Spear Point Engineering, LLC
TBPE Firm No. 18904
204 W Montgomery
Willis, TX 77378

Engineer's Construction Opinion of Cost
Texas Grand Ranch Sec 14
5/26/2020

Item No.	Item Description	Unit Quantity	Unit Measure	Unit Price	Total Cost
BONDING & MOBILIZATION					
1	TPDES General Storm Water Permit	1	LS	$ 2,500.00	$ 2,500.00
				Bonding & Mobilization Subtotal:	**$ 2,500.00**
PAVING & GRADING					
1	Clearing and grubbing, to include disposal of debris and vegetation	20.9	AC	$ 4,250.00	$ 88,825.00
2	Preparation of R.O.W. & Easements	20.9	AC	$ 2,000.00	$ 41,800.00
3	Additional roadway grading	2,700	CY	$ 4.75	$ 12,825.00
4	TRU-BLN Soil Stabilization Blend	880	TON	$ 120.00	$ 105,600.00
5	Subgrade Stabilization and Preparation	31,292	SY	$ 1.75	$ 54,761.00
6	8-inch Base Course	29,315	SY	$ 10.75	$ 315,136.25
7	2-inch Type D HMAC Paving	27,338	SY	$ 9.90	$ 270,646.20
8	Street, Stop and Speed Limit Signs	8	EA	$ 500.00	$ 4,000.00
9	Furnish and install Pavement Markings	1	LS	$ 500.00	$ 500.00
				Paving & Grading Subtotal:	**$ 894,093.45**
STORM SEWER					
1	18-inch HDPE Storm Sewer	98	LF	$ 40.00	$ 3,920.00
2	24-inch HDPE Storm Sewer	110	LF	$ 45.00	$ 4,950.00
3	30-inch HDPE Storm Sewer	374	LF	$ 55.00	$ 20,570.00
4	Safety End Treatment for (1) 18-inch Culvert	3	EA	$ 1,800.00	$ 5,400.00
5	Headwall & Wingwall for (1) 18-inch Culvert	1	EA	$ 2,200.00	$ 2,200.00
6	Safety End Treatment for (1) 24-inch Culvert	2	EA	$ 2,600.00	$ 5,200.00
7	Headwall & Wingwall for (2) 24-inch Culvert	2	EA	$ 3,200.00	$ 6,400.00
8	Safety End Treatment for (1) 30-inch Culvert	1	EA	$ 2,700.00	$ 2,700.00
9	Headwall & Wingwall for (1) 30-inch Culverts	3	EA	$ 2,900.00	$ 8,700.00
10	Headwall & Wingwall for (3) 30-inch Culverts	4	EA	$ 4,200.00	$ 16,800.00
11	Drainage Swale	225	LF	$ 5.00	$ 1,125.00
12	Rip-Rap	1	LS	$ 10,000.00	$ 10,000.00
				Storm Sewer Subtotal:	**$ 87,965.00**
EROSION CONTROL					
1	Hydromulch Seeding of distrurbed areas	15.3	AC	$ 750.00	$ 11,438.74
2	Stabilized Construction Entrance/Exit	2	EA	$ 2,000.00	$ 4,000.00
3	Reinforced Siltation Fencing	2,000	LF	$ 1.00	$ 2,000.00
				Erosion Control Subtotal:	**$ 17,438.74**
TOTALS					
				GRAND TOTAL:	**$ 1,001,997.19**

NOTE: Estimate is based on unapproved construction plans and subject to change. The prices included in this estimate are current as of the estimate date. Actual bid prices will differ from the estimate.

5/26/2020

COPY

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):
I Texas Grand Ranch, LLC
183 Water Street, Williamstown, MA 01267

SURETY (Name and Address of Principal Place of Business):
International Fidelity Insurance Company
One Newark Center
Newark, NJ 07102-5207

OWNER (Name and Address):
Walker County Judge and/or successors or assigns
1313 University Avenue, Huntsville, TX 77340

CONTRACT
Date: June 1, 2020
Amount: $1,001,997.19 One Million One Thousand Nine Hundred Ninety Seven Dollars and 19/100
Description (Name and Location): Texas Grand Ranch Unit 14 Street and Drainage Facilities

BOND
Bond Number: 0763083
Date (Not earlier than Contract Date): June 1, 2020
Amount: $1,001,997.19 One Million One Thousand Nine Hundred Ninety Seven Dollars and 19/100
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL
Company: I Texas Grand Ranch, LLC

Signature: _____ (Seal)
Name and Title:
Thomas Gazda
Authorized Signatory and
Officer of Patton Special Assets, LLC
its Manager

(Space is provided below for signatures of additional parties, if required.)

