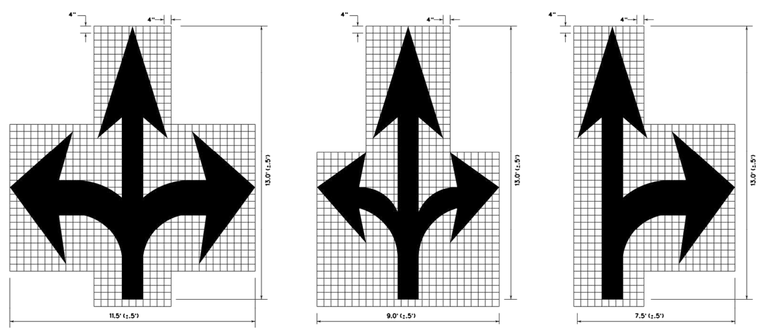
PM(3)-12

©TxDOT April 1998	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
5-00 2-12				
8-00	DIST	COUNTY		SHEET NO.
2-10				

22C



TYPICAL TRANSITION FOR TWLTL
AND DIVIDED HIGHWAY



NOTES:

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION. SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:
   - A. REGULATORY
     - STOP
     - RIGHT (LEFT) TURN ONLY
     - 25 MPH
     - SYMBOL ARROWS
   - B. WARNING
     - STOP AHEAD
     - SIGNAL AHEAD
     - SCHOOL
     - SCHOOL X-ING
     - PED X-ING
     - R X R (SEE RCPM DETAIL)
     - OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS
5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES.
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN LETTERS SHOULD BE APPROXIMATELY 4 INCHES. THE WIDTH OF LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES.
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED BY STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED ELSEWHERE IN THE PLANS.

SEPTEMBER 2009

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING STANDARDS

STANDARD PAVEMENT MARKINGS
(ARROWS)

SHEET 3 OF 16

SUBMITTAL	PROJECT NO.		DATE
DRAWN BY	DESIGN BY	CHECKED BY	SHEET NO.

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

CORLEY FARMS
UNIT 1

TXDOT PAVEMENT MARKING DETAILS

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C15

P:\03481\004\Drawings\C15 TxDOT PAVEMENT MARKING DETAILS.dwg 2021.04.26 - 2:45pm mwalpert

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:

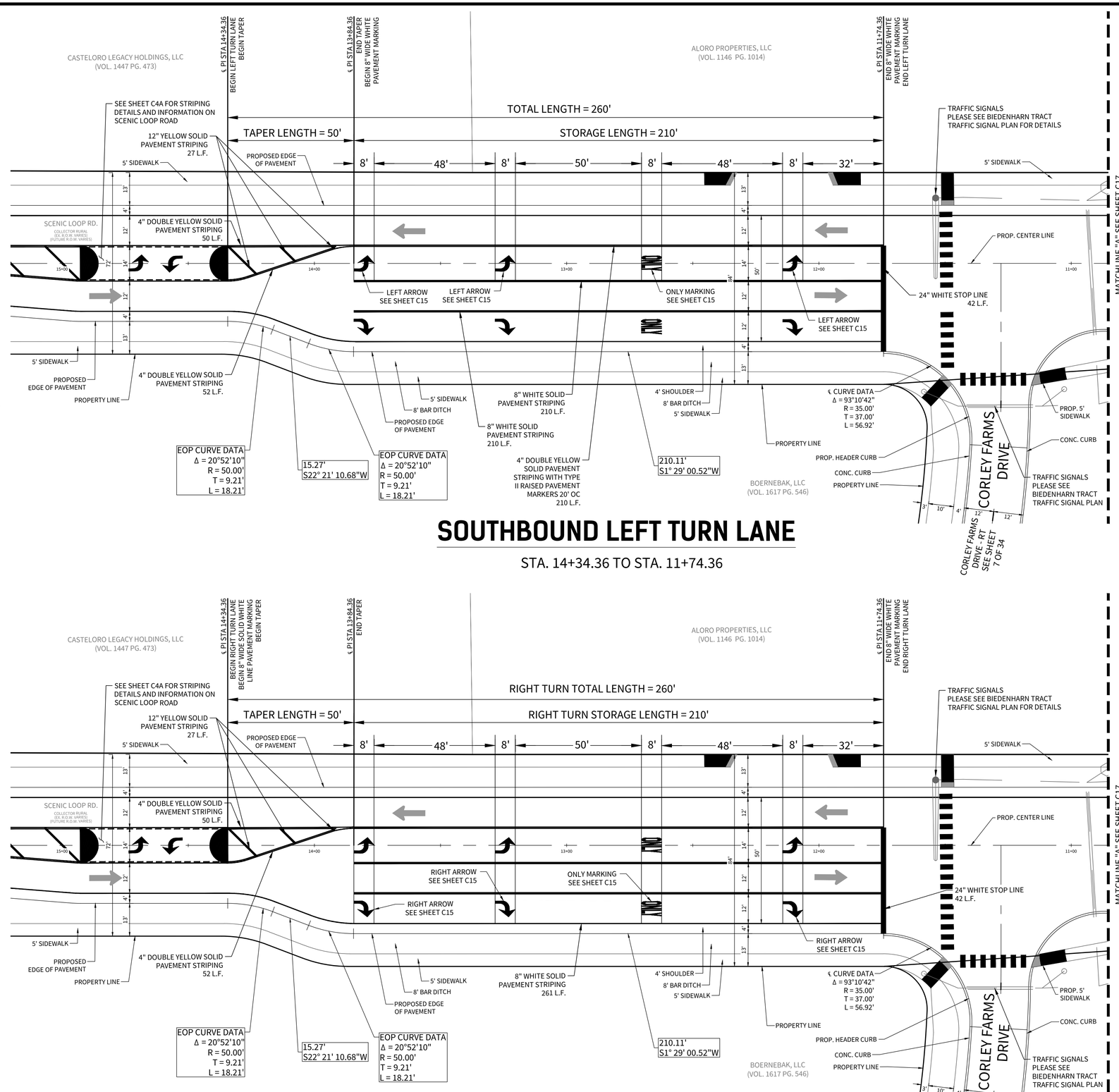
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

LEGEND

- TRAFFIC FLOW ARROWS INDICATING DIRECTION



SOUTHBOUND LEFT TURN LANE

STA. 14+34.36 TO STA. 11+74.36

SOUTHBOUND RIGHT TURN LANE

STA. 14+34.36 TO STA. 11+74.36 (1)

SCALE: 1"=20'
0 10 20

CAUTION NOTE:

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC, UNDERGROUND FIBER OPTIC, AND TELEPHONE UTILITIES EXIST ALONG CASCADE CAVERN ROAD AND OLD FREDERICKSBURG ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

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CORLEY FARMS UNIT 1

TURN LANE PLAN

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-23 - REVISED TURN LANE STATIONING
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C16

16 OF 34

P:\03481\Civil\2-Drawings\C4A TURN LANE PLAN.dwg 2021/04/26 3:42pm mwadvard

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.

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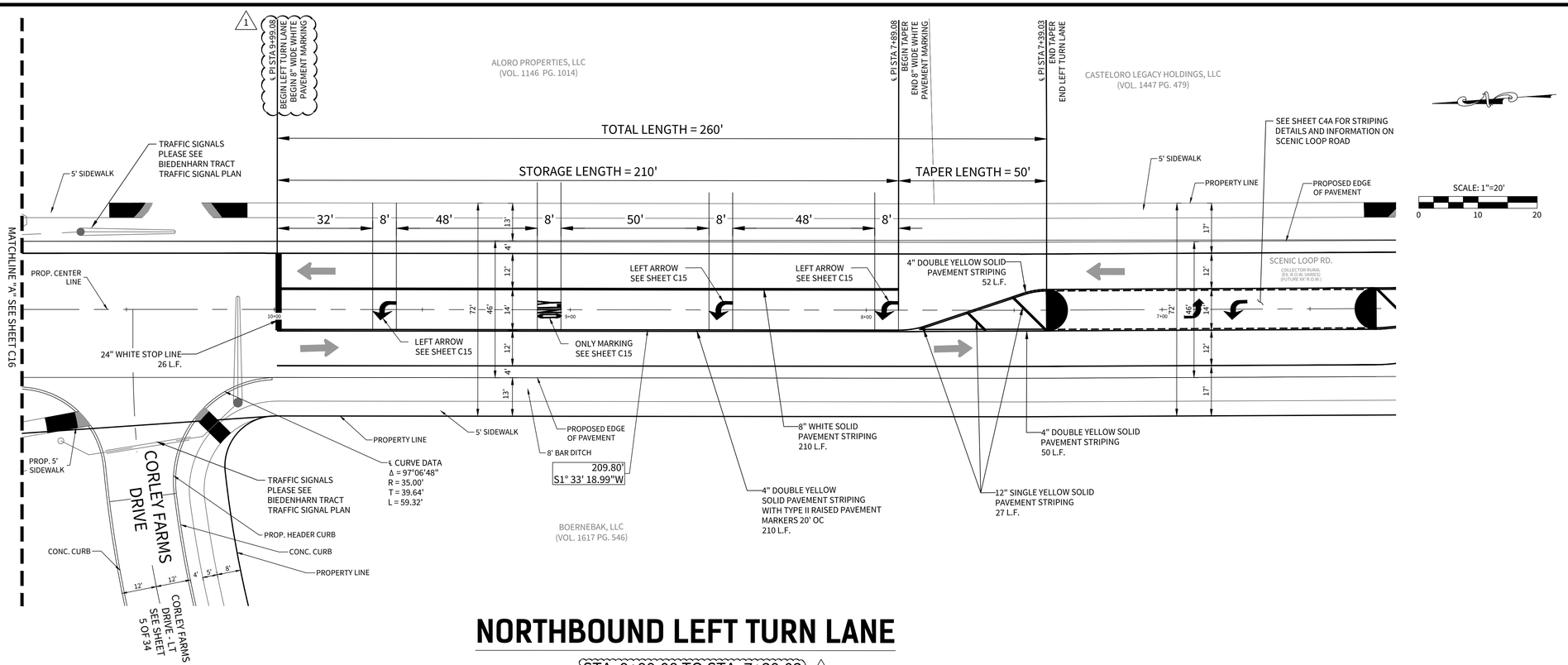
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

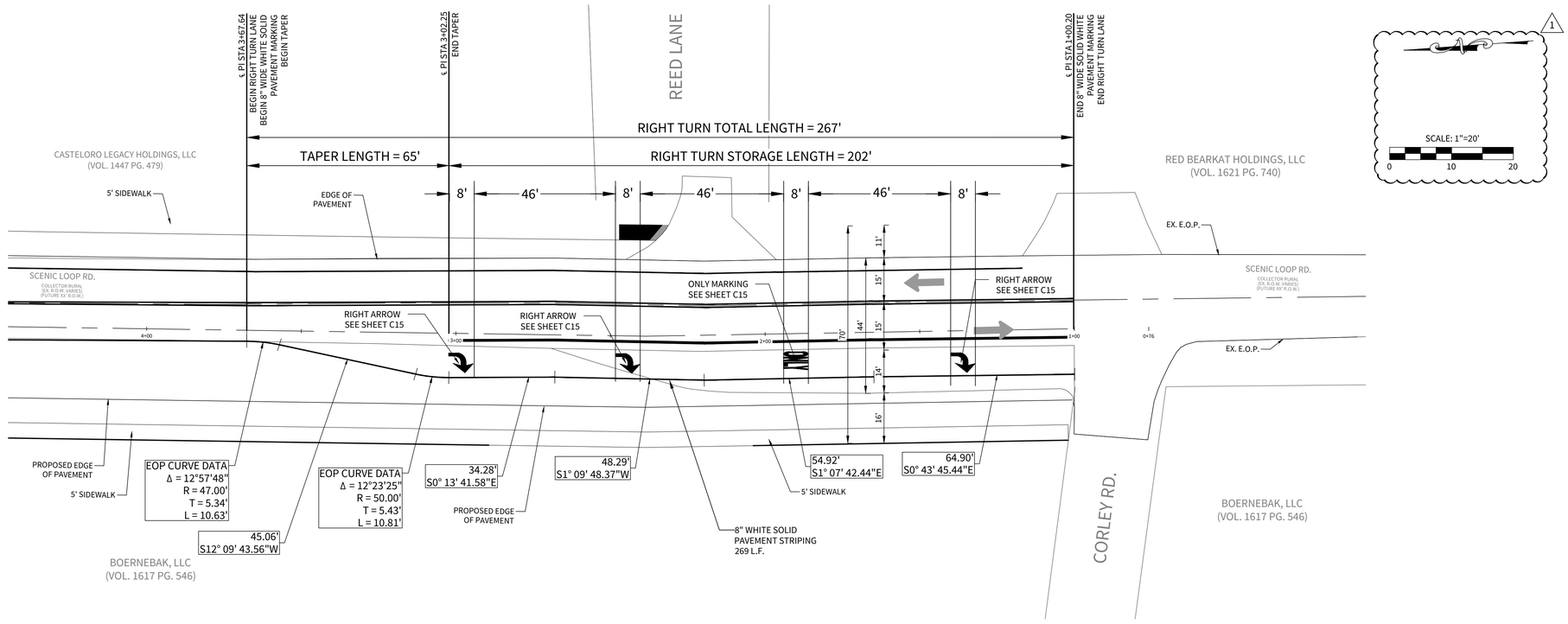
LEGEND

- TRAFFIC FLOW ARROWS INDICATING DIRECTION



NORTHBOUND LEFT TURN LANE

STA. 9+99.08 TO STA. 7+39.03 (1)



SOUTHBOUND LEFT TURN LANE

STA. 3+67.64 TO STA. 1+00.20 (1)

CAUTION NOTE:

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC, UNDERGROUND FIBER OPTIC, AND TELEPHONE UTILITIES EXIST ALONG CASCADE CAVERN ROAD AND OLD FREDERICKSBURG ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

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CUDE ENGINEERS EST. 1980

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

CORLEY FARMS UNIT 1

TURN LANE PLAN

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-23 - REVISED NORTHBOUND TURN LANE START STATION, UPDATED TURN LANE STATIONING, ADDED NORTH ARROW AND SCALE BAR.
2.
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C17

17 OF 34

P:\03481\004\Drawings\C17 TURN LANE PLAN.dwg 2021/04/26 3:43pm mwalcott

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

LOCATION MAP
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CONTACT PERSON: FELIPE GONZALEZ
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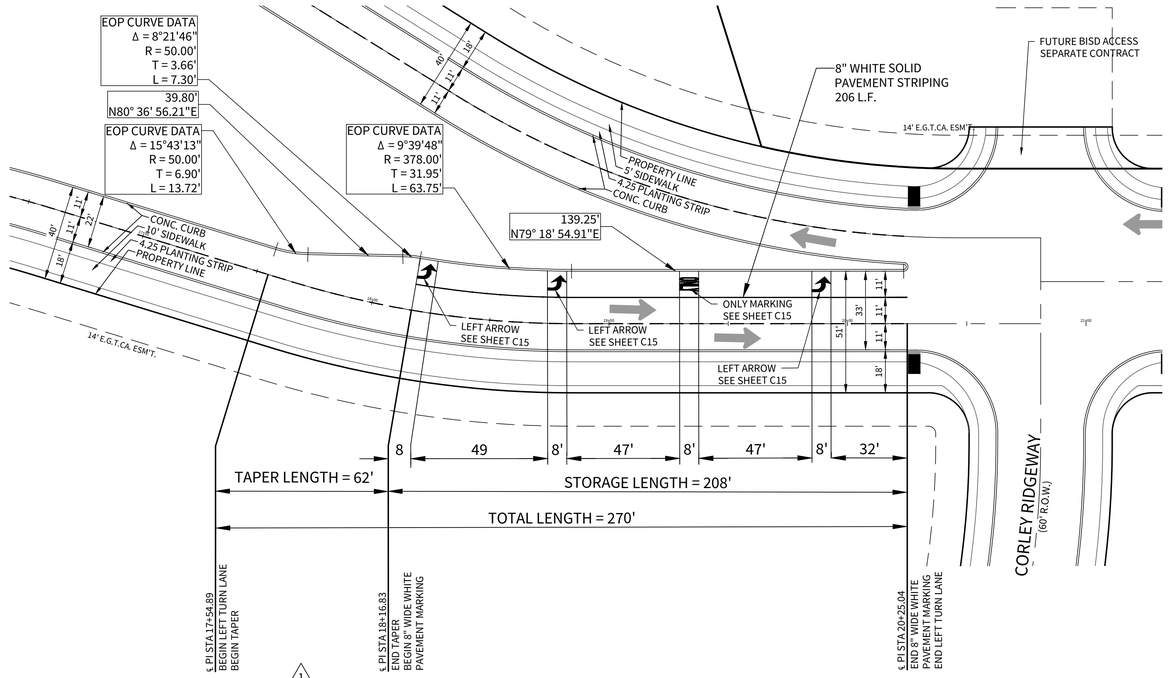
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

LEGEND

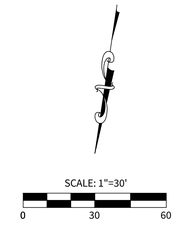
- TRAFFIC FLOW ARROWS INDICATING DIRECTION

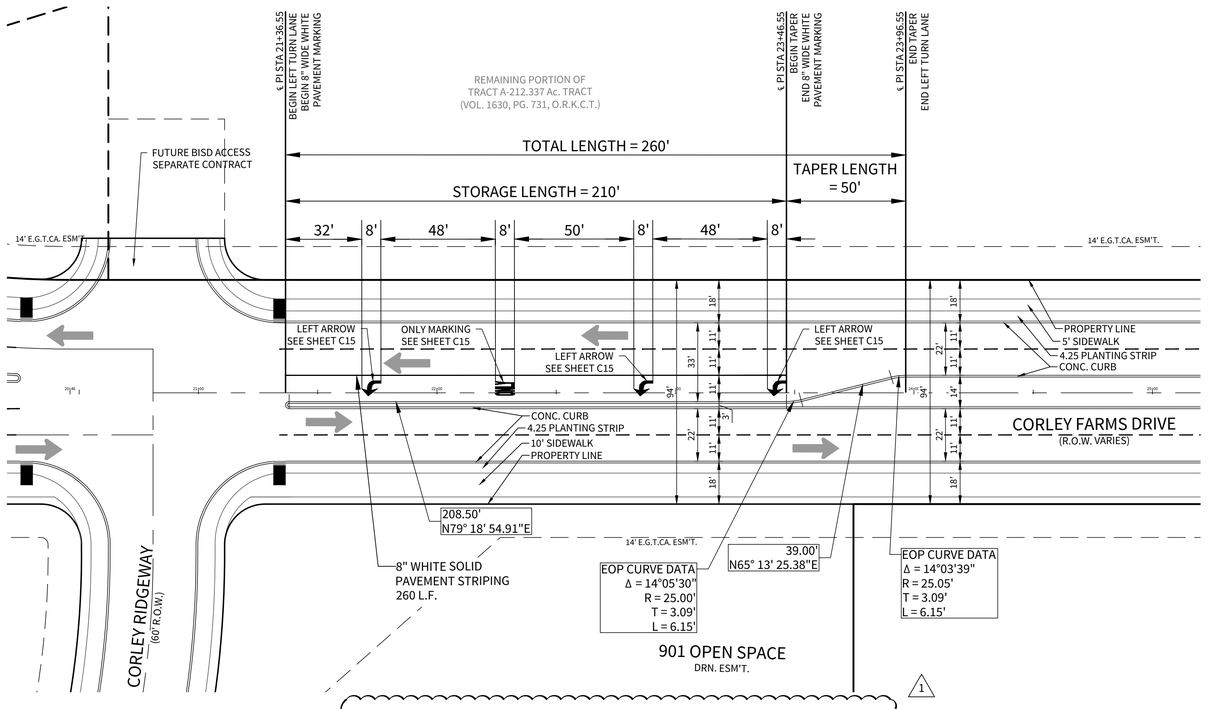


1

CORLEY FARMS DRIVE

WEST BOUND LEFT TURN STA. 17+54.89 TO STA. 20+25.04

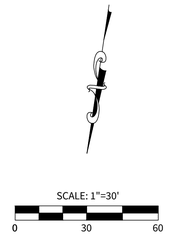




1

CORLEY FARMS DRIVE

EAST BOUND LEFT TURN STA. 21+36.55 TO STA. 23+96.55



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CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

TURN LANE PLAN

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-23 - PROVIDED STREET NAMES, UPDATED TURN LANE STATIONING.
2.
3.
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C18

P:\03481\004\Drawings\C18 TURN LANE PLAN.dwg 2021/04/26 3:43pm mwaylard

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

LOCATION MAP
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CONTACT PERSON: FELIPE GONZALEZ
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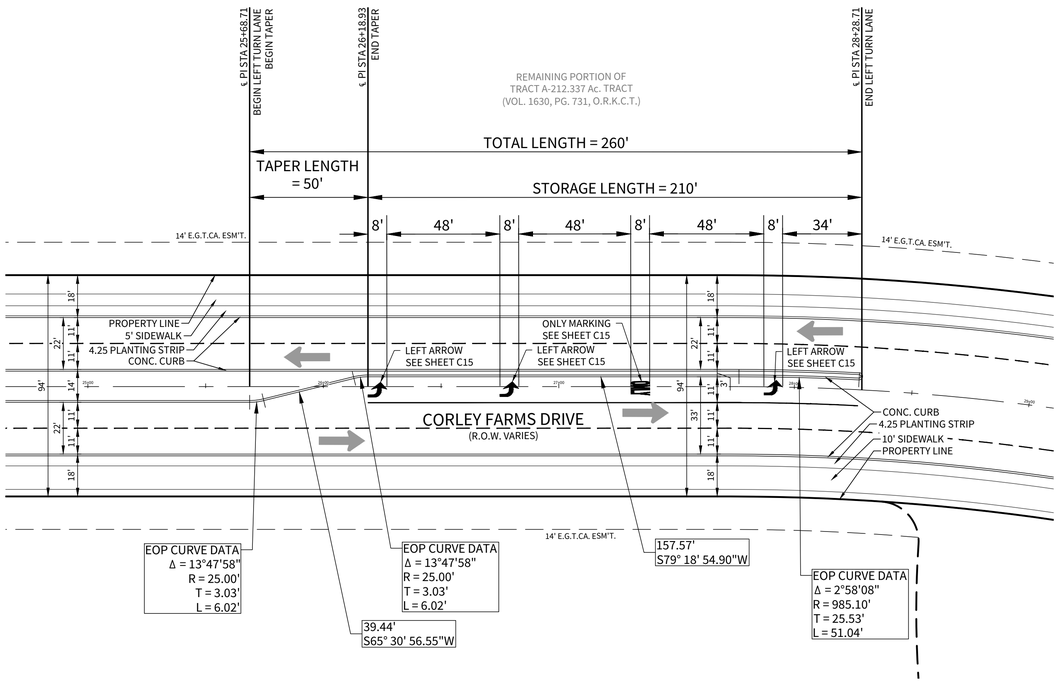
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

LEGEND

- TRAFFIC FLOW ARROWS INDICATING DIRECTION



SCALE: 1"=30'
0 30 60

CORLEY FARMS DRIVE

WEST BOUND LEFT TURN STA. 25+68.71 TO STA. 28+28.71

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 1

TURN LANE PLAN

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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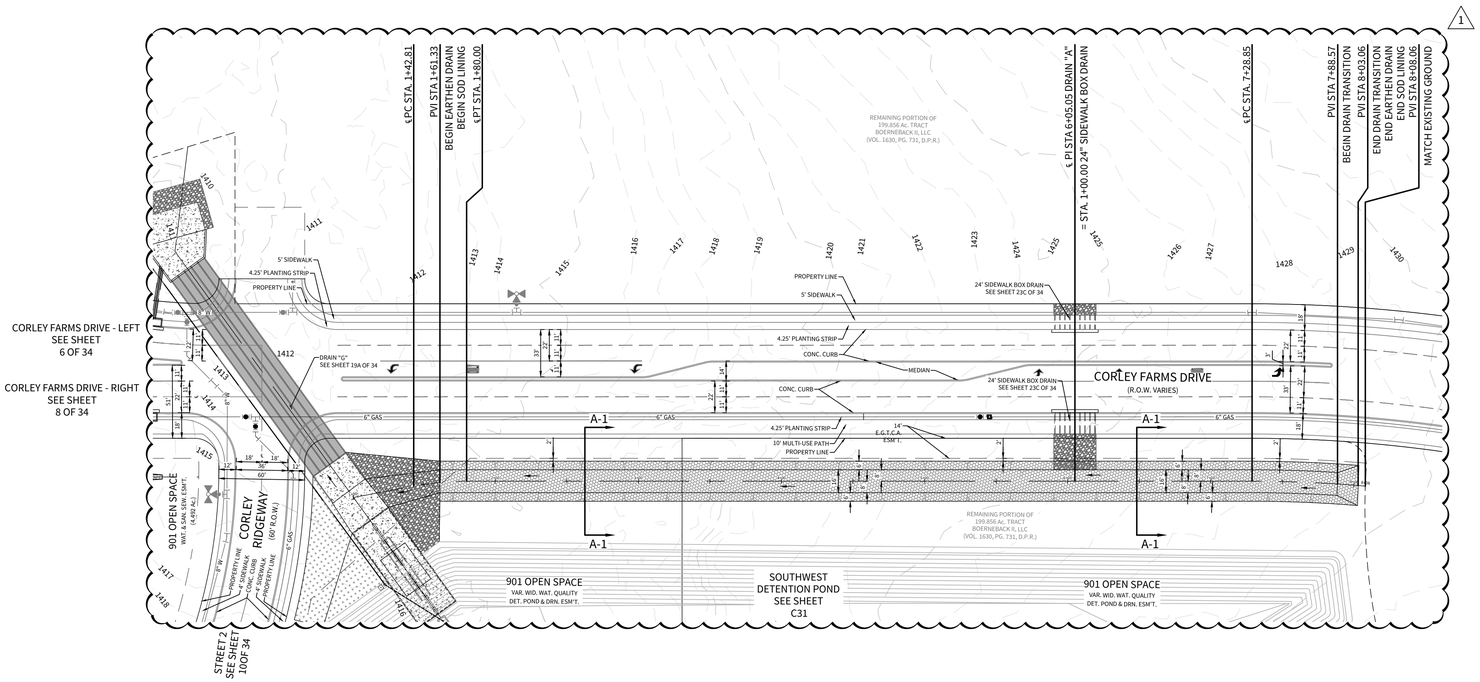
STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED PROFESSIONAL ENGINEER
04.30.21

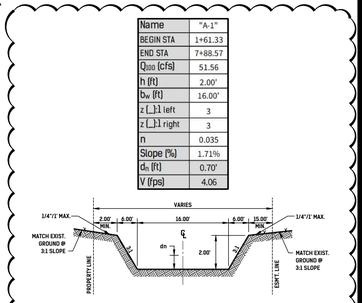
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C18A

P:\03481\004\2-Drawings\CIVIL\TURN LANES\C18A.dwg 2021/04/30 7:42pm brandonjost

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





Name	"A-1"
BEGIN STA	1+61.33
END STA	7+88.57
Q_{100} (cfs)	51.56
h (ft)	2.00'
b_w (ft)	16.00'
z [_]:1 left	3
z [_]:1 right	3
n	0.035
Slope (%)	1.71%
d_n (ft)	0.70'
V (fps)	4.06

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

LEGEND:

- PROPOSED CULVERT
- CONCRETE RIP RAP
- ROCK GABION MATTRESS
- SOD LINED DRAINAGE CHANNEL

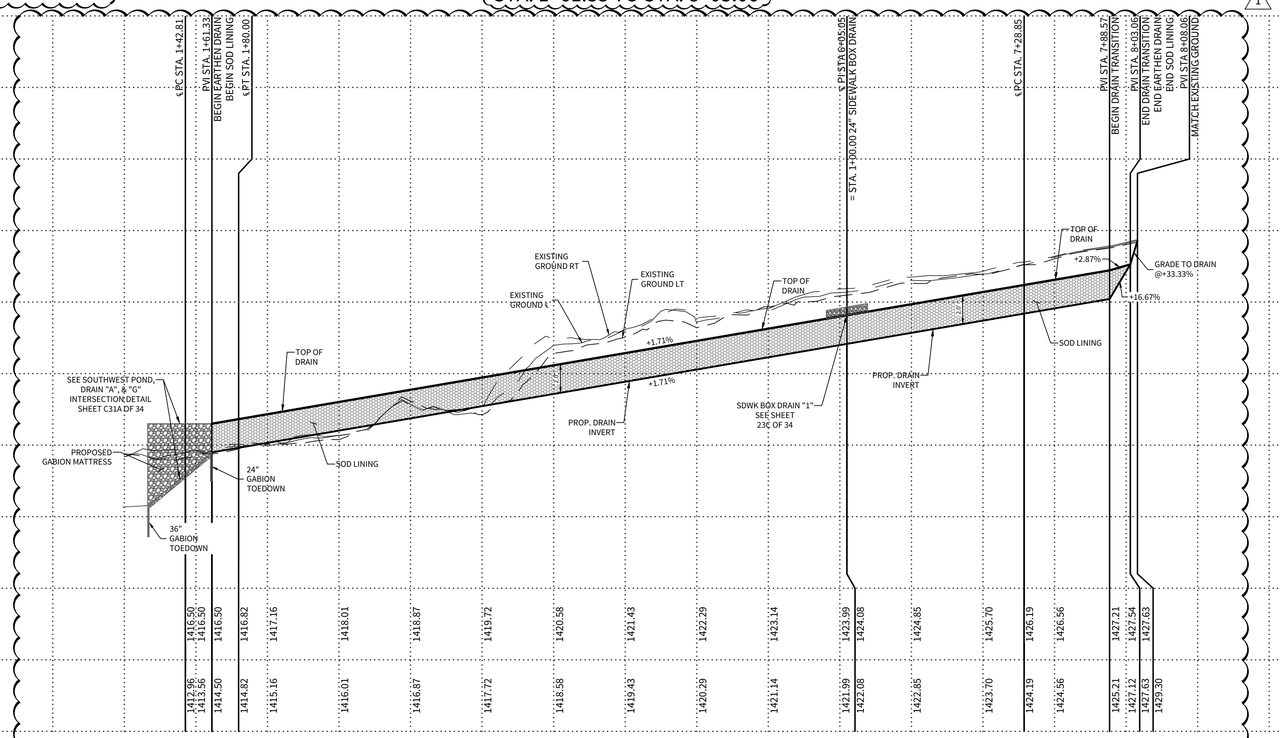
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP–RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, THIS EARTHEN CHANNEL MUST BE SOD LINED FROM STATION 1+61.33 TO 8+03.06 WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 - 6 FPS.

DRAIN A

STA. 1+61.33 TO STA. 8+03.06

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



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San Antonio, Texas 78231
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CORLEY FARMS UNIT 1

DRAIN "A" PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - REVISED DRAIN DESIGN, REVISED NOTES, REVISED DRAIN CROSS SECTION.
2.
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CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C19

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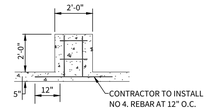
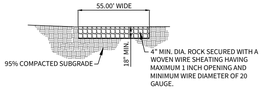


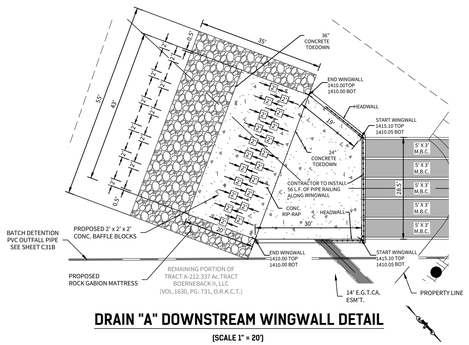
DRAIN "G" BAFFLE BLOCK REINFORCEMENT DETAIL

(N.T.S.)



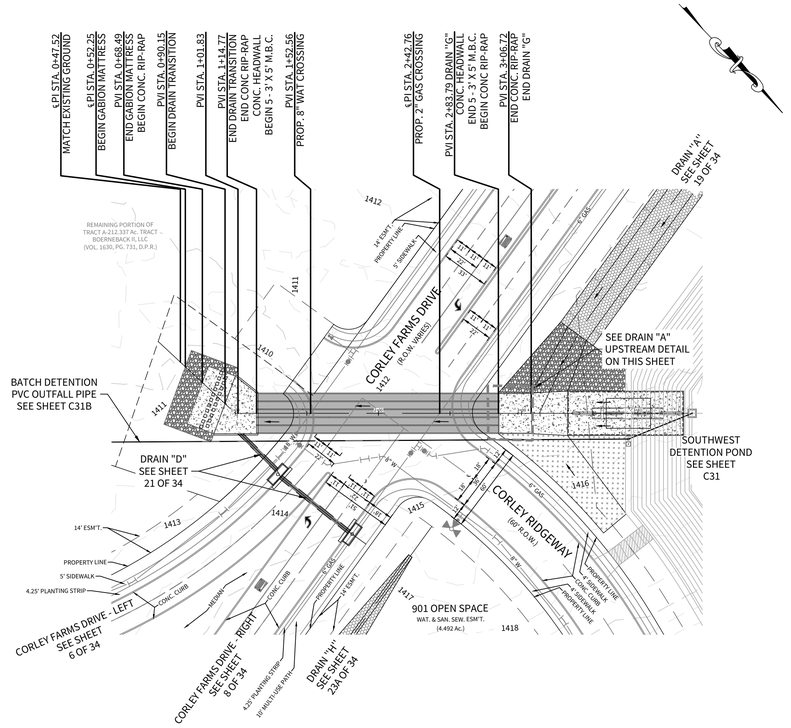
GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

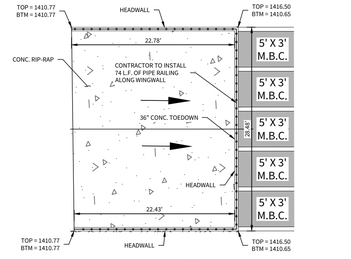
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



DRAIN "A" DOWNSTREAM WINGWALL DETAIL

(SCALE 1" = 20')





DRAIN "A" UPSTREAM DETAIL

(SCALE 1" = 10')

LEGEND:

- PROPOSED CULVERT
- CONCRETE RIP RAP
- ROCK GABION MATTRESS
- SOD LINED DRAINAGE CHANNEL

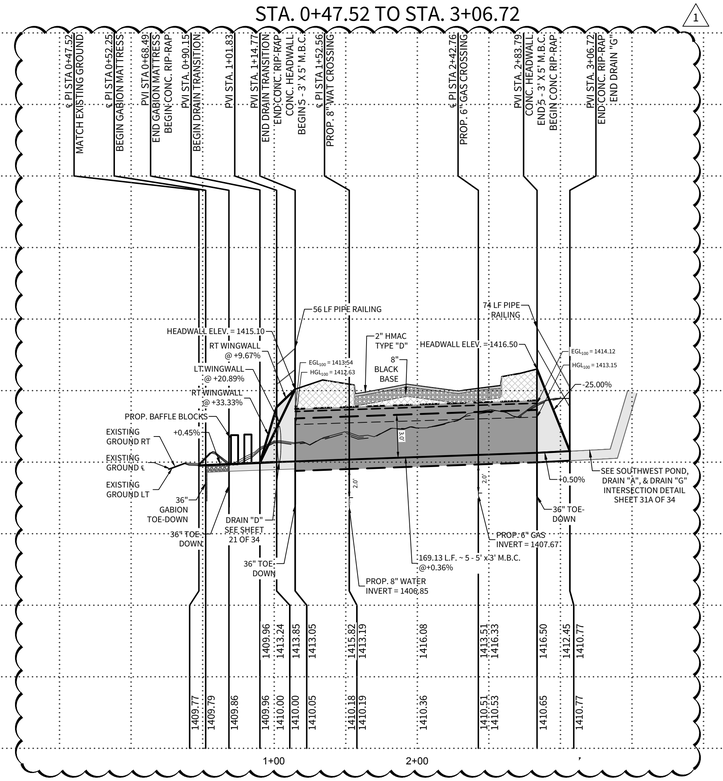
NOTES: 1

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 - 6 FPS.

DRAIN "G"

STA. 0+47.52 TO STA. 3+06.72

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



CULVERT SUMMARY

5 - 5' X 3' M.B.C.
Q_{100} = 493.68 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = BOX
RISE = 36"
SPAN = 60"
CHANNEL SLOPE = 0.36%
OUTFALL V_{100} = 9.11 FPS

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CORLEY FARMS UNIT 1

DRAIN "G" PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - ADDED CONC. TOE-DOWN, ADDED HGL & EGL, REVISED NOTES.
2.
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C19A

19A OF 34

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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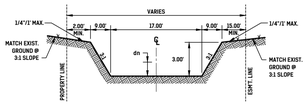
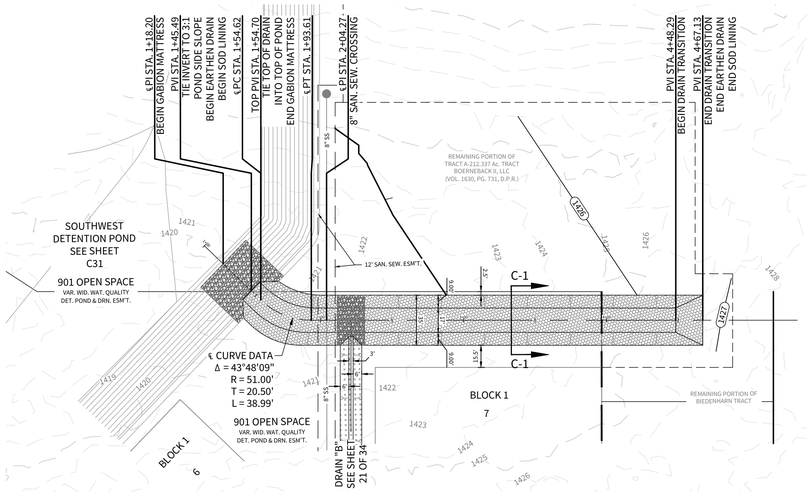


DRAIN "C-1" SECTIONS

(N.T.S.)

1

Name	"C-1"
BEGIN STA	1+45.49
END STA	4+48.29
Q_{100} (cfs)	338.64
h (ft)	3.00'
b_w (ft)	17.00'
z (_):1 left	3
z (_):1 right	3
n	0.035
Slope (%)	0.75%
d_n (ft)	2.49'
V (fps)	5.57

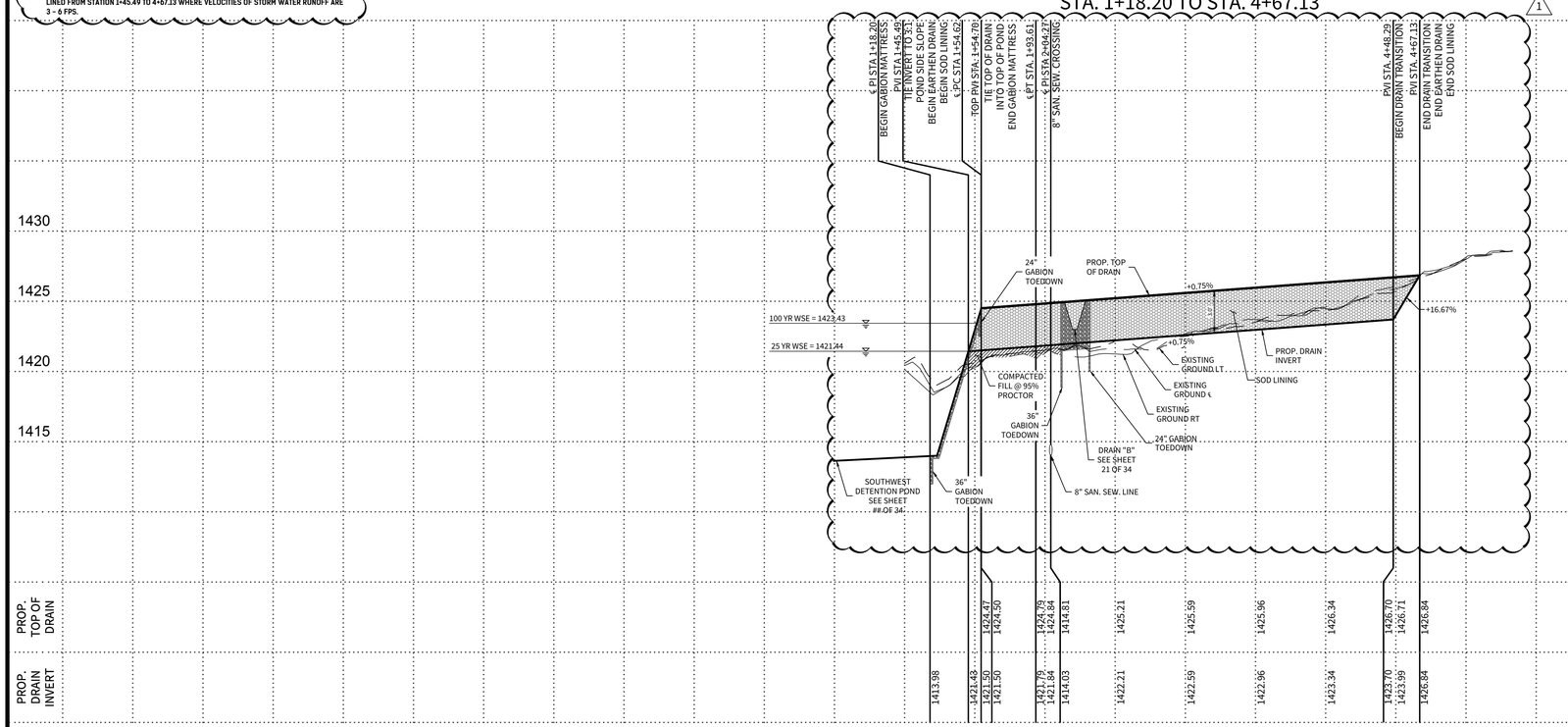


DRAIN "C"

STA. 1+18.20 TO STA. 4+67.13

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

1



1

LEGEND:

SOD LINED DRAINAGE CHANNEL

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, THIS EARTHEN CHANNEL MUST BE SOD LINED FROM STATION 1+45.49 TO 4+67.13 WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 < 6 FPS.

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CORLEY FARMS UNIT 1

DRAIN "C" PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - REVISED DRAIN CROSS SECTION, ADDED SOD LINING LIMITS, UPDATED NOTES.
2.
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4.
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7.
8.
9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C20

20 OF 34

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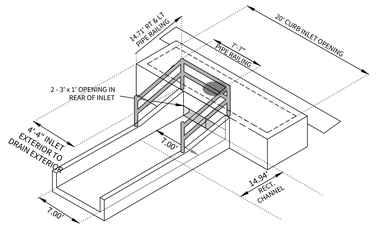
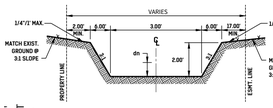
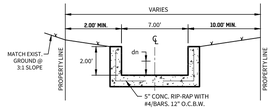


DRAIN "B"
CURB INLET & CONC. DRAIN DETAIL

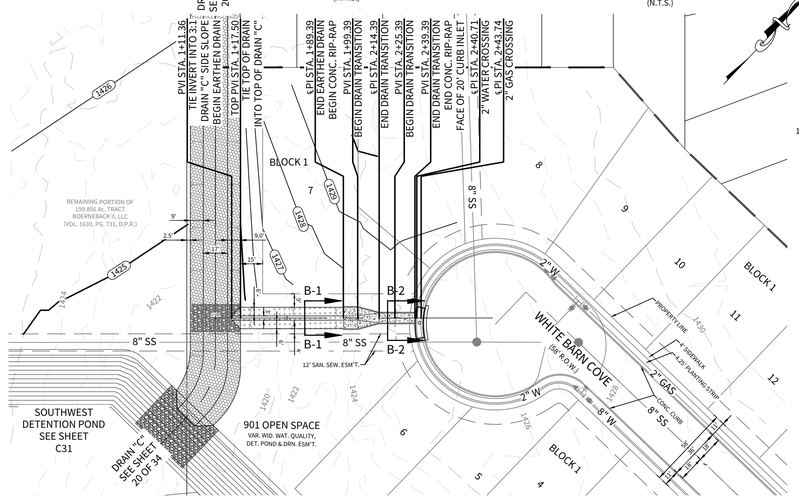
Name	"B-1"	"B-2"
BEGIN STA	1+11.36	2+14.39
END STA	1+89.39	2+39.39
Q_{25} (cfs)	22.69	22.69
h (ft)	2.00'	2.00'
b_W (ft)	3.00'	7.00'
z (_):1 left	3	0
z (_):1 right	3	0
n	0.035	0.015
Slope (%)	0.50%	0.50%
d_n (ft)	1.28'	0.67'
V (fps)	2.58	4.80



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

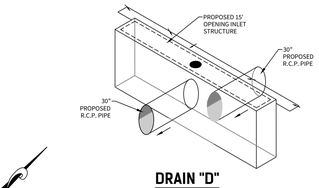


DRAIN "B-2" SECTION
(N.T.S.)

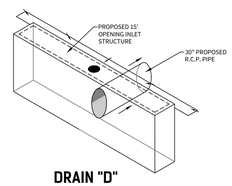


DRAIN "B"

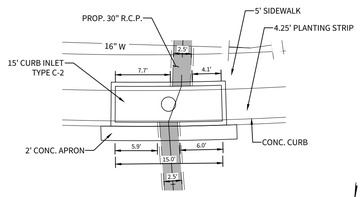
STA. 1+11.36 TO STA. 2+39.39



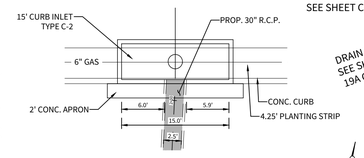
DRAIN "D"
15' INLET "D-1" AND R.C.P. PIPE DETAIL
(N.T.S.)



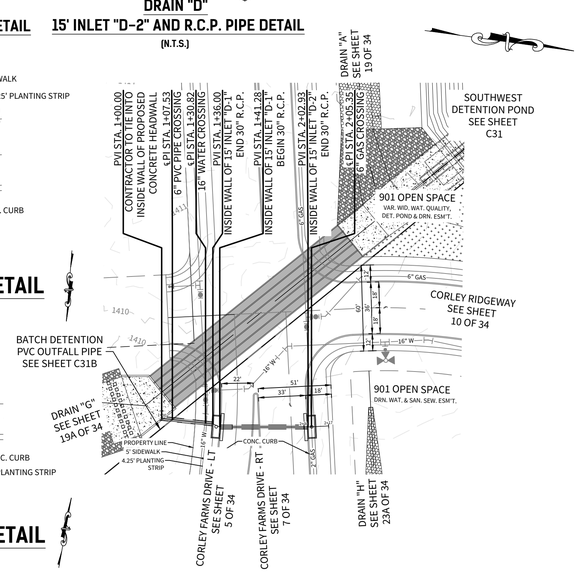
DRAIN "D"
15' INLET "D-2" AND R.C.P. PIPE DETAIL
(N.T.S.)



DRAIN "D" 15' INLET "D-1" DETAIL
(SCALE 1" = 10')



DRAIN "D" 15' INLET "D-2" DETAIL
(SCALE 1" = 10')



DRAIN "D"

STA. 1+00.00 TO STA. 2+02.35

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

DRAIN "B" CURB INLET & CONC. DRAIN DETAIL

LEGEND:

- PROPOSED PIPE CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL

NOTES:

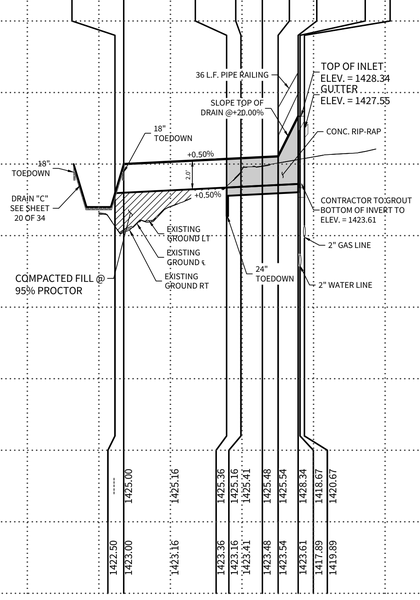
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP–RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 – 6 FPS.

20' CURB INLET OPENING (TYPE C-1) DRAIN B

$Q_{100\ PROJECT}$ = 22.69 c.f.s.
$Q_{100\ ULTIMATE}$ = 22.69 c.f.s.

$$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{22.69}{0.7*0.50*(2*32.2*0.54)^{1/2}}$$

L = 10.99' INLET REQ'D.
USED - 20' INLET (TYPE C-1)
A = 6.00 s.f. (1 - 3'x2' OPENING(S))
V = 3.78 f.p.s.
Hv = 0.22'
1.5Hv = 0.33'
Hw = z + y + 1.5Hv
Hw = 1423.34+2.0+0.33
Hw = 1,425.67
GUTTER = 1,427.55



15' CURB INLET OPENING DRAIN D-1 (TYPE C-2)

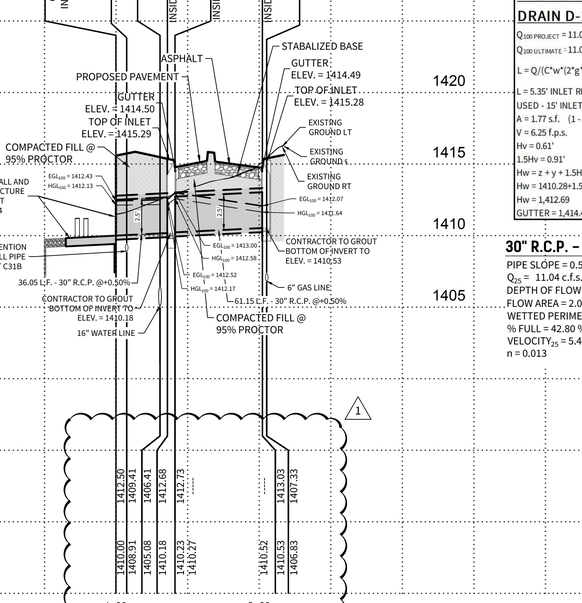
$Q_{25\ PROJECT}$ = 8.67 c.f.s.
$Q_{25\ ULTIMATE}$ = 8.67 c.f.s.

$$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{8.665}{0.7*0.50*(2*32.2*0.54)^{1/2}}$$

L = 4.20' INLET REQ'D.
USED - 15' INLET (TYPE C-1)
A = 1.77 s.f. (1 - 1.5' DIAMETER OPENING(S))
V = 4.91 f.p.s.
Hv = 0.37'
1.5Hv = 0.56'
Hw = z + y + 1.5Hv
Hw = 1409.79+1.5+0.56
Hw = 1,411.85
GUTTER = 1,414.50

30" R.C.P. – INLET D-1 TO HEADWALL

PIPE SLOPE = 0.50 %
Q_{25} = 14.69 c.f.s.
DEPTH OF FLOW = 1.26 ft
FLOW AREA = 2.48 ft²
WETTED PERIMETER = 3.95 ft
% FULL = 50.40 %
$VELOCITY_{25}$ = 5.92 ft/s
n = 0.013



15' CURB INLET OPENING DRAIN D-2 (TYPE C-2)

$Q_{100\ PROJECT}$ = 11.04 c.f.s.
$Q_{100\ ULTIMATE}$ = 11.04 c.f.s.

$$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{11.04}{0.7*0.50*(2*32.2*0.54)^{1/2}}$$

L = 5.35' INLET REQ'D.
USED - 15' INLET (TYPE C-1)
A = 1.77 s.f. (1 - 1.5' DIAMETER OPENING(S))
V = 6.25 f.p.s.
Hv = 0.61'
1.5Hv = 0.91'
Hw = z + y + 1.5Hv
Hw = 1410.28+1.5+0.91
Hw = 1,412.69
GUTTER = 1,414.49

30" R.C.P. – INLET D-2 TO INLET D-1

PIPE SLOPE = 0.50 %
Q_{25} = 11.04 c.f.s.
DEPTH OF FLOW = 1.07 ft
FLOW AREA = 2.02 ft²
WETTED PERIMETER = 3.57 ft
% FULL = 42.80 %
$VELOCITY_{25}$ = 5.47 ft/s
n = 0.013

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CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

DRAIN "B" & "D" PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1.	2021.04.23 - REVISED NOTES, VERIFIED DRAIN ELEVATIONS.
2.	
3.	
4.	
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9.	

STATE OF TEXAS
DAVID D. CUPIT II
92076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C21

21 OF 34

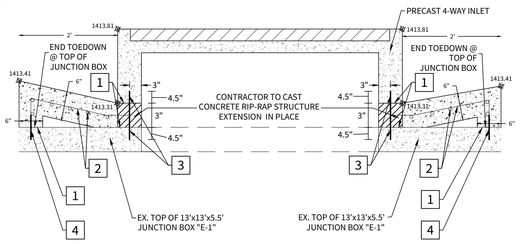
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

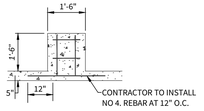
I:\03481\004\3-Drawings\C21 DRAIN "B" & "D" PLAN AND PROFILE.dwg, 2021.04.29 12:23pm, Jacqueline

LEGEND & KEYNOTES

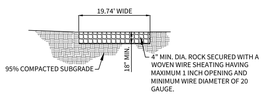
- PRECAST STRUCTURE
- PROPOSED CONCRETE STRUCTURE EXTENSION (CAST IN PLACE)
- PROPOSED CONCRETE RIP-RAP (CAST IN PLACE)
- #3 EPOXY COATED DOWEL BAR

1. CONTRACTOR TO ROUGHEN EXISTING CONCRETE AT CONCRETE STRUCTURE EXTENSION WITH EPOXY COATED BONDING ADHESIVE AS ALLOWED IN THE CITY OF BOERNE STANDARD SPECIFICATIONS SECTION 02072
2. #3 BARS @ 18" O.C.E.W. (SEE CITY OF BOERNE CONCRETE RIP RAP TYPICAL SECTION STANDARD DETAIL 02423-1.1)
3. 12" - #3 EPOXY COATED DOWEL BARS @ 12" O.C. MAX. INTO PRECAST 13'x13'x5.5' JUNCTION BOX "E-1" & PRECAST 4-WAY INLET
4. 8" - #3 EPOXY COATED DOWEL BARS @ 12" O.C. MAX. INTO PRECAST 13'x13'x5.5' JUNCTION BOX "E-1"

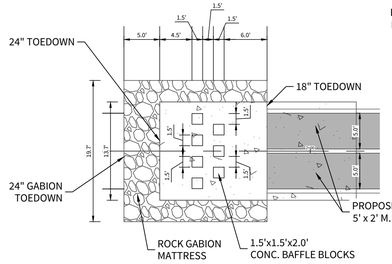




DRAIN "E" BAFFLE BLOCK REINFORCEMENT DETAIL
(N.T.S.)



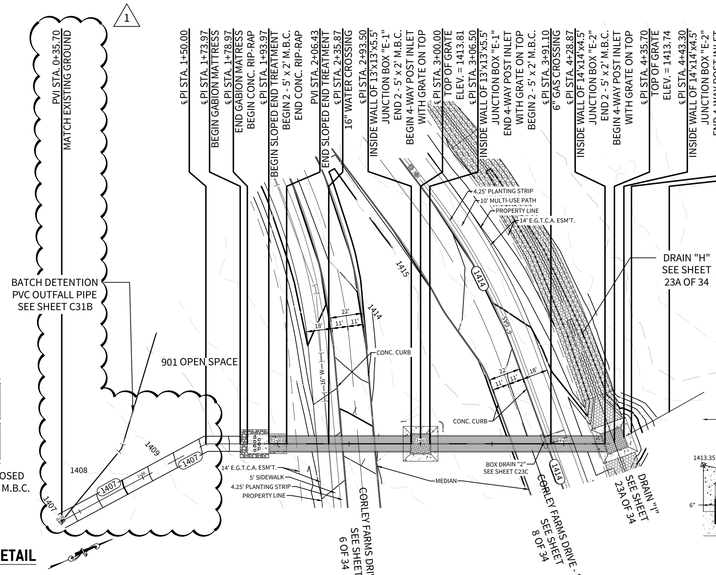
GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



DRAIN "E" GABION MATTRESS & BAFFLE BLOCK DETAIL
(SCALE 1" = 10')

LEGEND:
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL

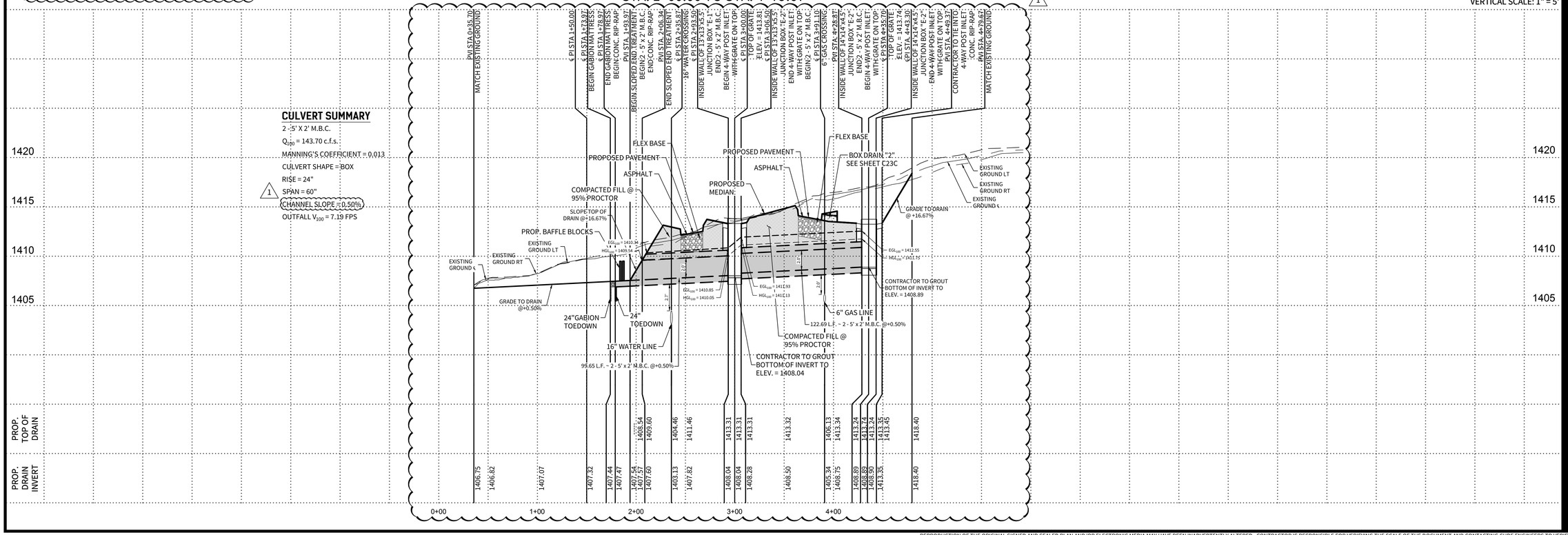
NOTES:
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 - 6 FPS.