SURETY

International Fidelity Insurance Company (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title Deron K. Treadwell
(Attach Power of Attorney) Attorney-in-Fact

Attest: _____
Signature and Title Eric R. Toothaker

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title:

EJCDC No. C-610 (2002 Edition)
Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;

2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or

2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone
Surety Agency or Broker
Owner's Representative (engineer or other party)

Cross Surety, Inc.

485 Main Street

Lewiston, ME 04240

207-786-6750

POWER OF ATTORNEY

Bond # 0763083

HARCO NATIONAL INSURANCE COMPANY
INTERNATIONAL FIDELITY INSURANCE COMPANY

Member companies of IAT Insurance Group, Headquartered: 702 Oberlin Road, Raleigh, North Carolina 27605

KNOW ALL MEN BY THESE PRESENTS: That **HARCO NATIONAL INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of Illinois, and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of New Jersey, and having their principal offices located respectively in the cities of Rolling Meadows, Illinois and Newark, New Jersey, do hereby constitute and appoint

CHRISTINE E. WATSON, BLAIR E. TORELLI, ROYCE M. CROSS, MICHELLE V. ORLANDO, MICHAEL A. VINER, DERON K. TREADWELL

Lewiston, ME

their true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, and the execution of such instrument(s) in pursuance of these presents, shall be as binding upon the said **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by their regularly elected officers at their principal offices.

This Power of Attorney is executed, and may be revoked, pursuant to and by authority of the By-Laws of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** and is granted under and by authority of the following resolution adopted by the Board of Directors of **INTERNATIONAL FIDELITY INSURANCE COMPANY** at a meeting duly held on the 13th day of December, 2018 and by the Board of Directors of **HARCO NATIONAL INSURANCE COMPANY** at a meeting held on the 13th day of December, 2018.

"**RESOLVED**, that (1) the Chief Executive Officer, President, Executive Vice President, Senior Vice President, Vice President, or Secretary of the Corporation shall have the power to appoint, and to revoke the appointments of, Attorneys-in-Fact or agents with power and authority as defined or limited in their respective powers of attorney, and to execute on behalf of the Corporation and affix the Corporation's seal thereto, bonds, undertakings, recognizances, contracts of indemnity and other written obligations in the nature thereof or related thereto; and (2) any such Officers of the Corporation may appoint and revoke the appointments of joint-control custodians, agents for acceptance of process, and Attorneys-in-fact with authority to execute waivers and consents on behalf of the Corporation; and (3) the signature of any such Officer of the Corporation and the Corporation's seal may be affixed by facsimile to any power of attorney or certification given for the execution of any bond, undertaking, recognizance, contract of indemnity or other written obligation in the nature thereof or related thereto, such signature and seals when so used whether heretofore or hereafter, being hereby adopted by the Corporation as the original signature of such officer and the original seal of the Corporation, to be valid and binding upon the Corporation with the same force and effect as though manually affixed."

IN WITNESS WHEREOF, **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** have each executed and attested these presents on this 31st day of December, 2018

INTERNATIONAL FIDELITY INSURANCE COMPANY CORPORATE SEAL 1904 NEW JERSEY

STATE OF NEW JERSEY
County of Essex

STATE OF ILLINOIS
County of Cook

HARCO NATIONAL INSURANCE COMPANY CORPORATE SEAL 1984 ILLINOIS

Kenneth Chapman
Executive Vice President, Harco National Insurance Company
and International Fidelity Insurance Company

On this 31st day of December, 2018, before me came the individual who executed the preceding instrument, to me personally known, and, being by me duly sworn, said he is the therein described and authorized officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, that the seals affixed to said instrument are the Corporate Seals of said Companies; that the said Corporate Seals and his signature were duly affixed by order of the Boards of Directors of said Companies.

SHIRELLE A. OUTLEY NOTARY PUBLIC My Comm. Exp. 04-04-2023 No. 50079910 NEW JERSEY

IN TESTIMONY WHEREOF, I have hereunto set my hand affixed my Official Seal, at the City of Newark, New Jersey the day and year first above written.

Shirelle A. Outley a Notary Public of New Jersey
My Commission Expires April 4, 2023

CERTIFICATION

I, the undersigned officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Sections of the By-Laws of said Companies as set forth in said Power of Attorney, with the originals on file in the home office of said companies, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand on this day. June 1, 2020

A00327

Irene Martins, Assistant Secretary

I Texas Grand Ranch, LLC

SECTION 14 DEVELOPMENT DOCUMENTS

DOCUMENT CHECKLIST

DELIVERING TO COUNTY

✓ UNIT 14 PERFORMANCE BOND STREET AND DRAINAGE #0763083

✓ ROLLBACK TAX CERT

Treasurer

WALKER County DEV

On 6/2/ 2020 all documents mentioned above were delivered by Debra Burkhalter and received by Amy Klawinsky with Walker County.

Amy Klawinsky
WALKER COUNTY

Debra Burkhalter
I TEXAS GRAND RANCH

Amy Klawinsky

RECEIVED
JUN 02 2020
WALKER COUNTY TREASURER

VARIANCE REQUEST FORM
FOR
WALKER COUNTY SUBDIVISION POLICY

To: Utility Director
Walker County
1100 University Ave. Rm. 207
Huntsville, Texas 77340

Date of Submission:

_____

Name of Property Owner:

Hassell	James	C.
LAST	FIRST	MI

I. Description of lot or tract of land for which variance is requested:

1) Survey and abstract:
John Saddler Survey
Abstract No. 45

2) Name on Deed:
James C. Hassell

3) County Records:
Volume 1332
Page 237

4) Previous owner Name and Recording:
Name Raymond and Henry Johnson
Volume 1332
Page 237

5) Tax Number:

_____

6) If in a subdivision or being subdivided, give name of subdivision:
Waverly Estates

7) Date lot or tract was created:

6-20-2018

8) Name of person causing lot or tract to be created (Owner, developer, or other):

James C. Hassell

9) Name and address of lienholder of property(if none, so state):

Citizens State Bank

P. O. Box 518

Somerville, Texas 778r8

10) Give :

Section Exhibit C-1 Page 30 Paragraph _____

of the subdivision document for which variance is requested.

II. Variance requested and reason.

1) Describe what variance is desired (Add additional pages if needed):

A variance in the 2% streetway cross slope. Exhibit C-1

2) Give reason why your are unable to comply with the Walker County Subdivision Policy as shown. Normal cost of creating and complying with the Walker County Subdivision Policy is not necessarily an acceptable reason. (Add additional pages if needed):

Requesting a flat cross slope at Temple Lane and Luther Dean Lane to prevent putting in road side ditches to the inlets.

Signature of Applicant

James C. Hassell
Print name

Subscribed and sworn before me
this 5 day of February, 2020

STEPHANIE BURZYNSKI
Notary ID #12657852-2
My Commission Expires
July 02, 2020

NOTARY PUBLIC

Exp. Date 7/2/2020

If the lot or tract in question was created (divided) before January 1, 1996, complete the above Section I and II only.

If the lot or tract was created after January 19, 1996, have the previous owner or seller of the land complete and execute section III of this form.

III. To be completed by previous owner or seller of land for which variance is requested:

1) Name:

LAST _____ FIRST _____ MI _____

2) If a person other than you is requesting variance:
Are you related to the person requesting the variance?

_____

If "Yes", how?

_____

3) Were you familiar with the Walker County Subdivision Policy when this lot or tract was created? _____

4) Are you now familiar with the Walker County Subdivision Policy?

I have been given a copy of Section 232.001 - 232.005 of the Local Government Code which states that dividing my property into smaller tracts may qualify me as a subdivider and my property as a subdivision.

I am aware that as a subdivider, I am required to comply with the Walker County Subdivision Policy.

I am aware that failure to comply with the policy may make me subject penalties.

I am aware that failure to comply with the policy will mean that the grantee may be unable to obtain a permit for utilities and building.

Signature of Prior Property Owner or seller

James C. Hassell
Print Name

Subscribed and sworn before me
this _____ day of _____, _____.