DRAIN "E"

STA. 1+00.00 TO STA. 4+79.67

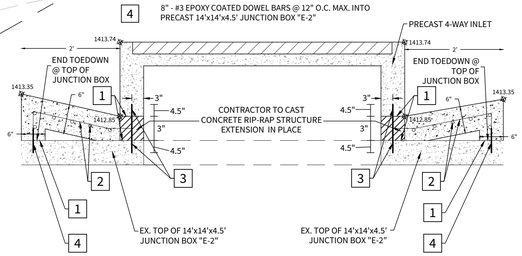
CULVERT SUMMARY
2 -5' X 2' M.B.C.
Q_{100} = 143.70 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = BOX
RISE = 24"
SPAN = 60"
(1) CHANNEL SLOPE = 0.50%
OUTFALL V_{100} = 7.19 FPS

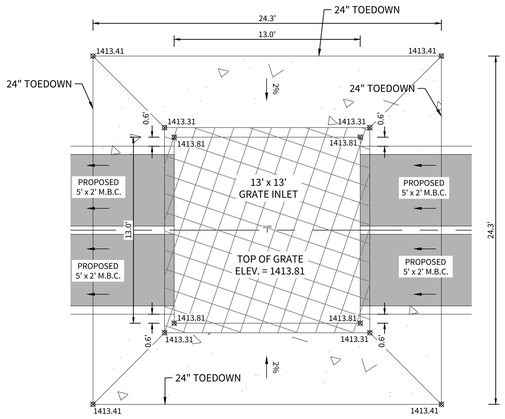


LEGEND & KEYNOTES

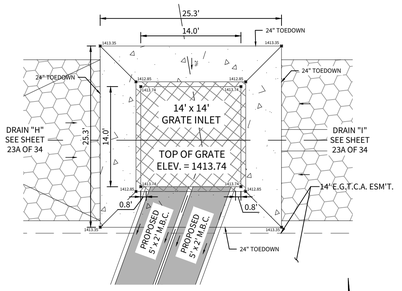
- PRECAST STRUCTURE
- PROPOSED CONCRETE STRUCTURE EXTENSION (CAST IN PLACE)
- PROPOSED CONCRETE RIP-RAP (CAST IN PLACE)
- #3 EPOXY COATED DOWEL BAR

1. CONTRACTOR TO ROUGHEN EXISTING CONCRETE AT CONCRETE STRUCTURE EXTENSION WITH EPOXY COATED BONDING ADHESIVE AS ALLOWED IN THE CITY OF BOERNE STANDARD SPECIFICATIONS SECTION 02072
2. #3 BARS @ 18" O.C.E.W. (SEE CITY OF BOERNE CONCRETE RIP RAP TYPICAL SECTION STANDARD DETAIL 02423-1.1)
3. 12" - #3 EPOXY COATED DOWEL BARS @ 12" O.C. MAX. INTO PRECAST 14'x14'x4.5' JUNCTION BOX "E-2" & PRECAST 4-WAY INLET
4. 8" - #3 EPOXY COATED DOWEL BARS @ 12" O.C. MAX. INTO PRECAST 14'x14'x4.5' JUNCTION BOX "E-2"





JUNCTION BOX "E-1" & 4-WAY POST INLET WITH GRATE ON TOP TIE-IN DETAIL
(SCALE 1" = 5')



JUNCTION BOX "E-2" & 4-WAY POST INLET WITH GRATE ON TOP TIE-IN DETAIL
(SCALE 1" = 10')

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

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 1

DRAIN "E" PLAN AND PROFILE

DATE 04/29/2021

PROJECT NO. 03481.004

DRAWN BY C3

CHECKED BY JC/DDC

REVISIONS
1. 2021-04-26 - REVISED NOTES, REVISED CULVERT SUMMARY, UPDATED GRADING, REVISED PROFILE ELEVATIONS.
2.
3.
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C22

22 OF 34

P:\03481\Civil\2 Drawings\C22 DRAIN "E" PLAN AND PROFILE.dwg 2021-04-30 12:56pm Langston

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 & KEYNOTES

- PRECAST STRUCTURE
- PROPOSED CONCRETE STRUCTURE EXTENSION (CAST IN PLACE)
- PROPOSED CONCRETE RIP-RAP (CAST IN PLACE)
- #3 EPOXY COATED DOWEL BAR

1. CONTRACTOR TO ROUGHEN EXISTING CONCRETE AT CONCRETE STRUCTURE EXTENSION WITH EPOXY COATED BONDING ADHESIVE AS ALLOWED IN THE CITY OF BOERNE STANDARD SPECIFICATIONS SECTION 02072
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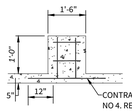
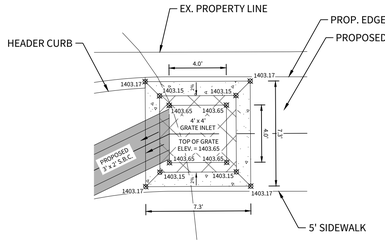
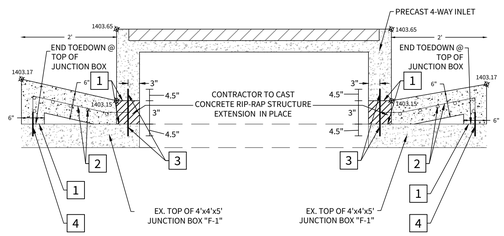
4. 8" - #3 EPOXY COATED DOWEL BARS @ 12" O.C. MAX. INTO PRECAST 4'x4'x5' JUNCTION BOX "F-1"



DRAIN "F" BAFFLE BLOCK REINFORCEMENT DETAIL
(N.T.S.)



4-WAY INLET TIE-IN DETAIL
(SCALE 1" = 5')



LEGEND:

PROPOSED CULVERT

1

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
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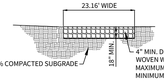
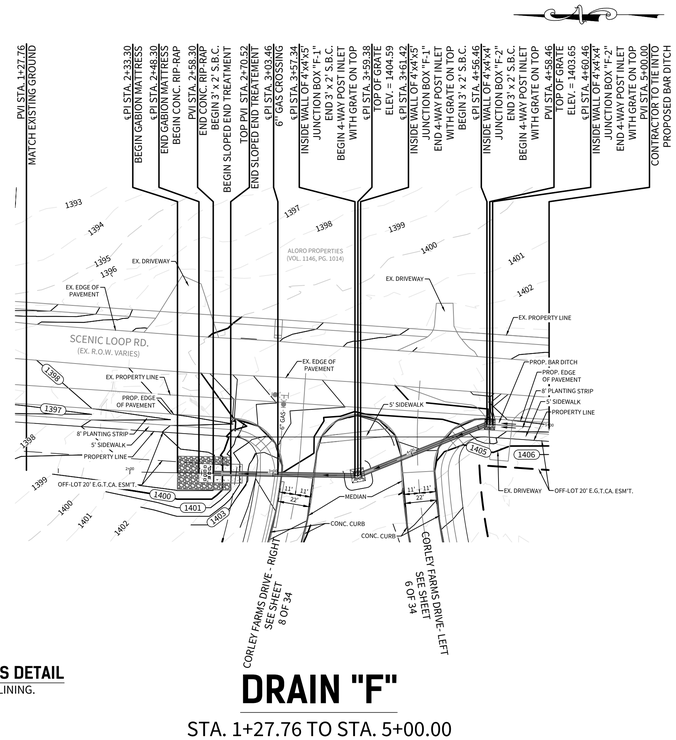


GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



DRAIN "F"

STA. 1+27.76 TO STA. 5+00.00

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

LEGEND & KEYNOTES

- PRECAST STRUCTURE
- PROPOSED CONCRETE STRUCTURE EXTENSION (CAST IN PLACE)
- PROPOSED CONCRETE RIP-RAP (CAST IN PLACE)
- #3 EPOXY COATED DOWEL BAR

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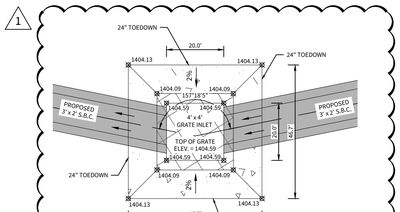
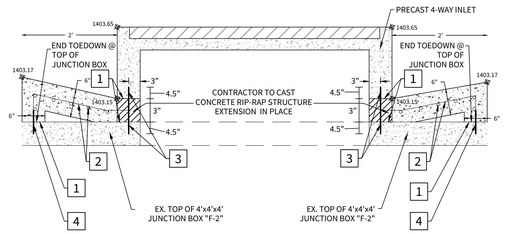
3. 12" - #3 EPOXY COATED DOWEL BARS @ 12" O.C. MAX. INTO PRECAST 4'x4'x4' JUNCTION BOX "F-2"& PRECAST 4-WAY INLET
4. 8" - #3 EPOXY COATED DOWEL BARS @ 12" O.C. MAX. INTO PRECAST 4'x4'x4' JUNCTION BOX "F-2"

1



4-WAY INLET TIE-IN DETAIL
(SCALE 1" = 5')



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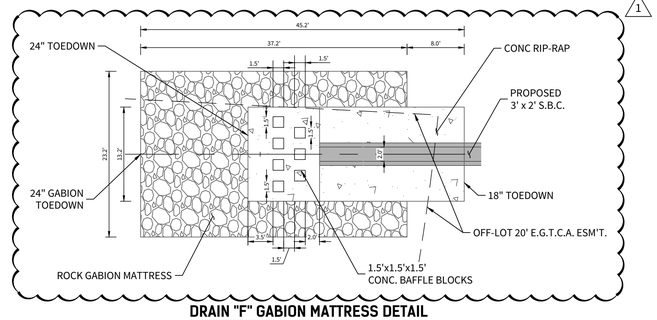
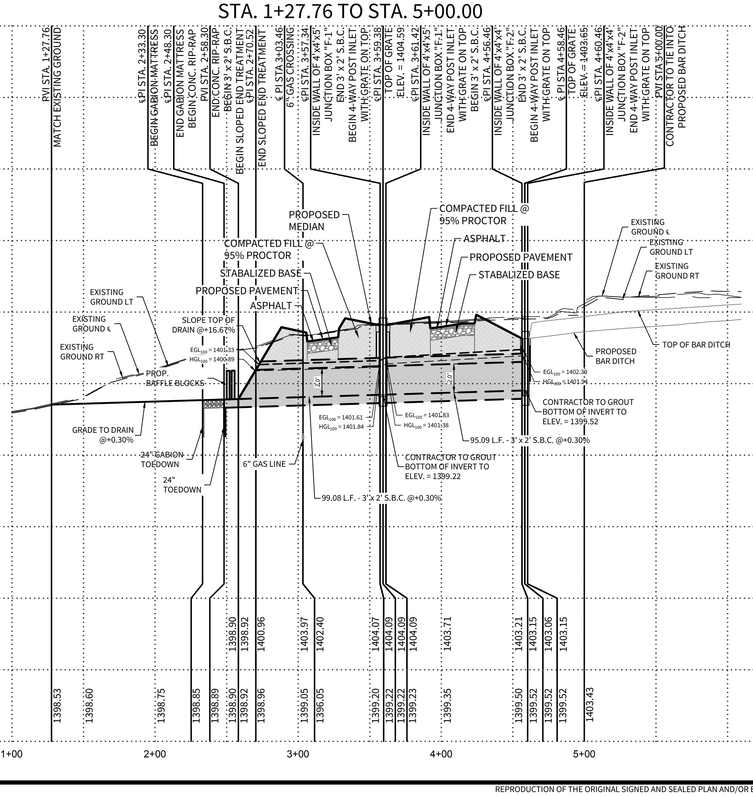


DRAIN "F" GABION MATTRESS DETAIL
(SCALE 1" = 10')

CULVERT SUMMARY

3' X 2' S.B.C.
Q_{100} = 30.92 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = BOX
RISE = 24"
SPAN = 36"
CHANNEL SLOPE = 0.30%
OUTFALL V_{100} = 7.78 FPS



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CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

DRAIN "F" PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - ADDED BAFFLE BLOCKS, REVISED NOTES, ADDED ANGLE DIM.
2.
3.
4.
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C23

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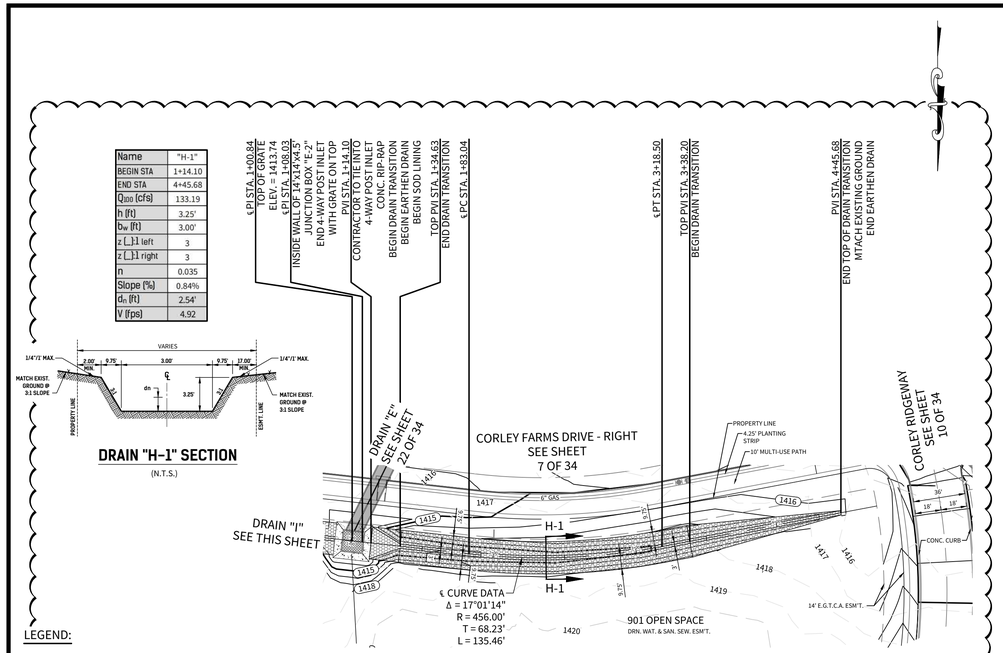
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LEGEND:

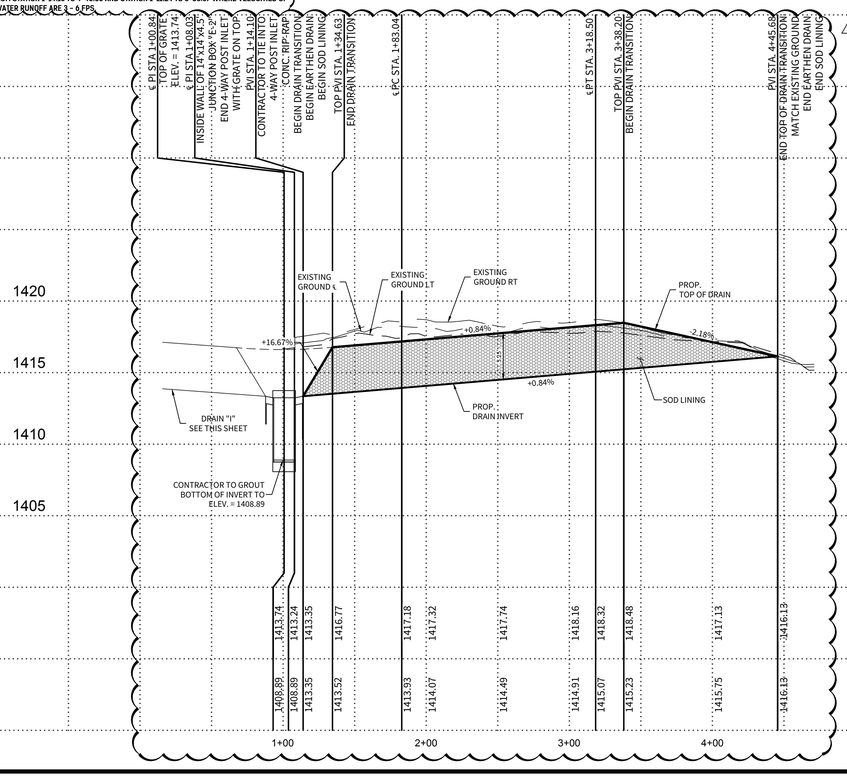
- PROPOSED CULVERT
- CONCRETE RIP RAP
- SOD LINED DRAINAGE CHANNEL

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, THIS EARTHEN CHANNEL MUST BE SOD LINED FROM STATION 1+14.10 TO 4+45.68 AND STATION 1+11.24 TO 5+60.07 WHERE VELOCITIES OF STORM WATER RUNOFF ARE ≥ 6 FPS.

DRAIN "H"

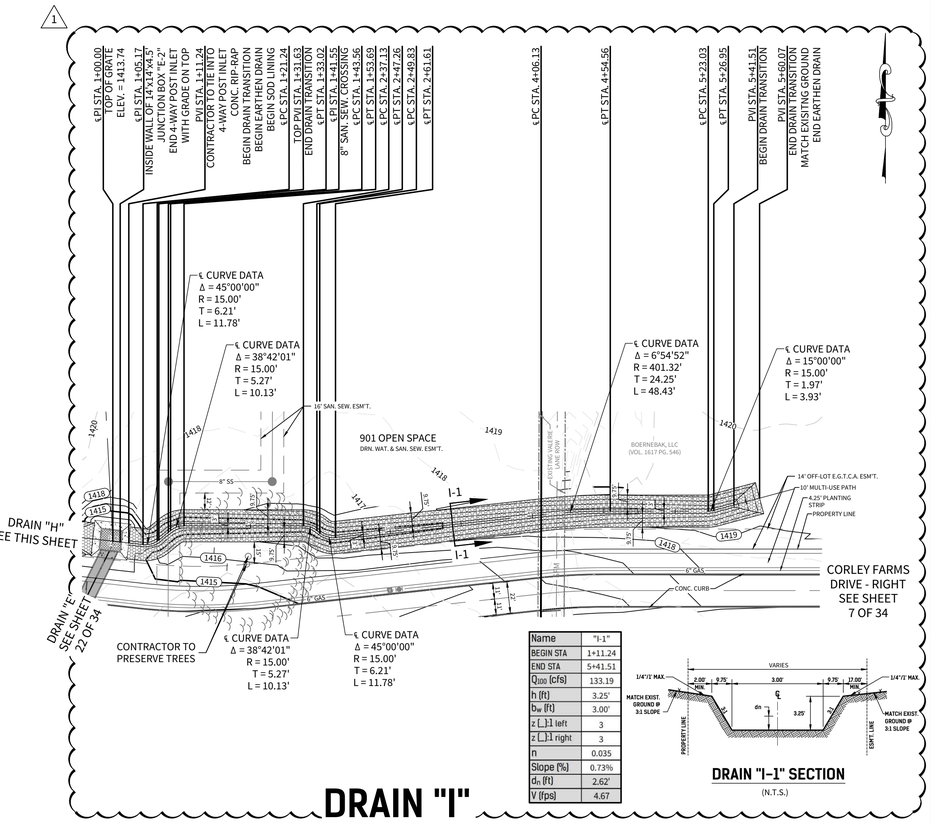
STA. 1+14.10 TO STA. 4+45.68



DRAIN "I"

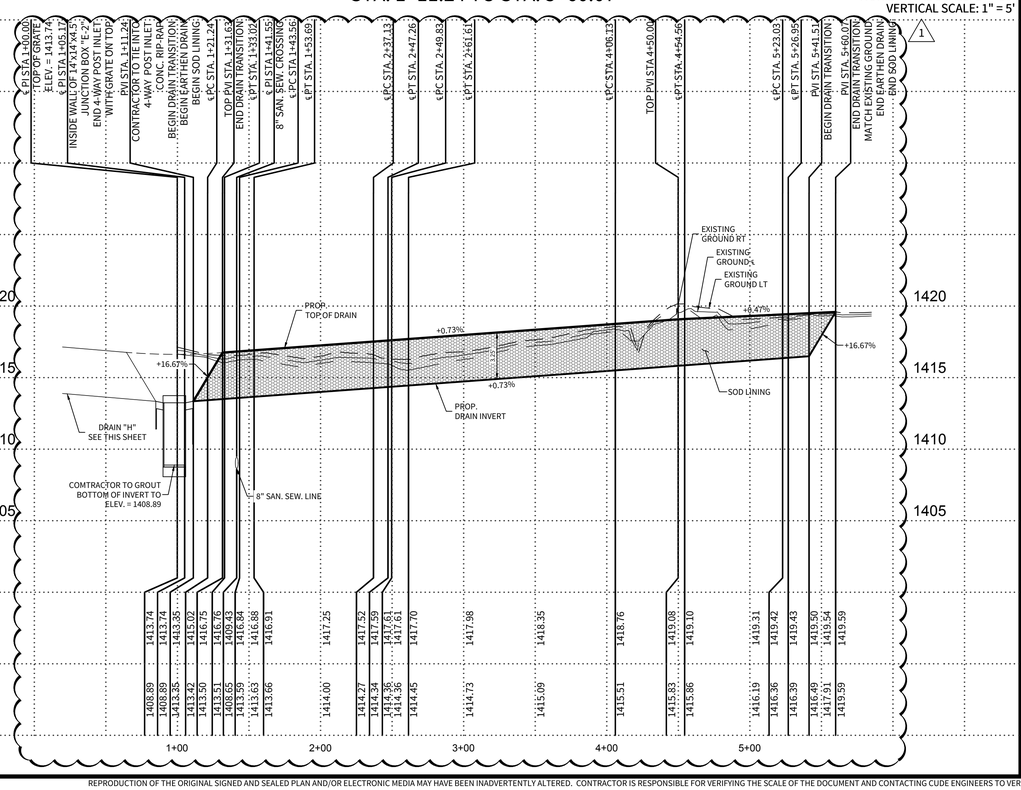
STA. 1+11.24 TO STA. 5+60.07

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



Name	"I-1"
BEGIN STA	1+11.24
END STA	5+41.51
Q100 (cfs)	133.19
h (ft)	3.25'
bw (ft)	3.00'
z [_]:1 left	3
z [_]:1 right	3
n	0.035
Slope (%)	0.73%
dn (ft)	2.62'
V (fps)	4.67

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



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

CORLEY FARMS UNIT 1

DRAIN "H" & "I" PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - REVISED DRAIN DESIGN, REVISED NOTES, REVISED DRAIN CROSS SECTION.
2.
3.
4.
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7.
8.
9.

STATE OF TEXAS
DAVID D. CUPIT II
92376
LICENSED
PROFESSIONAL ENGINEER
04.30.21

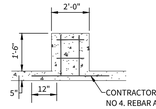
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C23A

23A OF 34

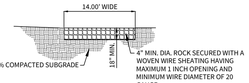
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

G:\03481\004\C3-Drawings\C23A DRAIN "H" & "I" PLAN AND PROFILE.dwg 2021-04-30 12:28pm caseyburns



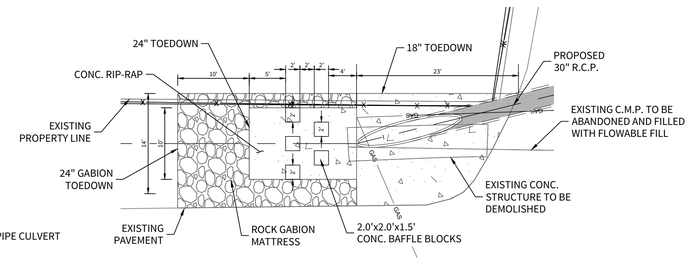
DRAIN "J" BAFFLE BLOCK REINFORCEMENT DETAIL

(N.T.S.)



GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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



DRAIN "J" GABION MATTRESS & BAFFLE BLOCK DETAIL

(SCALE 1" = 10')

LEGEND:

PROPOSED PIPE CULVERT

CONCRETE RIP RAP

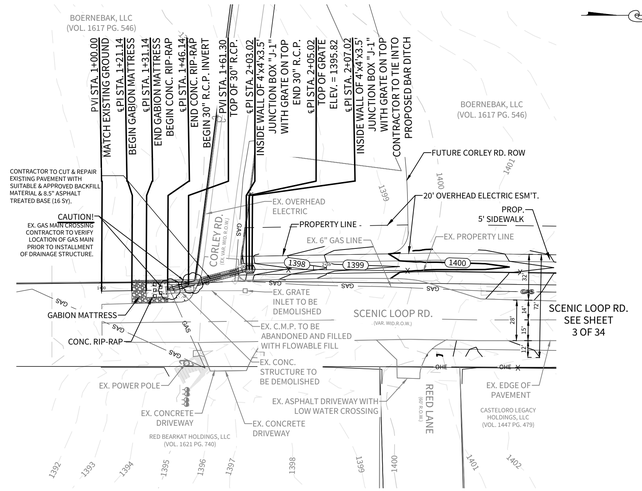
CAUTION NOTE:

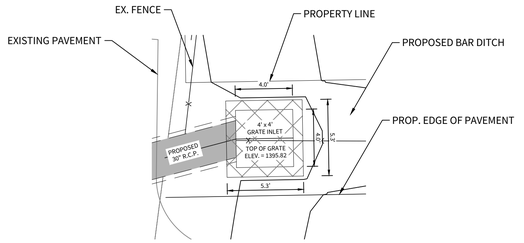
THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC, UNDERGROUND FIBER OPTIC, GAS, AND TELEPHONE UTILITIES EXIST ALONG SCENIC LOOP ROAD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

1

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 – 6 FPS.
5. CONTRACTOR IS REQUIRED TO PROVIDE ACCESS TO ALL ADJACENT HOMEOWNERS AND DRIVEWAYS AT ALL TIMES.





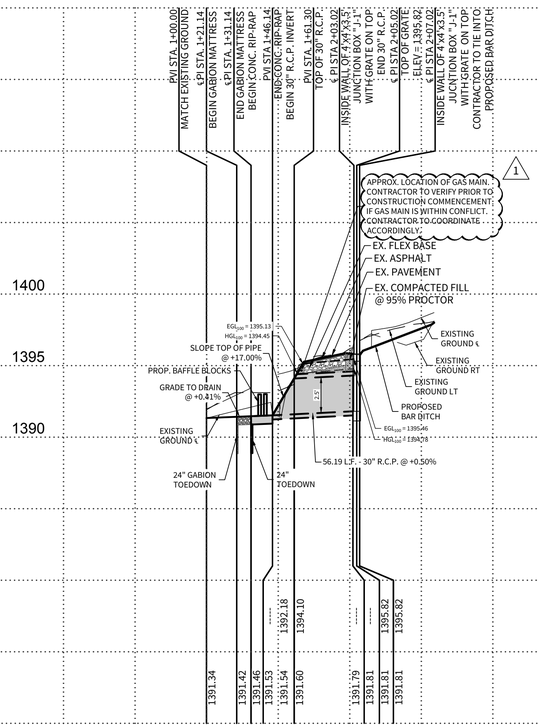
JUNCTION BOX "J-1" WITH GRATE ON TOP TIE-IN DETAIL

(SCALE 1" = 5')

DRAIN "J"

STA. 1+00.00 TO STA. 2+07.02

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



30" R.C.P.

PIPE SLOPE = 0.50 %
Q_{25} = 32.55 c.f.s.
DEPTH OF FLOW = 2.42 ft
FLOW AREA = 4.91 ft²
WETTED PERIMETER = 5.28 ft
% FULL = 96.80 %
$VELOCITY_{100}$ = 6.63 ft/s
n = 0.013

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San Antonio, Texas 78231
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CORLEY FARMS UNIT 1

DRAIN "J" PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - REVISED NOTES, ADDED EX. GAS MAIN CALLOUT.
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

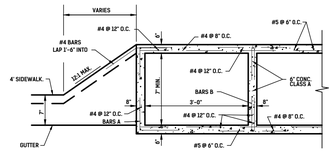
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C23B

23B OF 34

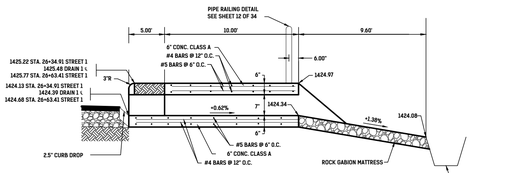
P:\03481\000\2-Drawings\C3\03 SHEETS_P PLAN AND PROFILE.dwg 2021-04-29 12:26pm cwiggins

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.



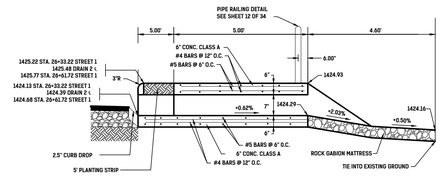
TYPICAL SIDEWALK BOX DRAIN SECTION

(N.T.S)



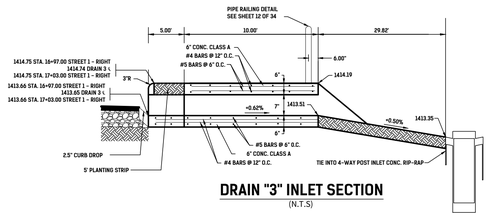
DRAIN "1" INLET SECTION

(N.T.S)



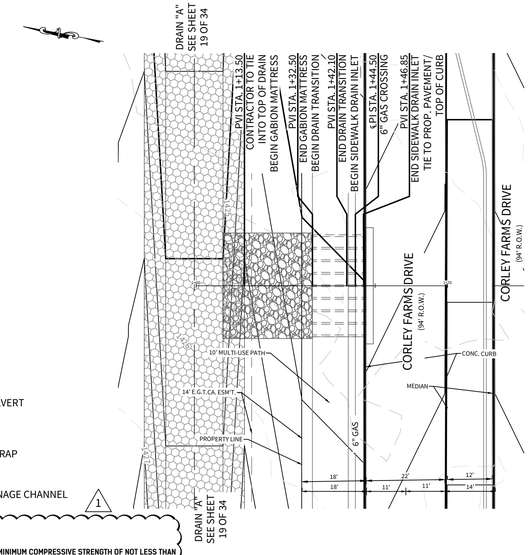
DRAIN "2" INLET SECTION

(N.T.S)



DRAIN "3" INLET SECTION

(N.T.S)



LEGEND:

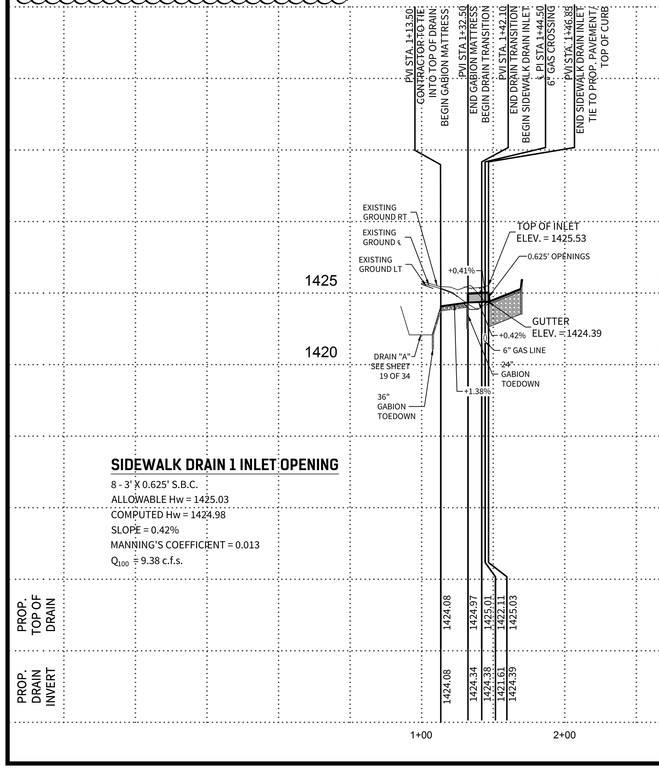
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP–RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 - 6 FPS.

BOX DRAIN "1"

STA. 1+15.50 TO STA. 1+46.85

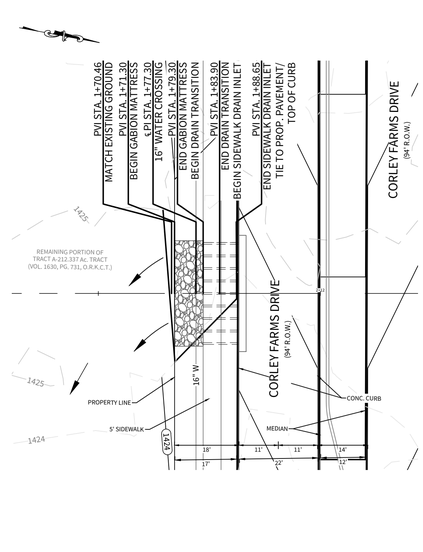


SIDEWALK DRAIN 1 INLET OPENING

8 - 3' X 0.625' S.B.C.
ALLOWABLE Hw = 1425.03
COMPUTED Hw = 1424.98
SLOPE = 0.42%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 9.38 c.f.s.

BOX DRAIN "2"

STA. 1+70.46 TO STA. 1+88.65



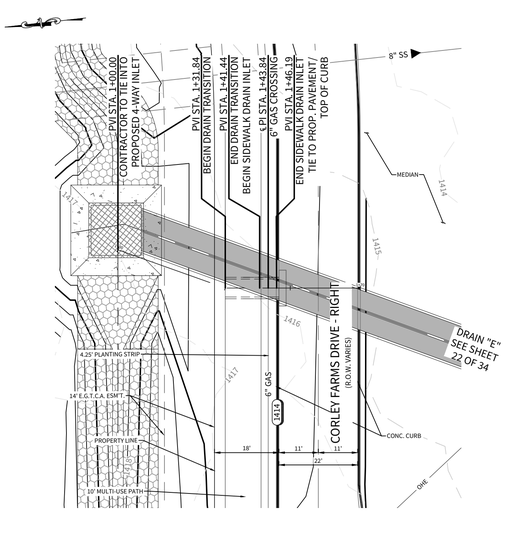
SIDEWALK DRAIN 2 INLET OPENING

8 - 3' X 0.625' S.B.C.
ALLOWABLE Hw = 1425.03
COMPUTED Hw = 1424.98
SLOPE = 2.03%
MANNING'S COEFFICIENT = 0.013
Q_{100} =9.49 c.f.s.

BOX DRAIN "3"

STA. 1+00.00 TO STA. 1+44.35

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



SIDEWALK DRAIN 3 INLET OPENING

5' X 0.625' S.B.C.
ALLOWABLE Hw = 1414.25
COMPUTED Hw = 1414.20
SLOPE = 2.00%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 5.65 c.f.s.

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CORLEY FARMS
UNIT 1

SIDEWALK BOX DRAIN PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - REVISED NOTES
2.
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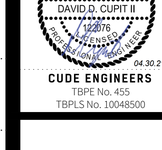

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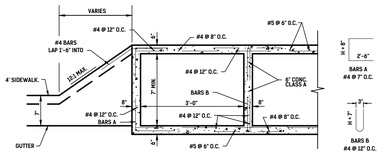
TBPLS No. 10048500

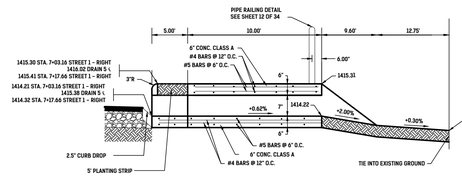
C23C

P:\03481\000\2-Drawings\Civil\C-SIDEWALK BOX DRAIN PLAN AND PROFILE.dwg 2021-04-29 11:50pm craigjudkins

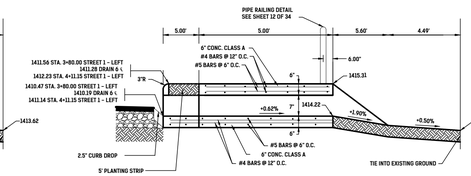
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



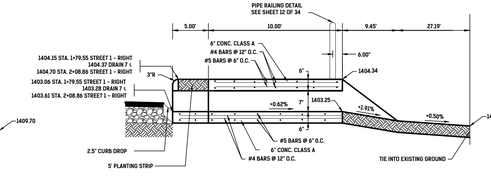
TYPICAL SIDEWALK BOX DRAIN SECTION
(N.T.S)



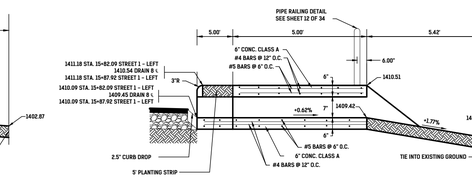
DRAIN "5" INLET SECTION
(N.T.S)



DRAIN "6" INLET SECTION
(N.T.S)



DRAIN "7" INLET SECTION
(N.T.S)



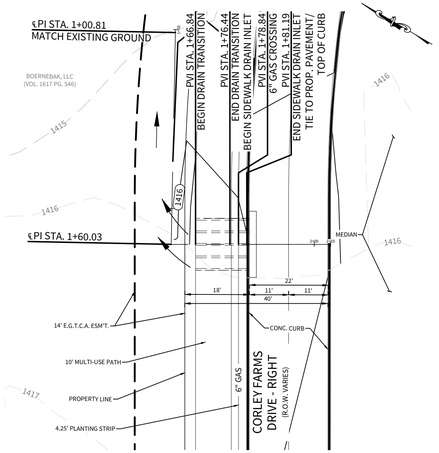
DRAIN "8" INLET SECTION
(N.T.S)

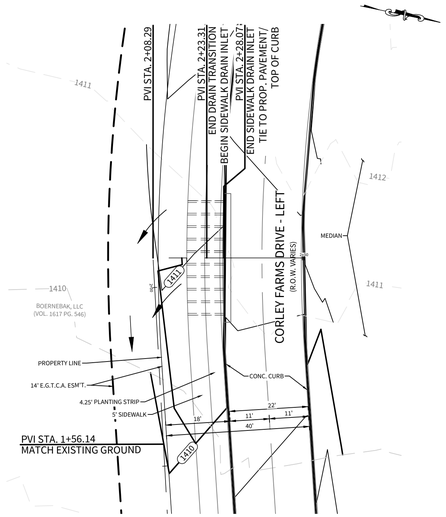
LEGEND:

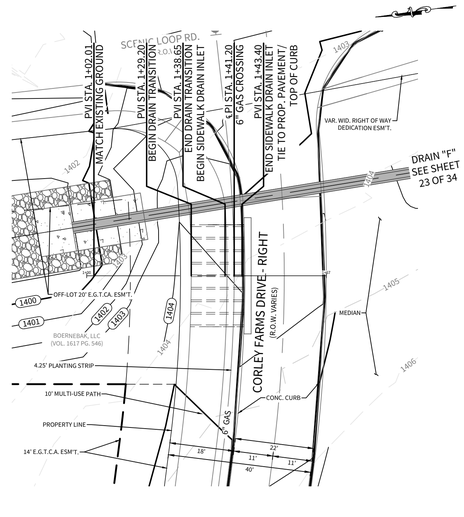
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL

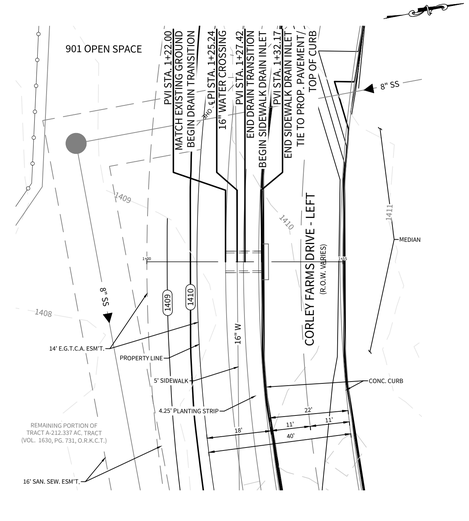
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 – 6 FPS.









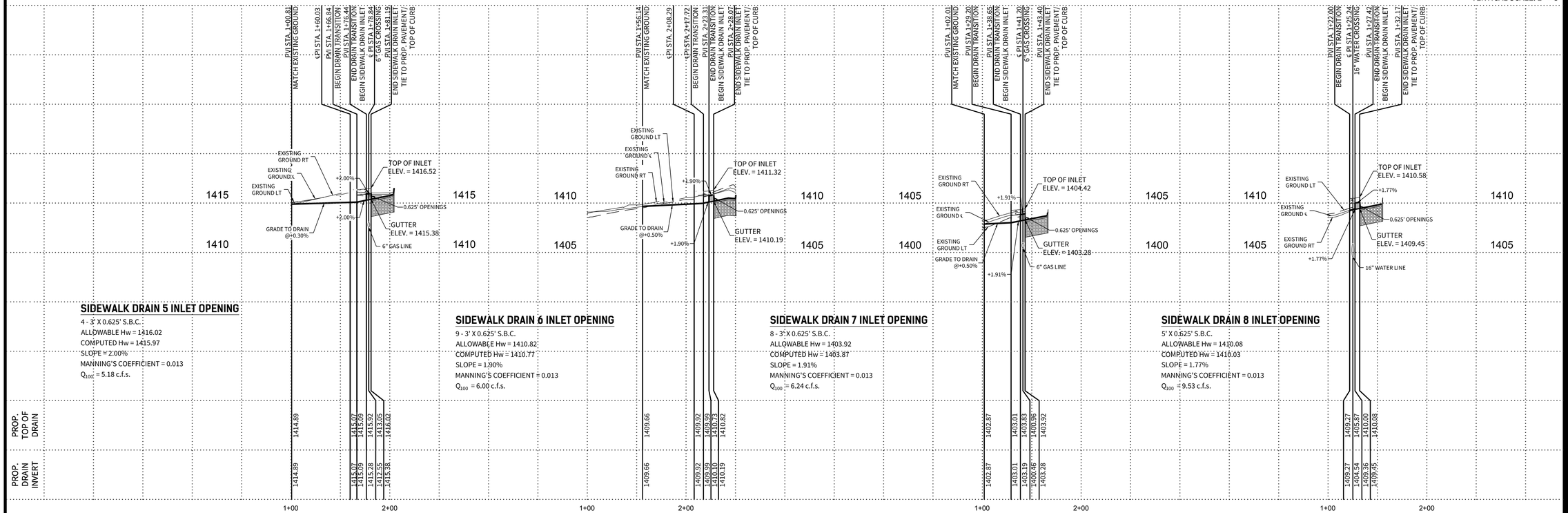
BOX DRAIN "5"
STA. 1+00.81 TO STA. 1+81.19

BOX DRAIN "6"
STA. 1+56.14 TO STA. 2+28.07

BOX DRAIN "7"
STA. 1+02.01 TO STA. 1+43.40

BOX DRAIN "8"
STA. 1+22.00 TO STA. 1+32.17

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



SIDEWALK DRAIN 5 INLET OPENING

4 - 3' X 0.625' S.B.C.
ALLOWABLE Hw = 1416.02
COMPUTED Hw = 1415.97
SLOPE = 2.00%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 5.18 c.f.s.

SIDEWALK DRAIN 6 INLET OPENING

9 - 3' X 0.625' S.B.C.
ALLOWABLE Hw = 1410.82
COMPUTED Hw = 1410.77
SLOPE = 1.90%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 6.00 c.f.s.

SIDEWALK DRAIN 7 INLET OPENING

8 - 3' X 0.625' S.B.C.
ALLOWABLE Hw = 1403.92
COMPUTED Hw = 1403.87
SLOPE = 1.91%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 6.24 c.f.s.

SIDEWALK DRAIN 8 INLET OPENING

5' X 0.625' S.B.C.
ALLOWABLE Hw = 1410.08
COMPUTED Hw = 1410.03
SLOPE = 1.77%
MANNING'S COEFFICIENT = 0.013
Q_{100} = 9.53 c.f.s.

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CORLEY FARMS
UNIT 1

SIDEWALK BOX DRAIN PLAN AND PROFILE

DATE
04/29/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-22 - REVISED NOTES
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C23D

23D OF 34

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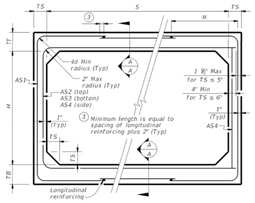
P:\03481\004\3-Drawings\C3D\3481004 PLAN AND PROFILE.dwg 2021/05/03 11:53pm craigbates

BOX DATA

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

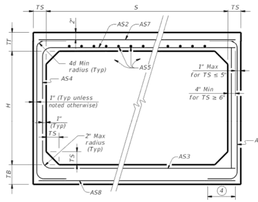
① For box length = 8'-0"

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



CORNER OPTION "A" CORNER OPTION "B"

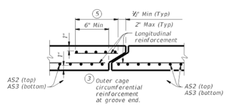
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

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

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

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS
PRECAST
4'-0" SPAN

SCP-4

FILE:	scp04ts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

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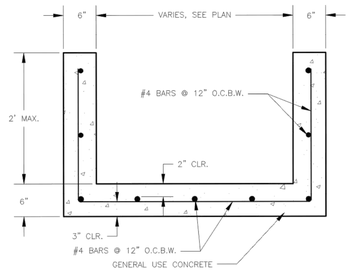
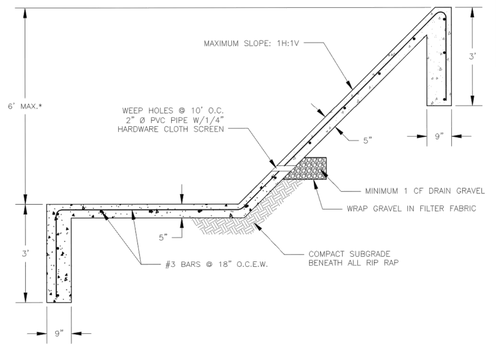
DATE
DATE



CITY OF BOERNE

CONCRETE FLUME

SCALE:	N.T.S.	DRAWING No.	02423–1.0	DATE:	JULY 2015



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

CITY OF BOERNE

CONCRETE RIP RAP
TYPICAL SECTION

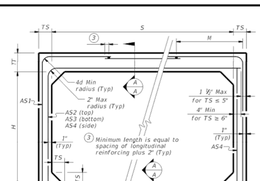
SCALE:	N.T.S.	DRAWING No.	02423–1.1	DATE:	JULY 2015

BOX DATA

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

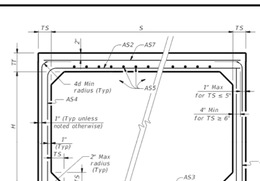
① For box length = 8'-0"

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



CORNER OPTION "A" CORNER OPTION "B"

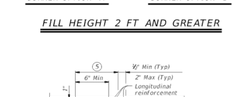
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

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

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

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS
PRECAST
5'-0" SPAN

SCP-5

FILE:	scp05ts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

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DATE
DATE

BOX DATA

SECTION DIMENSIONS					Fill Height (ft.)	H (Min) (in.)	REINFORCING (sq. in. / ft.) ②							① Lift Weight (tons)
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7	AS8	
3	2	7	6	4	< 2	–	0.17	0.25	0.16	0.10	0.17	0.14	3.3
3	2	4	4	4	2 < 3	31	0.13	0.19	0.18	0.10	–	–	2.4
3	2	4	4	4	3 – 5	31	0.10	0.11	0.12	0.10	–	–	2.4
3	2	4	4	4	10	31	0.10	0.10	0.10	0.10	–	–	2.4
3	2	4	4	4	15	31	0.10	0.13	0.13	0.10	–	–	2.4
3	2	4	4	4	20	31	0.11	0.17	0.17	0.10	–	–	2.4
3	2	4	4	4	25	31	0.14	0.21	0.21	0.10	–	–	2.4
3	2	4	4	4	30	31	0.17	0.25	0.25	0.10	–	–	2.4
3	2	4	4	4	35	31	0.20	0.29	0.30	0.10	–	–	2.4
3	3	7	6	4	< 2	–	0.17	0.27	0.17	0.10	0.17	0.14	3.7
3	3	4	4	4	2 < 3	31	0.10	0.22	0.21	0.10	–	–	2.8
3	3	4	4	4	3 – 5	31	0.10	0.14	0.14	0.10	–	–	2.8
3	3	4	4	4	10	31	0.10	0.11	0.11	0.10	–	–	2.8
3	3	4	4	4	15	31	0.10	0.14	0.15	0.10	–	–	2.8
3	3	4	4	4	20	31	0.10	0.18	0.19	0.10	–	–	2.8
3	3	4	4	4	25	31	0.10	0.23	0.23	0.10	–	–	2.8
3	3	4	4	4	30	31	0.12	0.27	0.28	0.10	–	–	2.8
3	3	4	4	4	35	31	0.14	0.32	0.32	0.10	–	–	2.8

① For box length = 8'-0"

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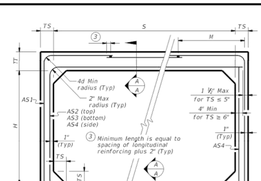
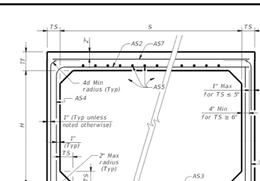


CORNER OPTION "A" CORNER OPTION "B"

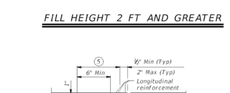
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A

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HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS
PRECAST
3'-0" SPAN

SCP-3

FILE:	scp03ts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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CORLEY FARMS
UNIT 1

TXDOT PRECAST 3',4'&5' CULVERT BOXES & COB CONC. RIP-RAP DETAILS

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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C24

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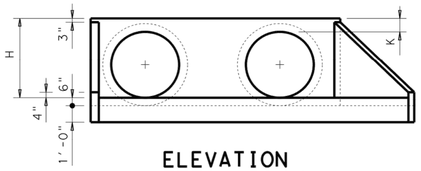
TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

SLOPE	DIA OF PIPE, D	Values for one Pipe W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	Values to be added for each addt'l Pipe X and W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	3'- 3 1/2"	2'- 8 3/4"	2'-10"	3'- 3 1/4"	81	0.5	1'- 9 3/4"	20	0.2
	15"	3'-10 1/2"	3'- 0 1/4"	3'- 4"	3'-10 1/4"	93	0.6	2'- 3"	25	0.3
	18"	4'- 5 1/2"	3'- 4"	3'-10"	4'- 5"	115	0.8	2'- 9 1/4"	32	0.4
	21"	5'- 0 3/4"	3'- 7 1/2"	4'- 4"	5'- 0"	128	0.9	3'- 2 1/4"	43	0.5
	24"	5'- 9 1/4"	4'- 0 3/4"	4'-10"	5'- 7"	148	1.1	3'- 8 1/2"	51	0.6
	27"	6'- 4 1/2"	4'- 4 1/2"	5'- 4"	6'- 2"	158	1.3	4'- 0 3/4"	57	0.7
	30"	6'-11 1/2"	4'- 8"	5'-10"	6'- 8 3/4"	181	1.5	4'- 5 3/4"	67	0.8
	33"	7'- 6 1/2"	4'-11 3/4"	6'- 4"	7'- 3 3/4"	197	1.7	4'-10"	73	0.9
	36"	8'- 1 3/4"	5'- 3 1/4"	6'-10"	7'-10 3/4"	223	1.9	5'- 3 1/4"	82	1.1
	42"	9'- 3 3/4"	5'-10 1/2"	7'-10"	9'- 0 1/2"	263	2.4	6'- 0 1/2"	100	1.4
	48"	10'- 9 1/2"	6'- 5 3/4"	9'- 4"	10'- 9 1/4"	315	3.2	6'- 9 3/4"	121	1.8
	54"	11'-11 3/4"	7'- 1"	10'- 4"	11'-11 1/4"	372	3.8	7'- 9 1/4"	154	2.2
	60"	13'- 1 3/4"	7'- 8 1/4"	11'- 4"	13'- 1"	419	4.5	8'- 6 1/2"	178	2.6
	66"	14'- 4"	8'- 3 1/2"	12'- 4"	14'- 3"	475	5.3	9'- 0 3/4"	198	3.0
	72"	15'- 6 1/4"	8'-10 3/4"	13'- 4"	15'- 4 3/4"	523	6.1	9'- 8"	220	3.3
3:1	12"	4'- 1 1/4"	2'- 8 3/4"	4'- 3"	4'-11"	104	0.7	1'- 9 3/4"	23	0.2
	15"	4'-10"	3'- 0 1/4"	5'- 0"	5'- 9 1/4"	123	0.9	2'- 3"	29	0.3
	18"	5'- 7"	3'- 4"	5'- 9"	6'- 7 3/4"	152	1.1	2'- 9 1/4"	37	0.5
	21"	6'- 3 3/4"	3'- 7 1/2"	6'- 6"	7'- 6"	171	1.3	3'- 2 1/4"	49	0.6
	24"	7'- 2"	4'- 0 3/4"	7'- 3"	8'- 4 1/2"	198	1.6	3'- 8 1/2"	59	0.7
	27"	7'-11"	4'- 4 1/2"	8'- 0"	9'- 2 3/4"	219	1.9	4'- 0 3/4"	68	0.9
	30"	8'- 7 3/4"	4'- 8"	8'- 9"	10'- 1 1/4"	254	2.2	4'- 5 3/4"	79	1.0
	33"	9'- 4 1/2"	4'-11 3/4"	9'- 6"	10'-11 3/4"	274	2.5	4'-10"	86	1.2
	36"	10'- 1 1/4"	5'- 3 1/4"	10'- 3"	11'-10"	305	2.9	5'- 3 1/4"	97	1.4
	42"	11'- 7"	5'-10 1/2"	11'- 9"	13'- 6 3/4"	371	3.7	6'- 0 1/2"	122	1.8
	48"	13'- 5 3/4"	6'- 5 3/4"	14'- 0"	16'- 2"	455	4.9	6'- 9 3/4"	152	2.4
	54"	14'-11 1/2"	7'- 1"	15'- 6"	17'-10 3/4"	532	5.9	7'- 9 1/4"	190	3.0
	60"	16'- 5"	7'- 8 1/4"	17'- 0"	19'- 7 1/2"	604	7.0	8'- 6 1/2"	224	3.5
	66"	17'-10 3/4"	8'- 3 1/2"	18'- 6"	21'- 4 1/4"	687	8.1	9'- 0 3/4"	248	4.0
	72"	19'- 4 1/4"	8'-10 3/4"	20'- 0"	23'- 1 1/4"	772	9.4	9'- 8"	281	4.6
4:1	12"	4'-11"	2'- 8 3/4"	5'- 8"	6'- 6 1/2"	132	0.9	1'- 9 3/4"	26	0.3
	15"	5'- 9 1/2"	3'- 0 1/4"	6'- 8"	7'- 8 1/2"	158	1.2	2'- 3"	33	0.4
	18"	6'- 8 1/4"	3'- 4"	7'- 8"	8'-10 1/4"	194	1.5	2'- 9 1/4"	43	0.6
	21"	7'- 6 3/4"	3'- 7 1/2"	8'- 8"	10'- 0"	226	1.8	3'- 2 1/4"	57	0.7
	24"	8'- 6 3/4"	4'- 0 3/4"	9'- 8"	11'- 2"	258	2.2	3'- 8 1/2"	68	0.9
	27"	9'- 5 1/4"	4'- 4 1/2"	10'- 8"	12'- 3 3/4"	286	2.6	4'- 0 3/4"	79	1.1
	30"	10'- 4"	4'- 8"	11'- 8"	13'- 5 3/4"	327	3.0	4'- 5 3/4"	91	1.3
	33"	11'- 2 1/2"	4'-11 3/4"	12'- 8"	14'- 7 1/2"	360	3.5	4'-10"	104	1.5
	36"	12'- 1"	5'- 3 1/4"	13'- 8"	15'- 9 1/4"	403	4.0	5'- 3 1/4"	115	1.7
	42"	13'-10"	5'-10 1/2"	15'- 8"	18'- 1"	487	5.1	6'- 0 1/2"	144	2.2
	48"	16'- 2 1/4"	6'- 5 3/4"	18'- 8"	21'- 6 3/4"	602	6.8	6'- 9 3/4"	183	3.0
	54"	17'-11 1/4"	7'- 1"	20'- 8"	23'-10 1/4"	717	8.2	7'- 9 1/4"	231	3.7
	60"	19'- 8 1/4"	7'- 8 1/4"	22'- 8"	26'- 2"	812	9.8	8'- 6 1/2"	270	4.4
	66"	21'- 5 1/2"	8'- 3 1/2"	24'- 8"	28'- 5 3/4"	933	11.4	9'- 0 3/4"	305	5.0
	72"	23'- 2 1/2"	8'-10 3/4"	26'- 8"	30'- 9 1/2"	1046	13.2	9'- 8"	342	5.7
6:1	12"	6'- 6 3/4"	2'- 8 3/4"	8'- 6"	9'- 9 3/4"	188	1.4	1'- 9 3/4"	30	0.4
	15"	7'- 8 3/4"	3'- 0 1/4"	10'- 0"	11'- 6 1/2"	226	1.9	2'- 3"	40	0.5
	18"	8'-10 3/4"	3'- 4"	11'- 6"	13'- 3 1/4"	277	2.4	2'- 9 1/4"	51	0.7
	21"	10'- 0 3/4"	3'- 7 1/2"	13'- 0"	15'- 0 1/4"	328	2.9	3'- 2 1/4"	69	1.0
	24"	11'- 4 1/4"	4'- 0 3/4"	14'- 6"	16'- 9"	371	3.5	3'- 8 1/2"	83	1.3
	27"	12'- 6 1/4"	4'- 4 1/2"	16'- 0"	18'- 5 3/4"	422	4.2	4'- 0 3/4"	98	1.5
	30"	13'- 8 1/4"	4'- 8"	17'- 6"	20'- 2 1/2"	482	4.9	4'- 5 3/4"	113	1.8
	33"	14'-10 1/4"	4'-11 3/4"	19'- 0"	21'-11 1/4"	543	5.7	4'-10"	130	2.0
	36"	16'- 0 1/4"	5'- 3 1/4"	20'- 6"	23'- 8"	598	6.5	5'- 3 1/4"	145	2.4
	42"	18'- 4 1/2"	5'-10 1/2"	23'- 6"	27'- 1 1/2"	732	8.4	6'- 0 1/2"	184	3.1
	48"	21'- 6 3/4"	6'- 5 3/4"	28'- 0"	32'- 4"	936	11.4	6'- 9 3/4"	240	4.1
	54"	23'-10 3/4"	7'- 1"	31'- 0"	35'- 9 1/2"	1112	13.8	7'- 9 1/4"	303	5.2
	60"	26'- 2 3/4"	7'- 8 1/4"	34'- 0"	39'- 3"	1266	16.4	8'- 6 1/2"	358	6.2



ELEVATION
Showing dimensions

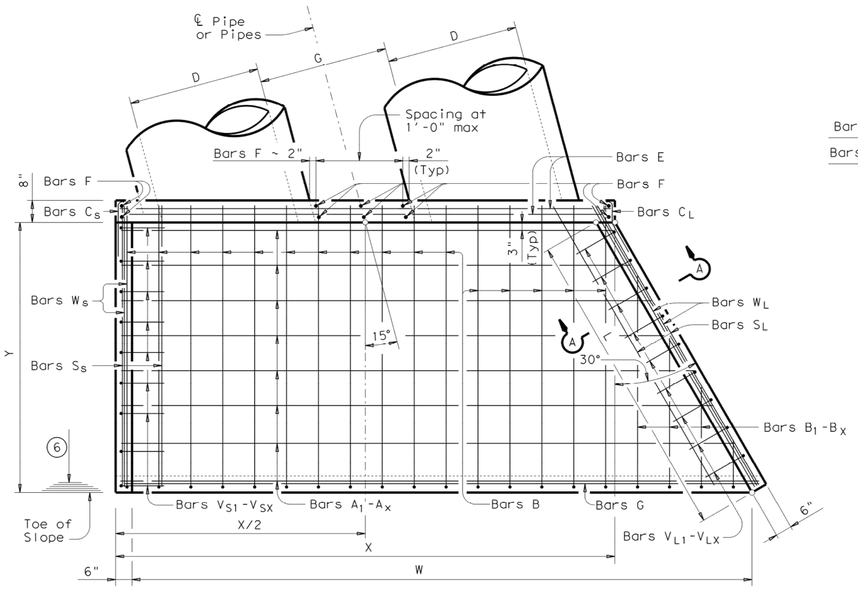
1. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
2. For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. Provide a 1'-0" footing as shown where required to maintain 4" Min cover for pipes.
4. Quantities shown are for one structure end only (one headwall).
5. Min Length = $6" + 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right)$
   Max Length = $12 \times H - 3" \times \left(\frac{12 \times H - 7}{12 \times L}\right) - 1"$
6. Lengths of wings based on SL:1 Slope along this line.

TABLE OF REINFORCING STEEL (4)

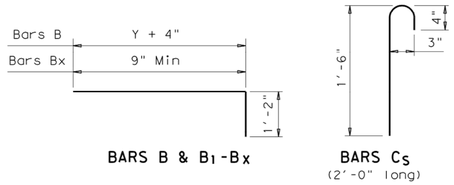
Bar	Size	Spa	No.
A	# 4	1'-0"	~
B	# 3	1'-6"	~
CL	# 4	1'-0"	~
CS	# 4	1'-0"	~
D	# 3	1'-0"	~
E	# 5	~	4
F	# 5	~	~
G	# 3	~	2
SL	# 4	~	3
SS	# 4	~	3
V	# 4	1'-0"	~
WL	# 5	~	2
WS	# 5	~	2

TABLE OF CONSTANT DIMENSIONS

DIA OF PIPE, D	G	K	H
12"	9"	1'- 0"	2'- 0"
15"	11"	1'- 0"	2'- 3"
18"	1'- 2"	1'- 0"	2'- 6"
21"	1'- 4"	1'- 0"	2'- 9"
24"	1'- 7"	1'- 0"	3'- 0"
27"	1'- 8"	1'- 0"	3'- 3"
30"	1'-10"	1'- 0"	3'- 6"
33"	1'-11"	1'- 0"	3'- 9"
36"	2'- 1"	1'- 0"	4'- 0"
42"	2'- 4"	1'- 0"	4'- 6"
48"	2'- 7"	1'- 3"	5'- 3"
54"	3'- 0"	1'- 3"	5'- 9"
60"	3'- 3"	1'- 3"	6'- 3"
66"	3'- 3"	1'- 3"	6'- 9"
72"	3'- 4"	1'- 3"	7'- 3"

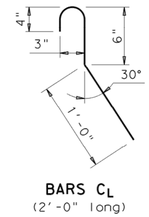


PLAN

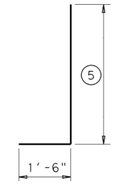


BARS B & B_1-B_X

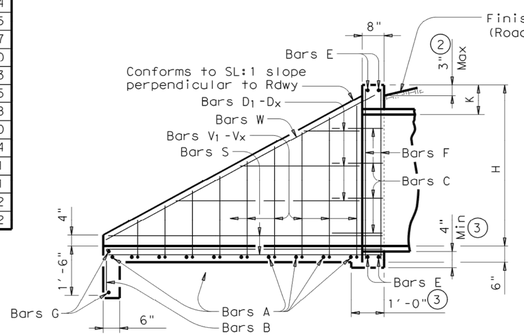
BARS C_S
(2'-0" long)



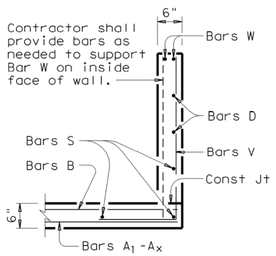
BARS C_L
(2'-0" long)



BARS V_S & V_L



TYPICAL WING ELEVATION



SECTION A-A

GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.
All reinforcing steel shall be Grade 60.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 15° SKEW PIPE CULVERTS

CH-FW-15

FILE: chfw15se.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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

CORLEY FARMS
UNIT 1

TXDOT FLARED WING DETAIL

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

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

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C25

P:\03481\0004\Drawings\C25 TXDOT FLARED WING DETAIL.dwg, 8/17/2021 4:45:23 PM, AutoUser

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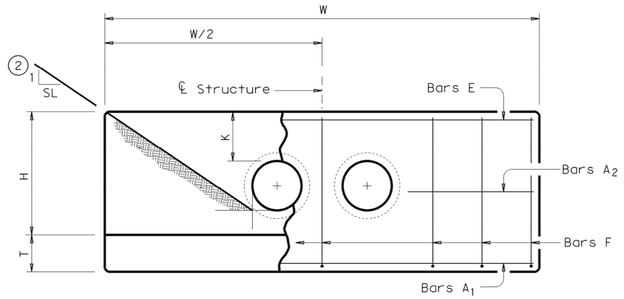
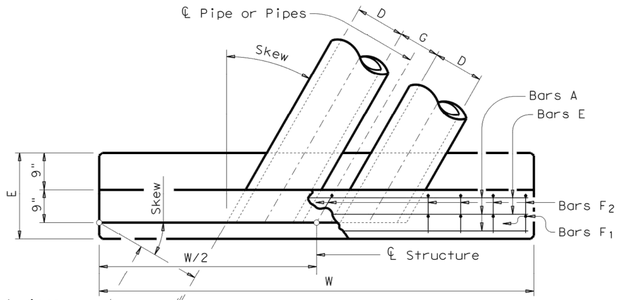
DATE:
FILE:

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

SLOPE	DIA OF PIPE, D	15 Degrees						30 Degrees						45 Degrees					
		Values for one Pipe			Values to be added for each addt'l Pipe			Values for one Pipe			Values to be added for each addt'l Pipe			Values for one Pipe			Values to be added for each addt'l Pipe		
		W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	9'- 4"	124	1.1	1'- 9 3/4"	15	0.2	10'- 5"	130	1.2	2'- 0"	16	0.2	12'- 9"	159	1.5	2'- 5 3/4"	17	0.3
	15"	10'- 7"	136	1.3	2'- 3"	17	0.2	11'-10"	159	1.5	2'- 6"	18	0.2	14'- 6"	191	1.8	3'- 0 3/4"	20	0.3
	18"	11'-11"	165	1.5	2'- 9"	19	0.3	13'- 3"	174	1.7	3'- 1"	29	0.3	16'- 3"	207	2.1	3'- 9 1/4"	33	0.4
	21"	13'- 2"	203	1.9	3'- 2 1/4"	31	0.4	14'- 9"	233	2.1	3'- 6 3/4"	33	0.4	18'- 0"	276	2.6	4'- 4 1/4"	36	0.5
	24"	14'- 6"	240	2.1	3'- 8 1/4"	34	0.4	16'- 2"	251	2.4	4'- 1 3/4"	36	0.5	19'-10"	318	2.9	5'- 0 3/4"	39	0.6
	27"	15'- 9"	258	2.5	4'- 0 3/4"	38	0.5	17'- 7"	292	2.8	4'- 6 1/4"	39	0.6	21'- 7"	342	3.4	5'- 6 1/4"	44	0.7
	30"	17'- 1"	297	2.8	4'- 5 3/4"	40	0.6	19'- 1"	311	3.1	5'- 0"	42	0.6	23'- 4"	388	3.8	6'- 1 3/4"	47	0.8
	33"	18'- 5"	320	3.3	4'- 9 3/4"	43	0.6	20'- 6"	358	3.6	5'- 4 3/4"	46	0.7	25'- 1"	439	4.4	6'- 7 1/4"	51	0.9
	36"	19'- 8"	401	4.0	5'- 3"	47	0.9	21'-11"	422	4.5	5'-10 3/4"	50	0.9	26'-10"	517	5.5	7'- 2 1/4"	55	1.2
	42"	22'- 3"	476	5.0	6'- 0 3/4"	53	1.1	24'-10"	528	5.6	6'- 8 3/4"	56	1.2	30'- 5"	634	6.9	8'- 3"	76	1.4
	48"	25'-11"	577	6.6	6'- 9 3/4"	60	1.3	28'-10"	637	7.3	7'- 7 1/4"	79	1.5	35'- 4"	791	9.0	9'- 3 3/4"	88	1.8
	54"	28'- 6"	711	7.8	7'- 9"	83	1.6	31'- 9"	781	8.7	8'- 8"	87	1.8	38'-11"	958	10.7	10'- 7 1/4"	97	2.2
	60"	31'- 1"	805	9.2	8'- 6 1/4"	91	1.9	34'- 8"	881	10.2	9'- 6 1/4"	97	2.1	42'- 5"	1113	12.5	11'- 8"	124	2.6
	66"	33'- 8"	907	10.6	9'- 0 3/4"	98	2.1	37'- 6"	1028	11.8	10'- 1 1/4"	102	2.4	46'- 0"	1235	14.5	12'- 4 1/4"	132	2.9
	72"	36'- 3"	1071	12.1	9'- 8"	105	2.4	40'- 5"	1207	13.5	10'- 9 1/4"	110	2.6	49'- 6"	1446	16.6	13'- 2 1/4"	141	3.2
3:1	12"	13'- 6"	178	1.6	1'- 9 3/4"	15	0.2	15'- 0"	189	1.8	2'- 0"	15	0.2	18'- 5"	237	2.2	2'- 5 3/4"	17	0.2
	15"	15'- 3"	212	1.9	2'- 3"	17	0.2	17'- 0"	223	2.1	2'- 6"	17	0.3	20'-10"	276	2.6	3'- 0 3/4"	20	0.3
	18"	17'- 1"	231	2.3	2'- 9"	19	0.3	19'- 1"	259	2.5	3'- 1"	29	0.3	23'- 4"	318	3.1	3'- 9 1/4"	32	0.4
	21"	18'-11"	306	2.7	3'- 2 1/4"	31	0.4	21'- 1"	339	3.0	3'- 6 3/4"	33	0.4	25'-10"	413	3.7	4'- 4 1/4"	36	0.5
	24"	20'- 8"	345	3.1	3'- 8 3/4"	35	0.4	23'- 1"	384	3.5	4'- 1 3/4"	36	0.5	28'- 3"	462	4.2	5'- 0 3/4"	40	0.6
	27"	22'- 6"	376	3.7	4'- 0 3/4"	38	0.5	25'- 1"	438	4.1	4'- 6 1/4"	39	0.6	30'- 9"	522	5.0	5'- 6 1/4"	44	0.7
	30"	24'- 4"	422	4.1	4'- 5 3/4"	40	0.6	27'- 2"	466	4.6	5'- 0"	42	0.6	33'- 3"	578	5.6	6'- 1 3/4"	47	0.8
	33"	26'- 2"	476	4.8	4'-10"	43	0.6	29'- 2"	522	5.3	5'- 4 3/4"	46	0.7	35'- 9"	644	6.5	6'- 7 1/4"	51	0.9
	36"	27'-11"	590	5.9	5'- 3 1/4"	47	0.8	31'- 2"	645	6.6	5'-10 3/4"	50	0.9	38'- 2"	787	8.0	7'- 2 1/4"	56	1.2
	42"	31'- 7"	684	7.3	6'- 0 1/4"	53	1.1	35'- 3"	776	8.2	6'- 8 3/4"	56	1.2	43'- 2"	933	10.0	8'- 3"	79	1.4
	48"	36'- 9"	880	9.6	6'- 9 3/4"	61	1.3	41'- 0"	953	10.7	7'- 7 1/4"	81	1.5	50'- 2"	1166	13.1	9'- 3 3/4"	88	1.8
	54"	40'- 5"	1065	11.4	7'- 9"	85	1.6	45'- 0"	1185	12.7	8'- 8"	89	1.8	55'- 2"	1435	15.5	10'- 7 1/4"	97	2.2
	60"	44'- 0"	1224	13.3	8'- 6 1/4"	93	1.9	49'- 1"	1356	14.8	9'- 6 1/4"	96	2.1	60'- 1"	1627	18.2	11'- 8"	124	2.6
	66"	47'- 7"	1357	15.4	9'- 1"	98	2.1	53'- 1"	1497	17.2	10'- 1 1/4"	103	2.3	65'- 1"	1834	21.1	12'- 4 1/4"	130	2.9
	72"	51'- 3"	1624	17.7	9'- 8"	105	2.3	57'- 2"	1787	19.7	10'- 9 1/4"	109	2.6	70'- 0"	2210	24.1	13'- 2 1/4"	139	3.2
4:1	12"	17'- 7"	232	2.1	1'- 9 3/4"	15	0.2	19'- 8"	259	2.4	2'- 0"	16	0.2	24'- 0"	314	2.9	2'- 5 3/4"	18	0.2
	15"	19'-11"	272	2.5	2'- 3"	17	0.2	22'- 3"	301	2.8	2'- 6"	18	0.3	27'- 3"	361	3.5	3'- 0 3/4"	21	0.3
	18"	22'- 3"	313	3.0	2'- 9"	19	0.3	24'-10"	344	3.3	3'- 1"	29	0.3	30'- 5"	427	4.0	3'- 9 1/4"	32	0.4
	21"	24'- 7"	407	3.6	3'- 2 1/4"	31	0.4	27'- 5"	446	4.0	3'- 6 3/4"	33	0.4	33'- 7"	549	4.9	4'- 4 1/4"	36	0.5
	24"	26'-11"	455	4.1	3'- 8 3/4"	35	0.4	30'- 0"	499	4.5	4'- 1 3/4"	36	0.5	36'- 9"	609	5.6	5'- 0 3/4"	40	0.6
	27"	29'- 3"	514	4.8	4'- 0 3/4"	38	0.5	32'- 7"	562	5.4	4'- 6 1/4"	40	0.6	39'-11"	703	6.6	5'- 6 1/4"	43	0.7
	30"	31'- 7"	568	5.4	4'- 5 3/4"	40	0.6	35'- 3"	620	6.0	5'- 0"	42	0.6	43'- 2"	768	7.4	6'- 1 3/4"	49	0.8
	33"	33'-11"	634	6.2	4'-10"	43	0.7	37'-10"	710	7.0	5'- 4 3/4"	46	0.7	46'- 4"	848	8.5	6'- 7 1/4"	52	0.9
	36"	36'- 3"	776	7.7	5'- 3"	48	0.9	40'- 5"	868	8.6	5'-10 3/4"	49	0.9	49'- 6"	1058	10.6	7'- 2 1/4"	56	1.1
	42"	40'-11"	921	9.6	6'- 0 1/4"	53	1.0	45'- 7"	1022	10.7	6'- 8 3/4"	57	1.2	55'-10"	1262	13.1	8'- 3"	78	1.4
	48"	47'- 7"	1152	12.6	6'-10"	61	1.3	53'- 1"	1268	14.0	7'- 7 1/4"	80	1.5	65'- 1"	1579	17.2	9'- 3 3/4"	86	1.8
	54"	52'- 3"	1416	14.9	7'- 9 1/4"	86	1.6	58'- 4"	1589	16.6	8'- 8"	89	1.8	71'- 5"	1916	20.4	10'- 7 1/4"	95	2.2
	60"	56'-11"	1606	17.5	8'- 6 3/4"	92	1.9	63'- 6"	1798	19.5	9'- 6 1/4"	95	2.1	77'- 9"	2184	23.9	11'- 8"	122	2.6
	66"	61'- 7"	1811	20.2	9'- 0 3/4"	97	2.1	68'- 8"	2011	22.5	10'- 1 1/4"	101	2.4	84'- 2"	2464	27.6	12'- 4 1/4"	131	2.9
	72"	66'- 3"	2142	23.2	9'- 8"	104	2.4	73'-11"	2371	25.9	10'- 9 1/4"	108	2.6	90'- 6"	2929	31.7	13'- 2 1/4"	138	3.2
6:1	12"	25'-11"	342	3.1	1'- 9 3/4"	15	0.2	28'-10"	374	3.5	2'- 0"	16	0.2	35'- 4"	456	4.3	2'- 5 3/4"	17	0.2
	15"	29'- 3"	390	3.7	2'- 3"	17	0.2	32'- 7"	442	4.2	2'- 6"	18	0.2	39'-11"	549	5.1	3'- 0 3/4"	20	0.3
	18"	32'- 7"	459	4.4	2'- 9"	20	0.3	36'- 4"	515	4.9	3'- 1"	29	0.3	44'- 7"	629	6.0	3'- 9 1/4"	33	0.4
	21"	36'- 0"	608	5.3	3'- 2 1/4"	31	0.4	40'- 2"	660	5.9	3'- 6 3/4"	33	0.4	49'- 2"	823	7.2	4'- 4 1/4"	38	0.5
	24"	39'- 4"	672	6.0	3'- 8 3/4"	35	0.4	43'-11"	748	6.7	4'- 1 3/4"	36	0.5	53'- 9"	920	8.2	5'- 0 3/4"	42	0.6
	27"	42'- 8"	770	7.1	4'- 0 3/4"	38	0.5	47'- 8"	852	8.0	4'- 6 1/4"	41	0.5	58'- 4"	1039	9.7	5'- 6 1/4"	45	0.7
	30"	46'- 1"	839	8.0	4'- 5 3/4"	40	0.6	51'- 5"	949	8.9	5'- 0"	44	0.6	62'-11"	1154	10.9	6'- 1 3/4"	48	0.8
	33"	49'- 5"	947	9.2	4'-10"	45	0.7	55'- 2"	1040	10.3	5'- 4 3/4"	48	0.7	67'- 6"	1284	12.6	6'- 7 1/4"	50	0.9
	36"	52'-10"	1151	11.4	5'- 3"	49	0.8	58'-11"	1287	12.7	5'-10 3/4"	51	1.0	72'- 1"	1575	15.6	7'- 2 1/4"	55	1.1
	42"	59'- 6"	1365	14.2	6'- 0 1/4"	55	1.0	66'- 5"	1522	15.8	6'- 8 3/4"	57	1.2	81'- 4"	1867	19.4	8'- 3"	76	1.4
	48"	69'- 4"	1729	18.5	6'-10"	59	1.3	77'- 4"	1934	20.7	7'- 7 1/4"	79	1.5	94'- 9"	2360	25.3	9'- 3 3/4"	86	1.8
	54"	76'- 1"	2130	22.0	7'- 9 1/4"	83	1.6	84'-10"	2370	24.6	8'- 8"	87	1.8	103'-11"	2904	30.1	10'- 7 1/4"	95	2.2
	60"	82'-10"	2414	25.8	8'- 6 3/4"	90	1.9	92'- 5"	2673	28.8	9'- 6 1/4"	94	2.1	113'-2"	3286	35.3	11'- 8"	122	2.6
	66"	89'- 7"	2712	29.9	9'- 0 3/4"	96	2.1	99'-11"	3030	33.3	10'- 1 1/4"	101	2.4	122'-4"	3689	40.8	12'- 4 1/4"	130	2.9
	72"	96'- 3"	3210	34.2	9'- 8"	102	2.4	107'-5"	3572	38.2	10'- 9 1/4"	108	2.6	131'-6"	4364	46.8	13'- 2 1/4"	139	3.2



ELEVATION

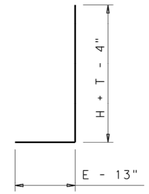


PLAN OF SKEWED PIPES

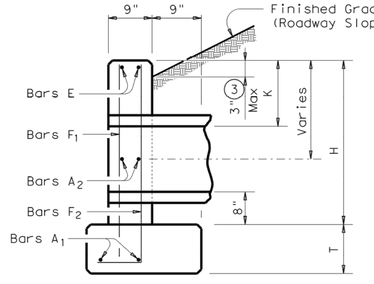
Showing 30° Skew

Lengths of wings based on SL:1 Slope along this line.

(2) Toe of Slope



BARS F_2



℄ SECTION

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

(2) Indicated slope is perpendicular to centerline Pipe or Pipes.

(3) For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

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

TABLE OF CONSTANT DIMENSIONS

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

TABLE OF REINFORCING STEEL (4)

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

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation — Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR SKEWED PIPE CULVERTS

CH-PW-S

FILE: chpwsste.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CORLEY FARMS UNIT 1

C26 - TXDOT PARALLEL WING DETAIL

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

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C26

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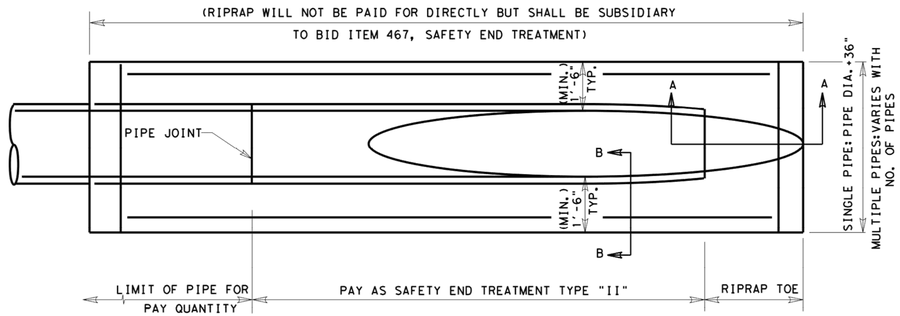
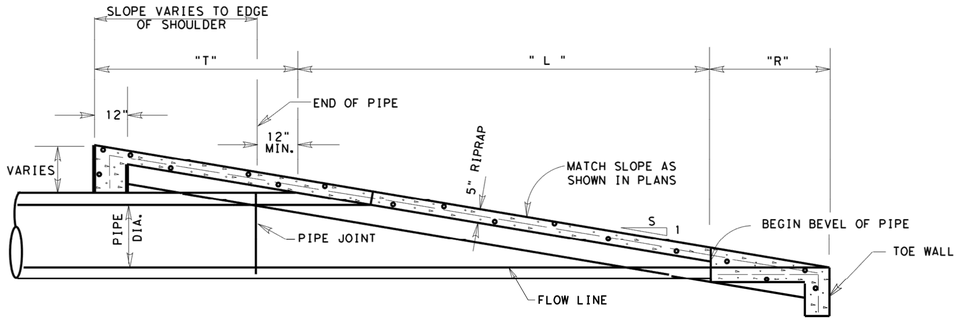
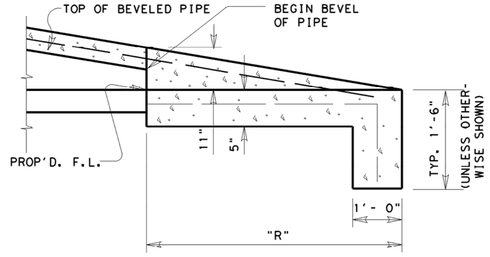


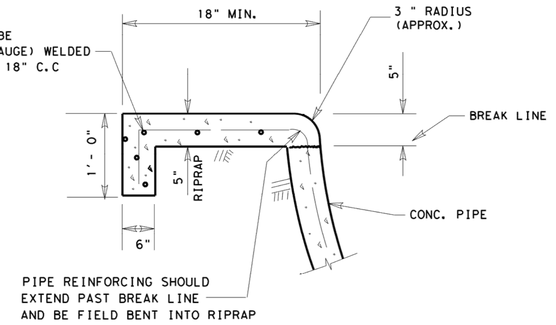
PLAN VIEW



ELEVATION
SAFETY END TREATMENT



SEC. A-A



SEC. B-B

SAFETY END TREATMENT PIPE LENGTHS

PIPE DIA. (IN.)	"L"			
	3:1	4:1	5:1	6:1
12	2'-0"	2'-8"	3'-4"	4'-0"
15	2'-9"	3'-8"	4'-7"	5'-6"
18	3'-6"	4'-8"	5'-10"	7'-0"
24	5'-1½"	6'-10"	8'-6½"	10'-3"
30	6'-9"	9-0"	11'-3"	13'-6"
36	8'-6"	11'-4"	14'-2"	17'-0"
42	10'-1½"	13'-6"	16'-10½"	20'-3"
48	11'-9"	15'-8"	19'-7"	23'-6"

⊛ DRIVEWAYS & TURNOUTS ARE 6:1 ONLY

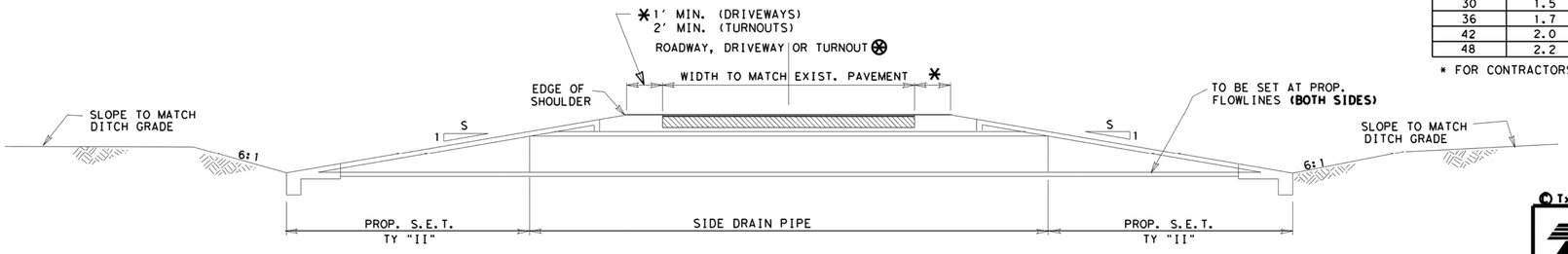
RIPRAP TOE LENGTHS

SLOPE	" R "	"T"
3:1	2'-9"	1'-9"
4:1	3'-8"	2'-4"
5:1	4'-7"	2'-11"
6:1	5'-6"	3'-6"

ESTIMATED RIPRAP VOLUME (CY)

PIPE DIA. (IN.)				
	3:1	4:1	5:1	6:1
12	.9	1.1	1.3	1.6
15	1.0	1.2	1.5	1.8
18	1.1	1.4	1.6	1.9
24	1.3	1.6	2.0	2.3
30	1.5	1.9	2.3	2.7
36	1.7	2.2	2.7	3.2
42	2.0	2.5	3.1	3.6
48	2.2	2.8	3.4	4.1

* FOR CONTRACTORS INFORMATION ONLY (SINGLE PIPE)



TYPICAL SIDEDRAIN SECTION

NOTE:

ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".

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PHARR DISTRICT STANDARDS

TEXAS DEPARTMENT OF TRANSPORTATION

SAFETY END TREATMENT DETAILS

REV. 9/16 SET. DGN

FED. RD. DIV. NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21					

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CORLEY FARMS
UNIT 1

TXDOT SAFETY END TREATMENT DETAILS

DATE
04/26/2021

PROJECT NO.
03481.004

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C27

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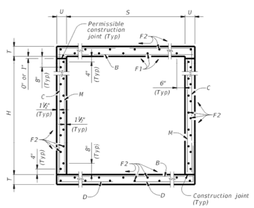
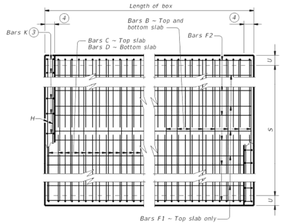


TYPICAL SECTION



PLAN OF REINF STEEL

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with TxDOT T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

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

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

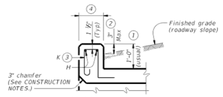
CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

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

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

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

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



SECTION THRU CURB

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

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

SCC-3 & 4

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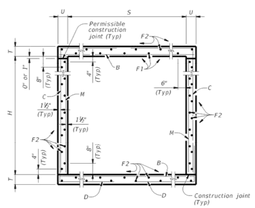
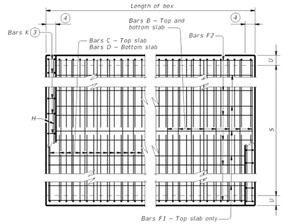


TYPICAL SECTION



PLAN OF REINF STEEL

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Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
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CONSTRUCTION NOTES:
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Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
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Provide bar laps, where required, as follows:
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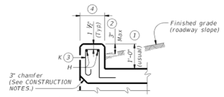
GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-HD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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



SECTION THRU CURB

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

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

SCC-5 & 6

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SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																						QUANTITIES			
					Bars B		Bars C					Bars D					Bars M ~ #4			Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K	Per Foot of Barrel		Curb	Total	
S	H	T	U		No.	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (LB)	Conc (CY)	Reinf (LB)	Conc (CY)	Reinf (LB)
3'-0"	2'-0"	8"	7"	30	108	#5	9"	3'-11"	441				108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	19	39'-9"	505	3'-11"	10	10	28	0.292	48.2	0.3	38	12.0	1,966
3'-0"	2'-0"	8"	7"	30	108	#5	9"	3'-11"	441				108	#4	9"	5'-1"	367	2'-10"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	21	39'-9"	611	3'-11"	10	10	28	0.335	54.5	0.3	38	13.7	2,216
4'-0"	2'-0"	8"	7"	30	108	#5	9"	4'-11"	554	163	#4	9"	5'-9"	622	2'-7"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	2'-0"	144	3	39'-9"	80	21	39'-9"	558	4'-11"	13	12	33	0.342	63.6	0.4	46	14.1	2,590
4'-0"	3'-0"	8"	7"	30	108	#5	9"	4'-11"	554	162	#4	6"	6'-9"	730	3'-7"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	3'-0"	216	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.385	70.8	0.4	46	15.8	2,876
4'-0"	4'-0"	8"	7"	30	108	#5	9"	4'-11"	554	162	#4	6"	7'-9"	839	4'-7"	3'-2"	162	#4	6"	5'-5"	586	3'-2"	2'-3"	108	9"	4'-0"	289	3	39'-9"	80	25	39'-9"	664	4'-11"	13	12	33	0.428	75.3	0.4	46	17.5	3,058

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

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

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

SCC-3 & 4

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SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																						QUANTITIES			
					Bars B		Bars C					Bars D					Bars M ~ #4			Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K	Per Foot of Barrel		Curb	Total	
S	H	T	U		No.	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (LB)	Conc (CY)	Reinf (LB)	Conc (CY)	Reinf (LB)
5'-0"	2'-0"	8"	7"	26	108	#6	9"	5'-11"	960	108	#5	9"	6'-4"	713	2'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	2'-0"	144	4	39'-9"	106	22	39'-9"	584	5'-11"	16	14	39	0.391	80.8	0.5	55	16.1	3,285
5'-0"	2'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	6'-5"	723	2'-8"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	2'-0"	144	4	39'-9"	106	26	39'-9"	584	5'-11"	16	14	39	0.429	81.2	0.5	55	17.6	3,304
5'-0"	3'-0"	8"	7"	26	108	#6	9"	5'-11"	960	108	#5	9"	7'-4"	826	2'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	3'-0"	216	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.434	88.0	0.5	55	17.8	3,576
5'-0"	3'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	7'-5"	835	3'-8"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	3'-0"	216	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.472	88.5	0.5	55	19.3	3,594
5'-0"	4'-0"	8"	7"	26	108	#6	9"	5'-11"	960	108	#5	9"	8'-4"	939	4'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	4'-0"	289	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.477	92.7	0.5	55	19.5	3,762
5'-0"	4'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	8'-5"	948	4'-8"	3'-9"	108	#5	9"	6'-6"	732	3'-9"	2'-9"	108	9"	4'-0"	289	4	39'-9"	106	26	39'-9"	690	5'-11"	16	14	39	0.515	93.1	0.5	55	21.1	3,780
5'-0"	5'-0"	8"	7"	26	108	#6	9"	5'-11"	960	108	#5	9"	9'-4"	1,051	5'-7"	3'-9"	108	#5	9"	6'-5"	723	3'-9"	2'-8"	108	9"	5'-0"	361	4	39'-9"	106	30	39'-9"	797	5'-11"	16	14	39	0.521	100.0	0.5	55	21.3	4,053
5'-0"	5'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	9'-5"	1,061	5'-8"	3'-9"	108	#5	9"	6'-5"	732	3'-9"	2'-9"	108	9"	5'-0"	361	4	39'-9"	106	30	39'-9"	797	5'-11"	16	14	39	0.559	100.4	0.5	55	22.8	4,072
6'-0"	2'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	6'-8"	751	2'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	2'-0"	144	5	39'-9"	133	25	39'-9"	664	6'-11"	18	16	45	0.440	89.4	0.5	63	18.1	3,637
6'-0"	2'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	6'-9"	1,141	2'-8"	4'-1"	162	#5	6"	6'-9"	760	4'-1"	2'-9"	108	9"	2'-0"	144	5	39'-9"	133	25	39'-9"	664	6'-11"	18	16	45	0.485	109.0	0.5	63	19.9	4,422
6'-0"	2'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	6'-11"	1,169	2'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	2'-0"	110	5	39'-9"	133	25	39'-9"	664	7'-1"	19	18	50	0.551	110.2	0.5	69	22.6	4,477
6'-0"	3'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	7'-8"	864	3'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	3'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.484	96.6	0.5	63	19.9	3,928
6'-0"	3'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	7'-9"	1,309	3'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	3'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.528	117.6	0.5	63	21.6	4,768
6'-0"	3'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	7'-11"	1,338	3'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	3'-0"	164	5	39'-9"	133	29	39'-9"	770	7'-1"	19	18	50	0.601	118.4	0.5	69	24.6	4,806
6'-0"	4'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	8'-8"	976	4'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	4'-0"	289	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.527	101.3	0.5	63	21.6	4,113
6'-0"	4'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	8'-9"	1,478	4'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	4'-0"	289	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.571	123.7	0.5	63	23.4	5,010
6'-0"	4'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	8'-11"	1,507	4'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	4'-0"	219	5	39'-9"	133	29	39'-9"	770	7'-1"	19	18	50	0.650	124.0	0.5	69	26.5	5,030
6'-0"	5'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	9'-8"	1,089	5'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	5'-0"	361	5	39'-9"	133	33	39'-9"	876	6'-11"	18	16	45	0.570	108.5	0.5	63	23.3	4,404
6'-0"	5'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	9'-9"	1,647	5'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	5'-0"	361	5	39'-9"	133	33	39'-9"	876	6'-11"	18	16	45	0.614	132.4	0.5	63	25.1	5,357
6'-0"	5'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	9'-11"	1,676	5'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	5'-0"	274	5	39'-9"	133	33	39'-9"	876	7'-1"	19	18	50	0.700	132.3	0.5	69	28.5	5,360
6'-0"	6'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	10'-8"	1,202	6'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	6'-0"	433	5	39'-9"	133	37	39'-9"	982	6'-11"	18	16	45	0.613	115.8	0.5	63	25.0	4,695
6'-0"	6'-0"	9"	7"	26	108	#6	9"	6'-11"	1,122	162	#5	6"	10'-9"	1,816	6'-8"	4'-1"	162	#5	6"	6'-10"	1,155	4'-1"	2'-9"	108	9"	6'-0"	433	5	39'-9"	133	37	39'-9"	982	6'-11"	18	16	45	0.657	141.0	0.5	63	26.8	5,704
6'-0"	6'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	10'-11"	1,845	6'-9"	4'-2"	162	#5	6"	7'-0"	1,183	4'-2"	2'-10"	82	12"	6'-0"	329	5	39'-9"	133	37	39'-9"	982	7'-1"	19	18	50	0.749	140.5	0.5	69	30.5	5,690

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

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

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

SCC-5 & 6

FILE:	scc5kbx-28.dgn	DN: TXDOT	CK: BWP	DW: TxDOT	CK: TxDOT
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CUDEENGINEERS.COM

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CORLEY FARMS
UNIT 1

SINGLE BOX CULVERTS CAST-IN-PLACE
DETAIL

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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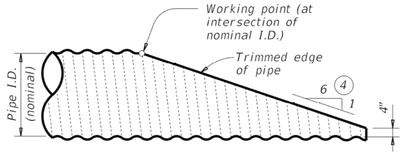
TBPE No. 455
TBPLS No. 10048500

C28

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.

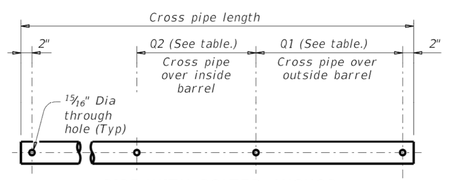
P:\03481\004\Drawings\Cad\SINGLE BOX CULVERTS CAST-IN-PLACE DETAIL.dwg 2021/04/26 2:50pm mwalpole



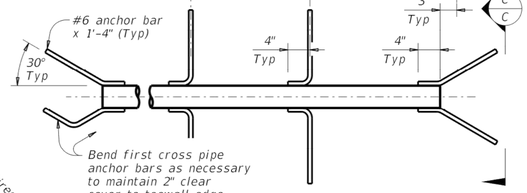
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

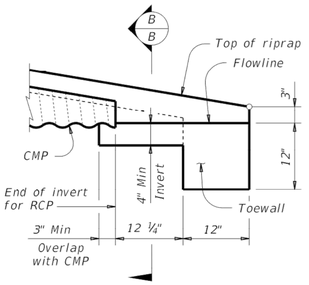
(Showing corrugated metal pipe (CMP) culvert Details at reinforced concrete pipe (RCP) culvert are similar.)



PIPE WITH BOLTED ANCHOR

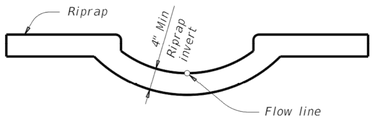


PIPE WITH ANCHOR BARS



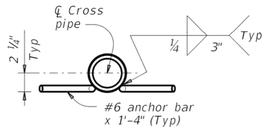
DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



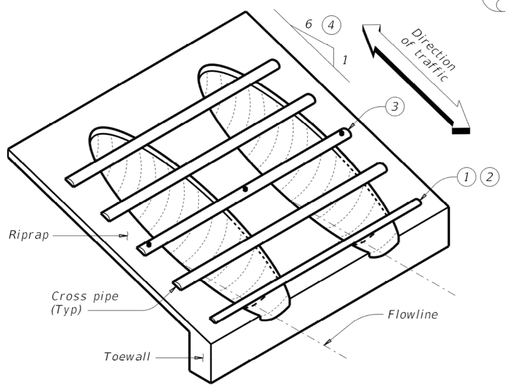
SECTION B-B

(Cross pipes not shown for clarity.)

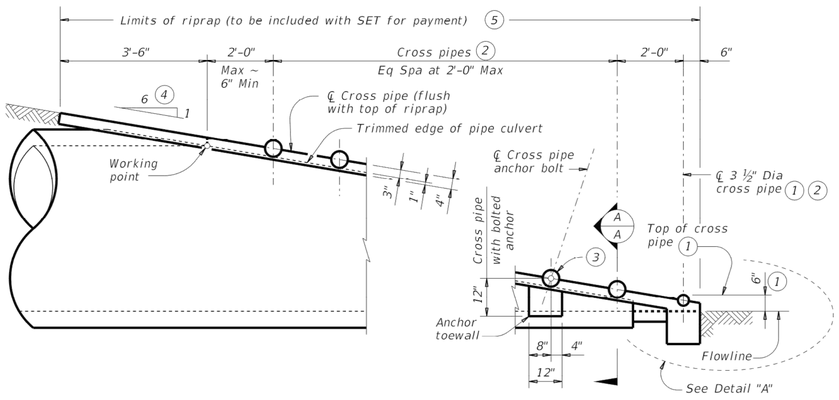


SECTION C-C

CROSS PIPE DETAILS

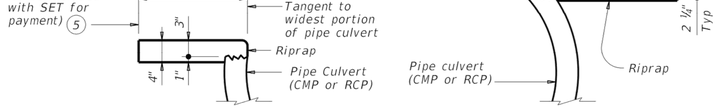


ISOMETRIC VIEW OF TYPICAL INSTALLATION



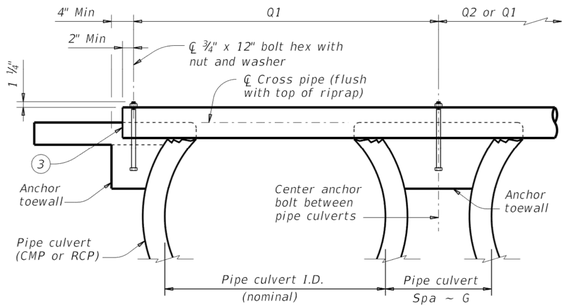
SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SHOWING CROSS PIPE WITH ANCHOR BAR



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES (2)

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' – 9"	N/A	2' – 1"	1' – 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' – 11"	N/A	2' – 5"	2' – 2"		
18"	0.8	1' – 2"	N/A	2' – 10"	2' – 8"		
21"	0.9	1' – 4"	N/A	3' – 2"	3' – 1"		
24"	0.9	1' – 7"	N/A	3' – 6"	3' – 7"		
27"	1.0	1' – 8"	N/A	3' – 10"	3' – 11"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
30"	1.1	1' – 10"	N/A	4' – 2"	4' – 4"	2 or more pipe culverts	
33"	1.2	1' – 11"	4' – 2"	4' – 5"	4' – 8"	All pipe culverts	
36"	1.3	2' – 1"	4' – 5"	4' – 9"	5' – 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' – 4"	4' – 11"	5' – 5"	5' – 10"		
48"	1.7	2' – 7"	5' – 5"	6' – 0"	6' – 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' – 0"	5' – 11"	6' – 9"	7' – 6"		
60"	2.2	3' – 3"	6' – 5"	7' – 4"	8' – 3"		
66"	2.4	3' – 3"	6' – 11"	7' – 10"	8' – 9"		
72"	2.7	3' – 4"	7' – 5"	8' – 5"	9' – 4"		

(1) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.

(2) Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1#2" standard pipe (4" O.D.) for the first bottom pipe.

(3) Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.

(4) Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.

(5) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.

Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

FILE:	setppdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
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REVISIONS		DIST	COUNTY		SHEET NO.

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CORLEY FARMS UNIT 1

TXDOT SAFETY END TREATMENT PARALLEL DRAINAGE 12" TO 72"

DATE
04/26/2021

PROJECT NO.
03481.004

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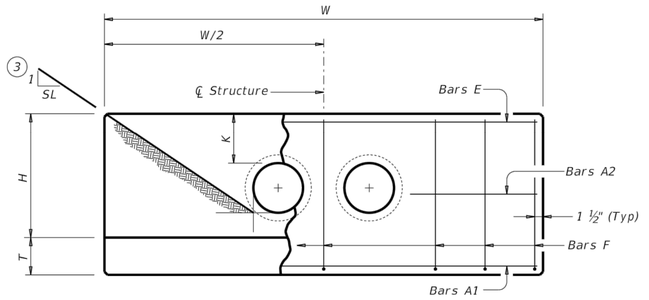
TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

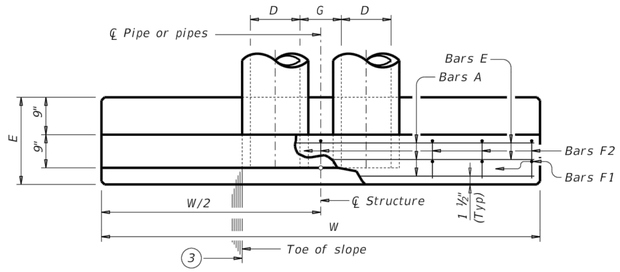
Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' – 0"	122	1.1	1' – 9"	15	0.2
	15"	10' – 3"	136	1.3	2' – 2"	16	0.2
	18"	11' – 6"	163	1.5	2' – 8"	19	0.3
	21"	12' – 9"	200	1.8	3' – 1"	31	0.4
	24"	14' – 0"	217	2.1	3' – 7"	34	0.4
	27"	15' – 3"	254	2.4	3' – 11"	37	0.5
	30"	16' – 6"	272	2.7	4' – 4"	40	0.6
	33"	17' – 9"	314	3.1	4' – 8"	43	0.6
	36"	19' – 0"	371	3.9	5' – 1"	46	0.8
	42"	21' – 6"	442	4.9	5' – 10"	52	1.0
	48"	25' – 0"	569	6.4	6' – 7"	59	1.3
	54"	27' – 6"	701	7.5	7' – 6"	82	1.6
	60"	30' – 0"	794	8.8	8' – 3"	90	1.8
	66"	32' – 6"	894	10.2	8' – 9"	96	2.0
	72"	35' – 0"	1,055	11.7	9' – 4"	103	2.3
3:1	12"	13' – 0"	175	1.6	1' – 9"	14	0.2
	15"	14' – 9"	193	1.9	2' – 2"	17	0.2
	18"	16' – 6"	228	2.2	2' – 8"	19	0.3
	21"	18' – 3"	299	2.6	3' – 1"	31	0.4
	24"	20' – 0"	323	3.0	3' – 7"	33	0.4
	27"	21' – 9"	371	3.5	3' – 11"	37	0.5
	30"	23' – 6"	415	4.0	4' – 4"	40	0.5
	33"	25' – 3"	469	4.6	4' – 8"	43	0.6
	36"	27' – 0"	556	5.7	5' – 1"	46	0.8
	42"	30' – 6"	675	7.1	5' – 10"	52	1.0
	48"	35' – 6"	837	9.2	6' – 7"	59	1.3
	54"	39' – 0"	1,015	11.0	7' – 6"	84	1.6
	60"	42' – 6"	1,171	12.9	8' – 3"	91	1.8
	66"	46' – 0"	1,298	14.9	8' – 9"	98	2.0
	72"	49' – 6"	1,561	17.1	9' – 4"	103	2.3
4:1	12"	17' – 0"	229	2.0	1' – 9"	15	0.2
	15"	19' – 3"	266	2.4	2' – 2"	17	0.2
	18"	21' – 6"	308	2.9	2' – 8"	19	0.3
	21"	23' – 9"	382	3.5	3' – 1"	31	0.3
	24"	26' – 0"	430	3.9	3' – 7"	34	0.4
	27"	28' – 3"	486	4.7	3' – 11"	37	0.5
	30"	30' – 6"	539	5.2	4' – 4"	40	0.6
	33"	32' – 9"	603	6.0	4' – 8"	42	0.6
	36"	35' – 0"	738	7.5	5' – 1"	47	0.8
	42"	39' – 6"	881	9.3	5' – 10"	52	1.0
	48"	46' – 0"	1,102	12.1	6' – 7"	61	1.3
	54"	50' – 6"	1,364	14.4	7' – 6"	84	1.6
	60"	55' – 0"	1,547	16.9	8' – 3"	91	1.8
	66"	59' – 6"	1,741	19.5	8' – 9"	98	2.0
	72"	64' – 0"	2,077	22.4	9' – 4"	102	2.3
6:1	12"	25' – 0"	336	3.0	1' – 9"	14	0.2
	15"	28' – 3"	384	3.6	2' – 2"	17	0.2
	18"	31' – 6"	452	4.2	2' – 8"	19	0.3
	21"	34' – 9"	581	5.1	3' – 1"	31	0.4
	24"	38' – 0"	644	5.8	3' – 7"	34	0.4
	27"	41' – 3"	737	6.9	3' – 11"	37	0.5
	30"	44' – 6"	807	7.7	4' – 4"	39	0.6
	33"	47' – 9"	912	8.9	4' – 8"	44	0.6
	36"	51' – 0"	1,108	11.0	5' – 1"	48	0.8
	42"	57' – 6"	1,318	13.7	5' – 10"	54	1.0
	48"	67' – 0"	1,682	17.9	6' – 7"	59	1.3
	54"	73' – 6"	2,072	21.3	7' – 6"	83	1.6
	60"	80' – 0"	2,351	24.9	8' – 3"	89	1.8
	66"	86' – 6"	2,643	28.9	8' – 9"	96	2.0
	72"	93' – 0"	3,121	33.1	9' – 4"	101	2.3

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

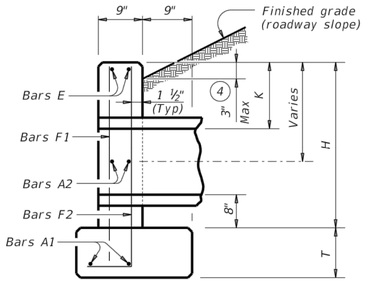
DATE:
FILE:



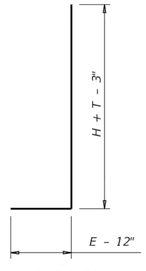
ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE



BARS F2

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

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

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

(4) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) Dimensions shown are usual and maximum.

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

TABLE OF CONSTANT DIMENSIONS

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

TABLE OF REINFORCING STEEL (6)

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

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

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

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: chpw0ste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

CUDEENGINEERS.COM
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CORLEY FARMS UNIT 1

1 TXDOT CONCRETE HEADWALLS NON-SKEWED DETAIL

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-22 - REVISED SHEET TITLE
2.
3.
4.
5.
6.
7.
8.
9.

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C30

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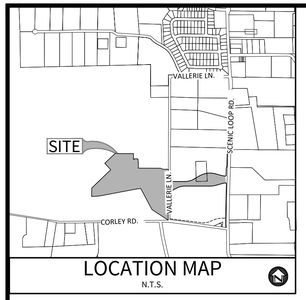
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

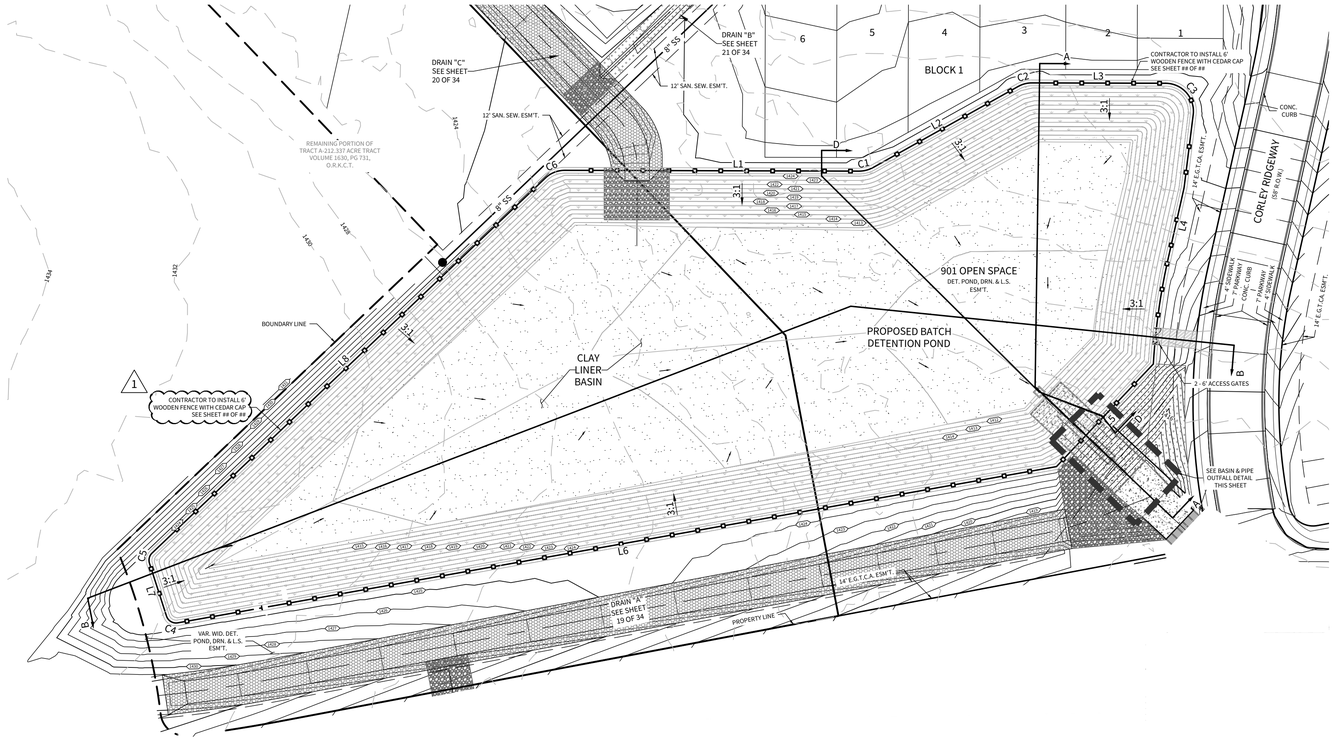


LOCATION MAP
N.T.S.

LEGEND

- CONC. RIP RAP
- GABION MATTRESS
- EARTHEN VEGETATION
- 710 PROPOSED CONTOUR
- 710 EXISTING CONTOUR
- 3:1 PROPOSED SLOPE
- DRAINAGE FLOW LINE
- 1% ANNUAL CHANCE FLOODPLAIN
- CLAY LINER

SCALE: 1"=50'
0 50 100



GENERAL NOTES:

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

CONTRACTOR TO HYDROMULCH ENTIRE DISTURBED LIMITS OF EARTHEN PORTION OF POND. 85% OF POND SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE & KENDALL COUNTY.

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

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE SUBDIVISION ORDINANCE OF THE CITY OF BOERNE, TEXAS.

ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK ROCK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.

ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.

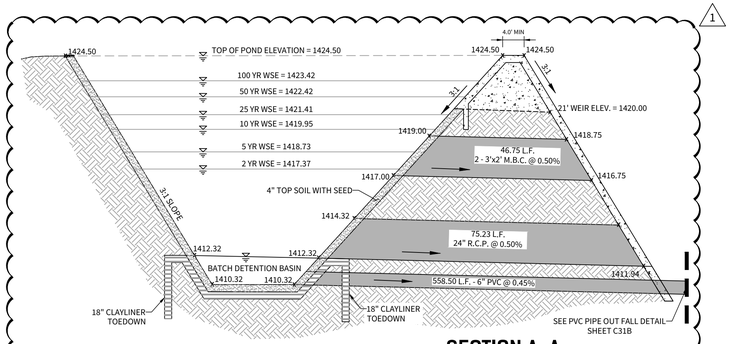
THE OWNER SHALL SPECIFY THE USE OF EITHER A CHAINLINK FENCE OR A WOODEN PRIVACY FENCE. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER PRIOR TO INSTALLATION AND CONSTRUCTION.