NOTARY PUBLIC

Exp. Date _____

IV. Commissioners Court action on Subdivision Variance Request:

1) Date of Action: _____

2) Approved as requested? _____

Yes or No

3) Approved with the following stipulation:

_____

_____

_____

_____

_____
Signature Walker County Judge

_____
Attested:
Walker County Clerk

WCFM-10 approved 10-16-97

BLEYL ENGINEERING
PLANNING • DESIGN • MANAGEMENT

Bleyl Engineering
100 Nugent Street
Conroe, TX 77301

March 6, 2020

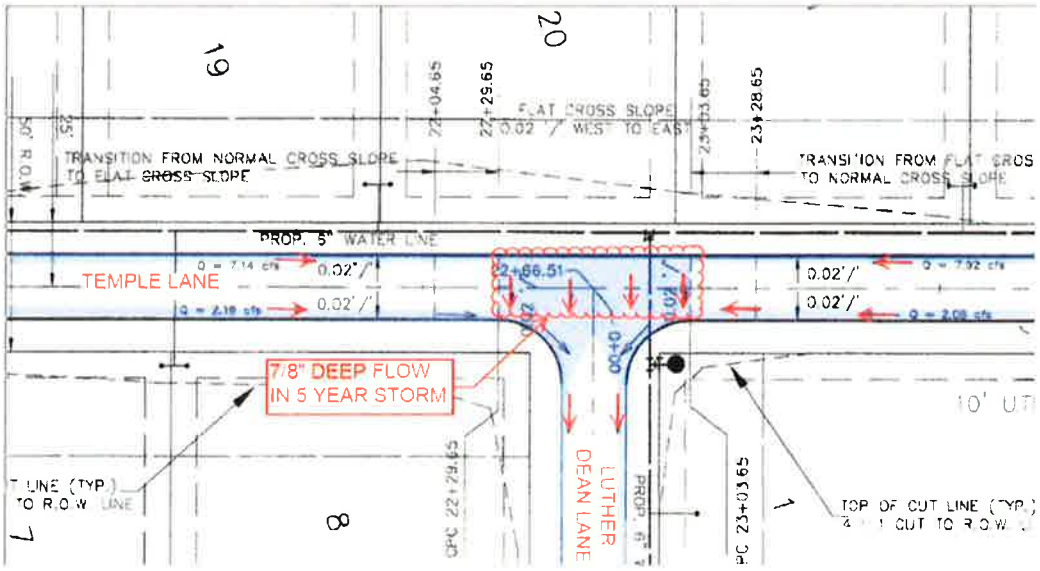
Mr. Andrew Isbell
Walker County
1313 University Avenue
Huntsville, TX 77340

Re: Variance Request
Waverly Place Section 1 (90500-211)
Walker County

Mr. Isbell:

We reviewed a variance request for Waverly Place Section 1. The developer requests Walker County waive the 2% street cross slope requirement on Temple Lane at the intersection of Luther Dean Lane (Subdivision Regulations Exhibit C-1).

The current design transitions from a crowned street section to a super-elevated street section to allow storm water to cross Temple Lane and flow down Luther Dean Lane. In general, street cross drainage is a hazard to traffic, and inlets are typically placed at intersections to eliminate the traffic hazard. Therefore, the applicant provided an engineer's signed and sealed letter to support this request. The engineer calculated a 7/8-inch flow depth across the street during a 5-year storm event. Subdivision Regulations requires cross-street drainage to be designed for a 10-year storm event. The design engineer did not provide the flow depth for the larger storm events, but we can expect the flow depth to increase as the storm intensity increases. The design engineer states these conditions, "will not create or cause a hazard to vehicular traffic operating in a lawful manner." Below is an edited excerpt from the construction plans that show the proposed drainage.



The blue shaded area represents the concentrated flow of storm water, and the red arrow indicates the typical direction the concentrated storm water travels.

It is our opinion that the street cross drainage will negatively impact vehicle traction and potentially increase wet-pavement collisions. In addition, the flow of water over the center joint may reduce the life of the pavement and increase maintenance. It is standard engineering practice to place inlets at intersections. Per the American Society of Civil Engineers publication, Design and Construction of Urban Stormwater Management Systems, "inlets are normally required at intersections to intercept 100% of the runoff. This is necessary to prevent street cross flow, which could cause a traffic hazard. Inlets should generally be placed on tangent curb sections and near corners." Because this a curb and gutter street section, we consider it an urban street design. Therefore, it should be designed as such.

In addition, Walker County Subdivision Regulation 6.1 states that streets shall not be used as drainage courses, and drainage in streets shall be taken to a defined drainage course as directly as possible. In this location, the flow travels approximately 2,250 feet in the street's gutter before it enters an inlet. Walker County's Draft Subdivision Regulations limits gutter flow to 400 feet. Therefore, the flow is not being taken directly to a drainage course, and the length of gutter flow is far greater than what is deemed acceptable. Approximately 450 feet downstream of the intersection is a cross culvert and drainage way. There is a potential to place inlets at the intersection of Temple Lane and Luther Dean Lane and pipe the stormwater about 450 feet to the downstream cross culvert. This scenario will remove the cross-street flow, reduce the depth and volume of water flowing in the gutters, and reduce the length of gutter flow. We would have no objection to the addition of properly designed inlets and storm sewer pipe at this intersection.

Please contact me at (936) 441-7833 or sdeloss@bleylengineering.com if you have questions or require additional information.

Sincerely,

Steffanie M. DeLoss

Steffanie M. DeLoss
Sr. Project Manager
Bleyl Engineering

RONALD A. YOUNG, P.E.
802 TRAIL LAKE DRIVE
EULESS, TX 76039
817-875-5478
FIRM NO. F-16072

February 24, 2020

Mr. Andrew Isbell
Planning Director
Walker County, Texas
1313 University Avenue
Huntsville, Texas 77340

RE: Variance Request
Waverly Place Section One (90500-211)
Walker County, Texas

Dear Mr. Isbell:

The owner of the subject property submitted a variance request for that property to waive the 2% street cross slope requirement on proposed Temple Lane at the intersection of proposed Luther Dean Lane. The proposed street design at this location transitions from a crowned street section to a "super-elevated" section or simply a flat 2% cross slope from the east curb line to the west curb line. This proposed design will allow storm water runoff from the west curb line of proposed Temple Lane to flow across proposed Temple Lane to the north and south curb lines of proposed Luther Dean Lane.

The proposed roadway design for Temple Lane provides a 0.7% longitudinal grade on each curb line north of Luther Dean Lane and an approximate grade of 1.8% south of Luther Dean Lane (the profile is in a vertical curve at this location). The tangent grade from the south is 3.567%. The departing grades on Luther Dean Lane from Temple Lane to the east are 1.68% on the north curb line and 1.589% on the south curb line.

The calculate gutter capacity for Temple Lane a 0.7% grade is 9.2 cubic feet per second (cfs) and15.4 cfs for a 1.8% grade. The calculated gutter capacity for the north curb of Luther Dean Lane is 14.9 cfs at a 1.68% grade and the south curb is 14.5 cfs at a 1.589% grade.

The calculated 5-year flow in the west gutter of Temple Lane north of Luther Dean Lane is 7.92 cfs while the calculated 5-year flow in the east gutter is 2.06 cfs. The calculated 5-year flow in the west gutter south of Luther Dean Lane is 7.14 cfs while the calculated 5-year flow in the east gutter of Temple Lane south of Luther Dean Lane is 2.19 cfs.

The 5-year flow in the west gutter of Temple Lane using the proposed street grade will drain across Temple Lane in a sheet flow condition to enter the north and south gutters of Luther Dean Lane. The gutter flows from the west curb line of Temple Lane flowing from west to east on a cross slope of 2% will have a depth of flow of approximately 0.075' or approximately 7/8". This depth of flow for the 2% cross slope provides a flow capacity of 7.97 cfs which is sufficient to handle the 7.92 cfs from the north along Temple Lane and the 7.14 cfs from the south along Temple Lane.

In my opinion, the conditions outlined above will not create or cause a hazard to vehicular traffic operating in a lawful manner. On behalf of the owner, I request approval of the variance request to allow a 2% cross slope from the east curb line to the west curb line of proposed Temple Lane at the intersection with proposed Luther Dean Lane.

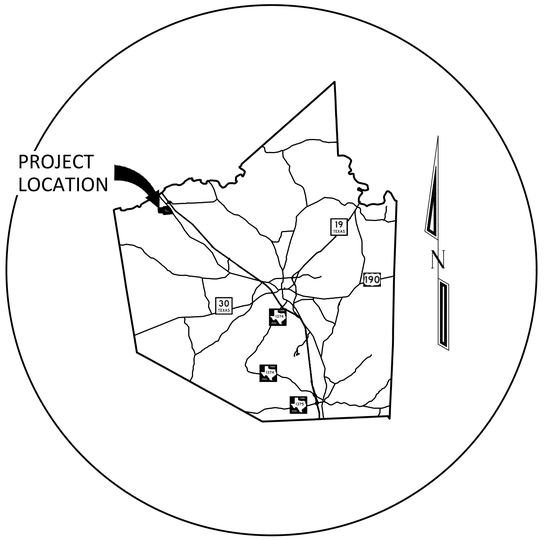
Sincerely,

Ronald A. Young, P.E.