Pond Outfall Structure Details:

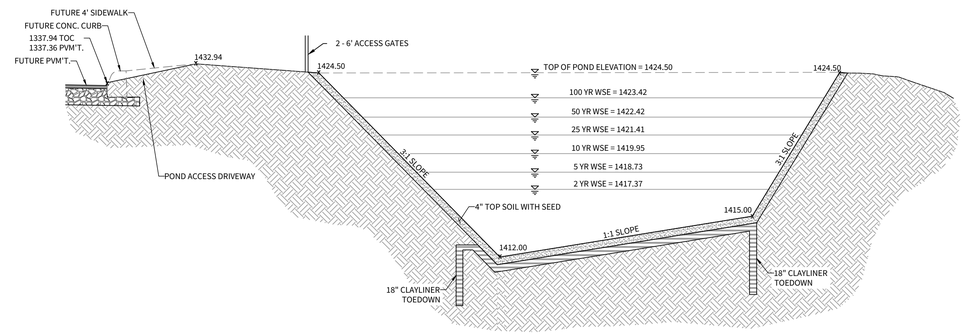
75.23 LF of 24" RCP @ 0.50%	US Invert:	1412.32	DS Invert:	1411.94
Restrictor plate to block half of opening to create 1.57 SF orifice				
46.75 LF of 2 - 3'x2' MBC @ 0.53%	US Invert:	1417.00	DS Invert:	1416.75
21.0' Weir @ Elev. = 1420.00				

Pond Characteristics Table:

2 YR Storm Event				
Pond Inflow:	261.6	CFS		
Pond Discharge:	19.4	CFS		
Maximum Pond WSE:	1417.37	FT	7.13	FT from top of pond
Storage Provided:	12.42	AC-FT		
5 YR Storm Event				
Pond Inflow:	370.0	CFS		
Pond Discharge:	51.8	CFS		
Maximum Pond WSE:	1418.73	FT	5.77	FT from top of pond
Storage Provided:	15.99	AC-FT		
10 YR Storm Event				
Pond Inflow:	476.5	CFS		
Pond Discharge:	90	CFS		
Maximum Pond WSE:	1419.95	FT	4.55	FT from top of pond
Storage Provided:	19.38	AC-FT		
25 YR Storm Event				
Pond Inflow:	640.3	CFS		
Pond Discharge:	213.9	CFS		
Maximum Pond WSE:	1421.41	FT	3.09	FT from top of pond
Storage Provided:	23.66	AC-FT		
50 YR Storm Event				
Pond Inflow:	786.6	CFS		
Pond Discharge:	346.3	CFS		
Maximum Pond WSE:	1422.42	FT	2.08	FT from top of pond
Storage Provided:	26.79	AC-FT		
100 YR Storm Event				
Pond Inflow:	944.5	CFS		
Pond Discharge:	502.1	CFS		
Maximum Pond WSE:	1423.42	FT	1.08	FT from top of pond
Storage Provided:	30	AC-FT		



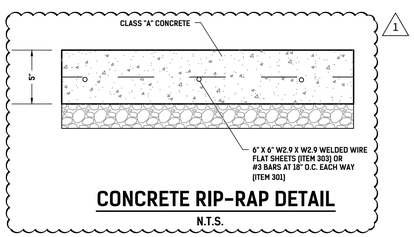
SECTION A-A
N.T.S.



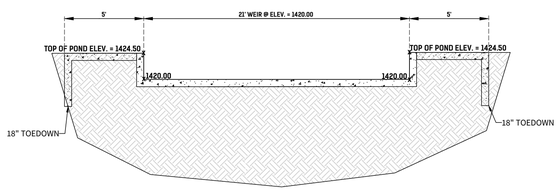
SECTION B-B
N.T.S.

GENERAL NOTES:

1. A 6 FOOT HIGH FENCE (WOOD, CHAINLINK, OR OTHER DECORATIVE FENCE AS SPECIFIED BY THE OWNER OR BY RESTRICTIVE COVENANT) SHALL BE INSTALLED AT THE TOP OF THE WATER QUALITY BASIN ALONG ALL SIDES. AT THE LOCATION OF THE 12' WIDE (MIN) MAINTENANCE RAMP, A 12 FOOT WIDE GATE (EITHER BEING A SINGLE GATE OR TWO 6' WIDE GATES) WITH LOCK SHALL BE PROVIDED TO ALLOW ACCESS TO THE WATER QUALITY POND.
2. ALL CONCRETE SHALL BE 3500 PSI COMPRESSIVE STRENGTH AFTER 28 DAYS OR GREATER.
3. ALL REBAR SPLICES AND LAPS SHALL BE A MINIMUM OF 40 BAR DIAMETERS UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR SHALL ALERT ENGINEER FOR FIELD OBSERVATION A MIN. OF 24 HOURS PRIOR TO EACH OF THE FOLLOWING EVENTS; DRAIN PIPE INSTALLATION COMPLETION, AND ANY CONCRETE POURS. THE CONTRACTOR SHALL ALSO PROVIDE A MATERIAL SUBMITTAL TO THE ENGINEER FOR REVIEW ON THE FOLLOWING MATERIALS; PERMEABLE GEOTEXTILE FABRIC, CLAY LINER.
5. CONTRACTOR SHALL INSTALL AND ESTABLISH 85% VEGETATION IN BASIN PER BASIN DETAIL SHEET PRIOR TO SITE CLOSEOUT.
6. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S (FILTERSTRIPS AND BASIN) MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
7. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.
8. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
9. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHELL BE REVEGETATED PRIOR TO COMPLETION.
10. BASIN DRAWDOWN IS CONTROLLED BY THE 6" PVC PIPE. BASIN DRAWN DOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.
11. CONTRACTOR TO SET THE VALVE POSITION TO FULLY OPEN.
12. CLAY SUBGRADE CONDITIONS ONSITE TODAY. DURING CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE GEOTECH ENGINEER OF RECORD AND CIVIL ENGINEER TO DETERMINE IF EXISTING CLAY SUBGRADE IS SUITABLE IN LIEU OF NEW CLAY PLACEMENT.
13. CONTRACTOR IS REQUIRED ELECTRICAL PLANS/SPECIFICATIONS FOR REVIEW BY CIVIL ENGINEER PRIOR TO THE START OF CONSTRUCTION.
14. REFER TO STORMWATER MANAGEMENT PLAN INFORMATION REGARDING DETENTION STAGE AND MITIGATION OF 5 YEAR, 25 YEAR AND 100 YEAR PEAK STORM EVENTS. UPPER LEVEL WEIRS (ABOVE THE DESIGN WATER SURFACE ELEVATION OF 1124) FOR MITIGATION OF THESE STORM EVENT WILL BE FINALIZED WITH THE CIVIL PLANS.



CONCRETE RIP-RAP DETAIL
N.T.S.



SECTION C-C
N.T.S.

CUDEENGINEERS.COM
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CORLEY FARMS UNIT 1

DETENTION POND "SOUTHWEST POND"

DATE 04/26/2021

PROJECT NO. 03481.004

DRAWN BY C3

CHECKED BY JC/DDC

REVISIONS

1. 2021-04-26 - REVISED POND DESIGN, UPDATED CROSS SECTIONS & CALCS.
2.
3.
4.
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7.
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C31

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P:\03481\Civil\2 Drawings\C3 CAD\TEXT\03 POND-SOUTHWEST POND" dwg 2021-04-30 7:19pm cjungkuhn

LOCATION MAP
N.T.S.

NOTES TO CONTRACTOR

(EACH PHASE OF BASIN CONSTRUCTION)

1. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO THE FOLLOWING MILESTONES:

   - REINFORCING STEEL FOR BASIN OVERFLOW WALL HAS BEEN SET, CONCRETE HAS NOT BEEN PLACED AND DRAIN PIPE AND RISER PIPE IS IN PLACE. CONTRACTOR SHALL PROVIDE ENGINEER WITH SURVEY DATA WHICH DEMONSTRATES THE RISER PIPE HAS BEEN SET AT PROPER ELEVATION AND GRADE.

   - BASIN HAS BEEN COMPLETELY FINISHED INCLUDING SOD OR SEED PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE)

2. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR APPROVAL.

3. UPON SUBSTANTIAL COMPLETION, OR AS REQUIRED BY ENGINEER, CONTRACTOR TO PROVIDE CERTIFYING ENGINEER WITH FIELDS SHOTS VERIFYING ELEVATIONS OF THE FOLLOWING:

   - TOP OF BANK/WALL AT EACH CORNER OF BASIN
   - TOE OF SLOPE AT EACH CORNER OF BASIN (INSIDE BASIN TOE)
   - OVERFLOW WEIRS

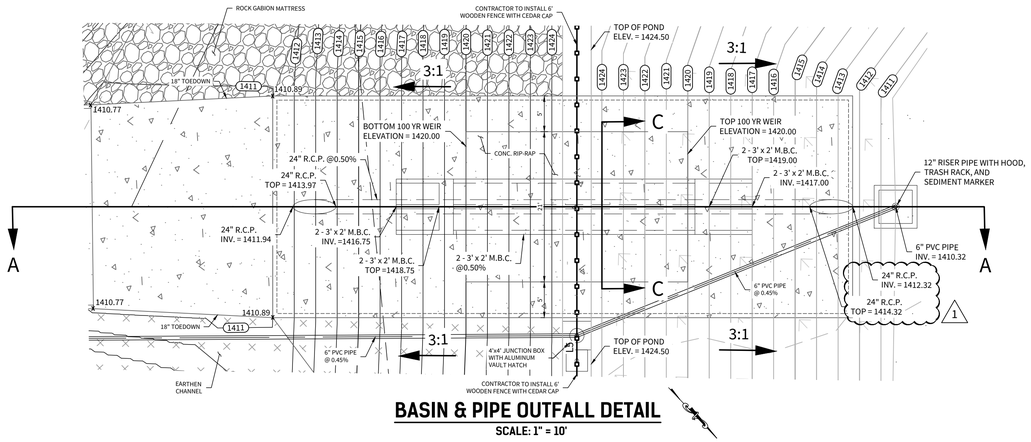
4. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE.

5. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 24 HOURS. CONTRACTOR TO SET BUTTERFLY VALVE TO FULLY OPEN TO BE CONTROLLED DDC CONTROLLER.

6. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.

CLAY LINER SPECIFICATIONS

PROPERTY	TEST METHOD	NOTES
PERMEABILITY	ASTM D-2434	0.000001 CM/SEC
PLASTICITY INDEX	ASTM D-423 & D424	NOT LESS THAN 15%
LIQUID LIMIT OF CLAY	ASTM D-2216	NOT LESS THAN 30%
CLAY PARTICLE PASSING	ASTM D-422	NOT LESS THAN 30%
CLAY COMPACTION	ASTM D-2216	95% OF STANDARD PROCTOR DENSITY



BASIN & PIPE OUTFALL DETAIL

SCALE: 1" = 10'

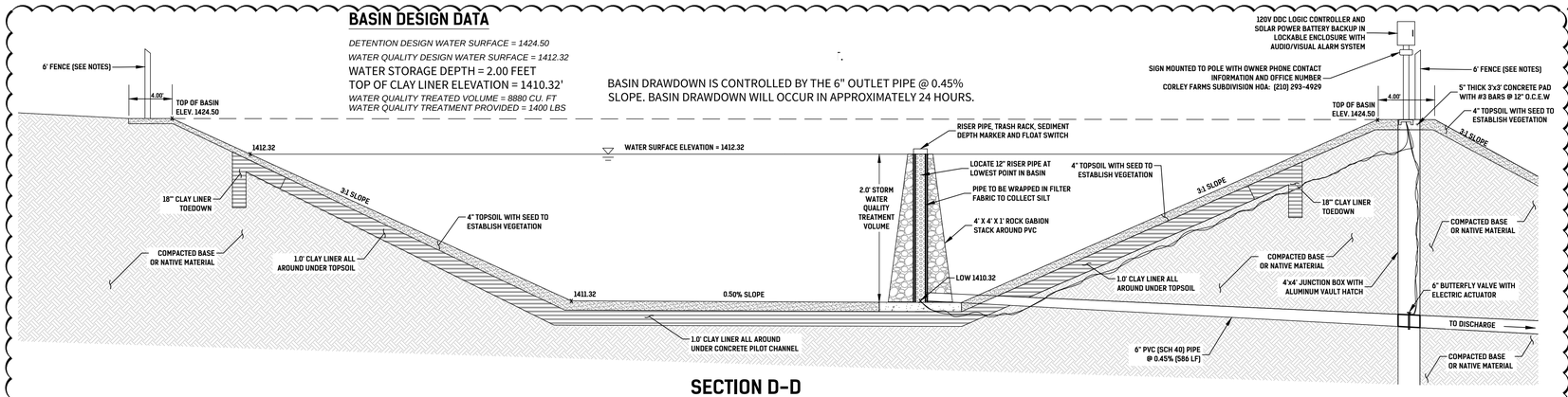
SOUTHWEST POND, DRAIN "A", & DRAIN "G" INTERSECTION DETAIL

SCALE: 1" = 10'

BASIN DESIGN DATA

DETENTION DESIGN WATER SURFACE = 1424.50
WATER QUALITY DESIGN WATER SURFACE = 1412.32
WATER STORAGE DEPTH = 2.00 FEET
TOP OF CLAY LINER ELEVATION = 1410.32'
WATER QUALITY TREATED VOLUME = 8880 CU. FT
WATER QUALITY TREATMENT PROVIDED = 1400 LBS

BASIN DRAWDOWN IS CONTROLLED BY THE 6" OUTLET PIPE @ 0.45% SLOPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.



SECTION D-D

N.T.S.

SEQUENCE OF OPERATION

1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO STRT DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE VALUE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 6" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 24 HOURS AND TO BE USER ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 6"BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTIVATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.

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CUDE ENGINEERS

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CORLEY FARMS UNIT 1

DETENTION POND "SOUTHWEST POND" (BATCH DETENTION)

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-26 - REVISED POND DESIGN, UPDATED CROSS SECTIONS & CALCS.
2.
3.
4.
5.
6.
7.
8.
9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

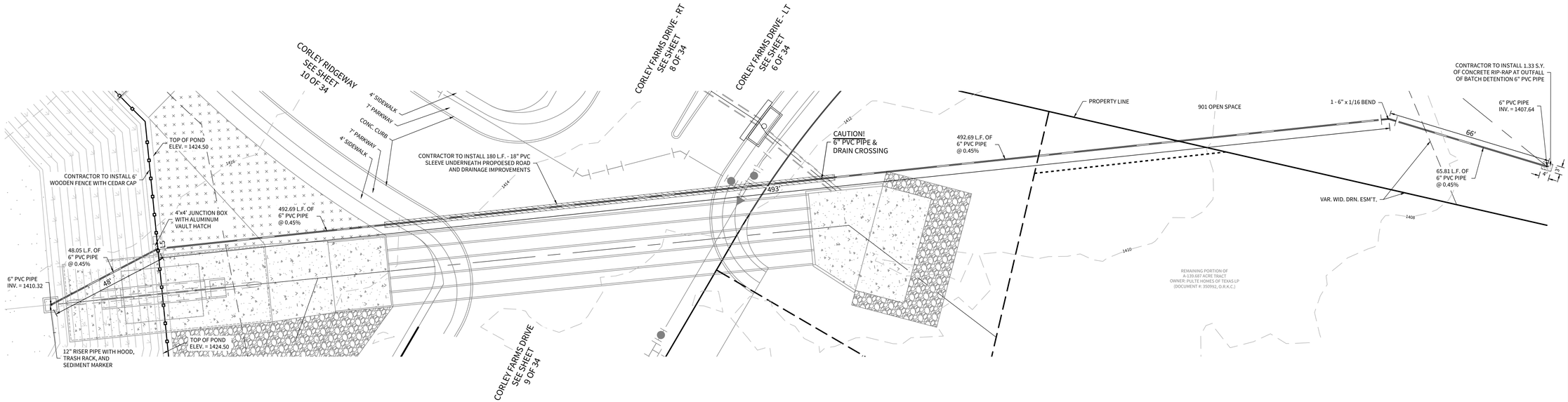
C31A

31A OF 34

P:\03481.004\C3-Drawings\C31.1E ENTIONPOND_SOUTHWEST POND.dwg 2021.04.26 2:29pm Langshaw

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.



PVC PIPE OUTFALL DETAIL

SCALE: 1" = 20'

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CORLEY FARMS
UNIT 1

DETENTION POND "SOUTHWEST POND"

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
102076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

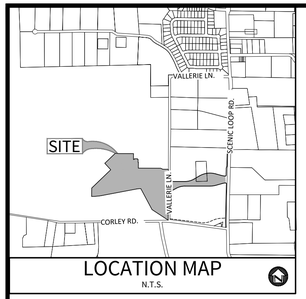
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C31B

OF

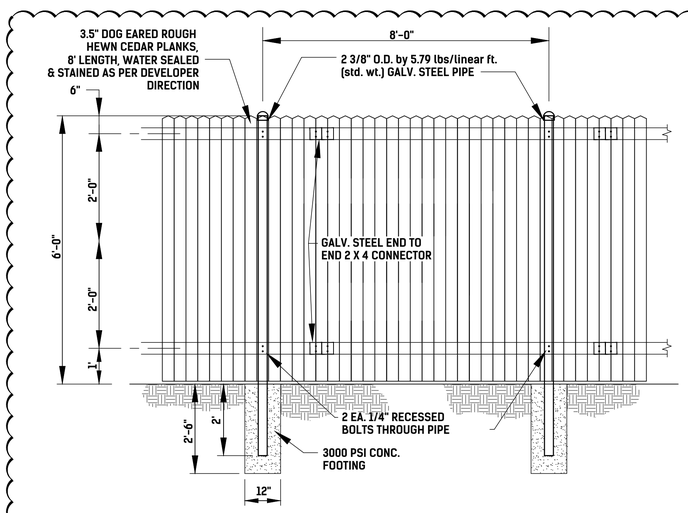
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\03481.004\03_Engineering\C3.1 - C3.5 (Civil)\Detail Sheets - 3SOUTHWEST POND\C31B - Plotted: 2021.04.26 12:19pm Lara Lamb



LOCATION MAP

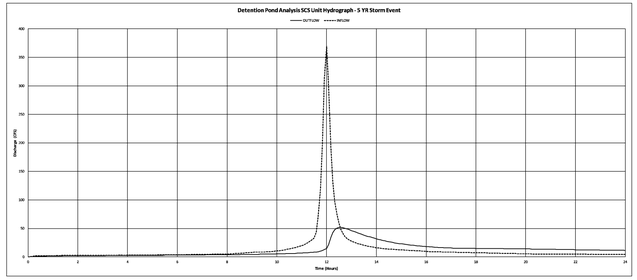
N.T.S.

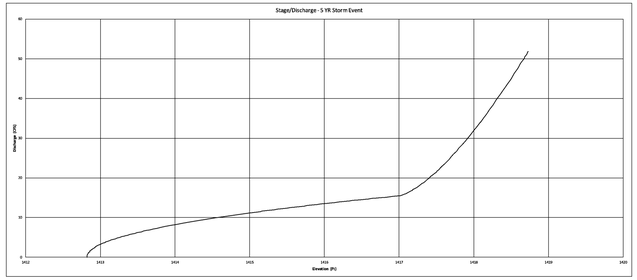


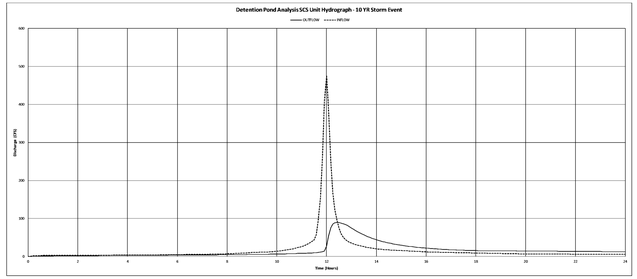
WOODEN PRIVACY FENCE DETAIL

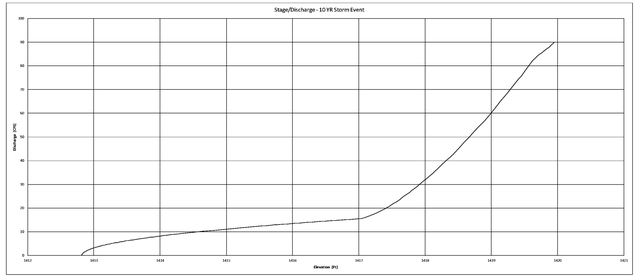
SCALE: NONE

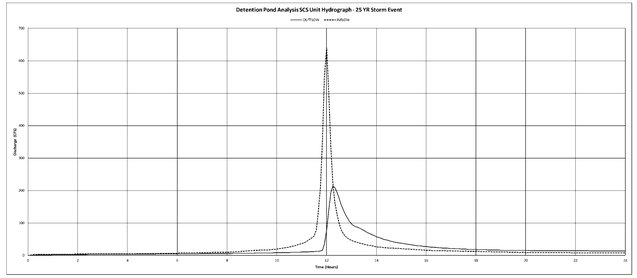
1

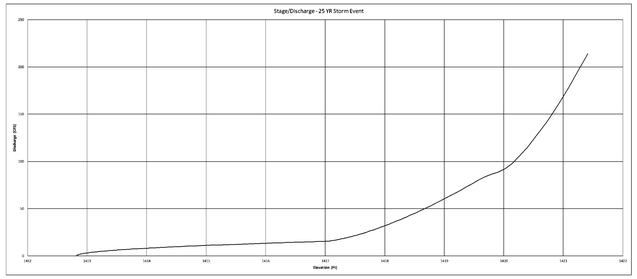


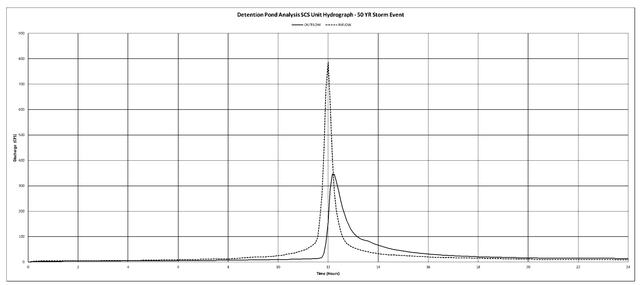


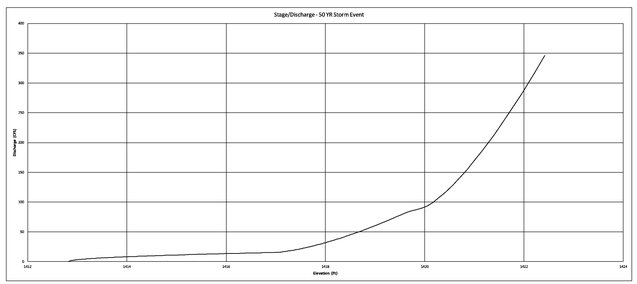


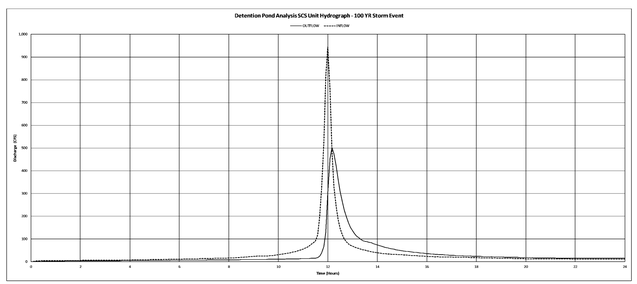


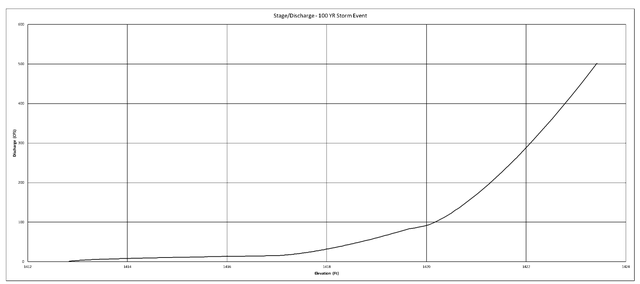












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CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

DETENTION POND "SOUTHWEST POND"

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - REVISED POND DESIGN, UPDATED CROSS SECTIONS & CALCS.
2.
3.
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C32

OF

C:\03481\04-Drawings\C3 DETENTION POND - SOUTHWEST POND - 04-26-2021.DWG 2:26pm cuhgalvin

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.

Pond Outfall Structure Details:

45 LF of 1 - 4'x2' SBC @ 0.88%		US Invert:	1396.50	DS Invert:	1396.11
15.0' Weir @ Elev. = 1398.75					
40.0' Weir @ Elev. = 1399.40					

Pond Characteristics Table:

2 YR Storm Event				
Pond Inflow:	81.4	CFS		
Pond Discharge:	62.4	CFS		
Maximum Pond WSE:	1399.31	FT	3.69	FT from top of pond
Storage Provided:	1.25	AC-FT		
5 YR Storm Event				
Pond Inflow:	116.2	CFS		
Pond Discharge:	107.9	CFS		
Maximum Pond WSE:	1399.69	FT	3.31	FT from top of pond
Storage Provided:	1.53	AC-FT		
10 YR Storm Event				
Pond Inflow:	175.6	CFS		
Pond Discharge:	168	CFS		
Maximum Pond WSE:	1400.02	FT	2.98	FT from top of pond
Storage Provided:	1.77	AC-FT		
25 YR Storm Event				
Pond Inflow:	309.3	CFS		
Pond Discharge:	307	CFS		
Maximum Pond WSE:	1400.61	FT	2.39	FT from top of pond
Storage Provided:	2.23	AC-FT		
50 YR Storm Event				
Pond Inflow:	493.4	CFS		
Pond Discharge:	481.4	CFS		
Maximum Pond WSE:	1401.21	FT	1.79	FT from top of pond
Storage Provided:	2.72	AC-FT		
100 YR Storm Event				
Pond Inflow:	687.9	CFS		
Pond Discharge:	665.1	CFS		
Maximum Pond WSE:	1401.76	FT	1.24	FT from top of pond
Storage Provided:	3.18	AC-FT		

Overall Site Discharge Summary

Discharge at Southeast Property Corner (Intersection of Valerie Lane and Corley Road)				
2 YR Storm Event				
Pre-Development Rate:	206.13	CFS		
Post-Development Rate:	175.10	CFS	31.03	CFS less than allowable
5 YR Storm Event				
Pre-Development Rate:	321.79	CFS		
Post-Development Rate:	252.10	CFS	69.69	CFS less than allowable
10 YR Storm Event				
Pre-Development Rate:	439.38	CFS		
Post-Development Rate:	358.10	CFS	81.28	CFS less than allowable
25 YR Storm Event				
Pre-Development Rate:	623.55	CFS		
Post-Development Rate:	530.70	CFS	92.85	CFS less than allowable
50 YR Storm Event				
Pre-Development Rate:	789.40	CFS		
Post-Development Rate:	720.20	CFS	69.20	CFS less than allowable
100 YR Storm Event				
Pre-Development Rate:	972.27	CFS		
Post-Development Rate:	964.00	CFS	8.27	CFS less than allowable

Note: ***Post-development discharge rates above account for detention ponds 1 and 3.***

GENERAL NOTES:

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

CONTRACTOR TO HYDROMULCH ENTIRE DISTURBED LIMITS OF EARTHEN PORTION OF POND. 85% OF POND SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE & KENDALL COUNTY.

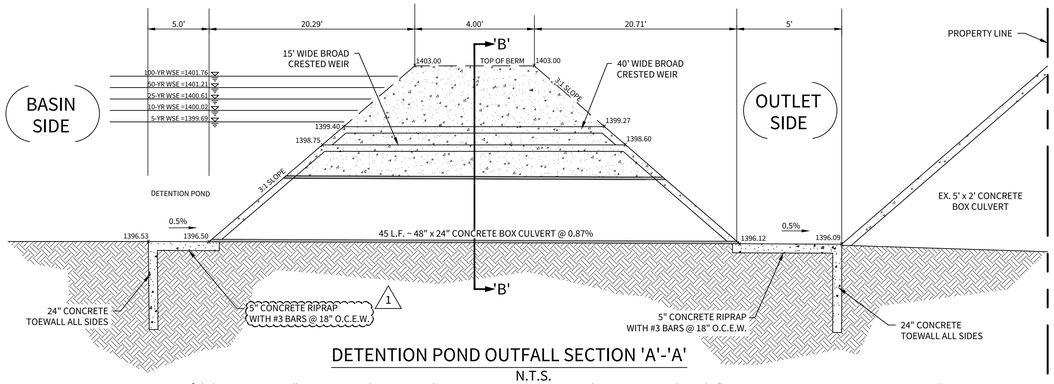
THE CONTRACTOR SHALL NOTIFY A UTILITY LOCATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF ANY ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY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

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE SUBDIVISION ORDINANCE OF THE CITY OF BOERNE, TEXAS.

ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK ROCK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.

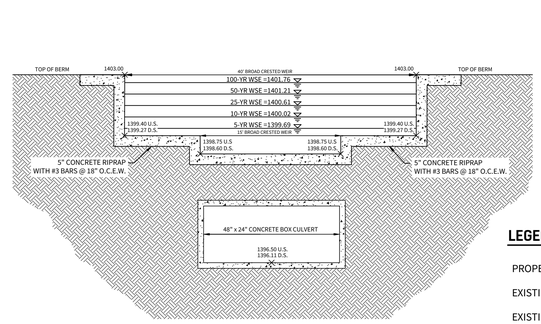
ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.

THE OWNER SHALL SPECIFY THE USE OF EITHER A CHAINLINK FENCE OR A WOODEN PRIVACY FENCE. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER PRIOR TO INSTALLATION AND CONSTRUCTION.



DETENTION POND OUTFALL SECTION 'A'-'A'

N.T.S.



DETENTION POND OUTFALL SECTION 'B'-'B'

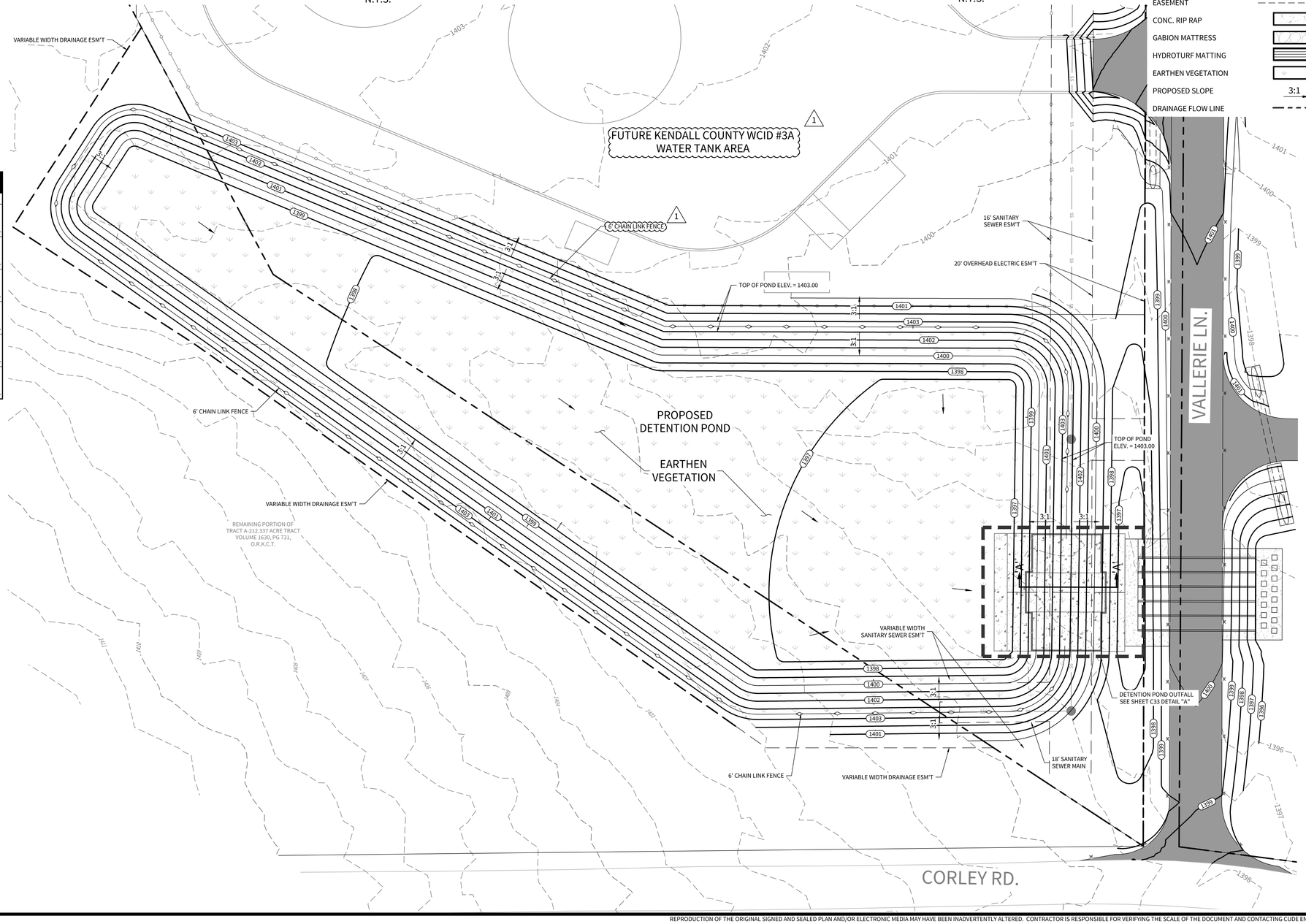
N.T.S.

SCALE: 1"=20'

0 10 20

LEGEND

- PROPERTY BOUNDARY
- EXISTING MINOR CONTOUR — 489
- EXISTING MAJOR CONTOUR — 500
- PROPOSED MAJOR CONTOUR — 492
- PROPOSED MINOR CONTOUR — 500
- EASEMENT
- CONC. RIP RAP
- GABION MATTRESS
- HYDROTURF MATTING
- EARTHEN VEGETATION
- PROPOSED SLOPE — 3:1
- DRAINAGE FLOW LINE



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CUDE ENGINEERS — EST. 1980

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CORLEY FARMS UNIT 1

DETENTION POND PLAN "SOUTHEAST POND"

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

1. 2021-04-26 - BID REVISED CALL OUT VERBIAGE.
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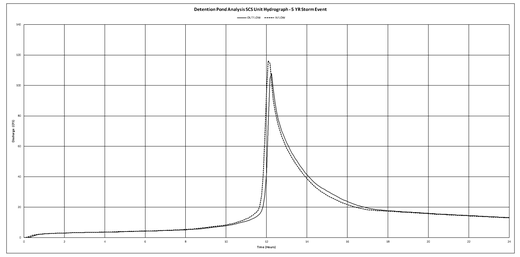
STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

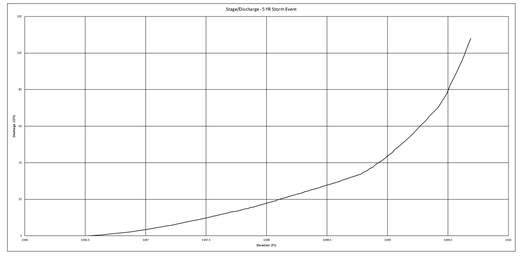
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

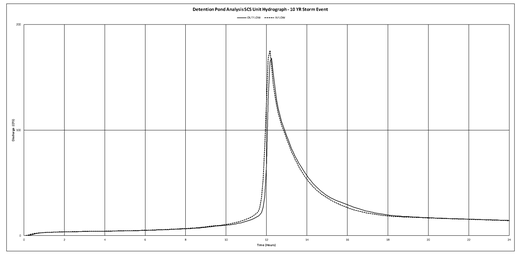
C33

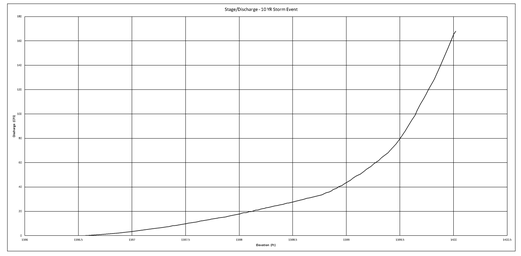
P:\03481\004\Drawings\CIVIL\DETENTION POND PLAN - SOUTHEAST POND.dwg 2021.04.26 2:21pm cjorgulanes

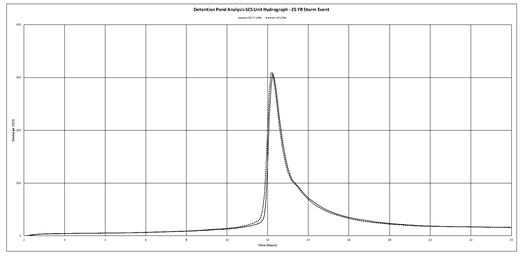
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

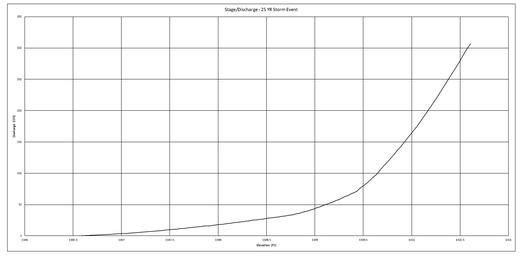


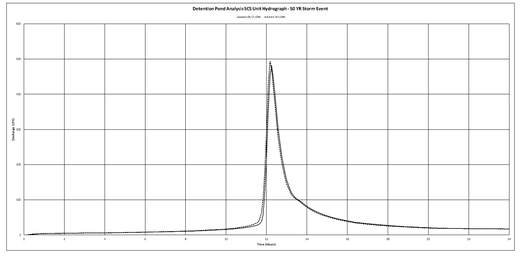


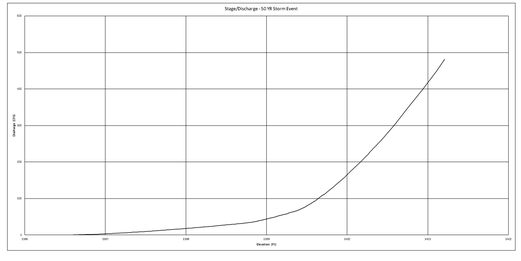


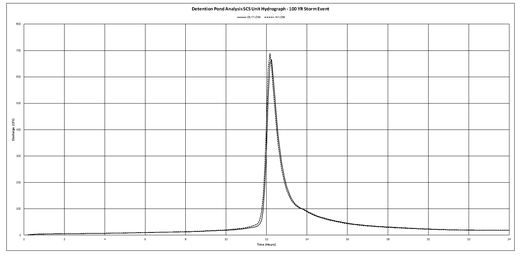


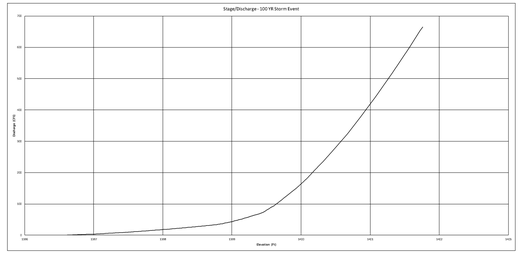


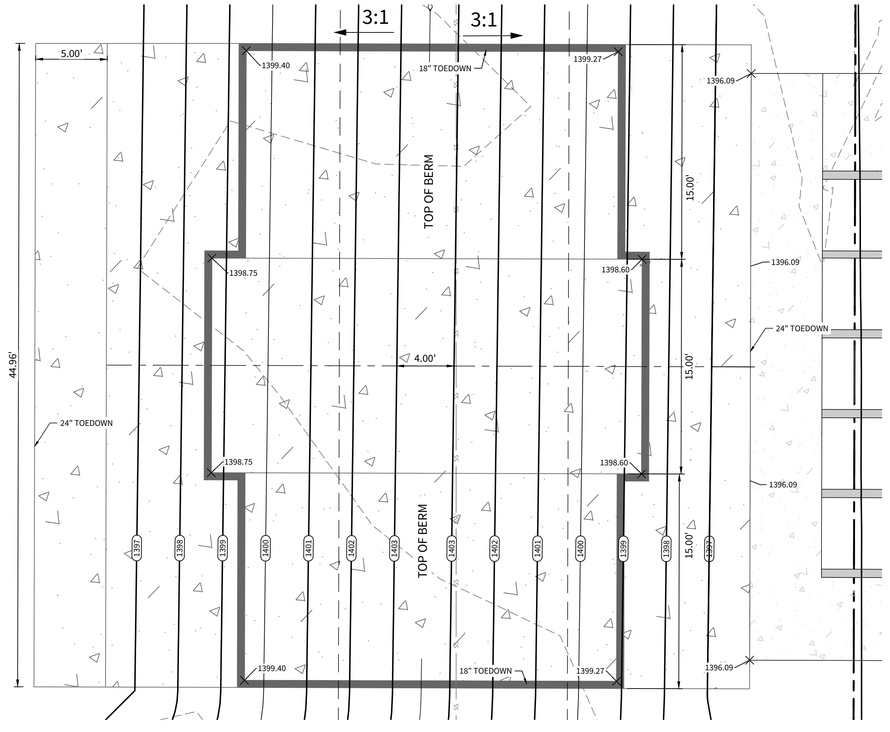












DETAIL "A"
SCALE: 1" = 5'

CUDEENGINEERS.COM

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

CORLEY FARMS
UNIT 1

DETENTION POND PLAN "SOUTHEAST POND"

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.30.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C34

33 OF 34

P:\03481\05\04 Drawings\C34 DETENTION POND PLAN "SOUTHEAST POND" - Reg 2021.04.30 2:51pm mmasias

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.

SEWER DISTRIBUTION CONSTRUCTION PLANS

- C35 - OVERALL SANITARY SEWER PLAN
- C36 - SANITARY SEWER GENERAL NOTES
- C37 - SANITARY SEWER PLAN & PROFILE LINE "A"
- C38 - SANITARY SEWER PLAN & PROFILE LINE "A"
- C39 - SANITARY SEWER PLAN & PROFILE LINE "B" & "D"
- C40 - SANITARY SEWER PLAN & PROFILE LINE "C"
- C41 - SANITARY SEWER STANDARD DETAILS

LOCATION MAP

VICINITY MAP

BIEDENHARN TRACT UNIT 1

SANITARY SEWER CONSTRUCTION PLANS

DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO, TX 78259
TEL: (210) 496-1985
FAX: (210) 496-0449

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

DRAWN BY	DATE
C3	03/15/2021
CHECKED BY	PROJECT NO.
JC/DDC	03481.000

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

BENCHMARK BM-1

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	04+93.61
"A"	07+37.87
"A"	09+99.64
"C"	05+54.08
"C"	08+62.28
"C"	10+21.73
"D"	01+40.53

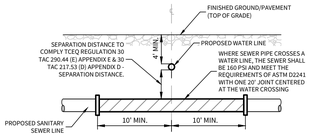
SEWER/DRAIN CROSSINGS	
"A"	12+31.62

SEWER/ELECTRIC CROSSINGS	
"A"	9+82.54
"A"	12+01.89

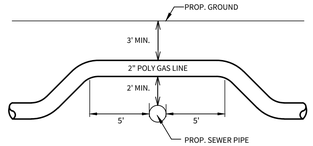
SEWER/GAS LINE CROSSINGS	
"A"	11+79.81
"C"	06+00.00
"C"	9+07.55
"C"	10+18.63
"D"	01+37.03

LEGEND

- PROPERTY LINE
- PROPOSED SEWER LINE — XX" SS
- PROPOSED MANHOLE
- PROPOSED WATER LINE — XX" W
- PROPOSED GAS LINE — XX" G
- EXISTING OVERHEAD ELECTRIC — OHE
- EXISTING SANITARY SEWER FORCE MAIN — SFM



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

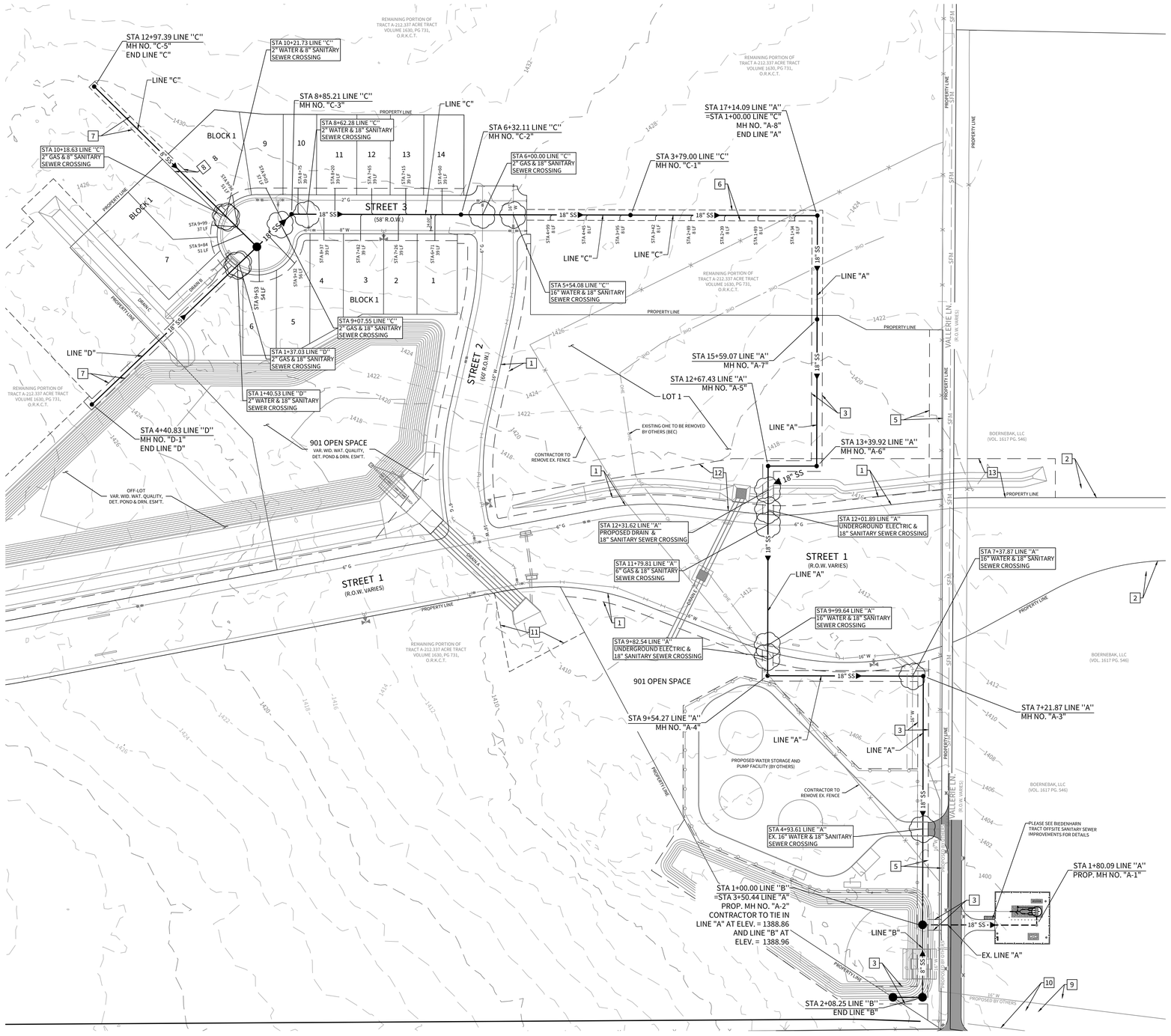


SEWER / GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)
NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'

SCALE: 1"=80'
0 80 160

KEYNOTES

1	14' E.G.T.CA. EASEMENT
2	OFF-LOT 14' E.G.T.CA. EASEMENT
3	16' SAN. SEW. EASEMENT
4	VAR. WID. RIGHT OF WAY DEDICATION EASEMENT
5	E.G.T.CA. EASEMENT
6	OFF-LOT 16' SAN. SEW. EASEMENT TO EXPIRE UPON INCORPORATION OF PLATTED STREET
7	OFF-LOT 12' SAN. SEW. EASEMENT
8	12' SAN. SEW. EASEMENT
9	25' WATER EASEMENT
10	30' OVERHEAD ELECTRIC EASEMENT
11	OFF-LOT VAR. WID. DRN. EASEMENT
12	VAR. WID. DRN. EASEMENT
13	OFF-LOT VAR. WID. DRN. EASEMENT



CAUTION!!

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

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC LINES EXIST WITHIN THE VICINITY OF 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.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAVING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. ALL SANITARY SEWER PIPE SHALL BE SDR-26 PVC PIPE MEETING ASTM SPECIFICATION D-3034.
3. MANHOLE OPENING INCREASED TO 30" AS PER TAC CHAPTER 217.55.
4. REFERENCE STREET DETAIL SHEET AND GEOTECHNICAL ENGINEERING REPORT FOR PAVEMENT DESIGN INFORMATION.
5. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.
6. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.
7. BENCHMARK TO BE SET BY ENGINEER PRIOR TO THE START OF CONSTRUCTION.
8. ALL SEWER LATERALS TO BE INSTALLED WITH A MINIMUM 150 PSI PRESSURE RATED PIPE AND EMBEDDED IN CEMENT STABILIZED SAND AT ALL WATER MAIN AND LATERAL SERVICE CROSSINGS PER 30 TAC CHAPTER 290.44(e)

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BIEDENHARN SUBDIVISION UNIT 1

OVERALL SANITARY SEWER PLAN

DATE 03/15/2021
PROJECT NO. 03481.004
DRAWN BY C3
CHECKED BY JC/DDC

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

STATE OF TEXAS
DAVID D. CUPIT II
92076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C35
1 OF 7

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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.

CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS

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

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

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

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

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

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

NON-EDWARDS AQUIFER RECHARGE ZONE SANITARY SEWER SYSTEM GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL BE APPROVED BY THE CITY OF BOERNE AND COMPLY WITH:
   A. CURRENT "CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (JANUARY, 2011)
   B. TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S DESIGN CRITERIA FOR SEWERAGE SYSTEMS [30 TAC 217]
2. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE CITY OF BOERNE PUBLIC WORKS DEPARTMENT AT 1-830-248-8511, 48 HOURS PRIOR TO EXCAVATION.
3. CONTRACTOR TO CONTACT 1-800-344-8377, 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND UTILITIES
4. THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION.
5. ALL WORK IN KENDALL COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT.
6. ALL WORK IN PUBLIC STREETS SHALL BE COORDINATED WITH AND APPROVED BY CITY OF BOERNE PUBLIC WORKS DEPARTMENT AND SHALL BE DONE IN ACCORDANCE WITH CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, THE CITY OF BOERNE MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROJECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREAS.
8. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION OF THE SANITARY SEWER LINES.

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

MANHOLES:

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

PIPING:

12. THE KIND AND DESCRIPTION OF THE PIPE CONDUIT IS SHOWN ON THE PLANS, (IF PVC, "SDR" AND ASTW/ANSI DESIGNATIONS, CLASS).
13. THE USE OF ASBESTOS CEMENT PIPE WILL BE PROHIBITED UNDER THIS CONTRACT. ALL DUCTILE IRON PIPE USED IN THIS SYSTEM SHALL BE CORROSION PROTECTED ON BOTH THE INTERIOR AND EXTERIOR SURFACES. ALL CORROSION PROTECTION SHALL BE APPLIED AND INSTALLED IN SUCH A MANNER AS TO MAINTAIN A CONTINUOUSLY PROTECTED SURFACE AFTER FINAL PIPE INSTALLATION.
14. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH, SDR 26 MINIMUM PIPE STIFFNESS OF 115 PSI.
15. ALL SEWER PIPES SHALL BE GOVERNED BY THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION (JANUARY 2011)
16. SEWER PIPE CONNECTIONS TO PRE-CAST MANHOLES WILL BE COMPRESSION JOINTS AS APPROVED BY CITY OF BOERNE MECHANICAL JOINT "BOOT TYPE" CONNECTIONS ALONE WILL NOT BE ALLOWED. "BOOT TYPE" JOINTS MAY BE USED IN CONJUNCTION WITH COMPRESSION JOINTS AS APPROVED BY CITY OF BOERNE. SEWER PIPE CONNECTIONS TO MONOLITHIC MANHOLES SHALL BE REVIEWED AND APPROVED BY CITY OF BOERNE. CITY OF BOERNE MUST APPROVE ANY CHANGES FROM THESE METHODS.
17. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE ASTM/ANSI SPECIFICATIONS (REFERENCE 30 TAC 217.54; ASTM C12, (ANSI A106.2) OR ASTM D-2321 (ANSI K65.171).
18. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN EARLIER PROVIDED, THE CONNECTION MUST BE MADE WITH AN APPROVED SERVICE SADDLE AS PER CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
19. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE EXTENDED TO AT LEAST THE PROPERTY LINE AND CAPPED AND SEALED.
20. WHERE REQUIRED, CONCRETE ENCASEMENT SHALL BE PLACED FOR FULL WIDTH OF THE TRENCH TO A PLANE 8" ABOVE THE TOP OF THE PIPE, WITH PAY LIMITS AS SHOWN ON THE STANDARD DETAIL SHEET.
21. A MINIMUM OF 3 FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT SUBGRADE, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.

BLASTING:

22. NO BLASTING WILL BE ALLOWED.

TESTING:

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

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

24. SEWER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE.
25. SANITARY SEWER MAIN CONNECTIONS MADE DIRECTLY TO EXISTING MANHOLES WILL REQUIRE SUCCESSFUL TESTING OF THE MANHOLE IN ACCORDANCE WITH THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
26. AFTER CONSTRUCTION, TESTING WILL BE DONE BY TV CAMERA BY THE CITY OF BOERNE FORCES AND OBSERVED BY INSPECTOR, WASTEWATER ENGINEERING PERSONNEL, AND CONTRACTOR AS CAMERA IS RUN THROUGH THE LINES. ANY ABNORMALITIES, SUCH AS BROKEN PIPE OR MISALIGNED JOINTS, MUST BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
27. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO THE CITY OF BOERNE PUBLIC WORKS DEPARTMENT.
28. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EVACUATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATION. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
29. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NO PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YER FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT. WASTE MATERIALS SHALL BE REMOVED FROM TXDOT NOW DAILY.
30. WATER JETTING THE BACKFILL WILL NOT BE PERMITTED. SANITARY SEWER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
31. WHERE THE MINIMUM 9-FOOT SEPARATION DISTANCE BETWEEN SEWER LINE AND WATER LINE/MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S RULES (30 TAC 217.53 (d) & 30 TAC 290.44 (e)).
32. THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION AND ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF SEWER COLLECTION SYSTEMS. DEVELOPER OR AUTHORIZED REPRESENTATIVE SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NOTES ON THE PROJECTS PLAN AND PROFILE SHEETS.
33. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AFTER FINAL ACCEPTANCE OF THE PROJECT BY THE CITY OF BOERNE PUBLIC WORKS.
34. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.
35. THE DEVELOPER DEDICATES THE SANITARY SEWER MAINS UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE CITY OF BOERNE. THE CITY OF BOERNE WILL OWN AND MAINTAIN SAID WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF THE CITY OF BOERNE CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
36. OWNER PAYS DIRECTLY FOR ALL INITIAL (PASSING) DENSITY TEXT.

SEWER GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN STRICT CONFORMANCE WITH CITY OF BOERNE REQUIREMENTS.
2. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH SPECIFICATIONS SECTION 30 TAC 217.54.
3. MANHOLE RINGS AND COVERS SHALL BE NEENAH FOUNDRY, DEETER FOUNDRY, ALAMO IRON WORKS, EAST JORDAN IRON WORKS, OR EQUAL. WHEN WATER TIGHT MANHOLE RINGS AND COVERS ARE SPECIFIED, THEY SHALL PROVIDE A-77 O.R. WATER TIGHT OR EQUAL AND MEET THE REQUIREMENTS OF SECTION 02515 1.2 OR THE CITY OF BOERNE STANDARD SPECIFICATIONS.
4. ALL MANHOLES SHALL BE PRECAST, INCLUDING BASES, "CHARLOTTES CONCRETE" OR APPROVED EQUAL WITH GASKETS ACCORDING TO ASTM C891.
5. MATERIAL FOR SANITARY SEWER PIPE MUST BE THE SAME FROM MANHOLE TO MANHOLE. CHANGES IN TYPE OF PIPE MAY BE MADE ONLY AT MANHOLES OR SPECIAL STRUCTURES, EXCEPT AS DIRECTED BY THE ENGINEER AND WHERE APPLICABLE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
6. ALL SEWER PIPE WITH LESS THAN THREE FEET (3) OF COVER SHALL BE CONCRETE ENCASED.
7. CONES, RISERS AND BASE MUST CONFORM TO ASTM C-478.
8. JOINTS BETWEEN MANHOLE SECTIONS MUST HAVE RUBBER GASKETS PER ASTM C-443.
9. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 150 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
10. PIPE TYPE DESIGNATIONS ARE SDR 26 AND SHALL BE FROM THE FOLLOWING MANUFACTURERS OR APPROVED EQUALS: J-M MANUFACTURING, CERTAINTEED CORPORATION, NORTH AMERICAN PIPE CORPORATION, I PEX INC., DIAMOND PLASTIC CORPORATION, FREEDOM PLASTICS, NATURAL PIPE AND PLASTICS, OR NORTHERN PIPE PRODUCTS. GASKET JOINTS AND ELECTROMETRIC SEALS SHALL CONFORM TO ASTM D3034 AND ASTM F477, RESPECTIVELY.
11. IN ORDER TO MINIMIZE EROSION AND SEDIMENTATION RESULTING FROM THE PROPOSED UTILITY INSTALLATION, THE PROJECT WILL BE RE-VEGETATED IN ACCORDANCE WITH TXDOT. THE OWNER AND CONTRACTOR WILL BE PROVIDED WITH A COPY OF TXDOT'S SPECIAL PROVISION FOR UTILITY PERMIT DATED 6/2001 AND TXDOT'S SPECIAL SPECIFICATION 10327 FURNISHING AND PLACING COMPOST, AT THE TIME OF BIDDING.
12. USE BEDDING AND INITIAL BACKFILL MATERIALS AS APPROVED BY THE CITY OF BOERNE AND CONFORM TO ASTM C33 GRADING AS SHOWN IN SECTION 02221 2.1C OF THE CITY OF BOERNE STANDARD SPECIFICATIONS.
13. COMPACT SECONDARY BACKFILL TO 98% MAX DRY DENSITY. CONTRACTOR TO PERFORM DENSITY TESTING AT INTERVALS OF 500' PER 6" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN TXDOT ROW (TXDOT REQUIREMENT) AND PER 8' LIFT OF SECONDARY BACKFILL FOR UTILITIES IN ALL OTHER AREAS (CITY OF BOERNE REQUIREMENT). REPORTS TO BE PROVIDED TO CITY OF BOERNE PUBLIC WORKS DEPARTMENT. REPORTS OF TEST RESULTS TO BE PROVIDED TO TXDOT FOR WORK WITHIN TXDOT ROW.
14. CONTRACTOR TO CONTACT 1-800-344-8377 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND CONDUITS.

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BIEDENHARN SUBDIVISION UNIT 1

SANITARY SEWER GENERAL NOTES

DATE 03/15/2021

PROJECT NO. 03481.004

DRAWN BY C3

CHECKED BY JC/DDC

REVISIONS

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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C36

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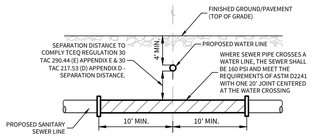
LOCATION MAP
N.T.S.



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

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3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.

OWNER/DEVELOPER:
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CONTACT PERSON: JOSEPH EPP
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SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

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

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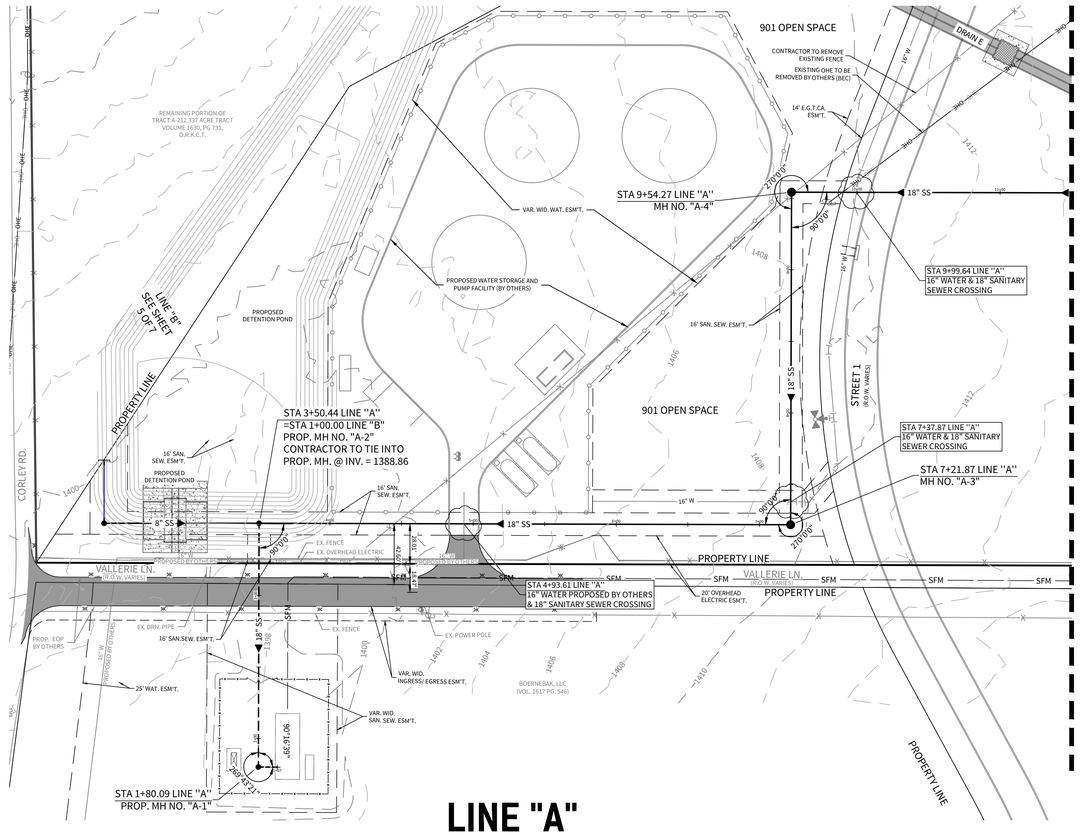
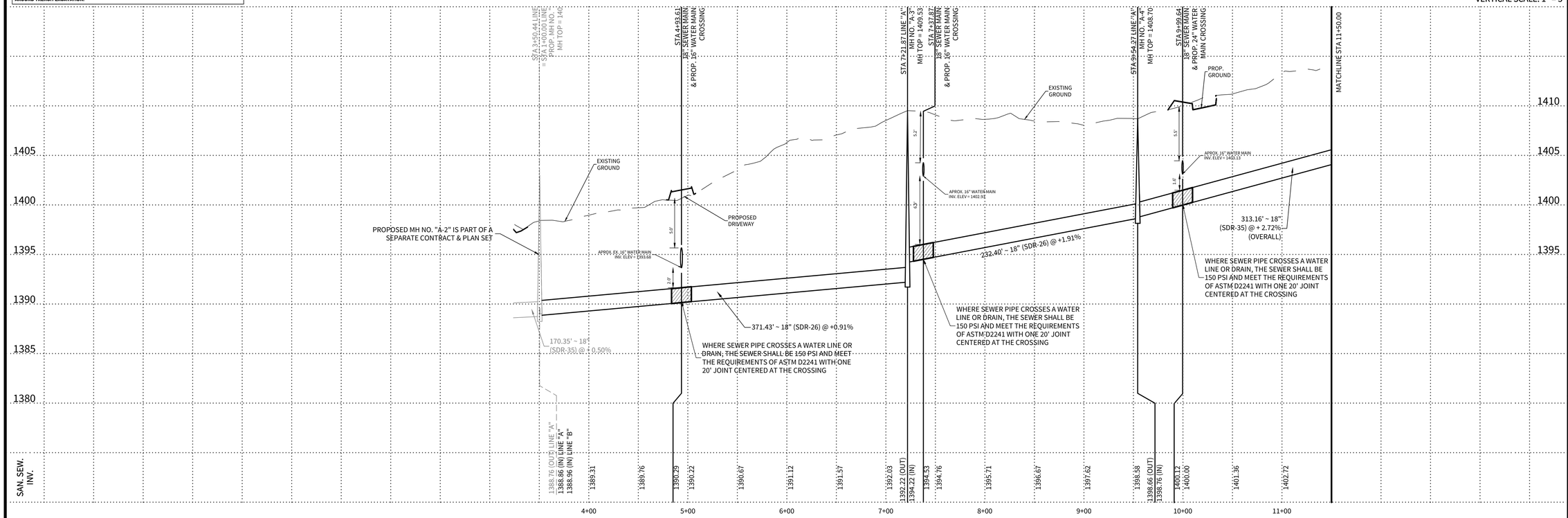
TRENCH EXCAVATION PROTECTION
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER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



LINE "A"
STA. 3+50.44 TO STA. 11+50.00

*NOTE: KENDALL COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED BEFORE WORKING ON KENDALL COUNTY RIGHT OF WAY

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



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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
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BIEDENHARN SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE LINE "A"

DATE 03/15/2021
PROJECT NO. 03481.004
DRAWN BY C3
CHECKED BY JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

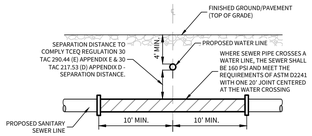
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C37
3 OF 7

P:\03481\DWG\ Drawings\C38 SANITARY SEWER PLAN & PROFILE LINE "A".dwg 2021/03/15 3:15pm kristyreid

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.



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

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2. ALL SANITARY SEWER PIPE SHALL BE SDR-26 PVC PIPE MEETING ASTM SPECIFICATION D-3034.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.

OWNER/DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

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

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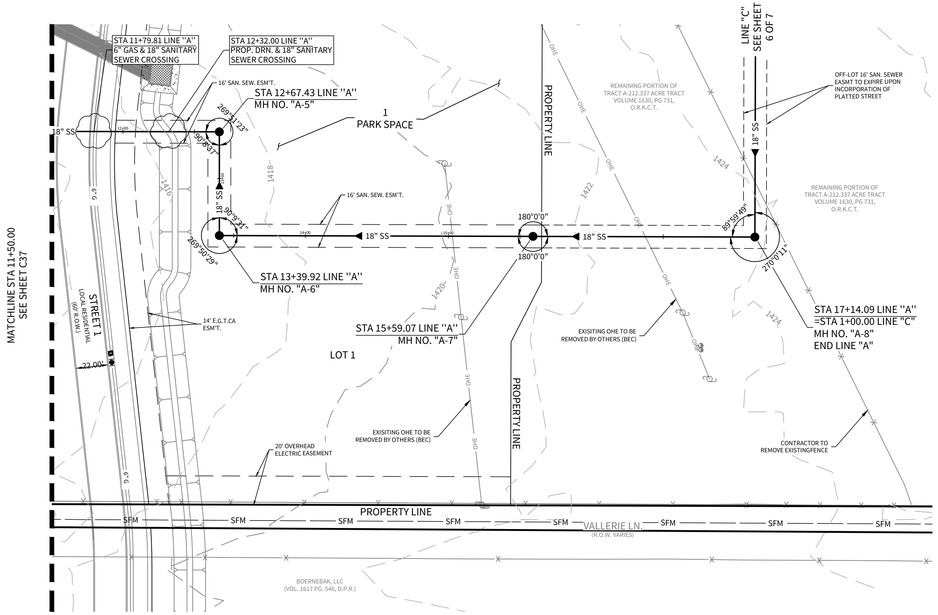
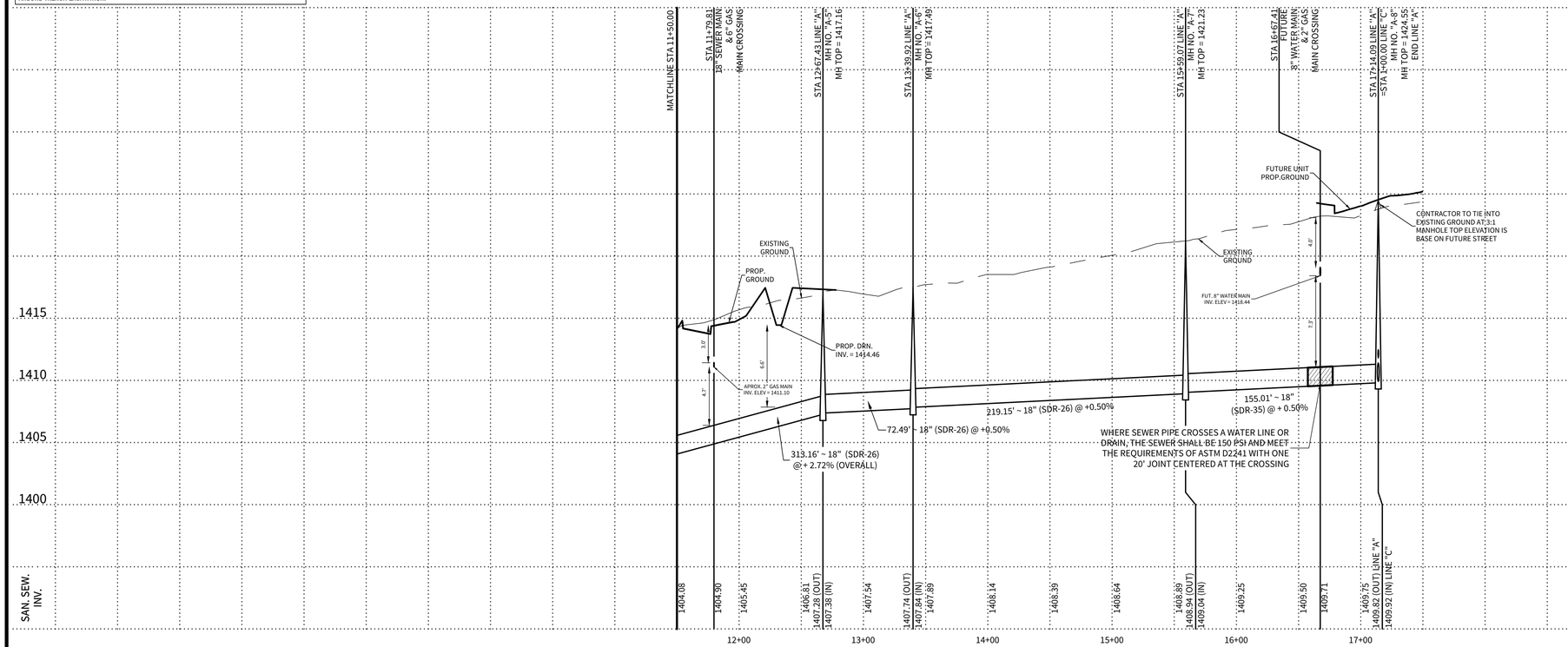


LINE "A"
STA. 11+50.00 TO STA. 16+90.18

*NOTE: KENDALL COUNTY RIGHT OF WAY PERMIT MUST BE OBTAINED BEFORE WORKING ON KENDALL COUNTY RIGHT OF WAY

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



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BIEDENHARN SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE LINE "A"

DATE 03/15/2021
PROJECT NO. 03481.004
DRAWN BY C3
CHECKED BY JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
124776
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C38
4 OF 7

I:\03481\000\2-Drawings\C38 SANITARY SEWER PLAN & PROFILE LINE "A".dwg 2021/03/15 2:52pm mmallett

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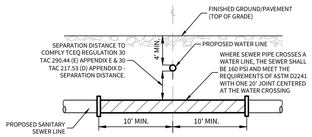
LOCATION MAP
N.T.S.



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

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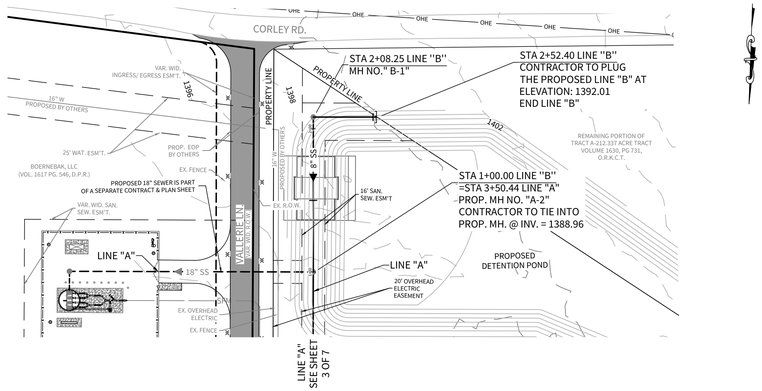
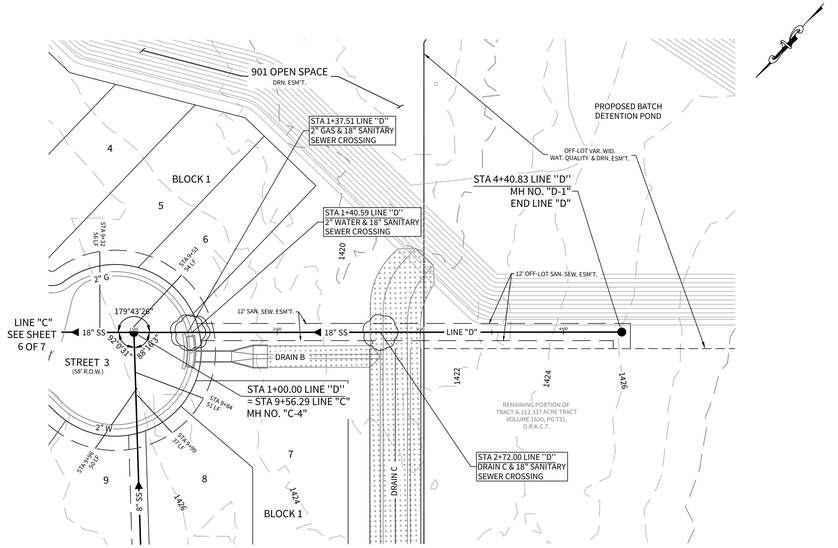
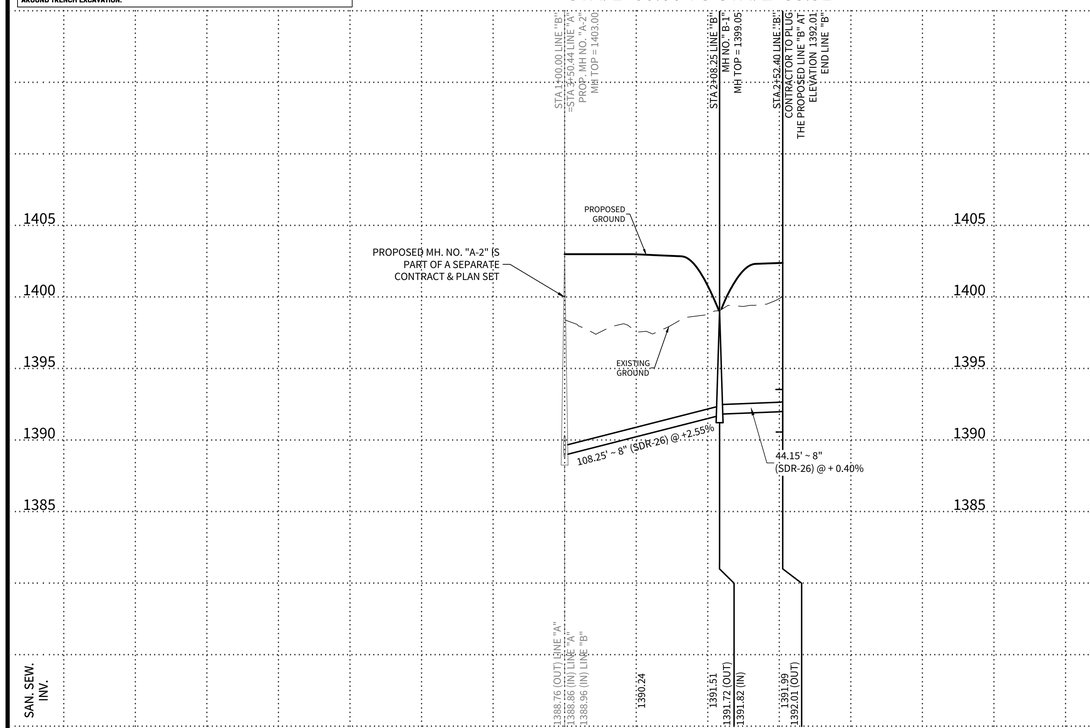


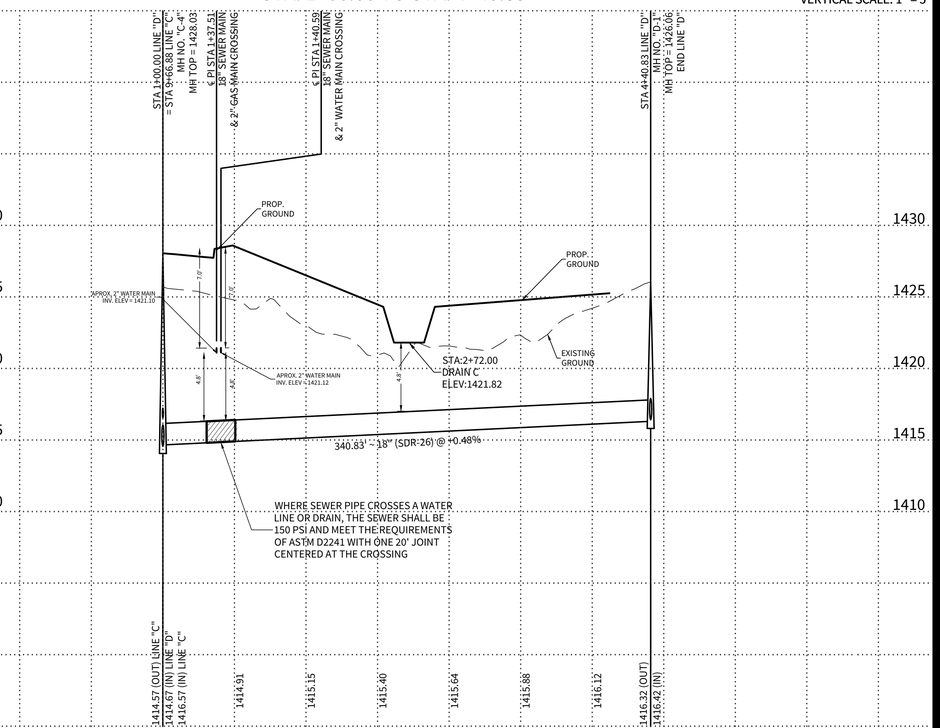


LINE "B"
STA. 1+00.00 TO STA. 2+35.91



LINE "D"
STA. 1+00.00 TO STA. 4+40.83

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



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

BIEDENHARN SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE LINE "B" & "D"

DATE 03/15/2021
PROJECT NO. 03481.004
DRAWN BY C3
CHECKED BY JC/DDC

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

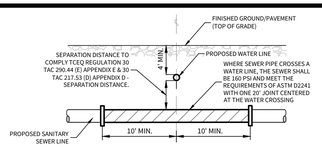
STATE OF TEXAS — DAVID D. CUPIT II — 122076 — LICENSED PROFESSIONAL ENGINEER — 03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C39
5 OF 7

P:\03481\000\2-Drawings\C3D_SAN\PLANS\SAN PLANS & PROFILE LINE "B" & "D" -Aug 2021\03\03-2.15pm mmabet

LOCATION MAP
N.T.S.



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

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: DAVID D. CUPIT II, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
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2. 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.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.

CAUTION!!

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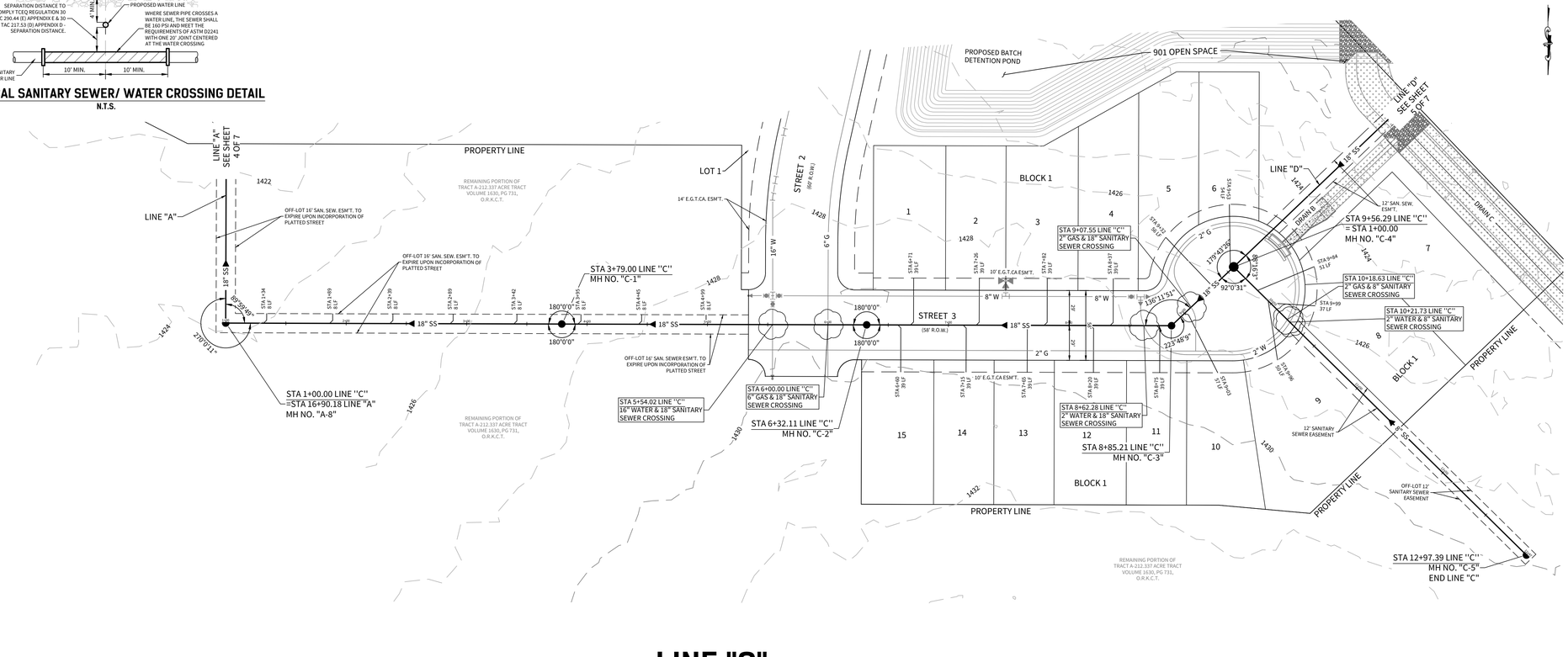
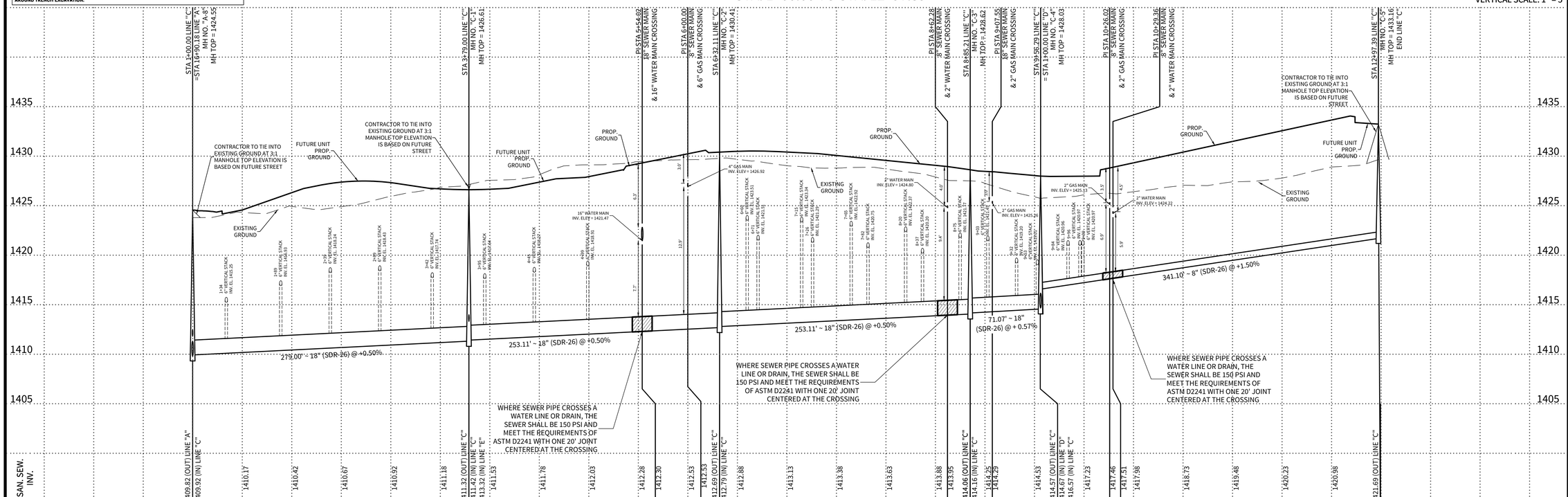


LINE "C"

STA. 1+00.00 TO STA. 12+97.39

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



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CUDE ENGINEERS EST. 1980

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San Antonio, Texas 78231
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BIEDENHARN SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE LINE "C"

DATE
03/15/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C40

6 OF 7

P:\03481\000\2-Drawings\C40-SANITARY SEWER PLANS & PROFILE LINE "C".dwg 3/15/2021 3:15:56 pm mdonald

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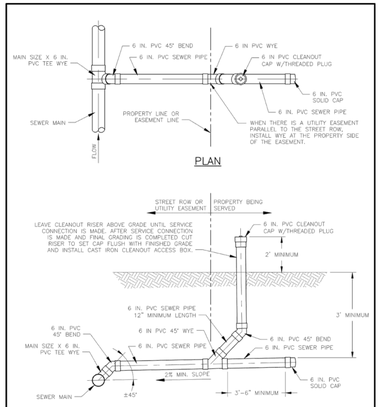
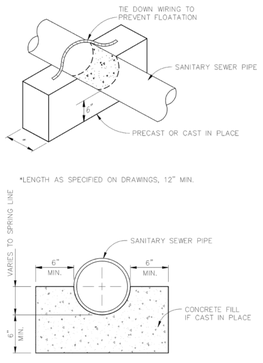


CITY OF BOERNE

STANDARD SANITARY SEWER SERVICE LATERAL

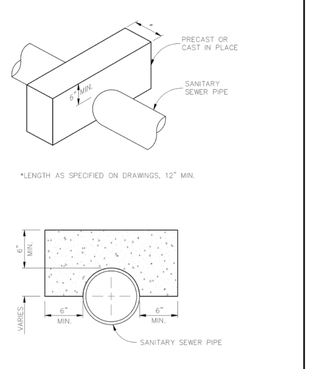
SCALE: N.T.S. | DRAWING No.: 02530-1.0 | DATE: JULY 2015



CITY OF BOERNE

SANITARY SEWER CONCRETE CRADLE

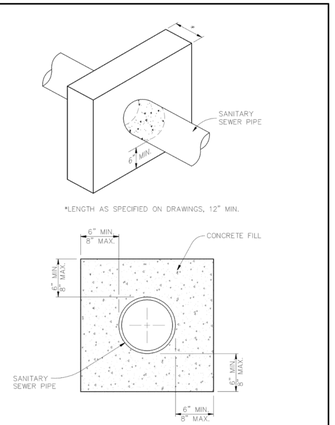
SCALE: N.T.S. | DRAWING No.: 02530-4.1 | DATE: JULY 2015



CITY OF BOERNE

SANITARY SEWER CONCRETE SADDLE

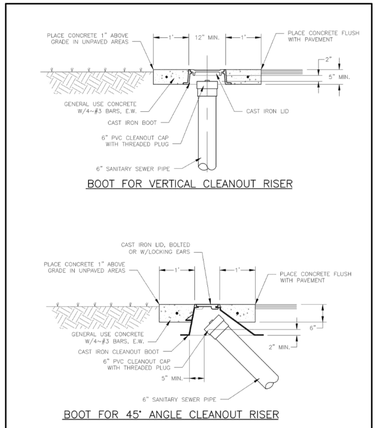
SCALE: N.T.S. | DRAWING No.: 02530-4.2 | DATE: JULY 2015



CITY OF BOERNE

SANITARY SEWER CONCRETE ENCASEMENT

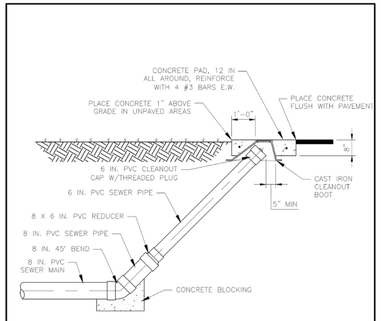
SCALE: N.T.S. | DRAWING No.: 02530-4.3 | DATE: JULY 2015



CITY OF BOERNE

CAST IRON CLEANOUT BOOT

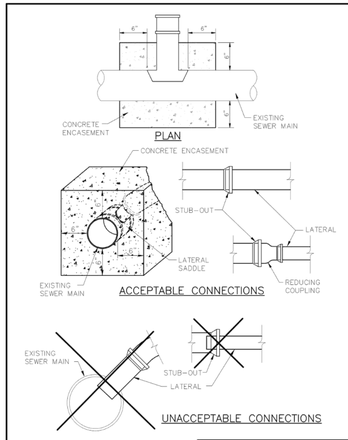
SCALE: N.T.S. | DRAWING No.: 02530-3.1 | DATE: JULY 2015



CITY OF BOERNE

END OF SEWER CLEANOUT

SCALE: N.T.S. | DRAWING No.: 02530-3.0 | DATE: JULY 2015

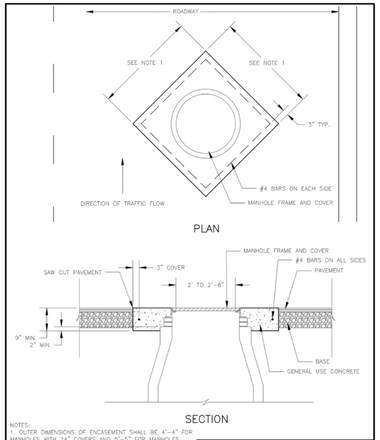


NOTE:
CONNECT THE SADDLE TO THE EXISTING MAIN PERMANENTLY USING CLAMPS AS RECOMMENDED BY THE MANUFACTURER.

CITY OF BOERNE

SANITARY SEWER SERVICE SADDLE CONNECTION

SCALE: N.T.S. | DRAWING No.: 02530-1.2 | DATE: JULY 2015

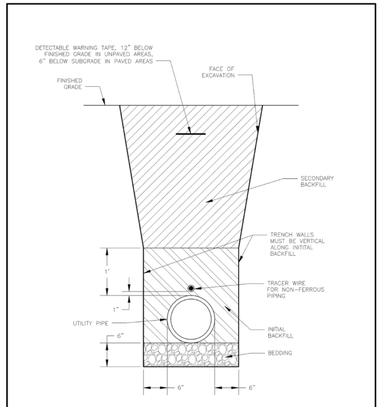


NOTES:
1. OUTER DIMENSIONS OF ENCASEMENT SHALL BE 4'-4" FOR MANHOLES WITH 24" COVERS AND 5'-5" FOR MANHOLES WITH 30" COVERS.
2. IN PAVED AREAS, SET TOP OF FRAME TO MATCH PAVEMENT GRADES AND FINISH CONCRETE FLUSH WITH TOP OF FRAME.
3. IN UNPAVED AREAS, SET TOP OF FRAME 1" TO 2" ABOVE FINISHED GRADE AND FINISH CONCRETE FLUSH WITH FINISHED GRADE.
4. CONSTRUCT CONCRETE RING ENCASEMENT ON ALL MANHOLES.

CITY OF BOERNE

MANHOLE RING ENCASEMENT

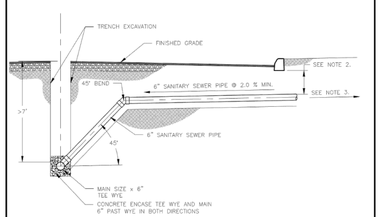
SCALE: N.T.S. | DRAWING No.: 02530-2.0 | DATE: JULY 2015



CITY OF BOERNE

UTILITY PIPE TRENCH

SCALE: N.T.S. | DRAWING No.: 02221-1.0 | DATE: JULY 2015

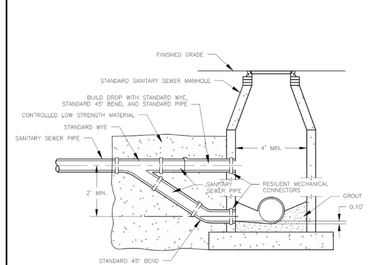


NOTES:
1. USE DEEP SANITARY SEWER SERVICE LATERAL WHEN THE MAIN DEPTH IS GREATER THAN 7' BELOW FINISHED GRADE.
2. INSTALL SERVICE LATERAL 2' MINIMUM BELOW CURB, OR 3' MINIMUM BELOW FINISHED GRADE WHEN NOT IN STREET. INSTALL SERVICE DEEPER WHEN LOT BEING SERVED SLOPES AWAY FROM SEWER MAIN. LATERAL DEPTH AT CURB OR PROPERTY LINE SHOULD NOT EXCEED 7'.
3. COMPLETE DEEP SANITARY SEWER SERVICE LATERAL AS PER THE STANDARD SANITARY SEWER SERVICE LATERAL DETAIL.

CITY OF BOERNE

DEEP SANITARY SEWER SERVICE LATERAL

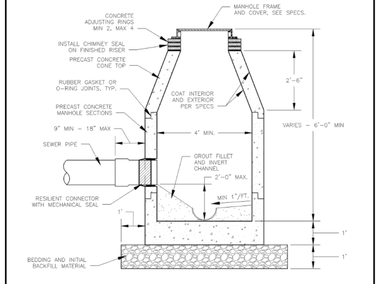
SCALE: N.T.S. | DRAWING No.: 02530-1.1 | DATE: JULY 2015



CITY OF BOERNE

SANITARY SEWER DROP MANHOLE

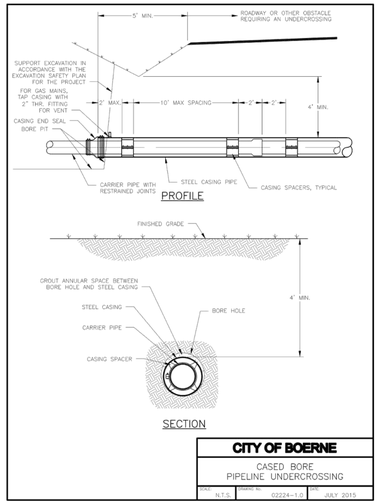
SCALE: N.T.S. | DRAWING No.: 02530-2.1 | DATE: JULY 2015



CITY OF BOERNE

STANDARD SANITARY SEWER MANHOLE

SCALE: N.T.S. | DRAWING No.: 02530-2.0 | DATE: JULY 2015



CITY OF BOERNE

CASED BORE PIPELINE UNDERCROSSING

SCALE: N.T.S. | DRAWING No.: 02224-1.0 | DATE: JULY 2015

TRENCH EXCAVATION PROTECTION

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

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

BIEDENHARN SUBDIVISION UNIT 1

SANITARY SEWER STANDARD DETAILS

DATE
03/15/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS

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

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

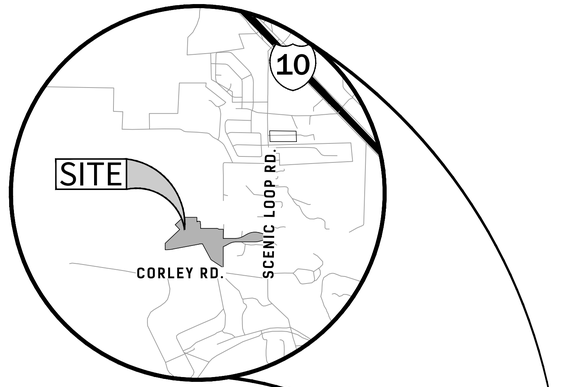
C41

P:\03481.004\C3 Drawings\C41 SANITARY SEWER STANDARD DETAILS.dwg 2021.03.15 2:25pm mcarlyle

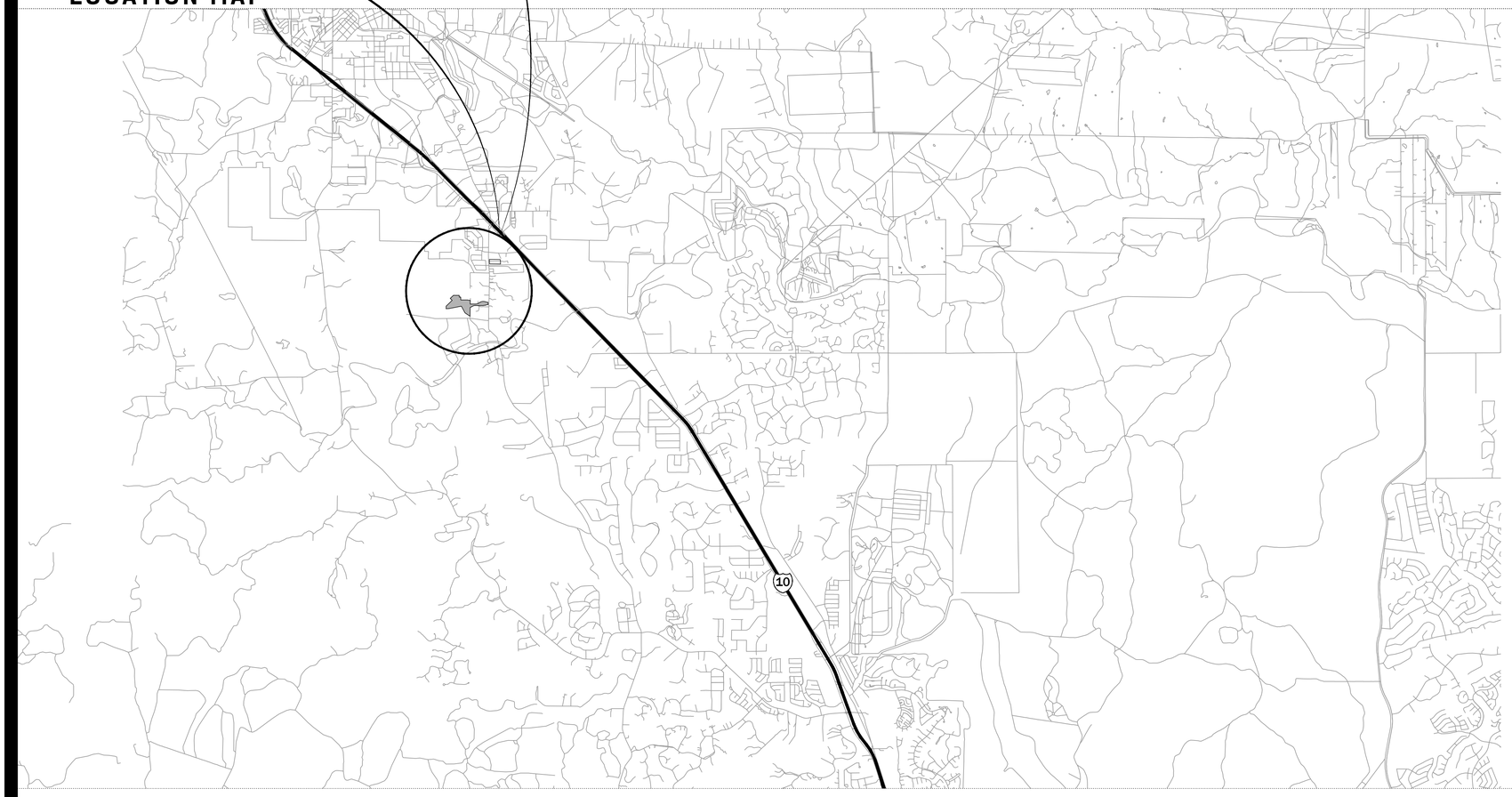
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

WATER DISTRIBUTION CONSTRUCTION PLANS

- C42 - WATER LINE A - PLAN & PROFILE
- C43 - WATER LINE A - PLAN & PROFILE
- C44 - WATER DISTRIBUTION PLAN
- C44A - WATER DISTRIBUTION PLAN



LOCATION MAP



VICINITY MAP

CORLEY FARMS UNIT 1

WATER DISTRIBUTION
CONSTRUCTION PLANS

PRESSURE ZONE 12

Developer's Name	PULTE HOMES OF TEXAS, L.P.				
Developer's Address	1718 DRY CREEKWAY, SUITE 120				
City	SAN ANTONIO	State	TEXAS	Zip	78259
Phone #	(210) 496-1985	Fax #	(210) 496-0449		
SAWS Block Map #	N/A	Total EDU's	19	Total Acreage	20.68
Total Linear Footage of Pipe	16" W - 1393 L.F./8" W - 1291 L.F./2" W - 389 L.F.	Plat No.	N/A (CORLEY FARMS UNIT 1 PLAT)		
Number of Lots	15	SAWS Job No.	21-1061		

DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO, TX 78259
TEL: (210) 496-1985
FAX: (210) 496-0449

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

DRAWN BY	DATE	PLAT NO.
C3	04/26/2021	*CORLEY FARMS UNIT 1*
CHECKED BY	**PROJECT NO.**	**SAWS JOB NO.**
JC/DDC	03481.000	*21-1061*

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.26.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

LOCATION MAP
N.T.S.

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

CAUTION!!
THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC LINES EXIST WITHIN THE VICINITY OF 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.

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

SHEET NOTES:

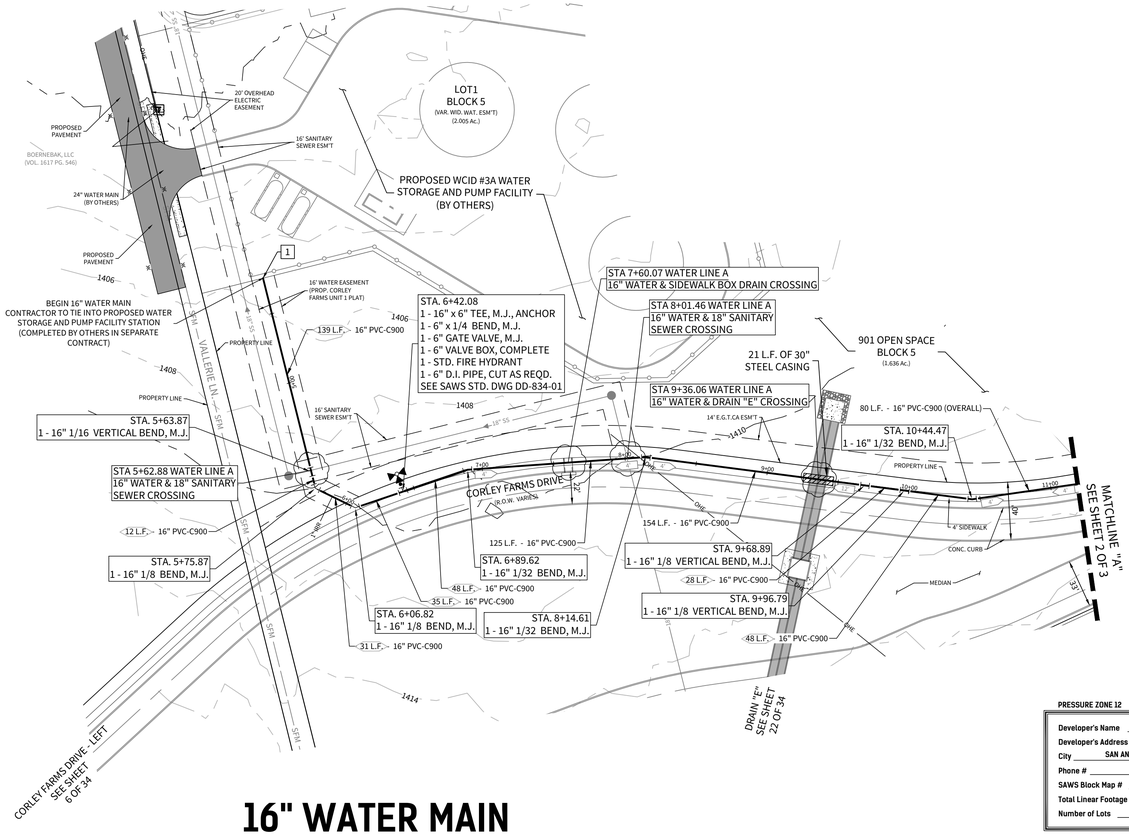
1. ALL 16" PVC SHALL BE C900, DR 18.
   ALL 8" PVC SHALL BE C900, DR 18.
2. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 16" MAIN AND 4 FEET DEPTH ON ALL 8" MAIN.

BENCHMARK **BM-1**

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

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 CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



KEYNOTE 1 [1]

STA. 4+24.46

AFTER RELEASE FOR SERVICE,
CONTRACTOR TO TIE NEW 16" MAIN
INTO EXIST. 16" WATER MAIN STUB-OUT WITH
±5 L.F. OF 16" WATER MAIN, CUT AS REQUIRED.

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

FOR CHLORINATION INJECTION
2 - 1" CORPORATION STOP C.C. X I.P.
2 - 1" COPPER TUBING, CUT AS REQ'D
2 - 1 1/4" THD. SOLID CAPS, THR.
2 - 1" COMP. X 1 1/4" COUPLING, CURB STOP

CONTRACTOR SHALL PROVIDE A 2" JUMPER CONNECTION
TO LOAD NEW MAIN

1 - 16" SOLID SLEEVE, M.J.
1 - 2" BLOWOFF ASSEMBLY (TEMP.)
1 - 16"x2" THR. DI. ECCENTRICALLY
TAPPED CAP, M.J. (TEMP.)
SEE SAWS STD DETAIL DWG DD-844-01

16" WATER MAIN

STA. 4+24.46 TO STA. 11+00.00

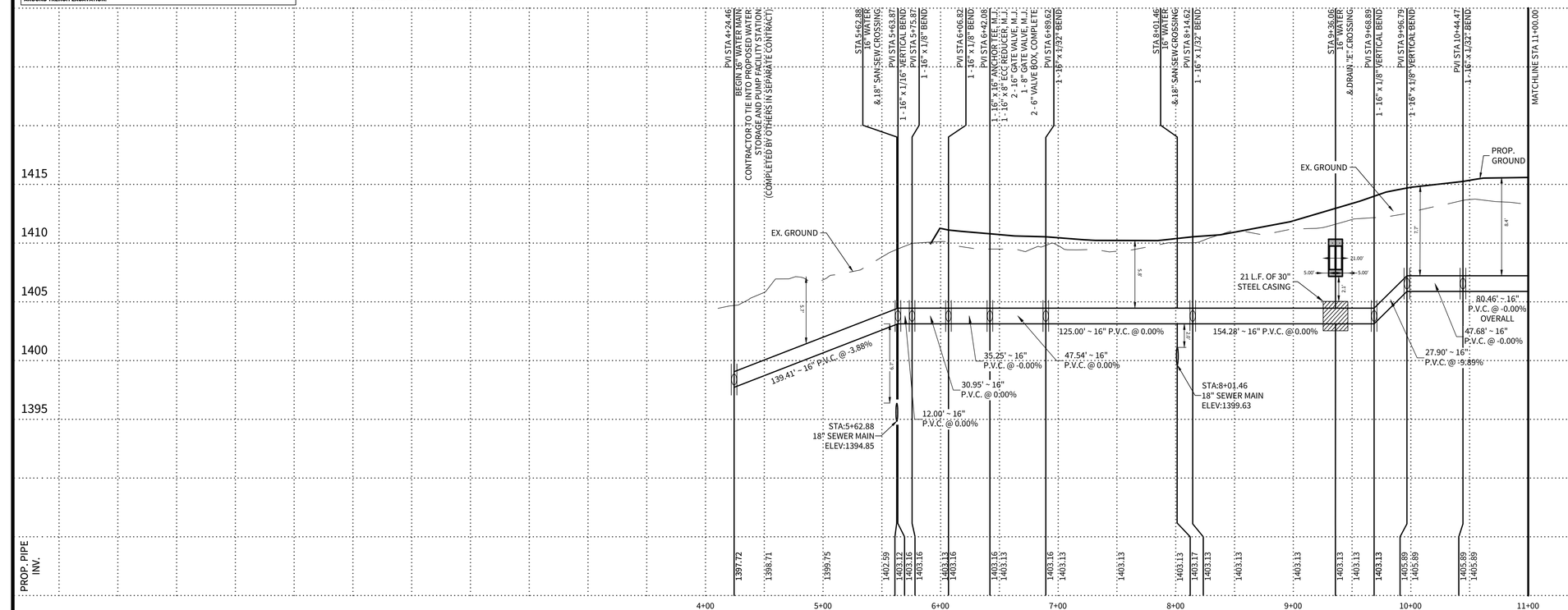
PRESSURE ZONE 12

Developer's Name	PULTE HOMES OF TEXAS, L.P.		
Developer's Address	1718 DRY CREEKWAY, SUITE 120		
City	SAN ANTONIO	State TEXAS	Zip 78259
Phone #	(210) 496-1085	Fax #	(210) 496-0449
SAWS Block Map #	N/A	Total EDU's 19	Total Acreage 20.68
Total Linear Footage of Pipe	16" W - 1393 L.F./8" W - 1291 L.F./2" W - 389 L.F.	Plat No.	N/A (CORLEY FARMS UNIT 1 PLAT)
Number of Lots	15	SAWS Job No.	21-1061

LEGEND

- XXX L.F. - XX" PVC C-900 = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = JOINT RESTRAINT
- = JOINT RESTRAINT ENTIRE LENGTH
- = EXISTING SEWER LINE AND MANHOLE
- = PROPOSED SEWER LINE AND MANHOLE
- = PROPOSED HYDRANT
- = PROPOSED AIR RELEASE ASSEMBLY
- SFM = EXISTING FORCE MAIN

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



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

CORLEY FARMS UNIT 1

WATER LINE A - PLAN & PROFILE

DATE 04/26/2021
PROJECT NO. 03481.004
DRAWN BY C3
CHECKED BY JC/DDC

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

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.26.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C42

1 OF 5

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

P:\03481\004\3 Drawings\C4\WATER LINE A - PLAN & PROFILE.dwg, 2021/04/26 10:23:00, kristyward

LOCATION MAP
N.T.S.

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

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OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

SHEET NOTES:

1. ALL 16" PVC SHALL BE C900, DR 18.
   ALL 8" PVC SHALL BE C900, DR 18.
2. CONTRACTOR SHALL CHLORINATE WITH HTH (SAWS SPEC. ITEM NO. 847).
3. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 16" MAIN AND 4 FEET DEPTH ON ALL 8" MAIN.

BENCHMARK **BM-1**

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

TRENCH EXCAVATION PROTECTION

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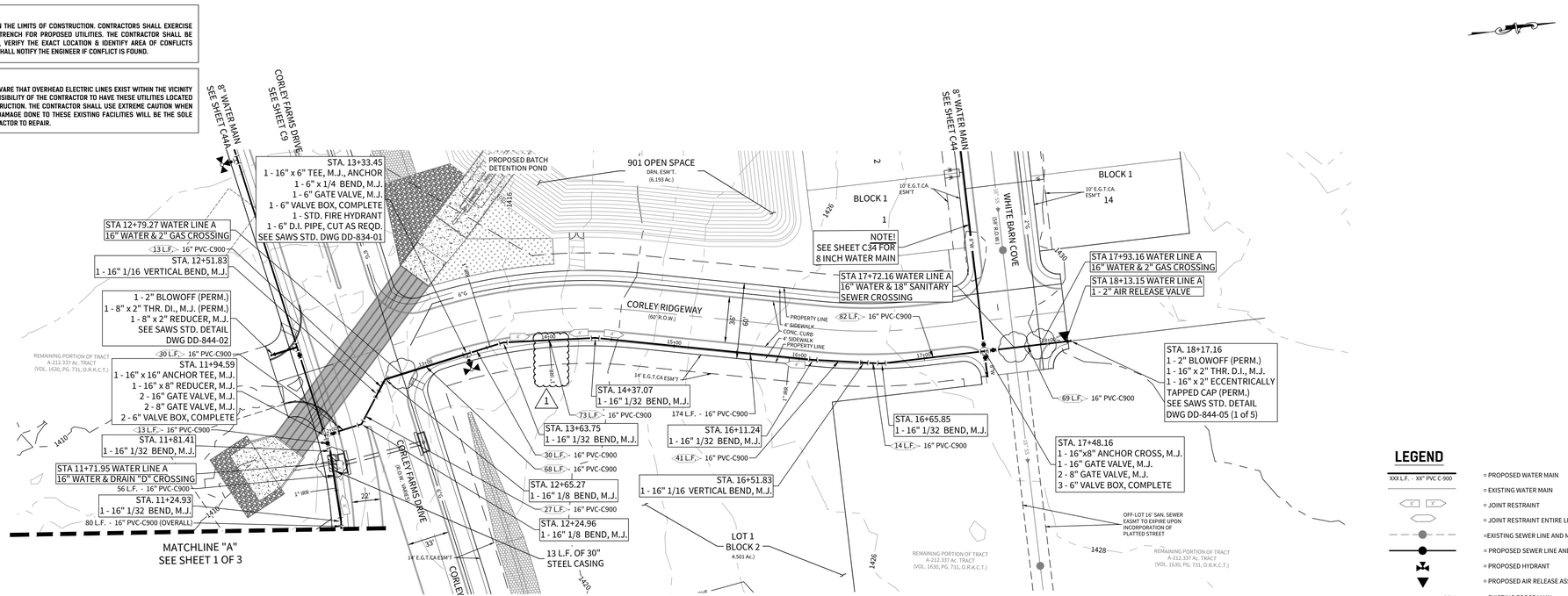


16" WATER MAIN

STA. 11+00.00 TO STA. 18+17.16

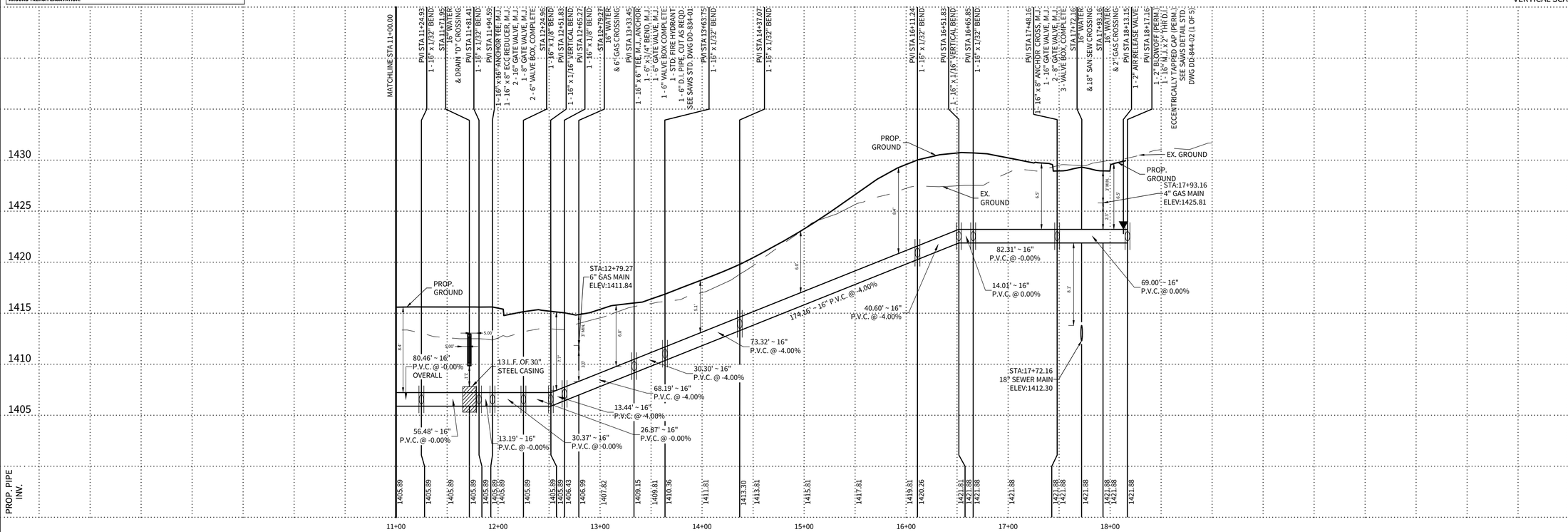
LEGEND

- XXX L.F. - XX" PVC C-900 = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = JOINT RESTRAINT
- = JOINT RESTRAINT ENTIRE LENGTH
- = EXISTING SEWER LINE AND MANHOLE
- = PROPOSED SEWER LINE AND MANHOLE
- = PROPOSED HYDRANT
- = PROPOSED AIR RELEASE ASSEMBLY
- SFM = EXISTING FORCE MAIN

PRESSURE ZONE 12

Developer's Name	PULTE HOMES OF TEXAS, L.P.		
Developer's Address	1718 DRY CREEKWAY, SUITE 120		
City	SAN ANTONIO	State TEXAS	Zip 78259
Phone #	(210) 496-1985	Fax #	(210) 496-0449
SAWS Block Map #	N/A	Total EDU's 19	Total Acreage 20.68
Total Linear Footage of Pipe	16" W - 1393 L.F./8" W - 1291 L.F./2" W - 389 L.F.	Plat No.	N/A (CORLEY FARMS UNIT 1 PLAT)
Number of Lots	15	SAWS Job No.	21-1061

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



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

CORLEY FARMS UNIT 1

WATER LINE A - PLAN & PROFILE

DATE
04/26/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
1. 2021-04-15 - BID REVISIONS
2.
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
04.26.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C43

2 OF 5

P:\03481\Civil\2-Drawings\C43 WATER LINE A - PLAN & PROFILE.dwg 2021.04.26 10:33am kmcdaniel

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.

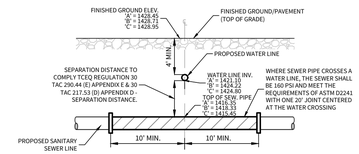
LOCATION MAP
N.T.S.

LEGEND

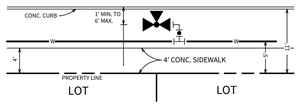
WW	= 3/4" PROPOSED WATER SERVICE WITH 5/8" METER
WW	= 3/4" EXISTING WATER SERVICE WITH 5/8" METER
3/4" IRRIG.	= 3/4" IRRIGATION SERVICE WITH 3/4" METER
XXX L.F. - XX" PVC C-900	= PROPOSED WATER MAIN
	= EXISTING WATER MAIN
	= EXISTING SANITARY SEWER
X X	= JOINT RESTRAINT
	=JOINT RESTRAINT ENTIRE LENGTH
	= PROPOSED SEWER LINE AND MANHOLE

THRUST BLOCKING NOTE

ANCHORAGE/ THRUST BLOCKING AND JOINT RESTRAINTS SHALL BE DONE IN ACCORDANCE WITH SAWS STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION (ITEM NO. 839)



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.

TRENCH EXCAVATION PROTECTION

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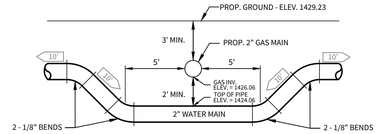
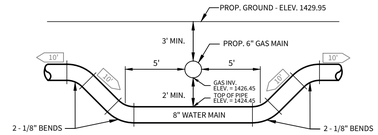
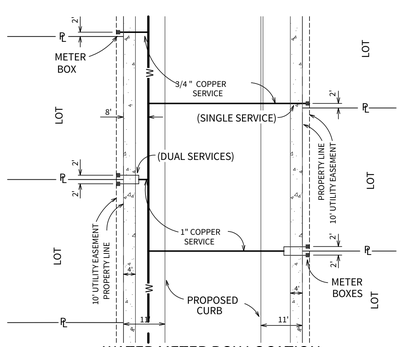


2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



WATER METER BOX LOCATION
N.T.S.

SCALE: 1"=50'
0 50 100

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: DAVID D. CUPIT II, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
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SAWS CONSTRUCTION NOTES
COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT *REVISED JULY 2017*

GENERAL SECTION

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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.

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- ☐ 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.

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13. A copy of all testing reports shall be forwarded to SAWS Construction Inspection Division. Water Section

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".

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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 1425 feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below 1425 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).

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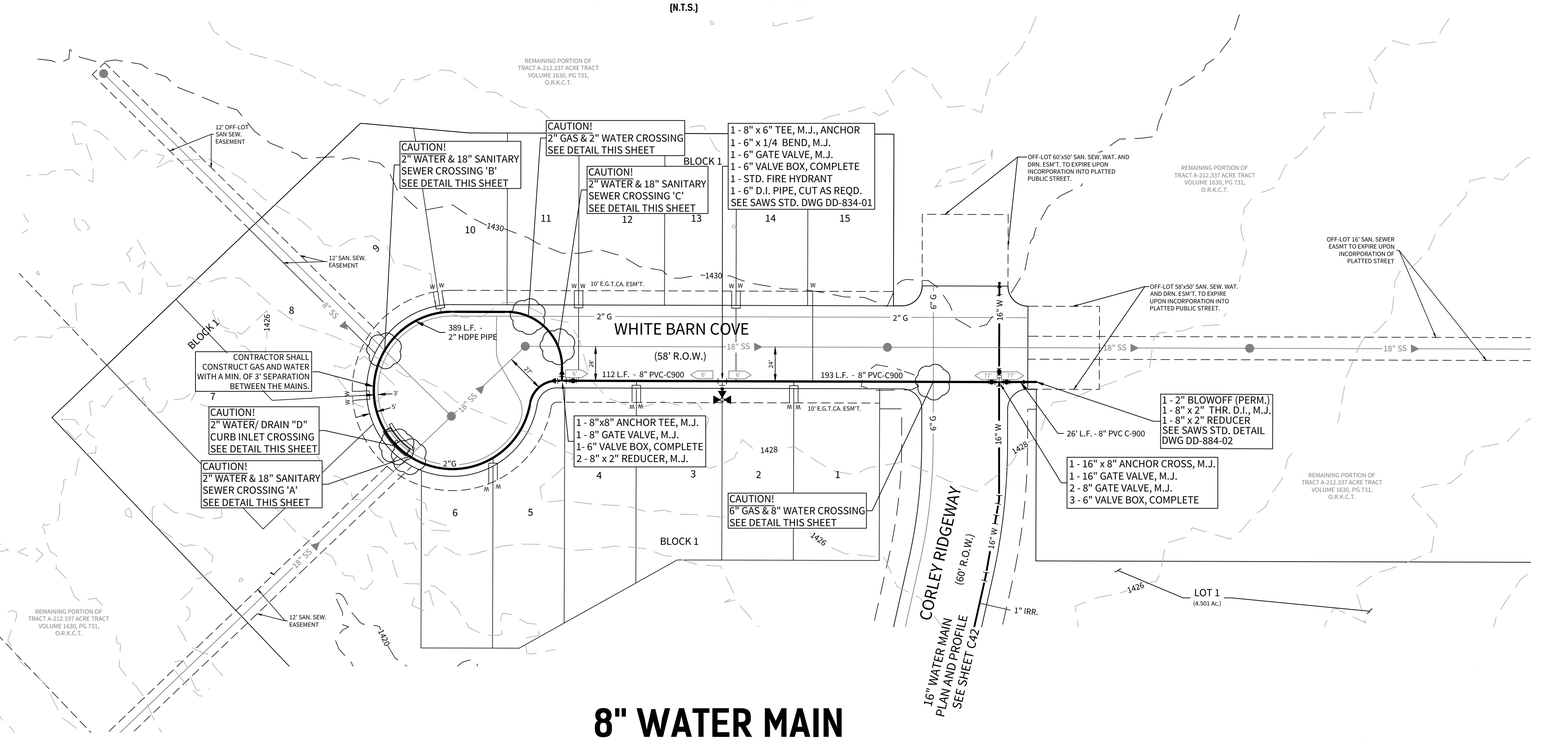
8. Backflow Prevention Devices:

- ☐ 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.

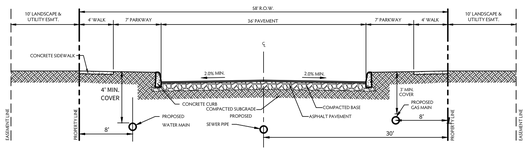
9. Final connection to the existing water main shall not be made until the water main has been pressure tested, chlorinated, and SAWS has released the main for tie-in and use.

10. All meters shall be 5/8", unless otherwise noted.

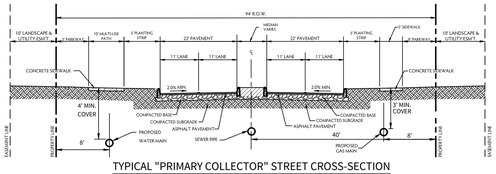
11. All pipes shall be C-900, CLASS 235 DR 18, unless otherwise noted.



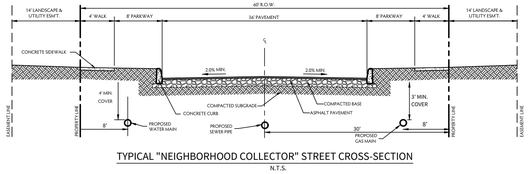
8" WATER MAIN



TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION
N.T.S.

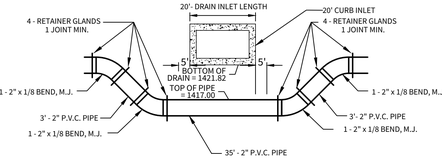


TYPICAL "PRIMARY COLLECTOR" STREET CROSS-SECTION
N.T.S.



TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION
N.T.S.

2" WATER MAIN INLET CROSSINGS	LENGTH
A_{INLET}	20'
$B_{STEELCASING}$	30'
$C_{HORZPIPE}$	35'
$D_{VERTPIPE}$	2.0'
INLET INVERT DEPTH	2.5'
INLET TOTAL DEPTH	3.0'
PIPE BURY	4.0'
PIPE DIAMETER	2"



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

WATER / DRAIN "D" CURB INLET CROSSINGS ~ DETAIL 1
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

PRESSURE ZONE 12

Developer's Name	PULTE HOMES OF TEXAS, L.P.		
Developer's Address	1718 DRY CREEKWAY, SUITE 120		
City	SAN ANTONIO	**State**	TEXAS **Zip** 78259
Phone #	(210) 496-1985	**Fax #**	(210) 496-0449
SAWS Block Map #	N/A	**Total EDU's**	19 **Total Acreage** 20.68
Total Linear Footage of Pipe	16" W - 1393 L.F./8" W - 1291 L.F./2" W - 389 L.F.	**Plat No.**	N/A (CORLEY FARMS UNIT 1 PLAT)
Number of Lots	15	**SAWS Job No.**	21-1061

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 1

WATER DISTRIBUTION PLAN

DATE 04/26/2021

PROJECT NO. 03481.004

DRAWN BY C3

CHECKED BY JC/DDC

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

STATE OF TEXAS
DAVID D. CUPIT II
92078
LICENSED
PROFESSIONAL ENGINEER
04.26.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C44

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

XXX L.F. - XX" PVC C-900 = PROPOSED WATER MAIN

= JOINT RESTRAINT

THRUST BLOCKING NOTE

ANCHORAGE/ THRUST BLOCKING AND JOINT RESTRAINTS SHALL BE DONE IN ACCORDANCE WITH SAWS STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION (ITEM NO. 839)

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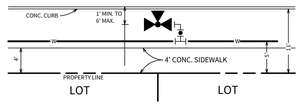

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.

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

SCALE: 1"=50'
0 50 100

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: DAVID D. CUPIT II, P.E.
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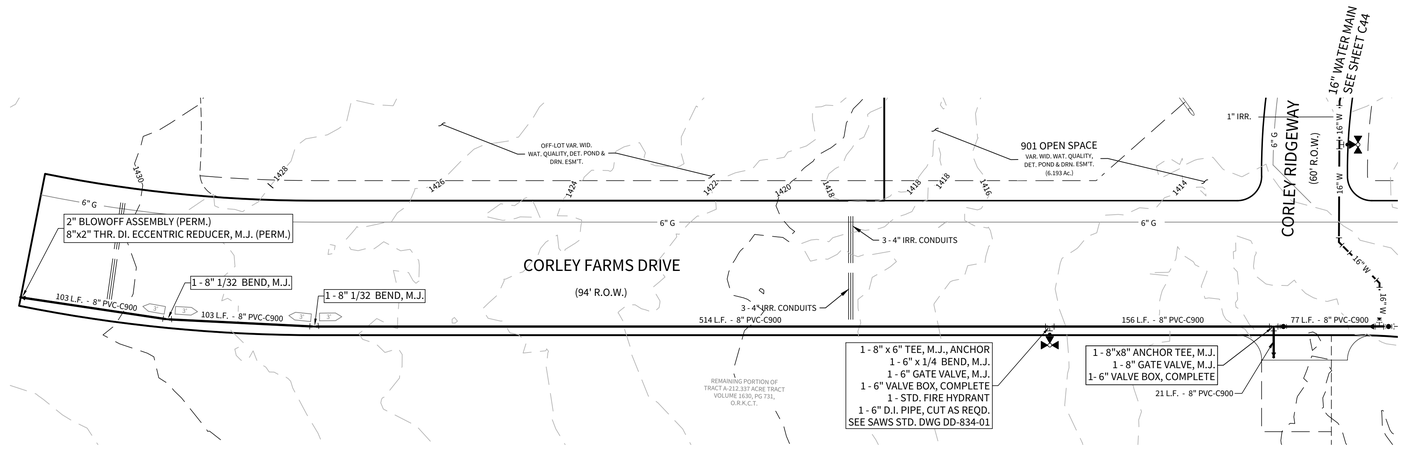
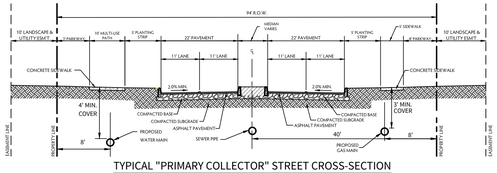
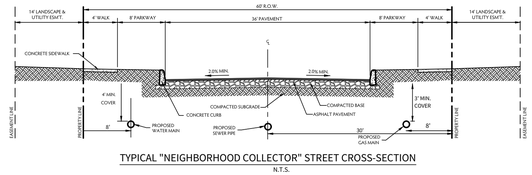


8" WATER MAIN



TYPICAL "PRIMARY COLLECTOR" STREET CROSS-SECTION
N.T.S.



TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION
N.T.S.

PRESSURE ZONE 12

Developer's Name	PULTE HOMES OF TEXAS, L.P.		
Developer's Address	1718 DRY CREEKWAY, SUITE 120		
City	SAN ANTONIO	**State** TEXAS	**Zip** 78259
Phone #	(210) 496-1985	**Fax #**	(210) 496-0449
SAWS Block Map #	N/A	**Total EDU's** 19	**Total Acreage** 20.68
Total Linear Footage of Pipe	16" W - 1393 L.F./8" W - 1291 L.F./2" W - 389 L.F.	**Plat No.**	N/A (CORLEY FARMS UNIT 1 PLAT)
Number of Lots	15	**SAWS Job No.**	21-1061

CUDEENGINEERS.COM

M.W. CUDE ENGINEERS

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

CORLEY FARMS UNIT 1

WATER DISTRIBUTION PLAN

DATE 04/26/2021
PROJECT NO. 03481.004
DRAWN BY C3
CHECKED BY JC/DDC

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

STATE OF TEXAS
DAVID D. CUPIT II
122676
LICENSED
PROFESSIONAL ENGINEER
04.26.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C44A

P:\03481\DWG\Drawings\C44A WATER DISTRIBUTION PLAN.dwg 4/26/2021 10:33:33am evansmith

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GAS DISTRIBUTION CONSTRUCTION PLANS

- C46 - GAS DISTRIBUTION PLAN
- C47 - GAS DISTRIBUTION PLAN
- C48 - CITY OF BOERNE GAS DISTRIBUTION PLAN NOTES & DETAILS

* STANDARD DETAILS ADOPTED FOR THIS CONSTRUCTION SET.

LOCATION MAP

VICINITY MAP

BIEDENHARN TRACT
UNIT 1

GAS DISTRIBUTION
CONSTRUCTION PLANS

DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO, TX 78259
TEL: (210) 496-1985
FAX: (210) 496-0449

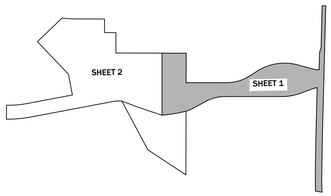
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

DRAWN BY	DATE	PLAT NO.
C3	03/15/2021	XX-XXXXXXXX
CHECKED BY	**PROJECT NO.**	
JC/DDC	03481.000	

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

LOCATION MAP
N.T.S.



KEY MAP
N.T.S.

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

SCALE: 1"=50'
0 50 100

GAS DISTRIBUTION GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL CONFORM TO ALL APPLICABLE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THE PROJECT.
2. ALL GAS DISTRIBUTION LINES SHALL BE YELLOW DR-11 POLYETHYLENE PIPE MEETING ASTM D3350, BY PERFORMANCE PIPE, DRISCOPLEX 6500 WITH NO SUBSTITUTIONS.
3. ALL MAINS SHALL BE CLEAR OF ALL FOREIGN MATERIAL BLOWN WITH DRY COMPRESSED AIR AND PRESSURED TESTED AS PER THE CITY OF BOERNE'S STANDARD SPECIFICATIONS.
4. FOR PURPOSES OF RECORD DRAWINGS FOR THE CITY OF BOERNE, THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS, TAPS, AND LENGTH OF SERVICE CONNECTIONS.
5. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS OF UTILITIES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
6. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT THEIR EXPENSE.
7. FINAL CONNECTION TO THE EXISTING GAS MAIN SHALL NOT BE MADE UNTIL THE MAIN HAS BEEN PRESSURE TESTED AND APPROVED FOR CONNECTION BY THE CITY OF BOERNE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
9. ALL ITEMS NOT SPECIFICALLY CALLED FOR ON THE PLANS, OR IN THE SPECIFICATIONS, BUT NECESSARY TO REASONABLY CONSTRUCT THE FACILITY OR IMPROVEMENT, SHALL BE CONSIDERED INCIDENTAL TO THE OVERALL PROJECT AND NO SEPARATE PAYMENTS WILL BE MADE FOR THESE ITEMS.
10. DEPTH OF BURY FOR ALL GAS PIPING SHALL BE A MINIMUM OF 3' UNLESS OTHERWISE NOTED OR APPROVED BY THE CITY OF BOERNE.
11. CONTRACTOR TO GRADE SITE TO WITHIN +/- 0.10' BEFORE THE INSTALLATION OF UTILITIES TO ENSURE PROPER COVER IS ACHIEVED.
12. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT.
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14. THE CONTRACTOR SHALL EXCAVATE AROUND EXISTING UTILITIES WHICH INTERSECT THE PROPOSED ALIGNMENT OF THE SERVICES AND NOTIFY THE ENGINEER OF POTENTIAL CONFLICTS PRIOR TO ANY CONSTRUCTION IN THE AREA.
15. UTILITY TRENCH COMPACTION: ALL UTILITY TRENCH COMPACTION TESTS WITHIN THE STREET RIGHT-OF-WAY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S GEO-TECHNICAL ENGINEER. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT TO EXCEED EIGHT INCHES (8") LOOSE. EACH LAYER OF MATERIAL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR ASTM 1557 AS SPECIFIED AND DESCRIBED IN ACCORDANCE WITH THE CITY OF BOERNE'S PROJECT SPECIFICATION - SECTION 02221.

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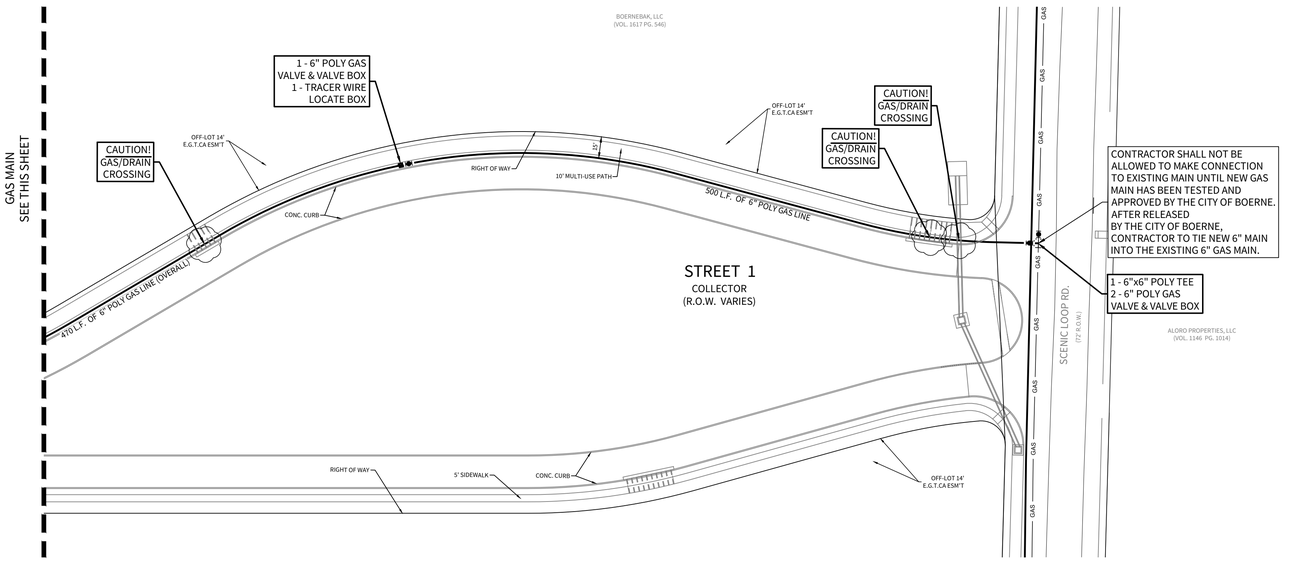
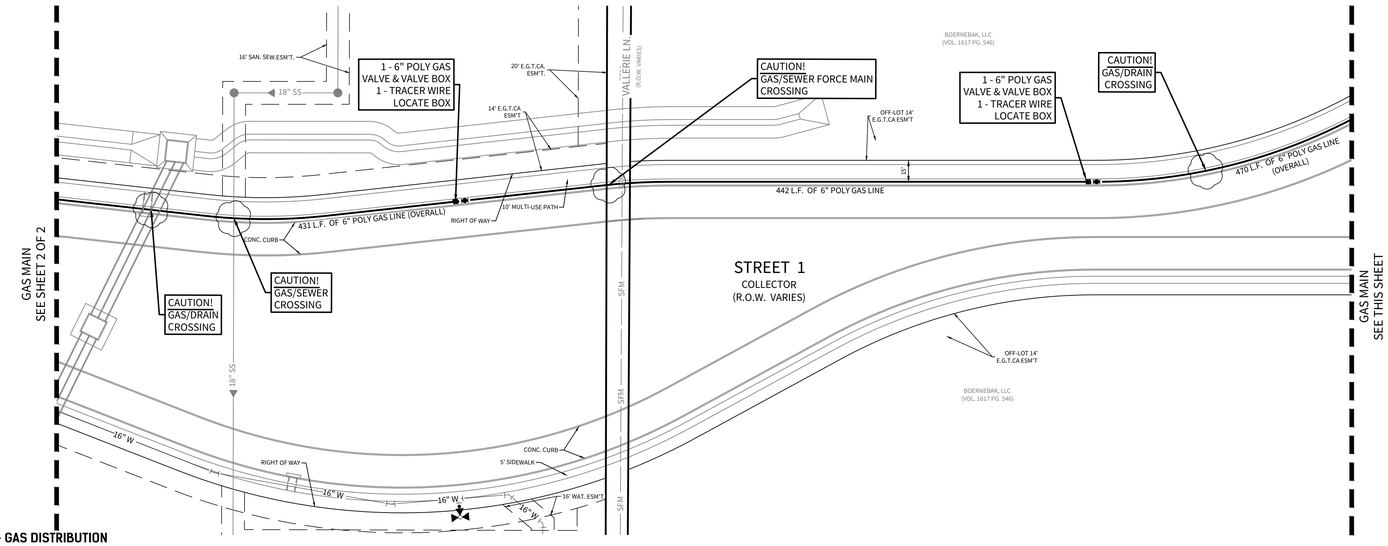
TRENCH EXCAVATION PROTECTION
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER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





BIEDENHARN SUBDIVISION UNIT 1 – GAS DISTRIBUTION
ESTIMATED QUANTITY TAKE-OFF
(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

Item No.	Description	Quantity	Units	Installation Responsibility
1	6" Poly Gas Main – Open Cut	3,484	LF	Contractor
1	2" Poly Gas Main – Open Cut	707	LF	Contractor
2	1" Gas Service, see Gas Service Detail (Long)	5	EA	Contractor
3	1" Gas Service, see Gas Service Detail (Short)	11	EA	Contractor
4	2" Gas Valve & Box	3	EA	Contractor
5	6" Gas Valve & Box	10	EA	Contractor
6	2" x 2" Poly Tee	1	EA	Contractor
7	6" x 6" Poly Cross	1	EA	Contractor
8	6" x 6" Poly Tee	2	EA	Contractor
9	2" Poly Cap	1	EA	Contractor
10	6" Poly Cap	2	EA	Contractor
11	6" Connection to Existing Main	1	LS	Contractor
12	Testing as required by City of Boerne	1	LS	Contractor

NOTES:
1. Estimated conduit quantities shown are linear footage.
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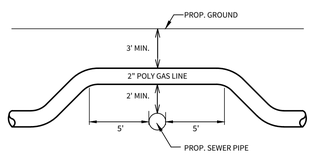
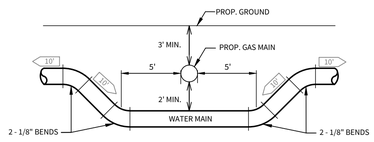


SEWER / GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)
NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'



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

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

BIEDENHARN SUBDIVISION UNIT 1

GAS DISTRIBUTION PLAN

DATE
03/15/2021
PROJECT NO.
03481.004
DRAWN BY
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REVISIONS
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9.

STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C46
1 OF 3

© 03481\000\Drawings\C4 GAS DISTRIBUTION PLAN.dwg 3/15/2021 12:24pm eadgard

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

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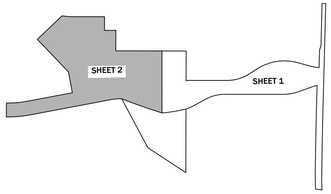

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1718 DRY CREEK WAY, SUITE 120
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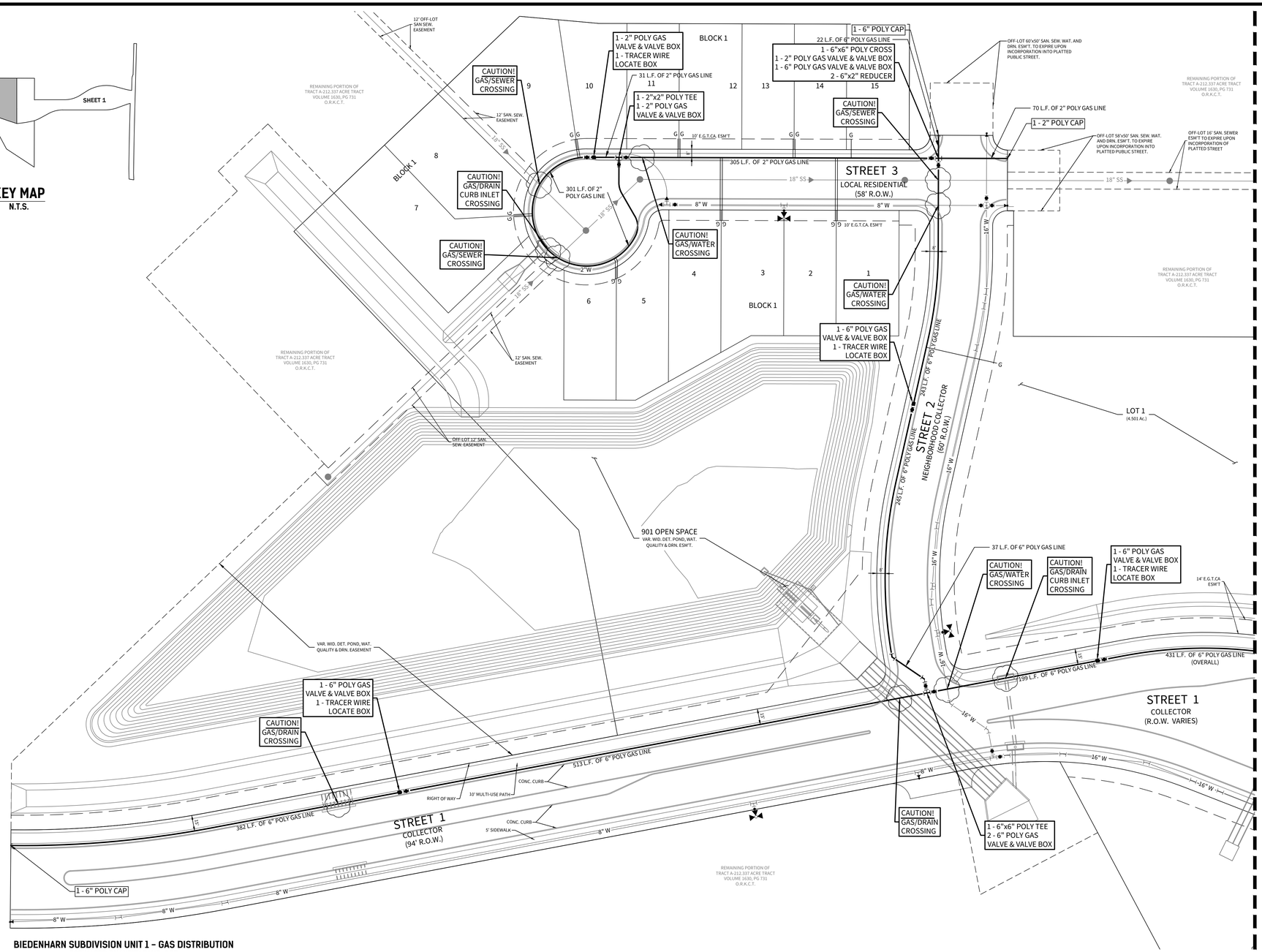

BIEDENHARN SUBDIVISION UNIT 1 – GAS DISTRIBUTION
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NOTES:

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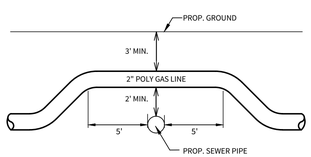

SEWER / GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)
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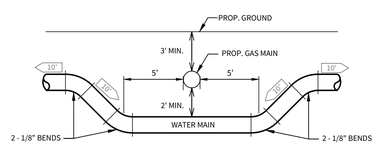

WATER / GAS CROSSINGS DETAIL
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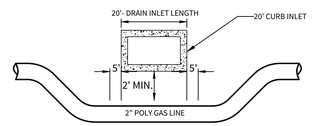

ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

GAS / CURB INLET CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

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BIEDENHARN SUBDIVISION UNIT 1

GAS DISTRIBUTION PLAN

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REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
92076
LICENSED PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C47

P:\03481.004\C3-Drawings\C47 GAS DISTRIBUTION PLAN.dwg 2021/03/15 2:21pm cvanvalen

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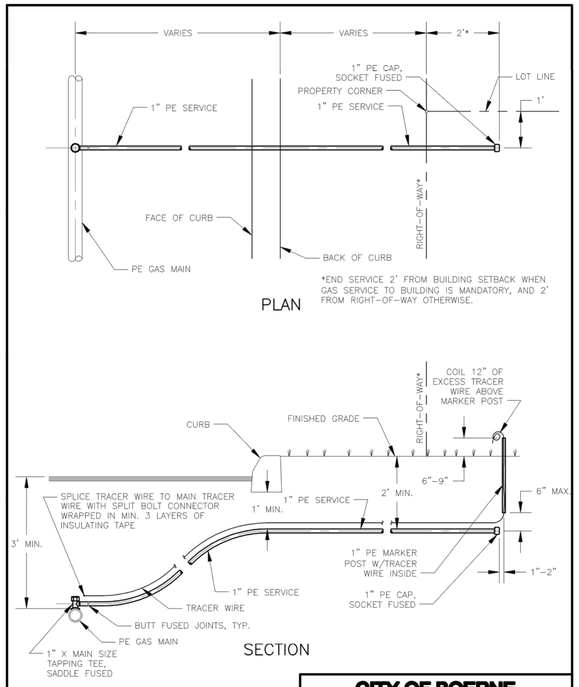
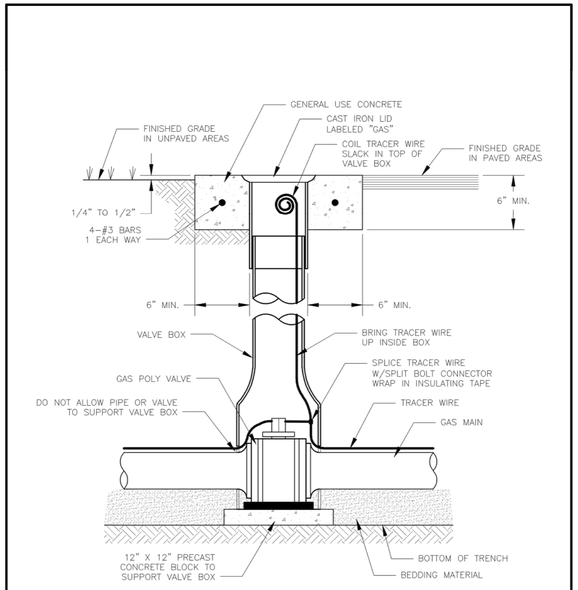


CITY OF BOERNE

GAS SERVICE

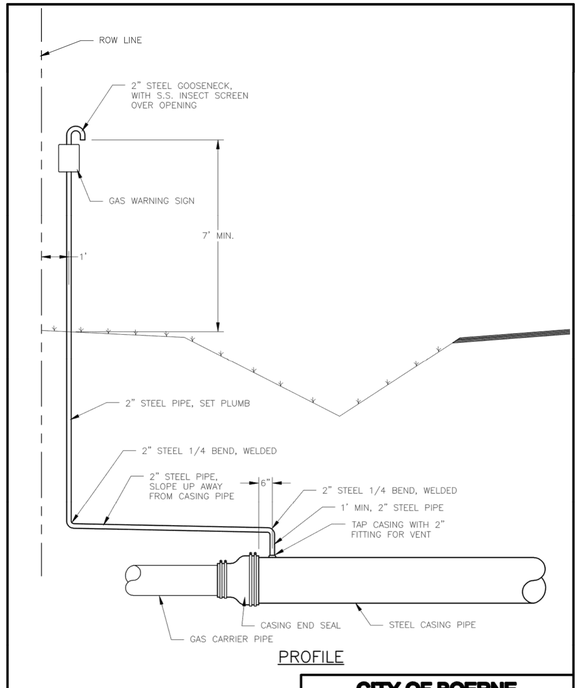
SCALE:	DRAWING No.	DATE:
N.T.S.	02560-1.3	JULY 2015



CITY OF BOERNE

GAS VALVE AND VALVE BOX

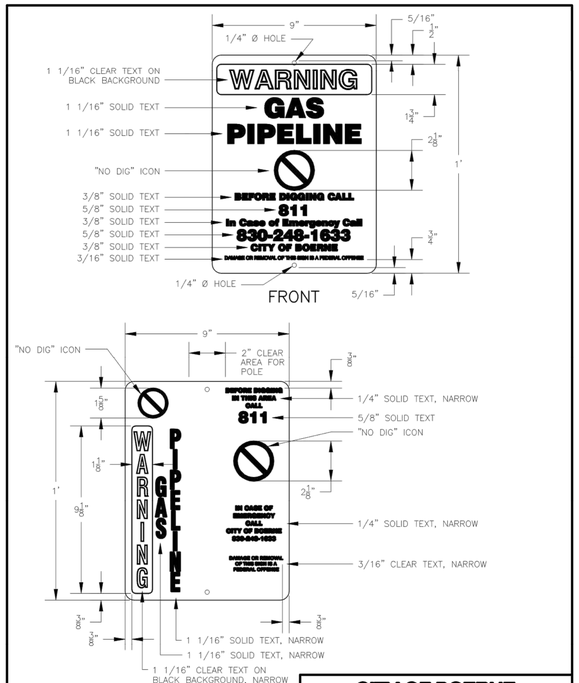
SCALE:	DRAWING No.	DATE:
N.T.S.	02560-1.0	JULY 2015



CITY OF BOERNE

CASING VENT FOR GAS MAIN UNDERCROSSING

SCALE:	DRAWING No.	DATE:
N.T.S.	02224-1.1	JULY 2015

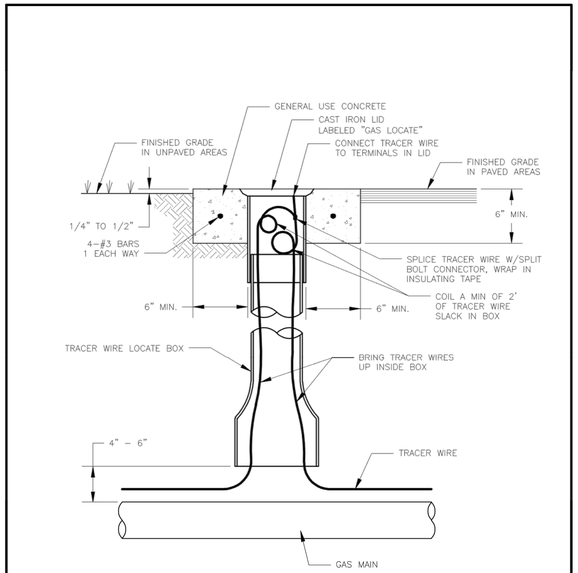


NOTE: MOUNT SIGN ON STEEL POST, 5'-6" ABOVE FINISHED GRADE.

CITY OF BOERNE

GAS WARNING SIGN

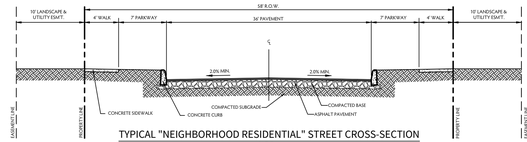
SCALE:	DRAWING No.	DATE:
N.T.S.	02560-1.1	JULY 2015



CITY OF BOERNE

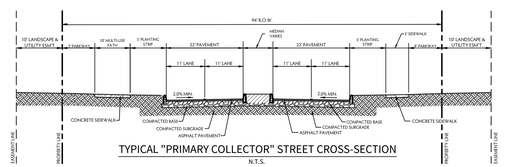
TRACER WIRE LOCATE BOX

SCALE:	DRAWING No.	DATE:
N.T.S.	02560-1.2	JULY 2015



TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION

N.T.S.



TYPICAL "PRIMARY COLLECTOR" STREET CROSS-SECTION

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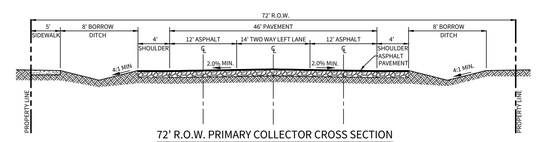

72' R.O.W. PRIMARY COLLECTOR CROSS SECTION

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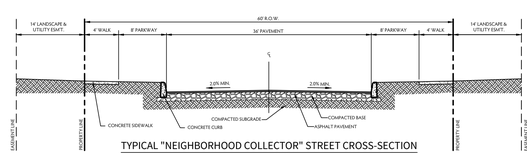

TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION

N.T.S.

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

BIEDENHARN SUBDIVISION UNIT 1

CITY OF BOERNE
CITY OF BOERNE GAS DISTRIBUTION PLAN NOTES & DETAILS

DATE
03/15/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C48

3 OF 3

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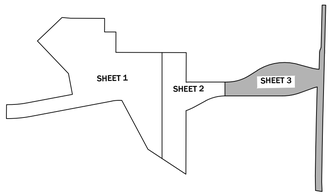

KEY MAP
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OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: DAVID D. CUPIT II, P.E.
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SAN ANTONIO, TX 78231
TEL: (210) 681-2951
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SCALE: 1"=50'
0 50 100

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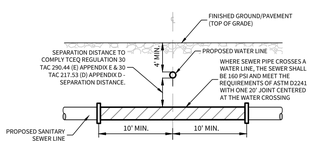

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

BENCHMARK **BM-1**

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

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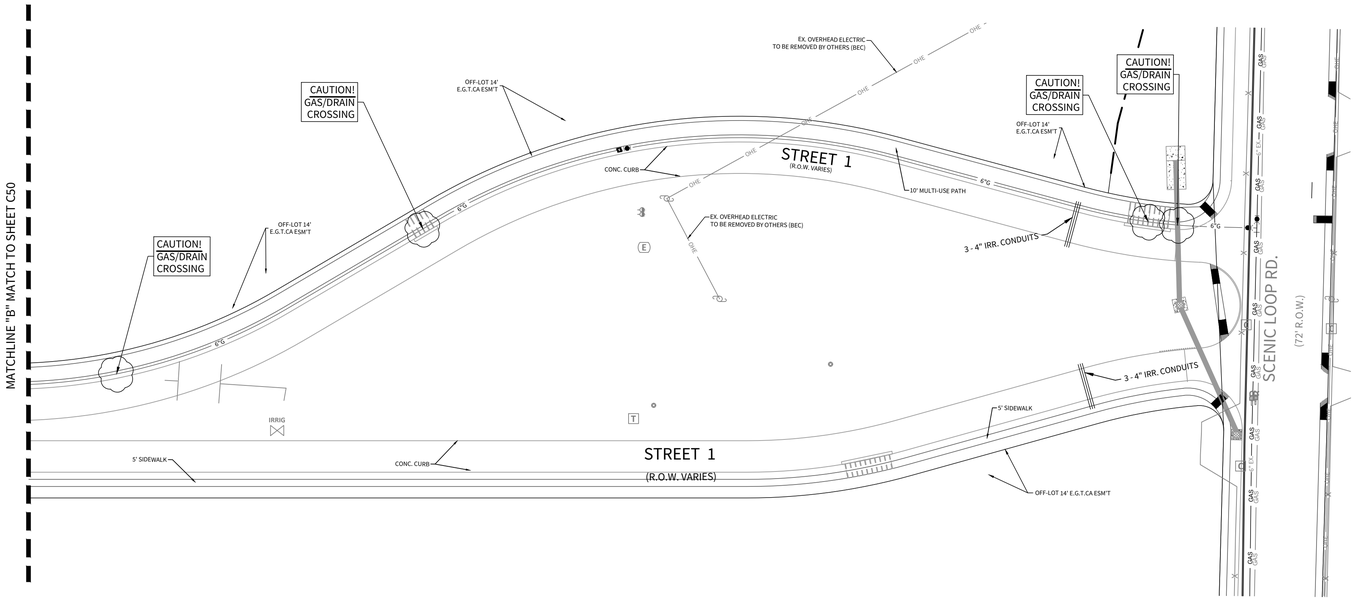

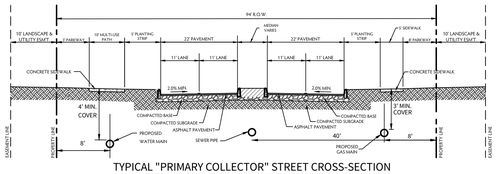

TYPICAL "PRIMARY COLLECTOR" STREET CROSS-SECTION
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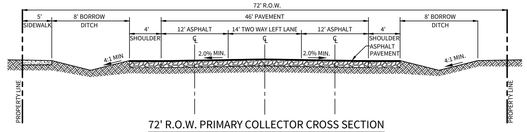

72' R.O.W. PRIMARY COLLECTOR CROSS SECTION
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UTILITY LAYOUT PLAN

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TBPE No. 455
TBPLS No. 10048500

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1 OF 3

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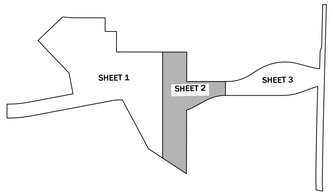

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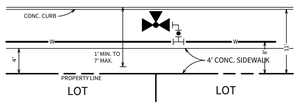

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TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
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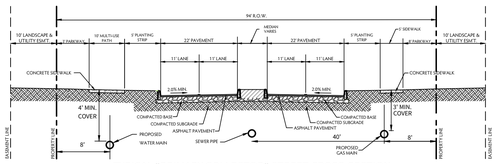

TYPICAL "PRIMARY COLLECTOR" STREET CROSS-SECTION
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BENCHMARK BM-1

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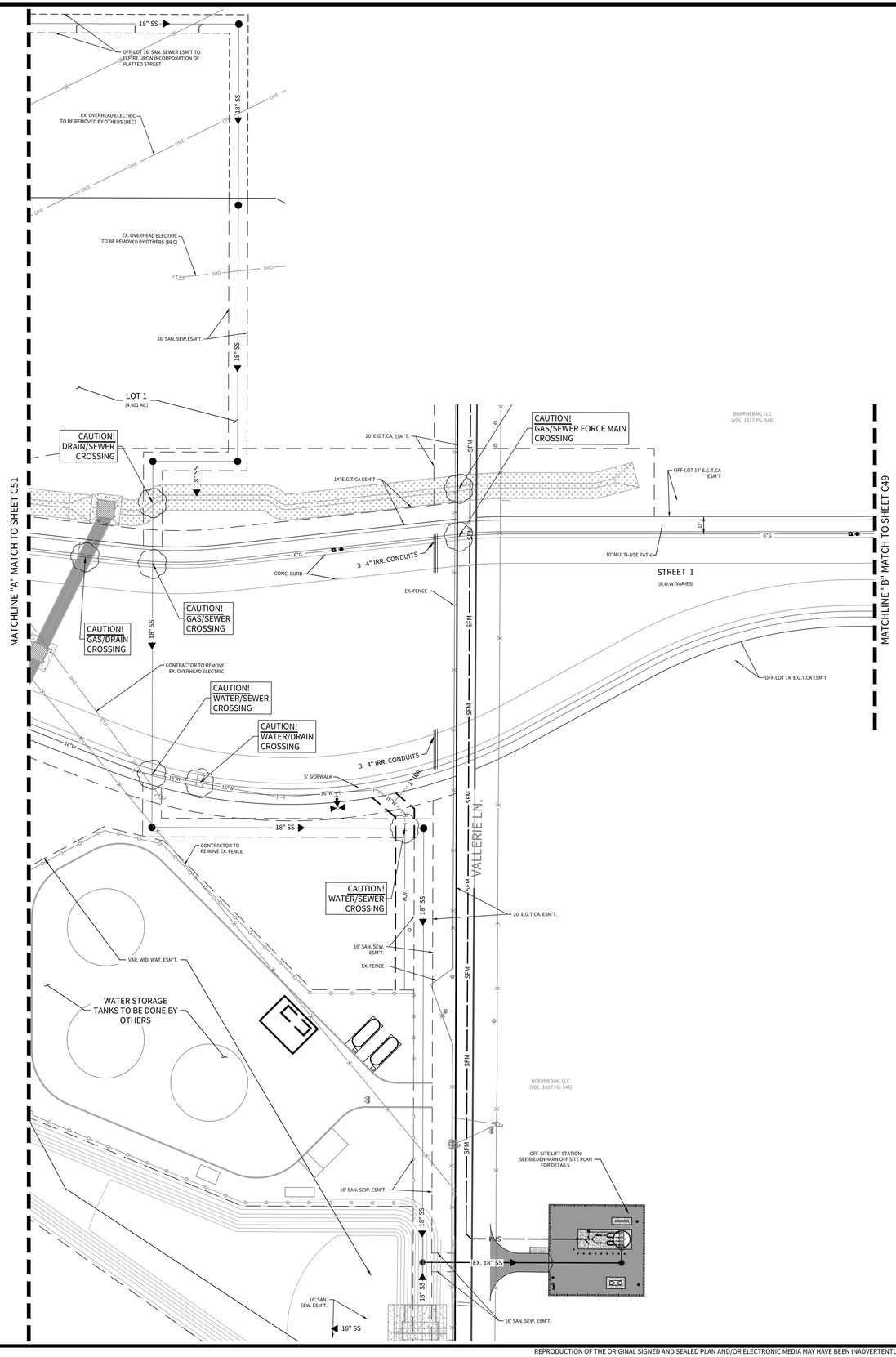

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BIEDENHARN SUBDIVISION UNIT 1

UTILITY LAYOUT PLAN

DATE
03/15/2021

PROJECT NO.
03481.004

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LICENSED
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TBPE No. 455
TBPLS No. 10048500

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2 OF 3

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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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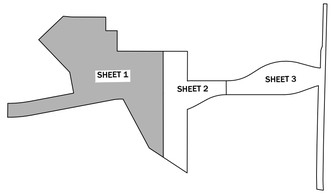

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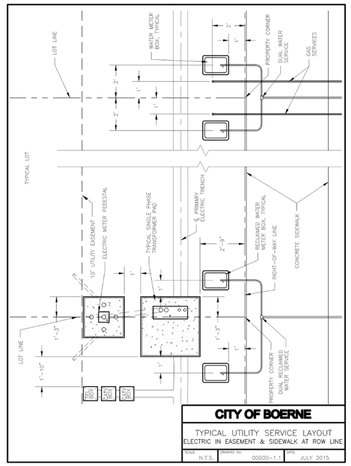

CITY OF BOERNE TYPICAL UTILITY SERVICE LAYOUT
N.T.S.

BENCHMARK **BM-1**

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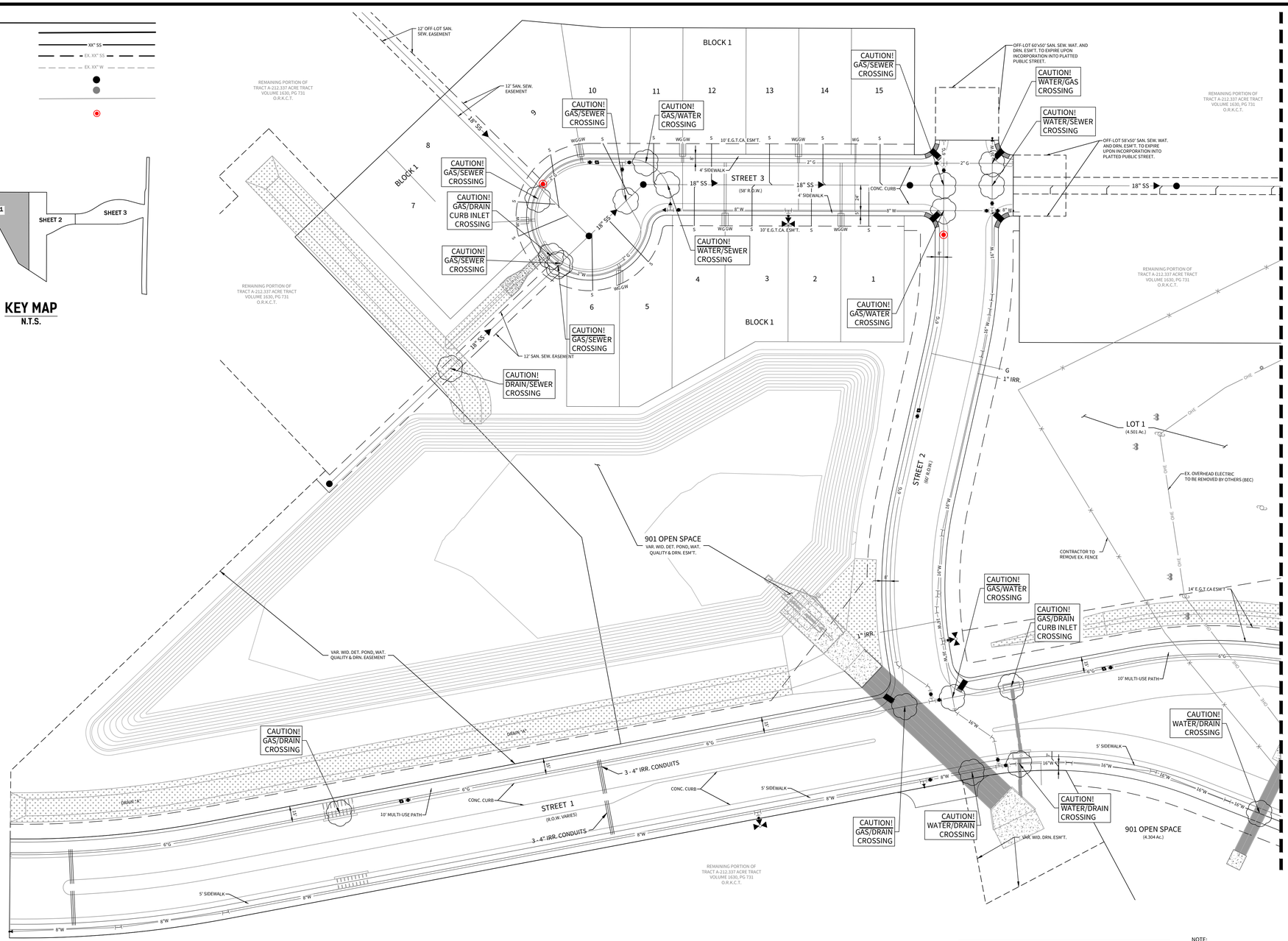

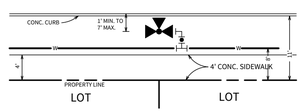

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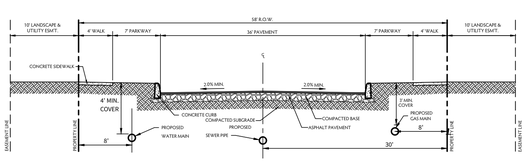

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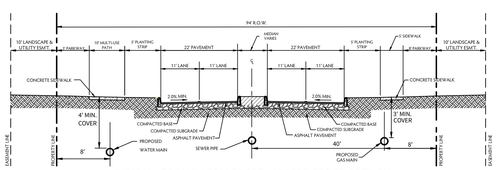

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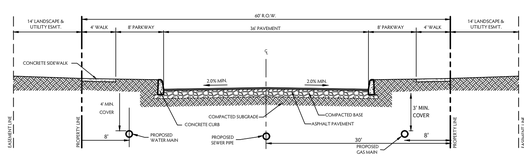

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STATE OF TEXAS
DAVID D. CUPIT II
124776
LICENSED PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C51

P:\03481\000\3-Drawings\C51-UTILITY LAYOUT 1.dwg 3/15/2021 2:22pm mshadad

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

LOCATION MAP
N.T.S.

LEGEND

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

SCALE: 1"=50'
0 50 100

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

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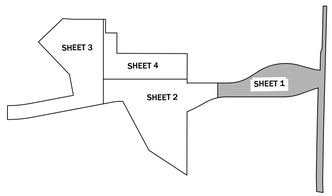
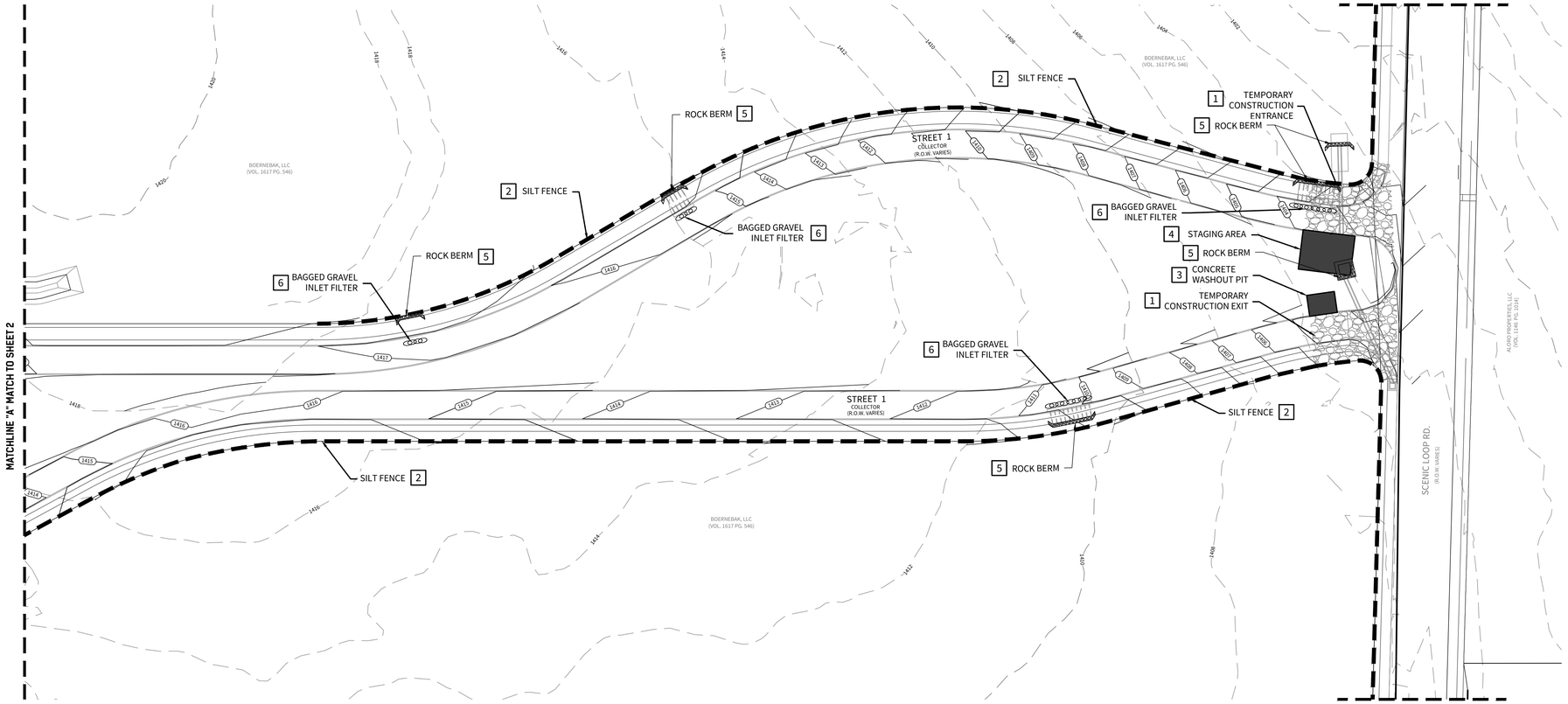


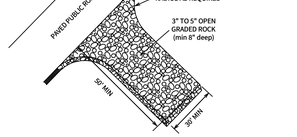
KEY MAP
N.T.S.

MATCHLINE "A" MATCH TO SHEET 2

MATCHLINE "D" MATCH TO SHEET 4

MATCHLINE "E" MATCH TO SHEET 4





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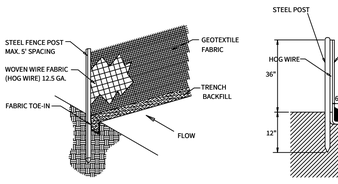
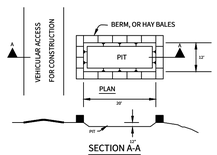


SILT FENCE DETAIL SECTION DETAIL

2 STANDARD SILT FENCE
N.T.S.



GENERAL NOTES:

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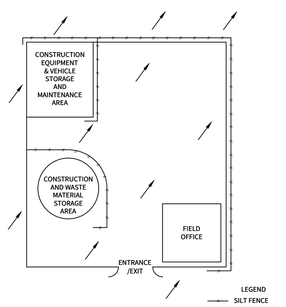
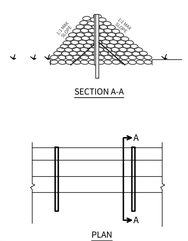
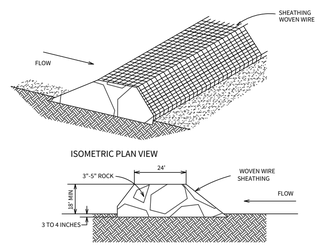


4 TYP. CONSTRUCTION STAGING AREA
N.T.S.

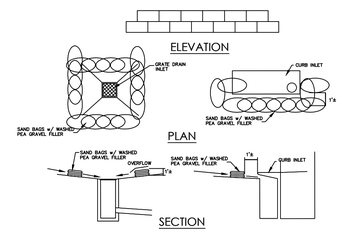


5 ROCK BERM W/ SILT FENCE DETAIL
N.T.S.



SECTION DETAIL

ROCK BERM
N.T.S.



BAGGED GRAVEL INLET FILTER NOTES

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2., MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
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6 BAGGED GRAVEL INLET FILTER NOTES
N.T.S.

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San Antonio, Texas 78231
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BIEDENHARN SUBDIVISION UNIT 1

STORM WATER POLLUTION PREVENTION PLAN

DATE
03/15/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C52

© 2021 M.W. CUDE ENGINEERS, L.L.C. | 03481.004 | C:\Users\jcupit\Desktop\03481.004\C3 STORM WATER POLLUTION PREVENTION PLAN.dwg, 2021/03/15 2:22pm, jcupit

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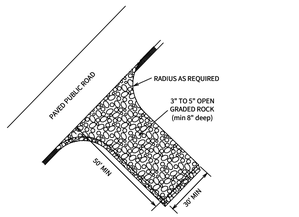

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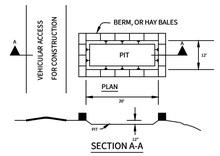

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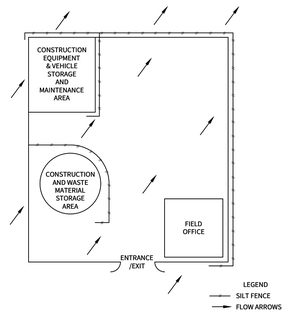

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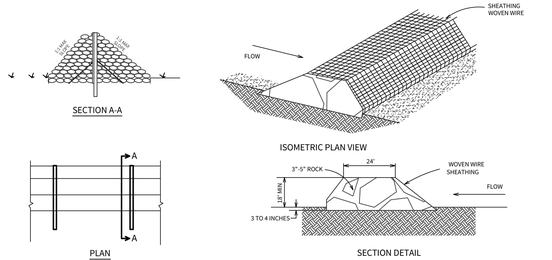
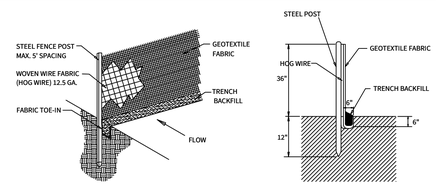


5 ROCK BERM W/ SILT FENCE DETAIL
N.T.S.

ROCK BERM
N.T.S.



2 STANDARD SILT FENCE
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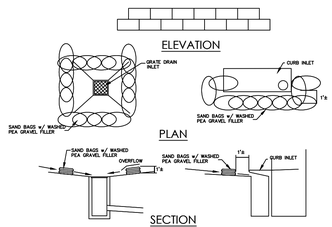

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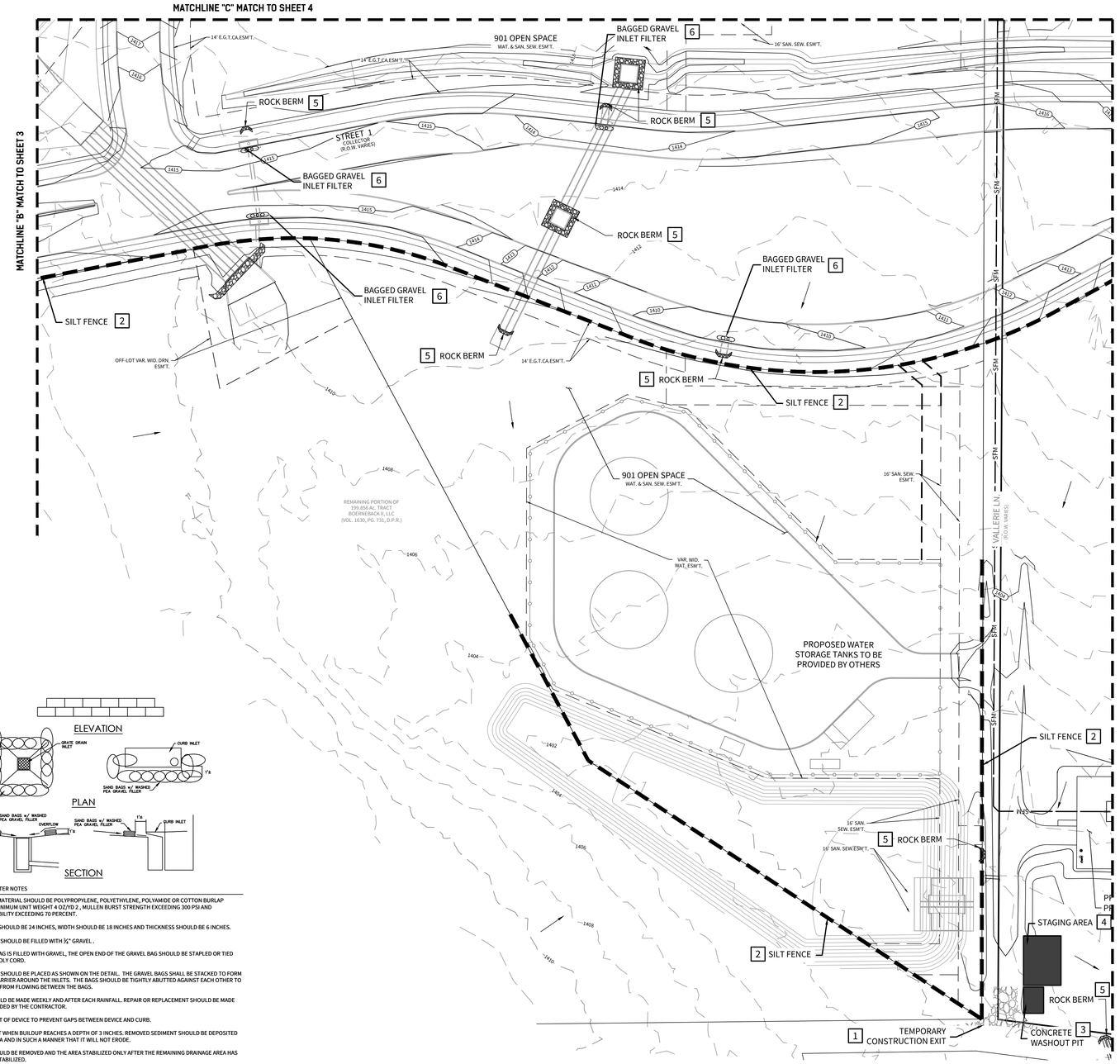

KEY MAP
N.T.S.

SCALE: 1"=50'
0 50 100

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BIEDENHARN SUBDIVISION UNIT 1

STORM WATER POLLUTION PREVENTION PLAN

DATE
03/15/2021

PROJECT NO.
03481.004

DRAWN BY
C3

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STATE OF TEXAS
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03.15.21

CUDE ENGINEERS
TBPE No. 455
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C53

2 OF 4

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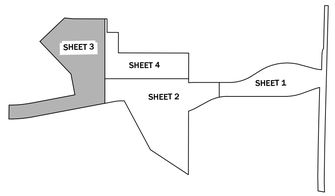

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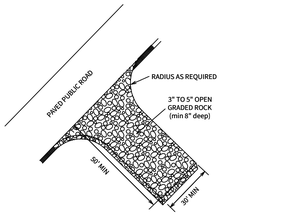

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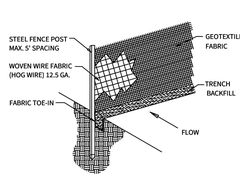

SILT FENCE DETAIL

SECTION DETAIL

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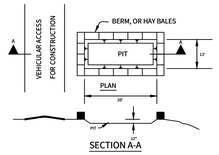

SECTION A-A

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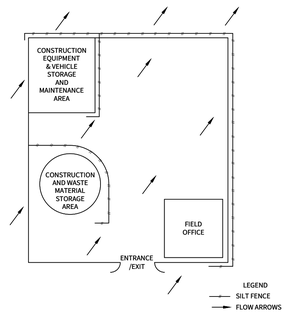

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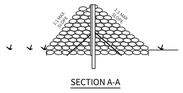
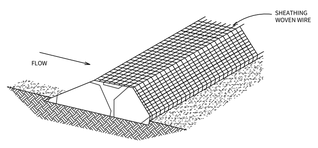
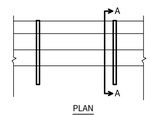
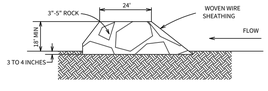




ISOMETRIC PLAN VIEW



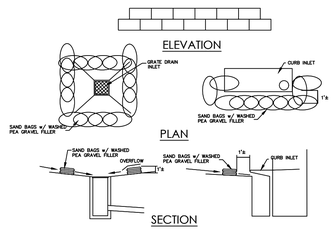
PLAN



SECTION DETAIL

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

ROCK BERM
N.T.S.



BAGGED GRAVEL INLET FILTER NOTES

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2., MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL 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.
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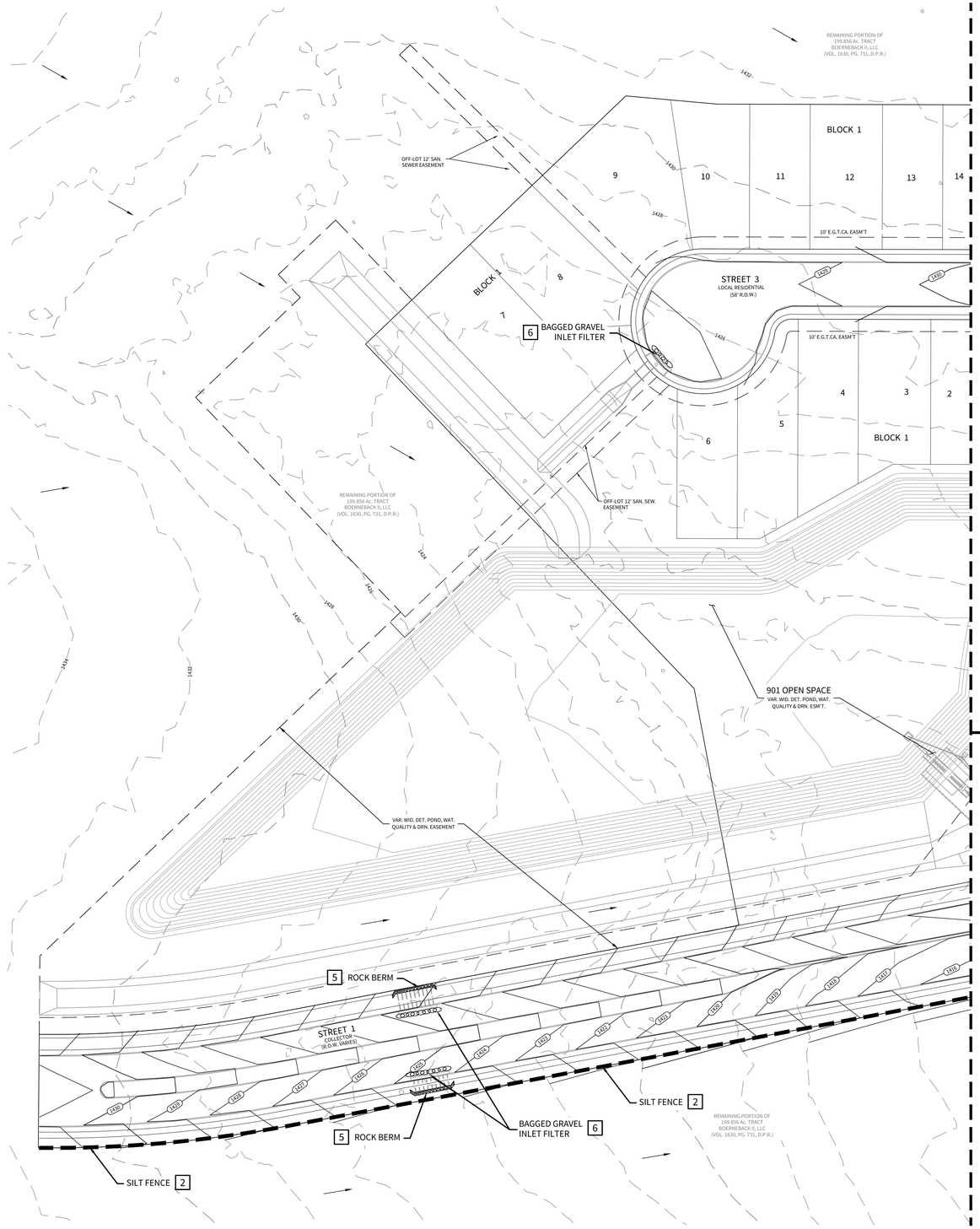
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

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



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BIEDENHARN SUBDIVISION UNIT 1

STORM WATER POLLUTION PREVENTION PLAN

DATE
03/15/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C54

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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:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

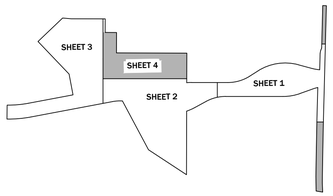
M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: DAVID D. CUPIT II, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

NOTE:

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THERE WILL BE NO STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.
4. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
5. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

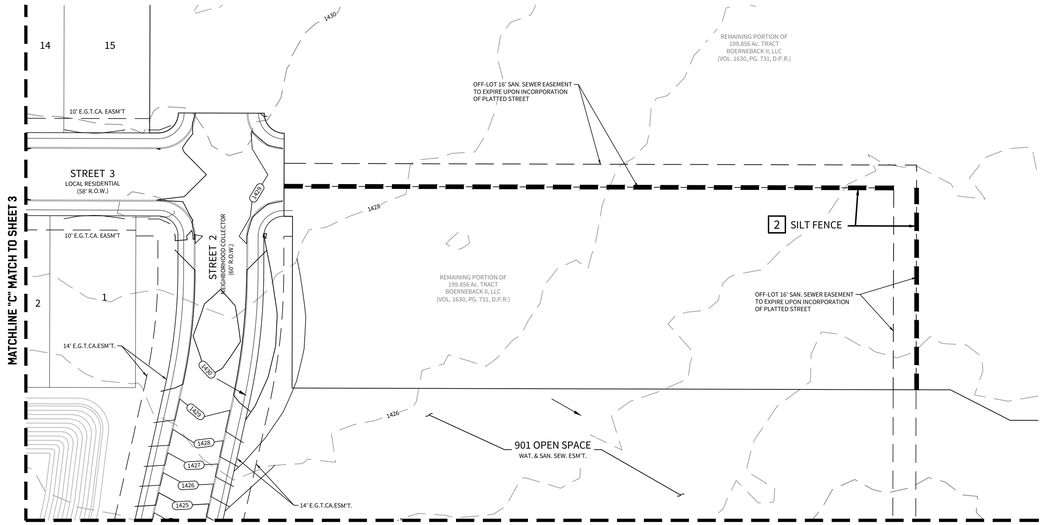
LEGEND

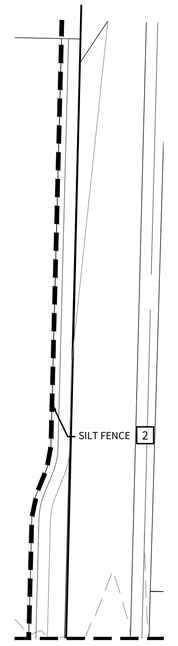
- PROPERTY LINE
- EXISTING CONTOURS — 930 —
- BMP ITEM NUMBER 1
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- ROCK BERM
- SILT FENCE
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT

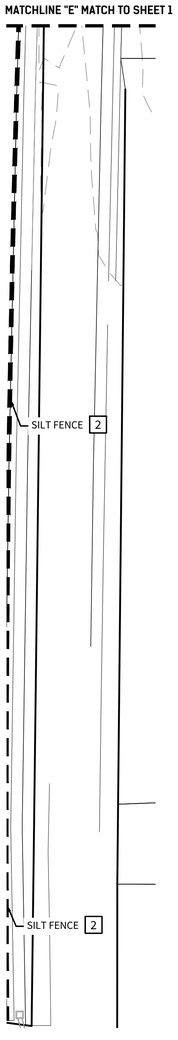


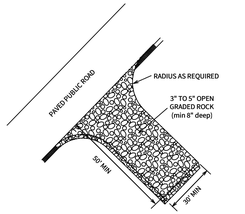
KEY MAP
N.T.S.

SCALE: 1"=50'
0 50 100





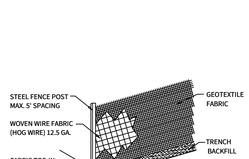




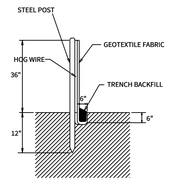
STABILIZED CONSTRUCTION EXIT NOTES:

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

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

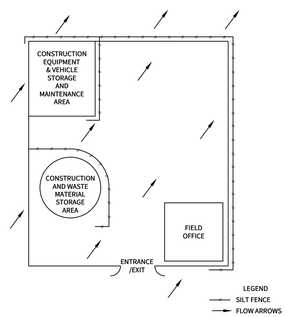


SILT FENCE DETAIL

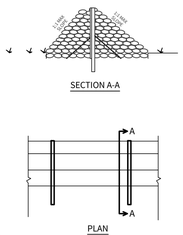


SECTION DETAIL

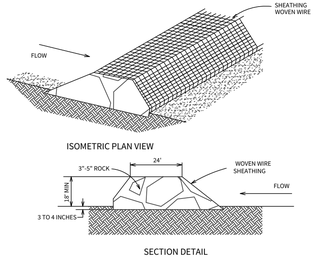
2 STANDARD SILT FENCE
N.T.S.



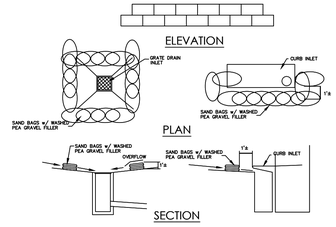
4 TYP. CONSTRUCTION STAGING AREA
N.T.S.



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



ROCK BERM
N.T.S.



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

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BIEDENHARN SUBDIVISION UNIT 1

STORM WATER POLLUTION PREVENTION PLAN

DATE
03/15/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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STATE OF TEXAS
DAVID D. CUPIT II
122076
LICENSED
PROFESSIONAL ENGINEER
03.15.21

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C55

4 OF 4

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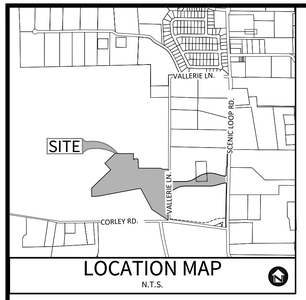
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



LOCATION MAP
N.T.S.

LEGEND

PROPOSED CONTOUR 1000
EXISTING CONTOUR 1000
PROPOSED ELEVATION × 1000.00
LIMITS OF GRADING

NOTE:
1. CONTRACTOR TO REFERENCE TREE PRESERVATION PLAN.
2. CONTOURS AS SHOWN ON STREET ARE TO TOP SUBGRADE.

SCALE: 1"=80'
0 80 160

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. General Description

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

2. Clearing the Area to be Filled

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

3. Scarifying the Area to be Filled

All organic matter shall be removed from the surface upon which the fill is to be placed, and the surface shall then be disked or scarified to a minimum depth of six inches (6"), all surface ruts or other uneven features will be leveled prior to field density testing. Where fills are made on hillsides or slopes, the slope of the original ground upon which the fill is to be placed shall be disked or scarified. Where the slope ratio of the original ground is steeper than 5 horizontal to 1 vertical, the bank shall be stepped or benched. Ground slopes which are flatter than 5 to 1 shall be benched when considered necessary by the Geotechnical Engineer.

4. Compacting the Area to be Filled

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

5. Fill Materials

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

6. Depth and Mixing of Fill Layers

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

7. Rock

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

8. Compaction of Fill Layer

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

9. Compaction of Slopes

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

10. Moisture Content

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

11. Density Tests

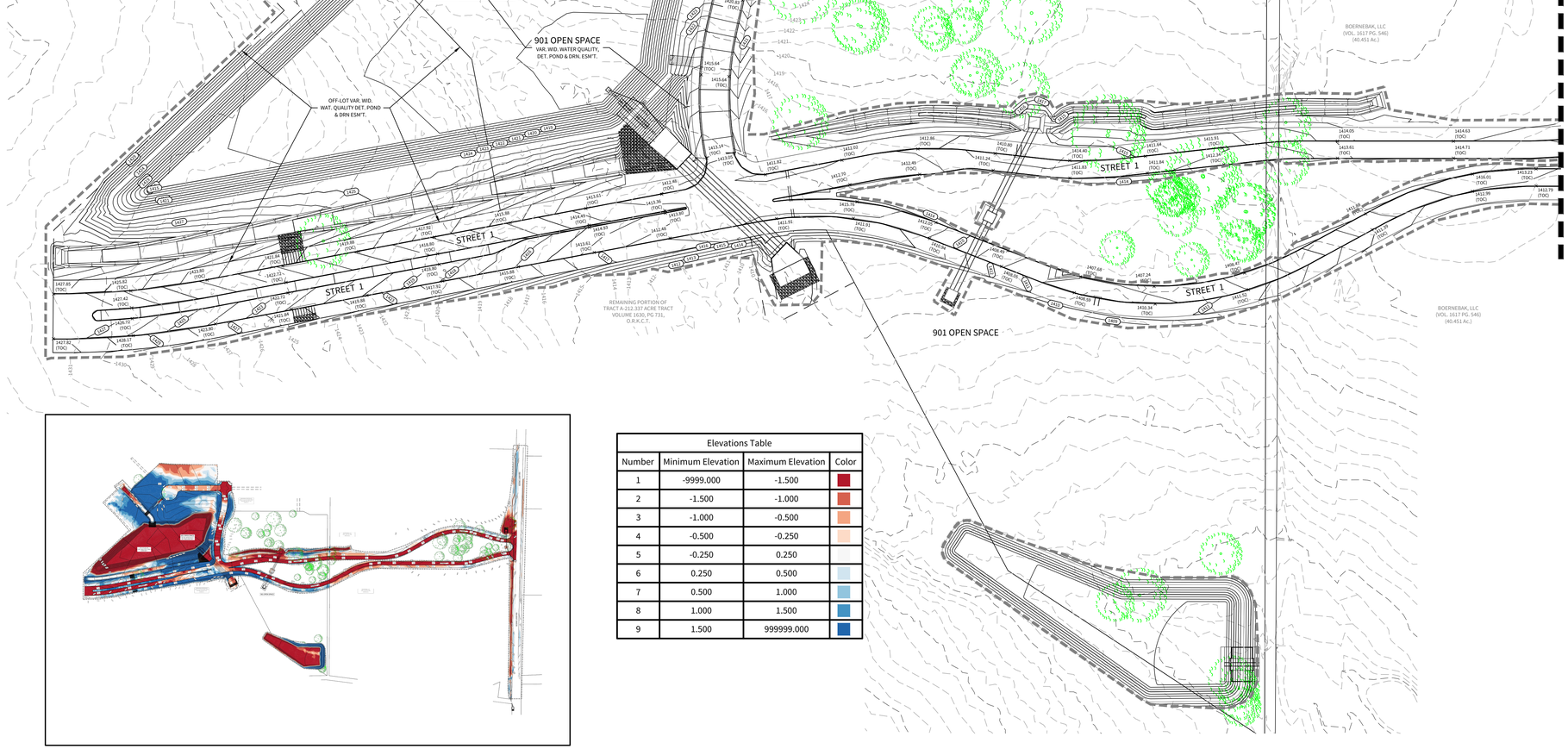
Field density tests shall be performed on layers of fill when the fill is being placed as directed by the Geotechnical Engineer. The maximum fill height between density testing shall be eighteen inches (18"). All testing shall be requested by the contractor to meet the contractor's construction schedule.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

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

12. Cut/Fill Lots

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

PUBLIC INFRASTRUCTURE			
CUT/FILL TABLE			
	CUT (Cu. Yd.)	FILL (Cu. Yd.)	NET (Cu. Yd.)
TOTAL	68,851.36	24,270.73	44,580.63 (CUT)



CUT & FILL HEAT MAP
N.T.S.

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-9999.000	-1.500	
2	-1.500	-1.000	
3	-1.000	-0.500	
4	-0.500	-0.250	
5	-0.250	0.250	
6	0.250	0.500	
7	0.500	1.000	
8	1.000	1.500	
9	1.500	999999.000	

CUDEENGINEERS.COM
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San Antonio, Texas 78231
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BIEDENHARN SUBDIVISION UNIT 1

PUBLIC INFRASTRUCTURE GRADING PLAN

DATE 03/12/2021
PROJECT NO. 03481.004
DRAWN BY C3
CHECKED BY JC/DDC

REVISIONS
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CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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1 OF 2

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LOCATION MAP
N.T.S.

LEGEND

PROPOSED CONTOUR 1000
EXISTING CONTOUR 1000
PROPOSED ELEVATION 1000.00
LIMITS OF GRADING

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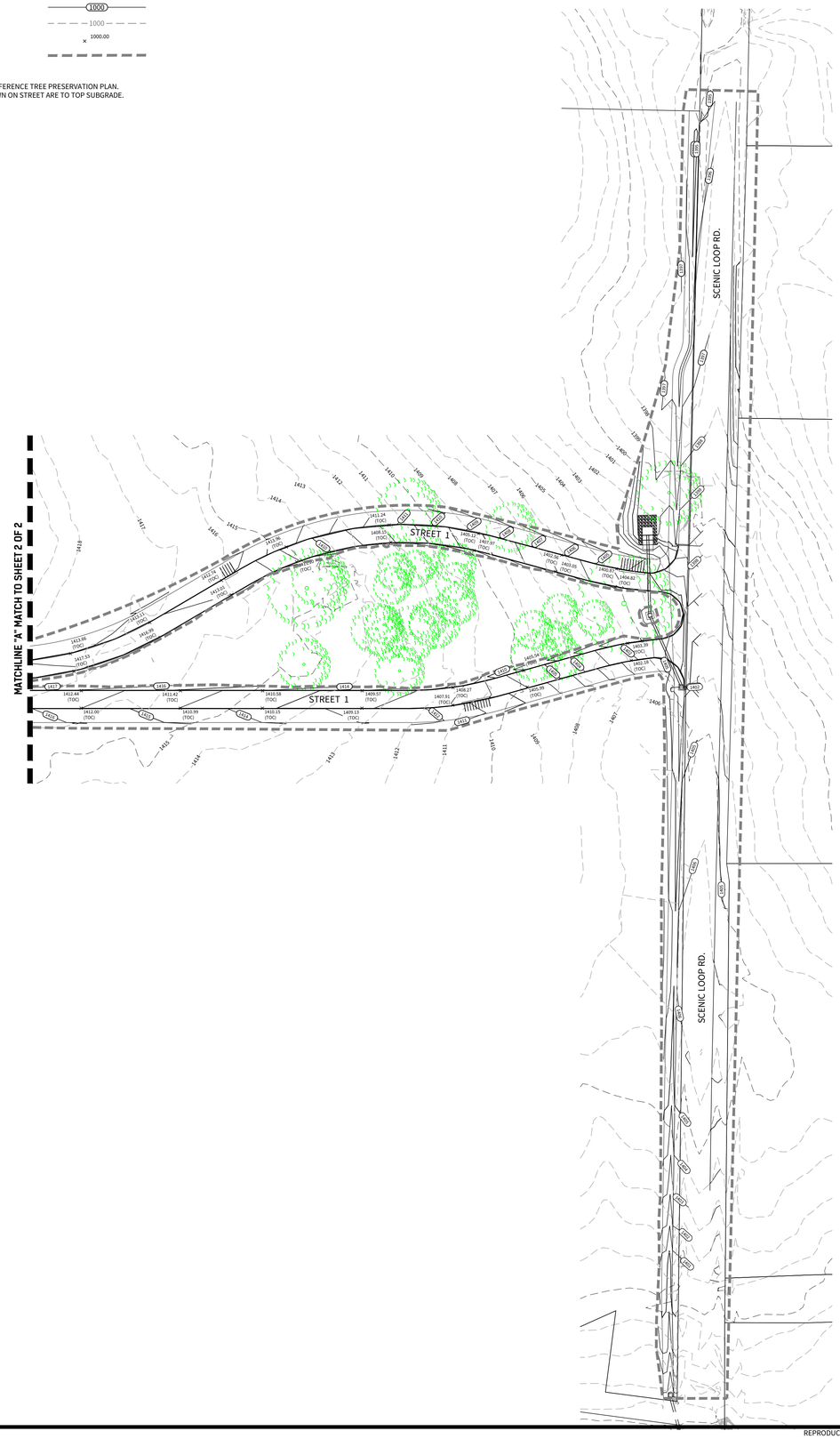

SCALE: 1"=80'
0 80 160

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CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
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Following the clearing and disking or scarifying of the fill area, it shall be bladed until it is uniform and free from large clods. The area shall be brought to the adequate moisture content and compacted (typically) to not less than ninety percent (90%) of maximum density in accordance with the current ASTM D 1557 Compaction Procedure, or 95% of maximum density in accordance with the current THD--TEX--113--E Compaction Procedure.

5. Fill Materials

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

6. Depth and Mixing of Fill Layers

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

7. Rock

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

8. Compaction of Fill Layer

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

9. Compaction of Slopes

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

10. Moisture Content

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

11. Density Tests

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

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

12. Cut/Fill Lots

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

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

BIEDENHARN SUBDIVISION UNIT 1

PUBLIC INFRASTRUCTURE
GRADING PLAN

DATE
03/12/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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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.

LEGEND

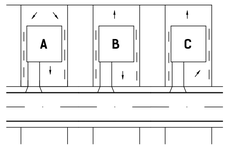
PROPOSED CONTOUR	1000
EXISTING CONTOUR	1000
PROPOSED ELEVATION	x 1000.00
TYPE OF LOT GRADING	A, B, OR C
SWALE FLOW LINE (ONLY LOT FOR PRIVATE LOT GRADING)	
LIMITS OF GRADING	
BUILDING PAD (65'-74')	

OWNER/DEVELOPER:

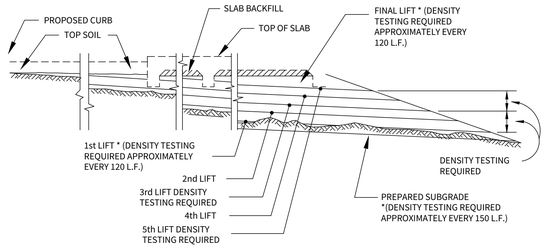
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: JOSEPH EPP
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 818-7104
FAX: (210) 496-0449

CIVIL ENGINEER:

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



TYPICAL LOT SITE PLAN
N.T.S.



DENSITY TEST FREQUENCY
NOT TO SCALE

GENERAL SPECIFICATIONS FOR SITE PREPARATION

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

2. Clearing the Area to be Filled
All timber, logs, trees, brush and rubbish shall be removed from the site.

3. Scarifying the Area to be Filled
All organic matter shall be removed from the surface upon which the fill is to be placed, and the surface shall then be disked or scarified to a minimum depth of six inches (6"), all surface ruts or other uneven features will be leveled prior to field density testing. Where fills are made on hillsides or slopes, the slope of the original ground upon which the fill is to be placed shall be disked or scarified. Where the slope ratio of the original ground is steeper than 5 horizontal to 1 vertical, the bank shall be stepped or benched. Ground slopes which are flatter than 5 to 1 shall be benched when considered necessary by the Geotechnical Engineer.

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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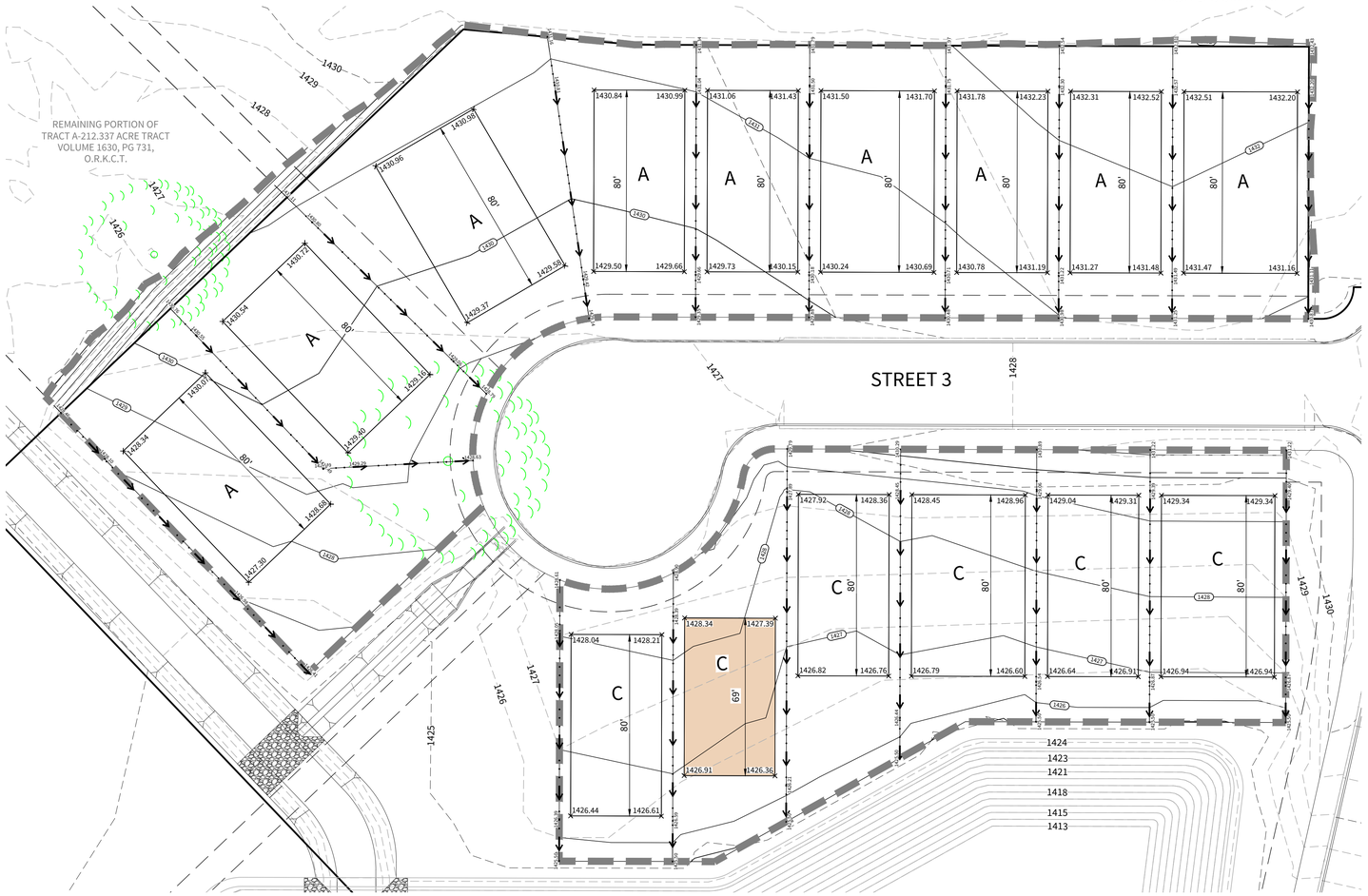
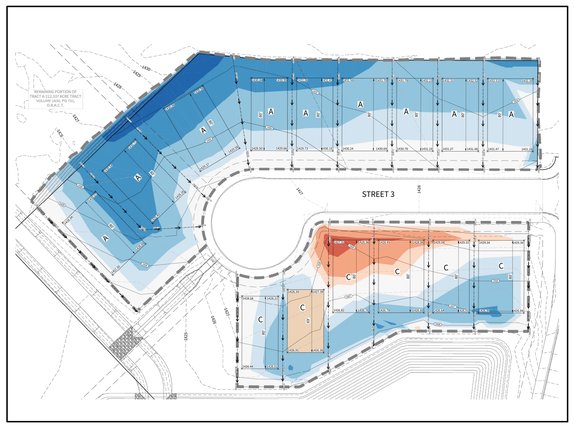


NOTES:

1. HOUSE PADS SHALL HAVE A MINIMUM 20' FRONTAGE, 15' REAR AND 5' SIDE SETBACK UNLESS NOTED OTHERWISE. CONTRACTOR SHALL REFER TO THE SUBDIVISION PLAT TO VERIFY ALL SETBACKS PRIOR TO CONSTRUCTION.
2. MINIMUM SLAB EXPOSURE IS 1.0'.
3. MAXIMUM REAR SETBACK SLOPE = 15%
4. HOUSE PAD SWALES TO BE CONSTRUCTED WITH HOME BUILDING.
5. CONTRACTOR SHALL ENSURE THAT POSITIVE DRAINAGE IS MAINTAINED AWAY FROM ALL HOUSE PADS. NO WATER PONDING SHALL BE ALLOWED.

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-9999.000	-1.500	
2	-1.500	-1.000	
3	-1.000	-0.500	
4	-0.500	-0.250	
5	-0.250	0.250	
6	0.250	0.500	
7	0.500	1.000	
8	1.000	1.500	
9	1.500	999999.000	



CUT & FILL HEAT MAP
N.T.S.

PRIVATE GRADING			
CUT/FILL TABLE			
	CUT (Cu. Yd.)	FILL (Cu. Yd.)	NET (Cu. Yd.)
TOTAL	209.58	2,400.38	2,190.80 (FILL)

CUDEENGINEERS.COM
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BIEDENHARN SUBDIVISION UNIT 1

PRIVATE LOT GRADING PLAN

DATE
03/12/2021

PROJECT NO.
03481.004

DRAWN BY
C3

CHECKED BY
JC/DDC

REVISIONS
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CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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BIEDENHARN SUBDIVISION, UNIT 1 & 2

ADDENDUM #1

PREPARED BY:
CUDE ENGINEERS
4122 POND HILL ROAD
SAN ANTONIO, TX 78231
TBPE NO. 455

PREPARED FOR:
PULTE HOMES OF TEXAS, L.P. ON BEHALF
OF KENDALL COUNTY WATER CONTROL AND
IMPROVEMENT DISTRICT NO. 3A

ADDENDUM #1

Project Name: BIEDENHARN SUBDIVISION, UNIT 1 & 2

Bid Opening Date: MAY 18,2021

Time: 2:00 PM

Change in Bid Opening Date: Yes _____ No X

New Bid Opening Date: _____

Receipt of **ADDENDUM #1** is hereby acknowledged to contain the following items:

1. Bidder Questions and Answers ..... 1 pages
2. Revised Bid Form ..... 7 pages
3. Revised Construction Plans ..... Construction Set
4. Contractor's Statement of Qualification ..... 10 pages
5. CAD ..... DIGITAL FILE UPLOADED

THIS ACKNOWLEDGMENT MUST BE SIGNED AND RETURNED WITH THE BID PACKAGE

COMPANY NAME: _____

ADDRESS: _____

_____

DATE: _____

SIGNATURE: _____

PRINT NAME, TITLE: _____

BIEDENHARN SUBDIVISION, UNIT 1 & 2
ADDENDUM #1
BIDDER QUESTIONS AND ANSWERS

Comment 1: Is the Engineer's estimate available?

Response: *Only bid quantities are provided, there are no engineer's estimates available.*

Comment 2: Will the sewer structures receive a protective coating?

Response: *Please refer to the City of Boerne Specifications and Details for coating requirements.*

Comment 3: Can we get the CAD files with all the street/lot info?

Response: *Latest CAD files have been uploaded.*

NOTE: Contractor statement of qualification has been added to the items to be included in the bid submittal.

PUBLIC BID TABULATION

PROJECT CORLEY FARMS, UNIT 1 (BIEDENHARN SUBD, UNIT 1)
DEVELOPER PULTE HOMES OF TEXAS, L.P.
ON BEHALF OF KCWCID NO. 3A
BID DATE 5/14/2021

CORLEY FARMS, UNIT 1 (BIEDENHARN SUBD, UNIT 1) PUBLIC CONSTRUCTION ITEMS

SPECS	ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUBTOTAL
TCEQ		MOBILIZATION	LS	1	$	$
TCEQ		INSURANCE AND BOND	LS	1	$	$
BOERNE		PREPARE RIGHT-OF-WAY	LS	1	$	$
BOERNE		CLEARING	AC	0.17	$	$
		REMOVE EXISTING FENCE AND IMPROVEMENTS	LS	1	$	$
		CLEARING			SUBTOTAL	$
BOERNE		PUBLIC UNIT EXCAVATION	CY	68,851	$	$
BOERNE		PUBLIC UNIT EMBANKMENT	CY	24,271	$	$
		GRADING			SUBTOTAL	$
BOERNE		CONCRETE WASHOUT PIT	EA	2	$	$
BOERNE		CONSTRUCTION ENTRANCE/EXIT	EA	3	$	$
BOERNE		STAGING	EA	2	$	$
BOERNE		ROCK FILTER DAM	LF	939	$	$
BOERNE		CURB INLET GRAVEL FILTERS	LF	279	$	$
BOERNE		SILT FENCE	LF	6,694	$	$
BOERNE		OPEN SPACE REVEGETATION	SY	57,581	$	$
		SEDIMENT CONTROL			SUBTOTAL	$
TCEQ/BOERNE		8" SANITARY SEWER PIPE (6'-10')	LF	159.34	$	$
TCEQ/BOERNE		8" SANITARY SEWER PIPE (10'-14')	LF	334.55	$	$
TCEQ/BOERNE		18" SANITARY SEWER PIPE (6'-10')	LF	605.79	$	$
TCEQ/BOERNE		18" SANITARY SEWER PIPE (10'-14')	LF	922.18	$	$
TCEQ/BOERNE		18" SANITARY SEWER PIPE (14'-18')	LF	1033.61	$	$
TCEQ/BOERNE		6" SEWER LATERALS (SDR-26)	LF	721	$	$
TCEQ/BOERNE		TELEVISE SEWER MAIN	LF	3056	$	$
TCEQ/BOERNE		TRENCH EXCAVATION PROTECTION	LF	3777	$	$
TCEQ/BOERNE		STANDARD MANHOLES	EA	15	$	$
TCEQ/BOERNE		TIE INTO EXISTING SANITARY SEWER	EA	1	$	$
TCEQ/BOERNE		EXTRA DEPTH - MANHOLES	VF	94	$	$
TCEQ/BOERNE		18" X 6" WYES	EA	19	$	$
TCEQ/BOERNE		8" X 6" WYES	EA	2	$	$
TCEQ/BOERNE		VERTICAL STACKS	VF	126	$	$
		SANITARY SEWER			SUBTOTAL	$
		DRAIN "A"				
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	1996	$	$
BOERNE		SOD LINING	SY	1996	$	$
		DRAIN "B"				
BOERNE		INLET TYPE I (COMPLETE)(20 FT)	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	87	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	36	$	$
BOERNE		GABION MATTRESS	SY	68	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	126	$	$
		DRAIN "C"				
BOERNE		GABION MATTRESS	SY	158	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	1249	$	$
BOERNE		SOD LINING	SY	1249	$	$
BOERNE		DRAIN "D"				
BOERNE		INLET TYPE II (COMPLETE)(15 FT)	EA	2	$	$
BOERNE		REINFORCED CONCRETE PIPE (CLASS III)(30" DIA)	LF	97	$	$
		DRAIN "E"				
BOERNE		PRECAST REINFORCED CONCRETE BOX CULVERT (2-5'X2')	LF	222	$	$
BOERNE		4-WAY INLET WITH GRATE COVER	EA	2	$	$
BOERNE		JUNCTION BOX 13'X13'X5.5'	EA	1	$	$
BOERNE		JUNCTION BOX 14'X14'X4.5'	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	25	$	$
BOERNE		CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	1.17	$	$
BOERNE		GABION MATTRESS	SY	21	$	$
		DRAIN "F"				
BOERNE		PRECAST REINFORCED CONCRETE BOX CULVERT (3'X2')	LF	194	$	$
BOERNE		4-WAY INLET WITH GRATE COVER	EA	2	$	$
BOERNE		JUNCTION BOX 4'X4'X4'	EA	1	$	$
BOERNE		JUNCTION BOX 4'X4'X5'	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	46	$	$
BOERNE		CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	0.875	$	$
BOERNE		GABION MATTRESS	SY	63	$	$
		DRAIN "G"				
BOERNE		PRECAST REINFORCED CONCRETE BOX CULVERT (5-5'X3')	LF	170	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	130	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	259	$	$
BOERNE		CONCRETE STRUCTURE (HEADWALLS)	CY	21	$	$

BOERNE	CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	6	$	$
BOERNE	GABION MATTRESS	SY	118	$	$
BOERNE	DRAIN "H"				
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	713	$	$
BOERNE	SOD LINING	SY	713	$	$
	DRAIN "I"				
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	1122	$	$
BOERNE	SOD LINING	SY	1122	$	$
	DRAIN "J"				
BOERNE	REINFORCED CONCRETE PIPE (CLASS III)(30" DIA)	LF	57	$	$
BOERNE	JUNCTION BOX 4'X4'X3.5' (WITH GRATE COVER)	EA	1	$	$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	49	$	$
BOERNE	CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	1.11	$	$
BOERNE	REMOVE EXISTING CONCRETE STRUCTURE (DEMO)	EA	1	$	$
BOERNE	REMOVE EXISTING GRATE INLET (DEMO)	EA	1	$	$
BOERNE	REMOVE EXISTING CORRUGATED METAL PIPE (DEMO)	EA	1	$	$
BOERNE	FLOWABLE FILL AS REQUIRED TO FILL REMOVED CMP PIPE	LS	1	$	$
BOERNE	GABION MATTRESS	SY	27	$	$
BOERNE	8.5" ASPHALT TREATED BASE	SY	16	$	$
	BOX DRAIN "1"				
BOERNE	SIDEWALK DRAIN (8-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	39	$	$
BOERNE	GABION MATTRESS	SY	82	$	$
	BOX DRAIN "2"				
BOERNE	SIDEWALK DRAIN (8-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	38	$	$
BOERNE	GABION MATTRESS	SY	27	$	$
	BOX DRAIN "3"				
BOERNE	SIDEWALK DRAIN (1-5' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	16	$	$
	BOX DRAIN "5"				
BOERNE	SIDEWALK DRAIN (4-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	44	$	$
	BOX DRAIN "6"				
BOERNE	SIDEWALK DRAIN (9-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	42	$	$
	BOX DRAIN "7"				
BOERNE	SIDEWALK DRAIN (8-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	38	$	$
	BOX DRAIN "8"				
BOERNE	SIDEWALK DRAIN (1-5' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	16	$	$
	SOUTHWEST POND				
BOERNE	REINFORCED CONCRETE PIPE (CLASS III)(24" DIA)	LF	76	$	$
BOERNE	PRECAST REINFORCED CONCRETE BOX CULVERT (2-3'X2')	LF	46.75	$	$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	323	$	$
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	16471	$	$
BOERNE	18" CLAY LAYER	SY	6006	$	$
BOERNE	6" PVC	LF	607	$	$
BOERNE	6" x 1/16 BEND	EA	1	$	$
BOERNE	18" PVC SLEEVE	LF	180	$	$
BOERNE	6' WOODEN PRIVACY FENCE	LF	1819	$	$
BOERNE	12' WIDE ACCESS GATE	EA	1	$	$
BOERNE	6" COMMERCIAL DRIVEWAY	SY	59	$	$
BOERNE	SEDIMENTATION MARKER	EA	1	$	$
BOERNE	4'X4' GALVANIZED ROCK GABION BASKET (W/RISER PIPE)	EA	1	$	$
BOERNE	JUNCTION BOX 4'X4'X(+/-13.5')	EA	1	$	$
BOERNE	3'X3' CONCRETE PAD FOR CONTROLLER	EA	1	$	$
BOERNE	DDC LOGIC CONTROLLER (COMPLETE)	EA	1	$	$
BOERNE	RESTRICTOR PLATE	EA	1	$	$
BOERNE	GABION MATTRESS	SY	280	$	$
	SOUTHEAST POND				
BOERNE	PRECAST REINFORCED CONCRETE BOX CULVERT (4'X2')	LF	45	$	$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	282	$	$
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	6,562	$	$
BOERNE	6' TALL CHAIN LINK FENCE	LF	963	$	$
BOERNE	12' WIDE ACCESS GATE	EA	1	$	$
	DRAINAGE			SUBTOTAL	$
SAWS	8" PVC C-900 WATER MAIN, CLASS 235 DR 18	LF	1375	$	$
SAWS	16" PVC C-900 WATER MAIN, CLASS 235 DR 18	LF	1393	$	$
SAWS	2" HDPE 200 PSI DR 11	LF	389	$	$
SAWS	TIE INTO EXISTING WATER MAIN	EA	1	$	$
SAWS	8" GATE VALVE & BOX, COMPLETE	EA	7	$	$
SAWS	16" GATE VALVE & BOX, COMPLETE	EA	4	$	$
SAWS	STANDARD F.H. COMPLETE W/ VALVE	EA	4	$	$
SAWS	CAST IRON FITTINGS	TON	6.5	$	$
SAWS	1" IRRIGATION SERVICE (1" METER)	EA	4	$	$

SAWS	3/4" SINGLE LONG SERVICE (5/8" METER)	EA	1	$	$
SAWS	1" DUAL SHORT SERVICE (5/8" METER)	EA	5	$	$
SAWS	1" DUAL LONG SERVICE (5/8" METER)	EA	2	$	$
SAWS	30" STEEL CASING	LF	34	$	$
SAWS	2" AIR RELEASE VALVE	EA	1	$	$
SAWS	2" PERMANENT BLOWOFF	EA	4	$	$
SAWS	HYDROSTATIC TEST	EA	1	$	$
SAWS	TRENCH EXCAVATION PROTECTION	LF	3,157	$	$
SAWS	METER BOXES	EA	19	$	$
	WATER SYSTEM			SUBTOTAL	$
BOERNE	2" HMAC, TYPE D (LOCAL STREET)	SY	2,000	$	$
BOERNE	3" HMAC, TYPE D (COLLECTOR STREET)	SY	2493	$	$
BOERNE	2" HMAC, TYPE D (72' ARTERIAL STREET)	SY	3413	$	$
BOERNE	2" HMAC, TYPE D (94' ARTERIAL STREET)	SY	15536	$	$
BOERNE	2" HMAC, TYPE C	SY	18949	$	$
BOERNE	PRIME COAT	GAL	8478	$	$
BOERNE	TACK COAT	GAL	4239	$	$
BOERNE	9.5" FLEX BASE (LOCAL STREET)	SY	2000	$	$
BOERNE	16" FLEX BASE (COLLECTOR STREET)	SY	2493	$	$
BOERNE	22.5" FLEX BASE (72' ARTERIAL)	SY	3413	$	$
BOERNE	22.5" FLEX BASE (94' ARTERIAL)	SY	15536	$	$
BOERNE	8" LIME TREATED SUBGRADE	SY	23442	$	$
BOERNE	LIME	TON	492	$	$
BOERNE	CONCRETE CURB	LF	11980	$	$
BOERNE	ALTERNATE DEEP CURB	LF	798	$	$
BOERNE	HEADER CURB	LF	130	$	$
BOERNE	SAW TOOTH CURB	LF	29	$	$
BOERNE	CONCRETE MEDIAN	SY	91	$	$
BOERNE	6" GUARD POSTS	EA	22	$	$
BOERNE	REGULATORY SIGNS	EA	7	$	$
BOERNE	9 IN. STREET NAME SIGN	EA	4	$	$
BOERNE	FIRE HYDRANT BLUE PAVEMENT REFLECTORS	EA	4	$	$
BOERNE	PAVEMENT MARKER (TYPE II A-A)	EA	8	$	$
BOERNE	BROKEN 4 INCH WIDE YELLOW LINE	LF	5204	$	$
BOERNE	SOLID 4 INCH WIDE YELLOW LINE	LF	715	$	$
BOERNE	DOUBLE 4 INCH WIDE YELLOW LINE	LF	827	$	$
BOERNE	24 INCH WHITE STOP LINE	LF	96	$	$
BOERNE	SOLID 8 INCH WIDE WHITE LINE	LF	4124	$	$
BOERNE	SOLID 12 INCH WIDE WHITE LINE	LF	259	$	$
BOERNE	SOLID 4 INCH & BROKEN 4 INCH WIDE YELLOW LINE	LF	444	$	$
BOERNE	24 INCH WHITE PAVEMENT CROSSWALK STRIPING	LF	122	$	$
BOERNE	MEDIAN NOSE YELLOW	EA	4	$	$
BOERNE	WORD "ONLY"	WORD	7	$	$
BOERNE	COMBINATION THRU/RIGHT WHITE ARROW	EA	1	$	$
BOERNE	RIGHT WHITE ARROW	EA	6	$	$
BOERNE	LEFT WHITE ARROW	EA	20	$	$
BOERNE	REMOVE EXISTING 4" DOUBLE YELLOW LINE	LF	1287	$	$
BOERNE	REMOVE AND REPLACE EXISTING DRIVEWAY ASPHALT	SY	322	$	$
BOERNE	REMOVE GRAVEL DRIVEWAY	SY	120	$	$
BOERNE	REMOVE ASPHALT DRIVEWAY	SY	168	$	$
BOERNE	DEMO EXISTING PAVEMENT	SY	226	$	$
BOERNE	TRAFFIC SIGNALIZATION	LS	1	$	$
	PAVING			SUBTOTAL	$
BOERNE	CONCRETE SIDEWALK	SY	6,604	$	$
BOERNE	WHEELCHAIR RAMPS	EA	22	$	$
	SIDEWALK			SUBTOTAL	$
TOTAL					$

*Notes

1. Traffic signalization to be bid as a lumpsum amount. Detail on Quantities and specifications are available on the contruction set provided by legacy engineering group.
2. Gas main and water main quantities have been revised per direction by SAWS and the District.

CORLEY FARMS, UNIT 1 (BIEDENHARN SUBD, UNIT 1) PRIVATE CONSTRUCTION ITEMS

SPECS	ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUBTOTAL
		LOT EXCAVATION	CY	210	$	$
		LOT EMBANKMENT	CY	2,400	$	$
		GRADING			SUBTOTAL	$
TCEQ/BOERNE		2"x4" LUMBER (GREEN PAINTED)	EA	14	$	$
		SANITARY SEWER			SUBTOTAL	$
BOERNE		2" POLYETHELENE GAS MAIN DR 11 WITH FITTINGS	LF	707	$	$
BOERNE		6" POLYETHELENE GAS MAIN	LF	3563	$	$
BOERNE		2" POLYETHELENE TEE	EA	1	$	$
BOERNE		6" POLYETHELENE TEE	EA	3	$	$
BOERNE		6" POLYETHELENE CROSS	EA	1	$	$
BOERNE		2" POLYETHELENE GAS VALVE AND BOX, COMPLETE	EA	3	$	$
BOERNE		6" POLYETHELENE GAS VALVE AND BOX, COMPLETE	EA	12	$	$

BOERNE	2" POLYETHELENE CAP	EA	1	$	$
BOERNE	6" POLYETHELENE CAP	EA	3	$	$
BOERNE	6" x 2" POLYETHELENE REDUCER	EA	2	$	$
BOERNE	TRACER WIRE	EA	7	$	$
BOERNE	1" DIA. SHORT SINGLE SERVICE	EA	11	$	$
BOERNE	1" DIA. LONG SINGLE SERVICE	EA	4	$	$
BOERNE	CONECTION TO EXISTING GAS MAIN	LS	1	$	$
BOERNE	TESTING AS REQUIRED	LS	1	$	$
BOERNE	TRENCH EXCAVATION SAFETY PROTECTION	LF	4191	$	$
	GAS			SUBTOTAL	$
BEC	CONDUIT SECONDARY CROSSINGS (2-2" & 2-4" PVC BUNDLE)	LF	188	$	$
BEC	CONDUIT PRIMARY CROSSINGS (4-2" & 2-4" PVC BUNDLE)	LF	376	$	$
SAWS	IRRIGATION CROSSINGS (2-4" PVC BUNDLE)	LF	250	$	$
	ELECTRIC			SUBTOTAL	$
TOTAL					$

*NOTE

-Specifications noted in the construction deocuments govern over specification noted in this bid tab. It only shown to provide more detail on each line item.

- Lot grading not included in public bid. Lot grading shall follow specifications noted on the grading plan.
- Public material export quantity shown on these bids, is to be stockpiled on unit 2. To be used in unit 2 construction.
- Contractor to leave 2,191 CY of export public material to be use don private lots for embankment.
- Every sewer lateral location must be identified with a 2"x4" lumber. This 2"x4" must be painted green and remain in place during construction.

BIDDER SIGNATURE _____

PUBLIC BID TABULATION

PROJECT CORLEY FARMS, UNIT 2 (BIEDENHARN SUBD, UNIT 2)
DEVELOPER PULTE HOMES OF TEXAS, L.P.
ON BEHALF OF KCWCID NO. 3A
BID DATE 5/14/2021

CORLEY FARMS, UNIT 2 (BIEDENHARN SUBD, UNIT 2) PUBLIC CONSTRUCTION ITEMS

SPECS	ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUBTOTAL
TCEQ		MOBILIZATION	LS	1	$	$
TCEQ		INSURANCE AND BOND	LS	1	$	$
BOERNE		PREPARE RIGHT-OF-WAY	LS	1	$	$
BOERNE		CLEARING	AC	14.29	$	$
		CLEARING			SUBTOTAL	$
BOERNE		PUBLIC UNIT EXCAVATION	CY	47,557	$	$
BOERNE		PUBLIC UNIT EMBANKMENT	CY	28,206	$	$
BOERNE		PUBLIC MATERIAL TO BE EMBANKED IN UNIT 3	CY	37,126	$	$
		GRADING			SUBTOTAL	$
BOERNE		CONCRETE WASHOUT PIT	EA	1	$	$
BOERNE		CONSTRUCTION ENTRANCE/EXIT	EA	2	$	$
BOERNE		STAGING	EA	1	$	$
BOERNE		ROCK FILTER DAM	LF	292	$	$
BOERNE		CURB INLET GRAVEL FILTERS	LF	213	$	$
BOERNE		SILT FENCE	LF	6,106	$	$
BOERNE		OPEN SPACE REVEGETATION	SY	34,137	$	$
		SEDIMENT CONTROL			SUBTOTAL	$
TCEQ/BOERNE		8" SANITARY SEWER PIPE (0'-6')	LF	91.42	$	$
TCEQ/BOERNE		8" SANITARY SEWER PIPE (6'-10')	LF	4712.09	$	$
TCEQ/BOERNE		8" SANITARY SEWER PIPE (10'-14')	LF	2409.31	$	$
TCEQ/BOERNE		6" SEWER LATERALS (SDR-26)	LF	9004	$	$
TCEQ/BOERNE		TELEVISE SEWER MAIN	LF	7213	$	$
TCEQ/BOERNE		TRENCH EXCAVATION PROTECTION	LF	16217	$	$
TCEQ/BOERNE		STANDARD MANHOLES	EA	28	$	$
TCEQ/BOERNE		DROP MANHOLE	EA	1	$	$
TCEQ/BOERNE		TIE INTO EXISTING SANITARY SEWER	EA	2	$	$
TCEQ/BOERNE		EXTRA DEPTH - MANHOLES	VF	95	$	$
TCEQ/BOERNE		CONCRETE SADDLES	EA	7	$	$
TCEQ/BOERNE		8" X 6" WYES	EA	217	$	$
		SANITARY SEWER			SUBTOTAL	$
		DRAIN "2-A"				
BOERNE		INLET TYPE I (COMPLETE)(25 FT)	EA	2	$	$
BOERNE		PRECAST REINFORCED CONCRETE BOX CULVERT (3-4'X2')	LF	107	$	$
BOERNE		SAFETY END TREATMENT	EA	2	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	104	$	$
BOERNE		CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	1.13	$	$
BOERNE		GABION MATTRESS	SY	57	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	2280	$	$
BOERNE		SOD LINING	SY	2280	$	$
		DRAIN "2-B"				
BOERNE		INLET TYPE I (COMPLETE)(25 FT)	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	9	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	6	$	$
BOERNE		GABION MATTRESS	SY	15	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	178	$	$
BOERNE		SOD LINING	SY	178	$	$
		DRAIN "2-C"				
BOERNE		INLET TYPE I (COMPLETE)(10 FT)	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	8	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	6	$	$
BOERNE		GABION MATTRESS	SY	99	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	2867	$	$
BOERNE		SOD LINING	SY	2867	$	$
		DRAIN "2-D"				
BOERNE		INLET TYPE I (COMPLETE)(20 FT)	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	9	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	7	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	340	$	$
BOERNE		SOD LINING	SY	340	$	$
		DRAIN "2-E"				
BOERNE		INLET TYPE I (COMPLETE)(20 FT)	EA	1	$	$
BOERNE		CORRUGATED METAL PIPE (CLASS III)(2-30" DIA)	LF	21	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	9	$	$
BOERNE		GABION MATTRESS	SY	10	$	$
		DRAIN "2-F"				
BOERNE		INLET TYPE I (COMPLETE)(30 FT)	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	13	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	9	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	445	$	$

	DRAIN "2-G"					
BOERNE	INLET TYPE I (COMPLETE)(30 FT)	EA	1	$		$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	11	$		$
BOERNE	SIDEWALK PIPE RAILING	LF	9	$		$
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	375	$		$
BOERNE	SOD LINING	SY	375	$		$
	DRAIN "2-H"					
BOERNE	REINFORCED CONCRETE PIPE (CLASS III)(2-18" DIA)	LF	87	$		$
BOERNE	SAFETY END TREATMENT	EA	2	$		$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	24	$		$
	DRAIN "2-I"					
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	966	$		$
	NORTHEAST POND					
BOERNE	REINFORCED CONCRETE PIPE (CLASS III)(24" DIA)	LF	60	$		$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	324	$		$
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	13249	$		$
BOERNE	18" CLAY LAYER	SY	6248	$		$
BOERNE	6" PVC	LF	82	$		$
BOERNE	6' TALL CHAIN LINK FENCE	LF	867	$		$
BOERNE	12' WIDE ACCESS GATE	EA	2	$		$
BOERNE	SEDIMENTATION MARKER	EA	1	$		$
BOERNE	4'X4' GALVANIZED ROCK GABION BASKET (W/RISER PIPE)	EA	1	$		$
BOERNE	JUNCTION BOX 4'X4'X(+/-13.5')	EA	1	$		$
BOERNE	3'X3' CONCRETE PAD FOR CONTROLLER	EA	1	$		$
BOERNE	DDC LOGIC CONTROLLER (COMPLETE)	EA	1	$		$
	DRAINAGE				SUBTOTAL	$
SAWS	8" PVC C-900 WATER MAIN, CLASS 235 DR 18	LF	7202	$		$
SAWS	16" PVC C-900 WATER MAIN, CLASS 235 DR 18	LF	1780	$		$
SAWS	2" HDPE 200 PSI DR 11	LF	752	$		$
SAWS	TIE INTO EXISTING WATER MAIN	EA	1	$		$
SAWS	8" GATE VALVE & BOX, COMPLETE	EA	22	$		$
SAWS	16" GATE VALVE & BOX, COMPLETE	EA	4	$		$
SAWS	STANDARD F.H. COMPLETE W/ VALVE	EA	15	$		$
SAWS	CAST IRON FITTINGS	TON	7.52	$		$
SAWS	1" IRRIGATION SERVICE (1" METER)	EA	5	$		$
SAWS	3/4" SINGLE SHORT SERVICE (5/8" METER)	EA	15	$		$
SAWS	3/4" SINGLE LONG SERVICE (5/8" METER)	EA	4	$		$
SAWS	1" DUAL SHORT SERVICE (5/8" METER)	EA	59	$		$
SAWS	1" DUAL LONG SERVICE (5/8" METER)	EA	44	$		$
SAWS	2" PERMANENT BLOWOFF	EA	7	$		$
SAWS	HYDROSTATIC TEST	EA	1	$		$
SAWS	TRENCH EXCAVATION PROTECTION	LF	9734	$		$
SAWS	METER BOXES	EA	230	$		$
	WATER SYSTEM				SUBTOTAL	$
BOERNE	REMOVE CONCRETE HEADER CURB AND 6" GUARD POSTS	LF	72	$		$
BOERNE	2" HMAC, TYPE D (LOCAL STREET)	SY	25854	$		$
BOERNE	3" HMAC, TYPE D (COLLECTOR STREET)	SY	12777	$		$
BOERNE	PRIME COAT	GAL	7726	$		$
BOERNE	TACK COAT	GAL	3863	$		$
BOERNE	9.5" FLEX BASE (LOCAL STREET)	SY	25854	$		$
BOERNE	16" FLEX BASE (COLLECTOR STREET)	SY	12777	$		$
BOERNE	8" LIME TREATED SUBGRADE	SY	38630	$		$
BOERNE	LIME	TON	811	$		$
BOERNE	CONCRETE CURB	LF	3984	$		$
BOERNE	ALTERNATE DEEP CURB	LF	13706	$		$
BOERNE	HEADER CURB	LF	108	$		$
BOERNE	6" GUARD POSTS	EA	18	$		$
BOERNE	REGULATORY SIGNS	EA	22	$		$
BOERNE	9 IN. STREET NAME SIGN	EA	30	$		$
BOERNE	FIRE HYDRANT BLUE PAVEMENT REFLECTORS	EA	15	$		$
	PAVING				SUBTOTAL	$
BOERNE	CONCRETE SIDEWALK	SY	1,660	$		$
BOERNE	WHEELCHAIR RAMPS	EA	6	$		$
	SIDEWALK				SUBTOTAL	$
TOTAL						$

*Notes

1.

CORLEY FARMS, UNIT 2 (BIEDENHARN SUBD, UNIT 2) PRIVATE CONSTRUCTION ITEMS

SPECS	ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUBTOTAL
		LOT EXCAVATION	CY	19,563	$	$
		LOT EMBANKMENT	CY	44,179	$	$
		GRADING			SUBTOTAL	$
TCEQ/BOERNE		2"x4" LUMBER (GREEN PAINTED)	EA	224	$	$
		SANITARY SEWER			SUBTOTAL	$
BOERNE		2" POLYETHELENE GAS MAIN DR 11 WITH FITTINGS	LF	6701	$	$

BOERNE	4" POLYETHELENE GAS MAIN DR 11 WITH FITTINGS	LF	154	$	$
BOERNE	6" POLYETHELENE GAS MAIN DR 11 WITH FITTINGS	LF	1912	$	$
BOERNE	2" POLYETHELENE TEE	EA	6	$	$
BOERNE	2" POLYETHELENE CROSS	EA	1	$	$
BOERNE	6" POLYETHELENE TEE	EA	1	$	$
BOERNE	6" POLYETHELENE CROSS	EA	2	$	$
BOERNE	2" POLYETHELENE GAS VALVE AND BOX, COMPLETE	EA	22	$	$
BOERNE	4" POLYETHELENE GAS VALVE AND BOX, COMPLETE	EA	1	$	$
BOERNE	6" POLYETHELENE GAS VALVE AND BOX, COMPLETE	EA	7	$	$
BOERNE	2" POLYETHELENE CAP	EA	4	$	$
BOERNE	4" POLYETHELENE CAP	EA	1	$	$
BOERNE	6" POLYETHELENE CAP	EA	2	$	$
BOERNE	TRACER WIRE	EA	11	$	$
BOERNE	1" DIA. SHORT SINGLE SERVICE	EA	89	$	$
BOERNE	1" DIA. LONG SINGLE SERVICE	EA	136	$	$
BOERNE	CONECTION TO EXISTING GAS MAIN	LS	2	$	$
BOERNE	TESTING AS REQUIRED	LS	1	$	$
BOERNE	TRENCH EXCAVATION SAFETY PROTECTION	LF	1848	$	$
	GAS			SUBTOTAL	$
BEC	CONDUIT SECONDARY CROSSINGS (2-2" & 2-4" PVC BUNDLE)	LF	188	$	$
BEC	CONDUIT PRIMARY CROSSINGS (4-2" & 2-4" PVC BUNDLE)	LF	376	$	$
SAWS	IRRIGATION CROSSINGS (2-4" PVC BUNDLE)	LF	250	$	$
	ELECTRIC			SUBTOTAL	$
TOTAL					$

*NOTE

-Specifications noted in the construction deocuments govern over specification noted in this bid tab. It only shown to provide more detail on each line item.

- Lot grading not included in public bid. Lot grading shall follow specifications noted on the grading plan.

- Every sewer lateral location must be identified with a 2"x4" lumber. This 2"x4" must be painted green and remain in place during construction.

-Gas main quantities have been revised to include the addition of a 6" gas line and a 4" gas line.

BIDDER SIGNATURE _____

CONTRACTOR'S STATEMENT OF QUALIFICATIONS

1. SUBMITTED BY:

Official Name of Firm:

Address:

2. SUBMITTED FOR:

Owner:

Project Name:

Type of Work:

3. CONTRACTOR'S CONTACT INFORMATION:

Contact Person:

Title:

Phone:

Email:

4. AFFILIATED COMPANIES:

Name:

Address:

5. TYPE OF ORGANIZATION:

☐ SOLE PROPRIETORSHIP

Name of Owner:

Doing Business As:

Date of Organization:

☐ PARTNERSHIP

Date of Organization:

Type of Partnership:

Name of General Partner(s):

☐ CORPORATION

State of Organization:

Date of Organization:

President:

Vice President(s):

Treasurer:

Secretary:

☐ LIMITED LIABILITY COMPANY

State of Organization:

Date of Organization:

Members:

☐ JOINT VENTURE

State of Organization:

Date of Organization:

Form of Organization:

Joint Venture Managing Partner

- Name:

- Address:

Joint Venture Managing Partner

- Name:

- Address:

6. LICENSING

Jurisdiction:

Type of License & Number:

Jurisdiction:

Type of License & Number:

7. BONDING INFORMATION

Bonding Company:

Address:

Bonding Agent:

Address:

Contact Name:

Phone Number:

Aggregate Bonding Capacity:

Available Bonding Capacity as of the date of this submittal:

8. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes, or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

9. EQUIPMENT:

MAJOR EQUIPMENT:

List on **Schedule C** all pieces of major equipment available for use on Owner's Project.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HEREWITH, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION:	
BY:	
TITLE:	
DATED:	

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS ____ DAY OF _____ , 20 ____

NOTARY PUBLIC – STATE OF:

MY COMMISSION EXPIRES:

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Evidence of authority for individuals listed in Section 7 to bind organization to an agreement.
5. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
6. Additional items as pertinent.

CONTRACTOR'S STATEMENT OF QUALIFICATION

SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

CONTRACTOR'S STATEMENT OF QUALIFICATION

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE C

LIST OF MAJOR EQUIPMENT AVAILABLE

ITEM	PURCHASE DATE	CONDITION	ACQUIRED VALUE

END OF DOCUMENT – CONTRACTOR'S STATEMENT OF QUALIFICATION

PUBLIC BID TABULATION

PROJECT CORLEY FARMS, UNIT 1 (BIEDENHARN SUBD, UNIT 1)
DEVELOPER PULTE HOMES OF TEXAS, L.P.
ON BEHALF OF KCWCID NO. 3A
BID DATE 5/13/2021

CORLEY FARMS, UNIT 1 (BIEDENHARN SUBD, UNIT 1) PUBLIC CONSTRUCTION ITEMS

SPECS	ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUBTOTAL
TCEQ		MOBILIZATION	LS	1	$	$
TCEQ		INSURANCE AND BOND	LS	1	$	$
BOERNE		PREPARE RIGHT-OF-WAY	LS	1	$	$
BOERNE		CLEARING	AC	0.17	$	$
		REMOVE EXISTING FENCE AND IMPROVEMENTS	LS	1	$	$
		CLEARING			**SUBTOTAL**	**$**
BOERNE		PUBLIC UNIT EXCAVATION	CY	68,851	$	$
BOERNE		PUBLIC UNIT EMBANKMENT	CY	24,271	$	$
		GRADING			**SUBTOTAL**	**$**
BOERNE		CONCRETE WASHOUT PIT	EA	2	$	$
BOERNE		CONSTRUCTION ENTRANCE/EXIT	EA	3	$	$
BOERNE		STAGING	EA	2	$	$
BOERNE		ROCK FILTER DAM	LF	939	$	$
BOERNE		CURB INLET GRAVEL FILTERS	LF	279	$	$
BOERNE		SILT FENCE	LF	6,694	$	$
BOERNE		OPEN SPACE REVEGETATION	SY	57,581	$	$
		SEDIMENT CONTROL			**SUBTOTAL**	**$**
TCEQ/BOERNE		8" SANITARY SEWER PIPE (6'-10')	LF	159.34	$	$
TCEQ/BOERNE		8" SANITARY SEWER PIPE (10'-14')	LF	334.55	$	$
TCEQ/BOERNE		18" SANITARY SEWER PIPE (6'-10')	LF	605.79	$	$
TCEQ/BOERNE		18" SANITARY SEWER PIPE (10'-14')	LF	922.18	$	$
TCEQ/BOERNE		18" SANITARY SEWER PIPE (14'-18')	LF	1033.61	$	$
TCEQ/BOERNE		6" SEWER LATERALS (SDR-26)	LF	721	$	$
TCEQ/BOERNE		TELEVISE SEWER MAIN	LF	3056	$	$
TCEQ/BOERNE		TRENCH EXCAVATION PROTECTION	LF	3777	$	$
TCEQ/BOERNE		STANDARD MANHOLES	EA	15	$	$
TCEQ/BOERNE		TIE INTO EXISTING SANITARY SEWER	EA	1	$	$
TCEQ/BOERNE		EXTRA DEPTH - MANHOLES	VF	94	$	$
TCEQ/BOERNE		18" X 6" WYES	EA	19	$	$
TCEQ/BOERNE		8" X 6" WYES	EA	2	$	$
TCEQ/BOERNE		VERTICAL STACKS	VF	126	$	$
		SANITARY SEWER			**SUBTOTAL**	**$**
		DRAIN "A"				
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	1996	$	$
BOERNE		SOD LINING	SY	1996	$	$
		DRAIN "B"				
BOERNE		INLET TYPE I (COMPLETE)(20 FT)	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	87	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	36	$	$
BOERNE		GABION MATTRESS	SY	68	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	126	$	$
		DRAIN "C"				
BOERNE		GABION MATTRESS	SY	158	$	$
BOERNE		REVEGETATION (INCLUDING TOP SOIL)	SY	1249	$	$
BOERNE		SOD LINING	SY	1249	$	$
BOERNE		**DRAIN "D"**				
BOERNE		INLET TYPE II (COMPLETE)(15 FT)	EA	2	$	$
BOERNE		REINFORCED CONCRETE PIPE (CLASS III)(30" DIA)	LF	97	$	$
		DRAIN "E"				
BOERNE		PRECAST REINFORCED CONCRETE BOX CULVERT (2-5'X2')	LF	222	$	$
BOERNE		4-WAY INLET WITH GRATE COVER	EA	2	$	$
BOERNE		JUNCTION BOX 13'X13'X5.5'	EA	1	$	$
BOERNE		JUNCTION BOX 14'X14'X4.5'	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	25	$	$
BOERNE		CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	1.17	$	$
BOERNE		GABION MATTRESS	SY	21	$	$
		DRAIN "F"				
BOERNE		PRECAST REINFORCED CONCRETE BOX CULVERT (3'X2')	LF	194	$	$
BOERNE		4-WAY INLET WITH GRATE COVER	EA	2	$	$
BOERNE		JUNCTION BOX 4'X4'X4'	EA	1	$	$
BOERNE		JUNCTION BOX 4'X4'X5'	EA	1	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	46	$	$
BOERNE		CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	0.875	$	$
BOERNE		GABION MATTRESS	SY	63	$	$
		DRAIN "G"				
BOERNE		PRECAST REINFORCED CONCRETE BOX CULVERT (5-5'X3')	LF	170	$	$
BOERNE		SIDEWALK PIPE RAILING	LF	130	$	$
BOERNE		CONCRETE RIP-RAP (5" THICK)	SY	259	$	$
BOERNE		CONCRETE STRUCTURE (HEADWALLS)	CY	21	$	$

BOERNE	CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	6	$	$
BOERNE	GABION MATTRESS	SY	118	$	$
BOERNE	**DRAIN "H"**				
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	713	$	$
BOERNE	SOD LINING	SY	713	$	$
	DRAIN "I"				
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	1122	$	$
BOERNE	SOD LINING	SY	1122	$	$
	DRAIN "J"				
BOERNE	REINFORCED CONCRETE PIPE (CLASS III)(30" DIA)	LF	57	$	$
BOERNE	JUNCTION BOX 4'X4'X3.5' (WITH GRATE COVER)	EA	1	$	$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	49	$	$
BOERNE	CONCRETE STRUCTURE (BAFFLE BLOCKS)	CY	1.11	$	$
BOERNE	REMOVE EXISTING CONCRETE STRUCTURE (DEMO)	EA	1	$	$
BOERNE	REMOVE EXISTING GRATE INLET (DEMO)	EA	1	$	$
BOERNE	REMOVE EXISTING CORRUGATED METAL PIPE (DEMO)	EA	1	$	$
BOERNE	FLOWABLE FILL AS REQUIRED TO FILL REMOVED CMP PIPE	LS	1	$	$
BOERNE	GABION MATTRESS	SY	27	$	$
BOERNE	8.5" ASPHALT TREATED BASE	SY	16	$	$
	BOX DRAIN "1"				
BOERNE	SIDEWALK DRAIN (8-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	39	$	$
BOERNE	GABION MATTRESS	SY	82	$	$
	BOX DRAIN "2"				
BOERNE	SIDEWALK DRAIN (8-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	38	$	$
BOERNE	GABION MATTRESS	SY	27	$	$
	BOX DRAIN "3"				
BOERNE	SIDEWALK DRAIN (1-5' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	16	$	$
	BOX DRAIN "5"				
BOERNE	SIDEWALK DRAIN (4-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	44	$	$
	BOX DRAIN "6"				
BOERNE	SIDEWALK DRAIN (9-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	42	$	$
	BOX DRAIN "7"				
BOERNE	SIDEWALK DRAIN (8-3' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	38	$	$
	BOX DRAIN "8"				
BOERNE	SIDEWALK DRAIN (1-5' OPENINGS)	EA	1	$	$
BOERNE	SIDEWALK PIPE RAILING	LF	16	$	$
	SOUTHWEST POND				
BOERNE	REINFORCED CONCRETE PIPE (CLASS III)(24" DIA)	LF	76	$	$
BOERNE	PRECAST REINFORCED CONCRETE BOX CULVERT (2-3'X2')	LF	46.75	$	$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	323	$	$
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	16471	$	$
BOERNE	18" CLAY LAYER	SY	6006	$	$
BOERNE	6" PVC	LF	607	$	$
BOERNE	6" x 1/16 BEND	EA	1	$	$
BOERNE	18" PVC SLEEVE	LF	180	$	$
BOERNE	6' WOODEN PRIVACY FENCE	LF	1819	$	$
BOERNE	12' WIDE ACCESS GATE	EA	1	$	$
BOERNE	6" COMMERCIAL DRIVEWAY	SY	59	$	$
BOERNE	SEDIMENTATION MARKER	EA	1	$	$
BOERNE	4'X4' GALVANIZED ROCK GABION BASKET (W/RISER PIPE)	EA	1	$	$
BOERNE	JUNCTION BOX 4'X4'X(+/-13.5')	EA	1	$	$
BOERNE	3'X3' CONCRETE PAD FOR CONTROLLER	EA	1	$	$
BOERNE	DDC LOGIC CONTROLLER (COMPLETE)	EA	1	$	$
BOERNE	RESTRICTOR PLATE	EA	1	$	$
BOERNE	GABION MATTRESS	SY	280	$	$
	SOUTHEAST POND				
BOERNE	PRECAST REINFORCED CONCRETE BOX CULVERT (4'X2')	LF	45	$	$
BOERNE	CONCRETE RIP-RAP (5" THICK)	SY	282	$	$
BOERNE	REVEGETATION (INCLUDING TOP SOIL)	SY	6,562	$	$
BOERNE	6' TALL CHAIN LINK FENCE	LF	963	$	$
BOERNE	12' WIDE ACCESS GATE	EA	1	$	$
	DRAINAGE			**SUBTOTAL**	**$**
SAWS	8" PVC C-900 WATER MAIN, CLASS 235 DR 18	LF	1375	$	$
SAWS	16" PVC C-900 WATER MAIN, CLASS 235 DR 18	LF	1393	$	$
SAWS	2" HDPE 200 PSI DR 11	LF	389	$	$
SAWS	TIE INTO EXISTING WATER MAIN	EA	1	$	$
SAWS	8" GATE VALVE & BOX, COMPLETE	EA	7	$	$
SAWS	16" GATE VALVE & BOX, COMPLETE	EA	4	$	$
SAWS	STANDARD F.H. COMPLETE W/ VALVE	EA	4	$	$
SAWS	CAST IRON FITTINGS	TON	6.5	$	$
SAWS	1" IRRIGATION SERVICE (1" METER)	EA	4	$	$

SAWS	3/4" SINGLE LONG SERVICE (5/8" METER)	EA	1	$	$
SAWS	1" DUAL SHORT SERVICE (5/8" METER)	EA	5	$	$
SAWS	1" DUAL LONG SERVICE (5/8" METER)	EA	2	$	$
SAWS	30" STEEL CASING	LF	34	$	$
SAWS	2" AIR RELEASE VALVE	EA	1	$	$
SAWS	2" PERMANENT BLOWOFF	EA	4	$	$
SAWS	HYDROSTATIC TEST	EA	1	$	$
SAWS	TRENCH EXCAVATION PROTECTION	LF	3,157	$	$
SAWS	METER BOXES	EA	19	$	$
	WATER SYSTEM			**SUBTOTAL**	**$**
BOERNE	2" HMAC, TYPE D (LOCAL STREET)	SY	2,000	$	$
BOERNE	3" HMAC, TYPE D (COLLECTOR STREET)	SY	2493	$	$
BOERNE	2" HMAC, TYPE D (72' ARTERIAL STREET)	SY	3413	$	$
BOERNE	2" HMAC, TYPE D (94' ARTERIAL STREET)	SY	15536	$	$
BOERNE	2" HMAC, TYPE C	SY	18949	$	$
BOERNE	PRIME COAT	GAL	8478	$	$
BOERNE	TACK COAT	GAL	4239	$	$
BOERNE	9.5" FLEX BASE (LOCAL STREET)	SY	2000	$	$
BOERNE	16" FLEX BASE (COLLECTOR STREET)	SY	2493	$	$
BOERNE	22.5" FLEX BASE (72' ARTERIAL)	SY	3413	$	$
BOERNE	22.5" FLEX BASE (94' ARTERIAL)	SY	15536	$	$
BOERNE	8" LIME TREATED SUBGRADE	SY	23442	$	$
BOERNE	LIME	TON	492	$	$
BOERNE	CONCRETE CURB	LF	11980	$	$
BOERNE	ALTERNATE DEEP CURB	LF	798	$	$
BOERNE	HEADER CURB	LF	130	$	$
BOERNE	SAW TOOTH CURB	LF	29	$	$
BOERNE	CONCRETE MEDIAN	SY	91	$	$
BOERNE	6" GUARD POSTS	EA	22	$	$
BOERNE	REGULATORY SIGNS	EA	7	$	$
BOERNE	9 IN. STREET NAME SIGN	EA	4	$	$
BOERNE	FIRE HYDRANT BLUE PAVEMENT REFLECTORS	EA	4	$	$
BOERNE	PAVEMENT MARKER (TYPE II A-A)	EA	8	$	$
BOERNE	BROKEN 4 INCH WIDE YELLOW LINE	LF	5204	$	$
BOERNE	SOLID 4 INCH WIDE YELLOW LINE	LF	715	$	$
BOERNE	DOUBLE 4 INCH WIDE YELLOW LINE	LF	827	$	$
BOERNE	24 INCH WHITE STOP LINE	LF	96	$	$
BOERNE	SOLID 8 INCH WIDE WHITE LINE	LF	4124	$	$
BOERNE	SOLID 12 INCH WIDE WHITE LINE	LF	259	$	$
BOERNE	SOLID 4 INCH & BROKEN 4 INCH WIDE YELLOW LINE	LF	444	$	$
BOERNE	24 INCH WHITE PAVEMENT CROSSWALK STRIPING	LF	122	$	$
BOERNE	MEDIAN NOSE YELLOW	EA	4	$	$
BOERNE	WORD "ONLY"	WORD	7	$	$
BOERNE	COMBINATION THRU/RIGHT WHITE ARROW	EA	1	$	$
BOERNE	RIGHT WHITE ARROW	EA	6	$	$
BOERNE	LEFT WHITE ARROW	EA	20	$	$
BOERNE	REMOVE EXISTING 4" DOUBLE YELLOW LINE	LF	1287	$	$
BOERNE	REMOVE AND REPLACE EXISTING DRIVEWAY ASPHALT	SY	322	$	$
BOERNE	REMOVE GRAVEL DRIVEWAY	SY	120	$	$
BOERNE	REMOVE ASPHALT DRIVEWAY	SY	168	$	$
BOERNE	DEMO EXISTING PAVEMENT	SY	226	$	$
BOERNE	TRAFFIC SIGNALIZATION	LS	1	$	$
	PAVING			**SUBTOTAL**	**$**
BOERNE	CONCRETE SIDEWALK	SY	6,604	$	$
BOERNE	WHEELCHAIR RAMPS	EA	22	$	$
	SIDEWALK			**SUBTOTAL**	**$**
TOTAL					**$**

*Notes

1. Traffic signalization to be bid as a lumpsum amount. Detail on Quantities and specifications are available on the contruction set provided by legacy engineering group.

CORLEY FARMS, UNIT 1 (BIEDENHARN SUBD, UNIT 1) PRIVATE CONSTRUCTION ITEMS

SPECS	ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	SUBTOTAL
		LOT EXCAVATION	CY	210	$	$
		LOT EMBANKMENT	CY	2,400	$	$
		GRADING			**SUBTOTAL**	**$**
TCEQ/BOERNE		2"x4" LUMBER (GREEN PAINTED)	EA	14	$	$
		SANITARY SEWER			**SUBTOTAL**	**$**
BOERNE		2" POLYETHELENE GAS MAIN DR 11 WITH FITTINGS	LF	707	$	$
BOERNE		6" POLYETHELENE GAS MAIN	LF	3563	$	$
BOERNE		2" POLYETHELENE TEE	EA	1	$	$
BOERNE		6" POLYETHELENE TEE	EA	3	$	$
BOERNE		6" POLYETHELENE CROSS	EA	1	$	$
BOERNE		2" POLYETHELENE GAS VALVE AND BOX, COMPLETE	EA	3	$	$
BOERNE		6" POLYETHELENE GAS VALVE AND BOX, COMPLETE	EA	12	$	$

BOERNE	2" POLYETHELENE CAP	EA	1	$	$
BOERNE	6" POLYETHELENE CAP	EA	3	$	$
BOERNE	6" x 2" POLYETHELENE REDUCER	EA	2	$	$
BOERNE	TRACER WIRE	EA	7	$	$
BOERNE	1" DIA. SHORT SINGLE SERVICE	EA	11	$	$
BOERNE	1" DIA. LONG SINGLE SERVICE	EA	4	$	$
BOERNE	CONECTION TO EXISTING GAS MAIN	LS	1	$	$
BOERNE	TESTING AS REQUIRED	LS	1	$	$
BOERNE	TRENCH EXCAVATION SAFETY PROTECTION	LF	4191	$	$
	GAS			**SUBTOTAL**	**$**
BEC	CONDUIT SECONDARY CROSSINGS (2-2" & 2-4" PVC BUNDLE)	LF	188	$	$
BEC	CONDUIT PRIMARY CROSSINGS (4-2" & 2-4" PVC BUNDLE)	LF	376	$	$
SAWS	IRRIGATION CROSSINGS (2-4" PVC BUNDLE)	LF	250	$	$
	ELECTRIC			**SUBTOTAL**	**$**
TOTAL					**$**

*NOTE

-Specifications noted in the construction deocuments govern over specification noted in this bid tab. It only shown to provide more detail on each line item.

- Lot grading not included in public bid. Lot grading shall follow specifications noted on the grading plan.
- Public material export quantity shown on these bids, is to be stockpiled on unit 2. To be used in unit 2 construction.
- Contractor to leave 2,191 CY of export public material to be use don private lots for embankment.
- Every sewer lateral location must be identified with a 2"x4" lumber. This 2"x4" must be painted green and remain in place during construction.

BIDDER SIGNATURE _____

BID BOND

KNOW ALL BY THESE PRESENTS, That we, V K Knowlton Construction & Utilities Inc

of 18225 FM 2252 San Antonio TX 78266 2717 (hereinafter called the Principal),

as Principal, and Argonaut Insurance Company

(hereinafter called the Surety), as Surety are held and firmly bound unto Pulte Homes of Texas, L.P. on behalf of Kendall County Water Control and Improvements District No. 3A

(hereinafter called the Obligee) in the penal sum of Five Percent of the Greatest Amount Bid

Dollars ($ 5% GAB)

for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, That WHEREAS, the Principal has submitted or is about to submit a proposal to the Obligee on a contract for Biedenham Tract Offsite Sanitary Sewer

NOW, THEREFORE, If the said Contract be timely awarded to the Principal and the Principal shall, within such time as may be specified, enter into the Contract in writing, and give bond, if bond is required, with surety acceptable to the Obligee for the faithful performance of the said Contract, then this obligation shall be void; otherwise to remain in full force and effect.

Signed and sealed this 19th day of April , 2021 .

Martina Thomas
Witness

V K Knowlton Construction & Utilities Inc (Seal)
Principal

By: DIR. OF EST + P.M.
Title

Melissa Woods
Melissa Woods
Witness

Argonaut Insurance Company

By Scott D. Chapman
Scott D. Chapman
Attorney-in-Fact

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

Argonaut Insurance Company
Deliveries Only: 225 W. Washington, 24th Floor
Chicago, IL 60606
United States Postal Service: P.O. Box 469011, San Antonio, TX 78246
POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the Argonaut Insurance Company, a Corporation duly organized and existing under the laws of the State of Illinois and having its principal office in the County of Cook, Illinois does hereby nominate, constitute and appoint:

Scott D. Chapman, Cheryl R. Colson, Timothy J. Maley, Kevin McQuain, Rosalyn D. Hassell, Misty Witt

Their true and lawful agent(s) and attorney(s)-in-fact, each in their separate capacity if more than one is named above, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed any and all bonds, contracts, agreements of indemnity and other undertakings in suretyship provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

$95,000,000.00

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of Argonaut Insurance Company:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the Company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the Argonaut Insurance Company, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, Argonaut Insurance Company has caused its official seal to be hereunto affixed and these presents to be signed by its duly authorized officer on the 8th day of May, 2017.

Argonaut Insurance Company

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

by: _____

Joshua C. Betz , Senior Vice President

STATE OF TEXAS
COUNTY OF HARRIS SS:

On this 8th day of May, 2017 A.D., before me, a Notary Public of the State of Texas, in and for the County of Harris, duly commissioned and qualified, came THE ABOVE OFFICER OF THE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of same, and being by me duly sworn, deposed and said that he is the officer of the said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation, and that Resolution adopted by the Board of Directors of said Company, referred to in the preceding instrument is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the County of Harris, the day and year first above written.

KATHLEEN M. MEEKS
Notary Public, State of Texas
Comm. Expires 07-15-2021
Notary ID 557902-8

Kathleen M. Meeks
(Notary Public)

I, the undersigned Officer of the Argonaut Insurance Company, Illinois Corporation, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand, and affixed the Seal of said Company, on the 19 day of April, 2021.

ARGONAUT INSURANCE COMPANY CORPORATE SEAL 1948 ILLINOIS

_____
James Bluzard , Vice President-Surety

IF YOU HAVE QUESTIONS ON AUTHENTICITY OF THIS DOCUMENT CALL (833) 820 - 9137.

ARGO POWER OF ATTORNEY

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Argonaut Insurance Company and its affiliates by telephone for information or to make a complaint:

ARGONAUT INSURANCE COMPANY

Please send all notices of claim on this bond to:

Argonaut Insurance Company
Argo Surety Claims
225 W. Washington St., 24th Floor
Chicago, IL 60606

(833) 820-9137 (toll-free)

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

(512) 490-1007

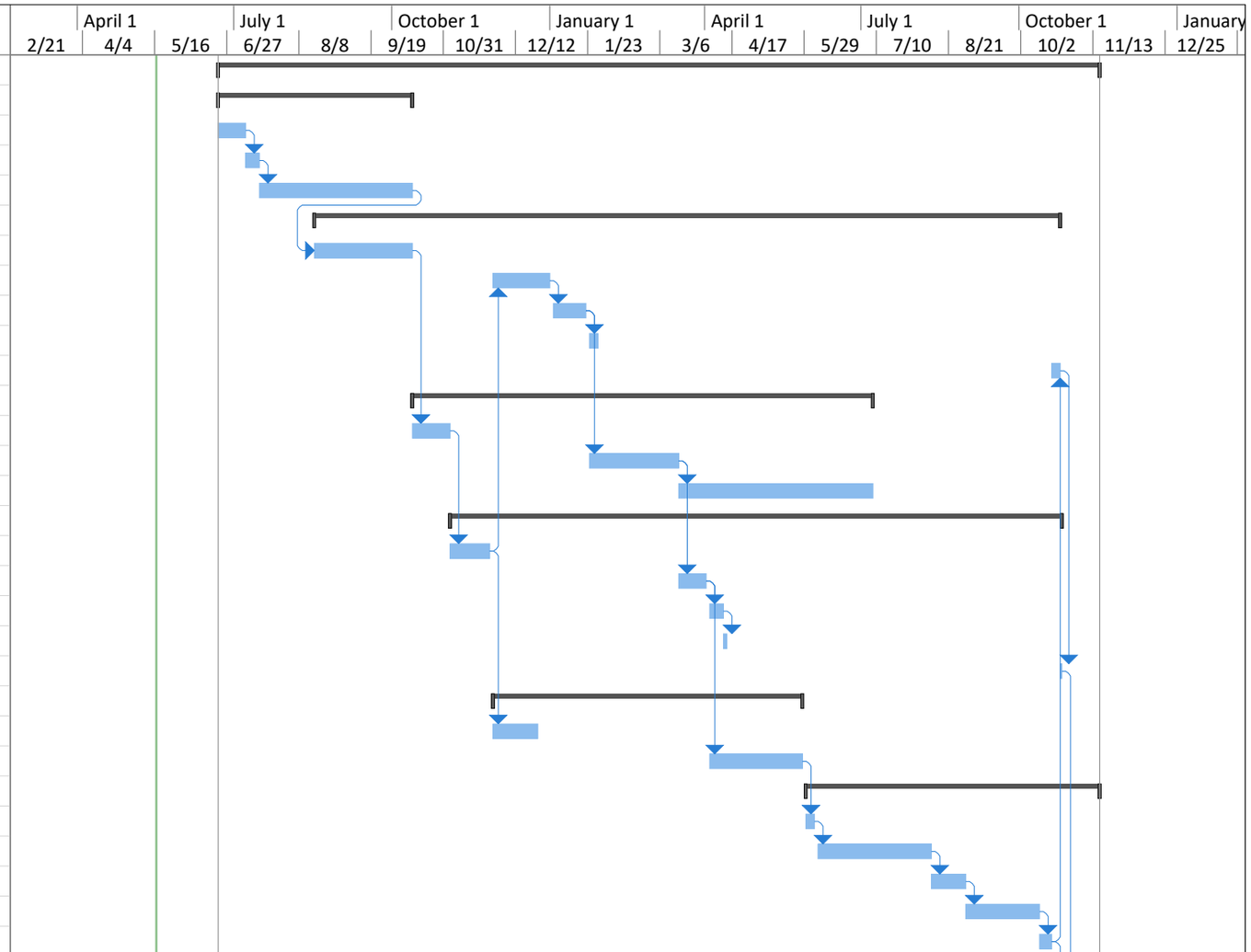
You may write the Texas Department of Insurance:

P. O. Box 149104
Austin, TX 78714-9104
Fax: (512) 475-1771
Web: http://www.tdi.state.tx.us
E-mail: ConsumerProtection@tdi.state.tx.us

PREMIUM OR CLAIM DISPUTES:
Should you have a dispute concerning your premium or about a claim you should contact your agent or Argo Surety first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR BOND:
This notice is for information only and does not become a part or condition of the attached document and is given to comply with Texas legal and regulatory requirements.

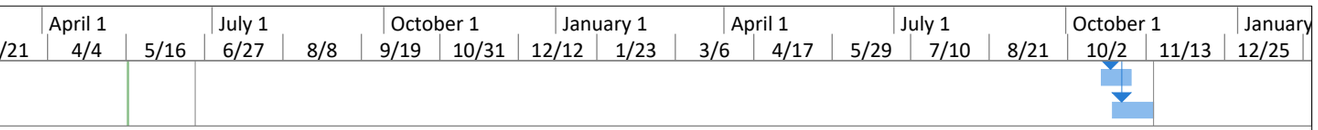
ID	Task Name	Start	Finish
1	**Biedenharn Unit 1**	**Tue 6/22/21**	**Wed 11/16/22**
2	**Site Improvements**	**Tue 6/22/21**	**Tue 10/12/21**
3	Erosion Control	Tue 6/22/21	Wed 7/7/21
4	Clearing	Thu 7/8/21	Thu 7/15/21
5	Mass Grading	Fri 7/16/21	Tue 10/12/21
6	**Sanitary Sewer Improvements**	**Tue 8/17/21**	**Mon 10/24/22**
7	Rocksaw for Sewer	Tue 8/17/21	Tue 10/12/21
8	Place Sewer Main & Manholes	Mon 11/29/21	Fri 12/31/21
9	Place Sewer Laterals	Mon 1/3/22	Fri 1/21/22
10	Backfill & Compact Trench	Mon 1/24/22	Fri 1/28/22
11	Raise Manhole Lids To Street Grades	Thu 10/20/22	Mon 10/24/22
12	**Drainage Improvements**	**Wed 10/13/21**	**Thu 7/7/22**
13	Rocksaw for Drainage	Wed 10/13/21	Wed 11/3/21
14	Inlets & J/B, Storm Pipe	Mon 1/24/22	Wed 3/16/22
15	Conc Riprap, Structural Conc	Thu 3/17/22	Thu 7/7/22
16	**Water Improvements**	**Thu 11/4/21**	**Tue 10/25/22**
17	Rock Saw for Water	Thu 11/4/21	Fri 11/26/21
18	Place Water Main & Fire Hydrants	Thu 3/17/22	Fri 4/1/22
19	Place Water Services	Mon 4/4/22	Mon 4/11/22
20	Backfill & Compact Trench	Tue 4/12/22	Wed 4/13/22
21	Meter Boxes	Tue 10/25/22	Tue 10/25/22
22	**Dry Utilities**	**Mon 11/29/21**	**Fri 5/27/22**
23	Rocksaw for Dry Utility	Mon 11/29/21	Fri 12/24/21
24	Dry Utility Construction	Mon 4/4/22	Fri 5/27/22
25	**Street Improvements**	**Mon 5/30/22**	**Wed 11/16/22**
26	Compact Street Subgrade	Mon 5/30/22	Fri 6/3/22
27	Flexible Base & Lime	Mon 6/6/22	Wed 8/10/22
28	Concrete Curb Trenching & Placement	Thu 8/11/22	Tue 8/30/22
29	Concrete Sidewalks	Wed 8/31/22	Wed 10/12/22
30	Curb & Sidewalk Backfill	Thu 10/13/22	Wed 10/19/22



Project: Schedule Template for
Date: Mon 5/17/21

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

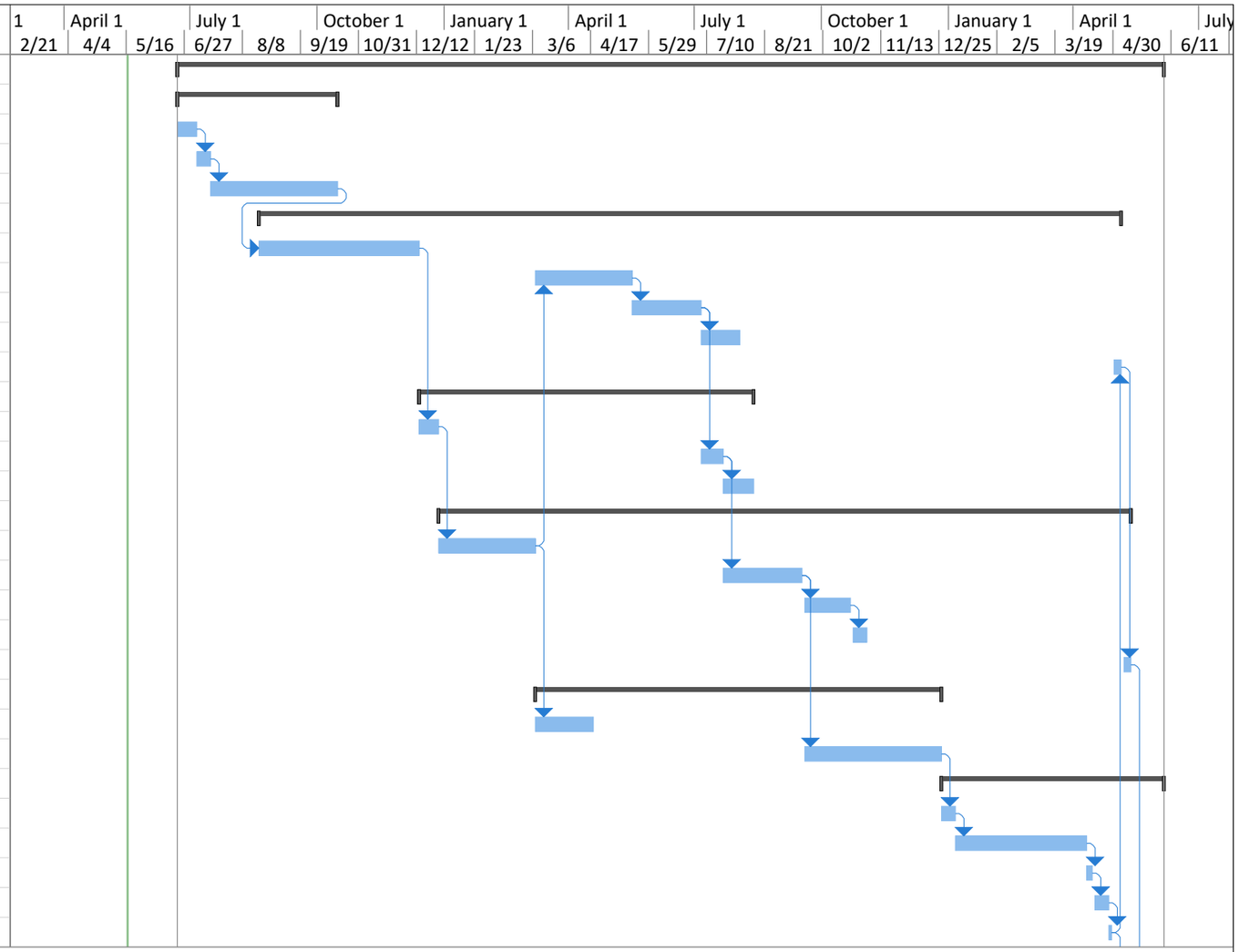
ID	Task Name	Start	Finish
31	Signage & Pavement Markings	Thu 10/20/22	Fri 11/4/22
32	Hotmix	Wed 10/26/22	Wed 11/16/22



Project: Schedule Template for
Date: Mon 5/17/21

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

ID	Task Name	Start	Finish
1	**Biedenharn Unit 2**	**Tue 6/22/21**	**Mon 6/5/23**
2	**Site Improvements**	**Tue 6/22/21**	**Fri 10/15/21**
3	Erosion Control	Tue 6/22/21	Mon 7/5/21
4	Clearing	Tue 7/6/21	Thu 7/15/21
5	Mass Grading	Fri 7/16/21	Fri 10/15/21
6	**Sanitary Sewer Improvements**	**Fri 8/20/21**	**Fri 5/5/23**
7	Rocksaw for Sewer	Fri 8/20/21	Mon 12/13/21
8	Place Sewer Main & Manholes	Tue 3/8/22	Mon 5/16/22
9	Place Sewer Laterals	Tue 5/17/22	Tue 7/5/22
10	Backfill & Compact Trench	Wed 7/6/22	Tue 8/2/22
11	Raise Manhole Lids To Street Grades	Mon 5/1/23	Fri 5/5/23
12	**Drainage Improvements**	**Tue 12/14/21**	**Fri 8/12/22**
13	Rocksaw for Drainage	Tue 12/14/21	Mon 12/27/21
14	Inlets & J/B, Storm Pipe	Wed 7/6/22	Thu 7/21/22
15	Conc Riprap, Structural Conc	Fri 7/22/22	Fri 8/12/22
16	**Water Improvements**	**Tue 12/28/21**	**Fri 5/12/23**
17	Rock Saw for Water	Tue 12/28/21	Mon 3/7/22
18	Place Water Main & Fire Hydrants	Fri 7/22/22	Fri 9/16/22
19	Place Water Services	Mon 9/19/22	Fri 10/21/22
20	Backfill & Compact Trench	Mon 10/24/22	Wed 11/2/22
21	Meter Boxes	Mon 5/8/23	Fri 5/12/23
22	**Dry Utilities**	**Tue 3/8/22**	**Mon 12/26/22**
23	Rocksaw for Dry Utility	Tue 3/8/22	Mon 4/18/22
24	Dry Utility Construction	Mon 9/19/22	Mon 12/26/22
25	**Street Improvements**	**Tue 12/27/22**	**Mon 6/5/23**
26	Compact Street Subgrade	Tue 12/27/22	Thu 1/5/23
27	Flexible Base & Lime	Fri 1/6/23	Mon 4/10/23
28	Concrete Curb Trenching & Placement	Tue 4/11/23	Fri 4/14/23
29	Concrete Sidewalks	Mon 4/17/23	Wed 4/26/23
30	Curb & Sidewalk Backfill	Thu 4/27/23	Fri 4/28/23



Project: Schedule Template for
Date: Mon 5/17/21

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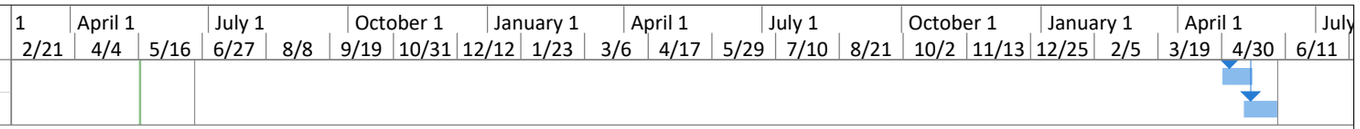

Project: Schedule Template for
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Project Summary	Duration-only	External Tasks	

RESOLUTION ADOPTING PREVAILING WAGE RATE SCALE FOR CONSTRUCTION PROJECTS

WHEREAS, Kendall County Water Control and Improvement District No. 3A of Kendall County, Texas (the "District') has been heretofore duly created and organized; and

WHEREAS, Chapter 2258, Texas Government Code ("Chapter 2258") requires the District to determine the general prevailing rate of per diem wages for each craft or type of worker in the locality in which a construction project for the District is to be performed and the general prevailing rate of per diem wages for legal holiday and overtime work; and

WHEREAS, Chapter 2258 provides that a worker employed on a construction project by or on behalf of the District shall be paid not less than said general prevailing rates, as applicable; and

WHEREAS, Chapter 2258 provides that a contractor which is awarded a construction contract for the District, or a subcontractor of the contractor, shall pay not less than the rates determined as set forth above to a worker employed in the execution of such contract for a construction project; and

WHEREAS, Chapter 2258 applies to construction projects paid for in whole or in part from funds of the District, regardless of whether the work is done under the District's supervision or direction; and

WHEREAL, the Board of Directors for the District (the "Board") has conducted a survey of wages received by classes of workers employed on projects similar to the construction projects of the District to determine the general prevailing rate of per diem wages in the District and has determined to adopt a Prevailing Wage Rate Scale for Construction Projects for the District; NOW, THEREFORE,

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF KENDALL COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 3A OF KENDALL COUNTY, TEXAS, THAT:

Section 1: The Board has conducted a survey of the wages received by classes of workers employed on public works projects of the City of Boerne, Kendall County, and United States government, said projects being similar to the construction projects by or on behalf of the District and, based on said survey, the Board has determined that the wage rates in the Prevailing Wage Rate Scale for Construction Projects attached hereto as **Exhibit "A"** are the general prevailing wage rates for construction projects by or on behalf of the District, being an average of the rates of the City of Boerne, Kendall County, and United Sates government.

Section 2: The District hereby adopts the Prevailing Wage Rate Scale for Construction Projects attached hereto as **Exhibit 'A"** which establishes minimum rates that shall be used by all contractors and their subcontractors on construction projects by or on behalf of the District.

Section 3: A contractor or subcontractor on a construction project by or on behalf of the District shall maintain records as required by Chapter 2258 and shall be subject to the penalties, forfeitures, and withholding of money for failure to comply with this Resolution and/or pending a final determination of an alleged violation, as provide din Chapter 2258.

Section 4: The District engineer is hereby directed and authorized to specify the wage rates adopted hereunder in all specifications for bids and contracts for construction projects by or on behalf of the District.

PASSED AND APPROVED this 20th day of January, 2021.

/s/ R. Hunt Winton III
President, Board of Directors

ATTEST:

/s/ Wm Wendell Hall
Secretary, Board of Directors

Exhibit A

"General Decision Number: TX20210007 01/01/2021

Superseded General Decision Number: TX20200007

State: Texas

Construction Types: Heavy and Highway

Counties: Atascosa, Bandera, Bastrop, Bell, Bexar, Brazos, Burleson, Caldwell, Comal, Coryell, Guadalupe, Hays, Kendall, Lampasas, McLennan, Medina, Robertson, Travis, Williamson and Wilson Counties in Texas.

HEAVY (excluding tunnels and dams, not to be used for work on Sewage or Water Treatment Plants or Lift / Pump Stations in Bell, Coryell, McClennon and Williamson Counties) and HIGHWAY Construction Projects

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021

* SUTX2011-006 08/03/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER (Paving and Structures)	$ 12.56	
ELECTRICIAN	$ 26.35	

FORM BUILDER/FORM SETTER
Paving & Curb.....$ 12.94
Structures.....$ 12.87

LABORER
Asphalt Raker.....$ 12.12
Flagger.....$ 9.45
Laborer, Common.....$ 10.50
Laborer, Utility.....$ 12.27
Pipelayer.....$ 12.79
Work Zone Barricade Servicer.....$ 11.85

PAINTER (Structures).....$ 18.34

POWER EQUIPMENT OPERATOR:
Agricultural Tractor.....$ 12.69
Asphalt Distributor.....$ 15.55
Asphalt Paving Machine.....$ 14.36
Boom Truck.....$ 18.36
Broom or Sweeper.....$ 11.04
Concrete Pavement Finishing Machine.....$ 15.48
Crane, Hydraulic 80 tons or less.....$ 18.36
Crane, Lattice Boom 80 tons or less.....$ 15.87
Crane, Lattice Boom over 80 tons.....$ 19.38
Crawler Tractor.....$ 15.67
Directional Drilling Locator.....$ 11.67
Directional Drilling Operator.....$ 17.24
Excavator 50,000 lbs or Less.....$ 12.88
Excavator over 50,000 lbs...$ 17.71
Foundation Drill, Truck Mounted.....$ 16.93
Front End Loader, 3 CY or Less.....$ 13.04
Front End Loader, Over 3 CY.$ 13.21
Loader/Backhoe.....$ 14.12
Mechanic.....$ 17.10
Milling Machine.....$ 14.18
Motor Grader, Fine Grade....$ 18.51
Motor Grader, Rough.....$ 14.63
Pavement Marking Machine....$ 19.17
Reclaimer/Pulverizer.....$ 12.88
Roller, Asphalt.....$ 12.78
Roller, Other.....$ 10.50
Scraper.....$ 12.27
Spreader Box.....$ 14.04
Trenching Machine, Heavy....$ 18.48

Servicer.....$ 14.51

Steel Worker
Reinforcing.....$ 14.00
Structural.....$ 19.29

TRAFFIC SIGNAL INSTALLER
Traffic Signal/Light Pole Worker.....$ 16.00

TRUCK DRIVER
Lowboy-Float.....$ 15.66
Off Road Hauler.....$ 11.88
Single Axle.....$ 11.79
Single or Tandem Axle Dump Truck.....$ 11.68
Tandem Axle Tractor w/Semi Trailer.....$ 12.81

WELDER.....$ 15.97

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number,

005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the

Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION
"