2/24/2020

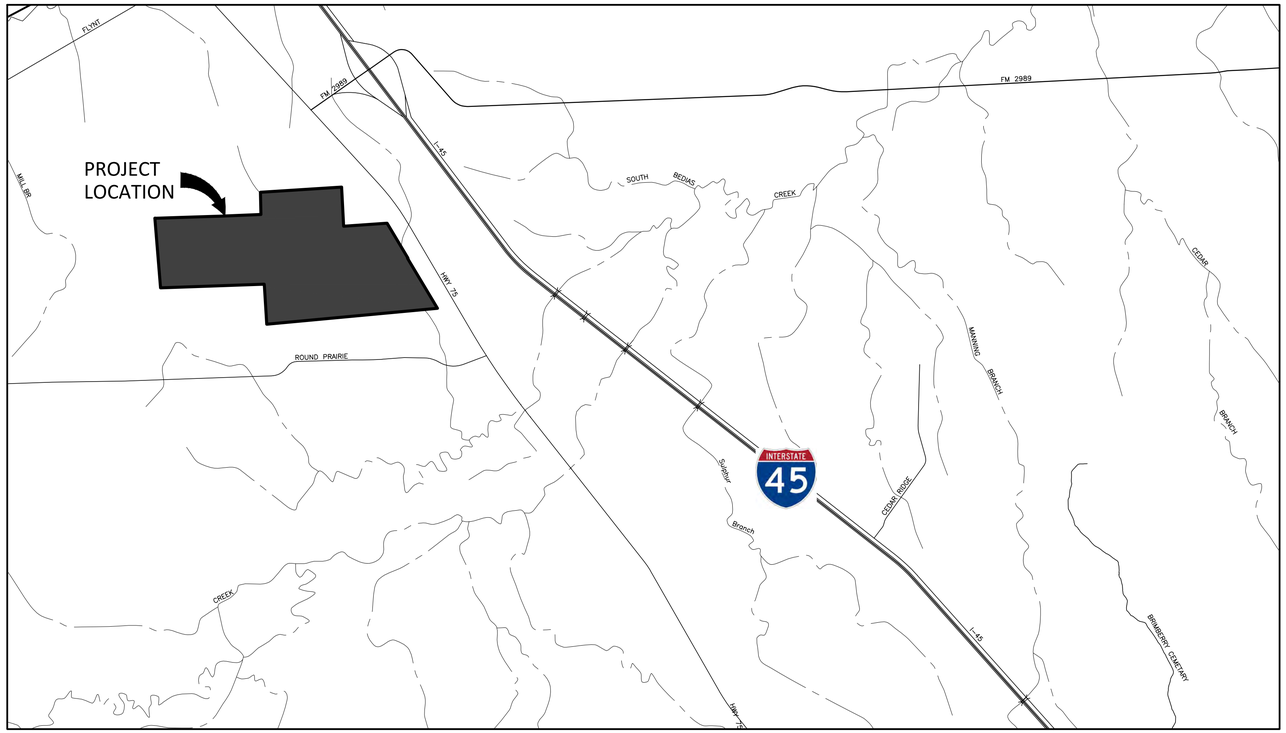
ORIGINAL LAYOUT SIZE – 22X34

CONSTRUCTION DRAWINGS FOR
LEGACY ESTATES
PAVING AND DRAINAGE
WALKER COUNTY, TEXAS
JANUARY 2020



VICINITY MAP

SCALE : NONE
WALKER COUNTY



Sheet List Table	
SHEET NUMBER	SHEET TITLE
1	COVER
2	CONSTRUCTION NOTES
3	SURVEY AND CONTROL
4	OVERALL
5	DRAINAGE PLAN
6	DRAINAGE CALCULATIONS
7	WEST VIEW DRIVE STA 0+00 TO 8+00
8	WEST VIEW DRIVE STA 8+00 TO 16+00
9	WEST VIEW DRIVE STA 16+00 TO 24+00
10	WEST VIEW DRIVE STA 24+00 TO 32+00
11	WEST VIEW DRIVE STA 32+00 TO 39+60
12	WEST VIEW DRIVE STA 39+60 TO 48+00
13	WEST VIEW DRIVE STA 48+00 TO END
14	TEMPORARY EROSION CONTROL PLAN
15	TEMPORARY EROSION CONTROL DETAILS
16	PAVING DETAILS
17	STORM DETAILS

FLOOD PLAIN: THIS PROJECT DOES LIE PARTIALLY WITHIN THE 100 YEAR FLOOD PLAIN IN ACCORDANCE WITH FEMA COMMUNITY MAP PANEL NO. 48471C0200D, WALKER COUNTY, TEXAS. EFFECTIVE DATE AUGUST 16, 2011.

CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS, AND CONFIRM POINTS OF CONNECTIONS TO EXISTING IMPROVEMENTS, INCLUDING CONFIRMATION OF ELEVATIONS AND GRADES OF EXISTING FACILITIES AND UTILITIES PRIOR TO STARTING ANY GRADING, PAVING OR UTILITY INSTALLATION. VERIFICATION OF LOCATIONS AND FUNCTIONS OF EACH EXISTING STRUCTURE OR SYSTEM AND ALL EXISTING UTILITY GRADES AND INVERT ELEVATIONS IS THE CONTRACTOR'S RESPONSIBILITY. NOTIFY THE ENGINEER OF ANY DISCREPANCIES IMMEDIATELY. ANY CONFLICTS OR ERRORS BETWEEN EXISTING FIELD CONDITIONS AND ENGINEERING PLANS MUST BE RESOLVED PRIOR TO STARTING EXCAVATION OR SETTING ANY GRAVITY SEWER (STORM OR SANITARY) AND APPURTENANCES.

REV	DATE	BY	APP	COMMENT

PREPARED FOR:
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15925 FM 3083, STE 6
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AUSTIN BRYAN CONROE HOUSTON

COVER

LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A-112 AND THE
ELIJAH ANDERSON SURVEY, A-2
WALKER COUNTY, TEXAS

THIS SET OF PLANS WAS PREPARED UNDER THE DIRECTION OF GREGORY M. STRUBE P.E., SEAL No.103290 ON JANUARY 13, 2020. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY AND NOT TO BE USED FOR CONSTRUCTION.

DESIGN: GREG M. STRUBE, PE
CAD: SGK | RVW: RVW
PROJECT NO: 12529
SHEET: 1 OF: 17

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1/13/2020 3:29:35 PM
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ORIGINAL LAYOUT SIZE – 22X34

GENERAL CONSTRUCTION NOTES

DWG. NO.

1. MATERIALS, CONSTRUCTION AND TESTING TO BE IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS , LATEST PRINTING AND AMENDMENTS THERETO.

2. ALL EXISTING UNDERGROUND UTILITIES ARE NOT GUARANTEED TO BE COMPLETED OR DEFINITE, BUT WERE OBTAINED FROM THE BEST INFORMATION AVAILABLE. CONTRACTOR HAS SOLE RESPONSIBILITY FOR FIELD VERIFICATION OF ALL EXISTING FACILITIES AS SHOWN ON DRAWINGS. CONTRACTOR SHALL COORDINATE ALL CONFLICTS WITH THE APPROPRIATE GOVERNING AGENCY.

3. THE LOCATION OF ALL UNDERGROUND UTILITIES, ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL REQUEST THE EXACT LOCATION OF THESE FACILITIES BY CALLING THE PERSPECTIVE UTILITY COMPANY, AT LEAST 48 HOURS BEFORE COMMENCING WORK. A) THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE WHICH OCCURS DUE TO HIS FAILURE TO REQUEST THE LOCATION AND PRESERVATION OF THESE UNDERGROUND FACILITIES. B) ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAID BY THE CONTRACTOR AT HIS OWN EXPENSE.

4. TEXAS LAW ARTICLE 1436C, PROHIBITS ALL ACTIVITIES IN WHICH PERSONS OR EQUIPMENT MAY COME WITHIN 6 FEET OF ENERGIZED OVERHEAD POWER LINES. FEDERAL REGULATION, TITLE 29, PART 1910.130(1) AND PART 1926.440 (A) (15) REQUIRE A MINIMUM CLEARANCE OF 10 FEET FROM THESE FACILITIES. THE ABOVE LAWS CARRY BOTH CRIMINAL AND CIVIL LIABILITIES, WITH CONTRACTORS AND OWNERS BEING LEGALLY RESPONSIBLE FOR THE SAFETY OF WORKERS UNDER THESE LAWS. IF EITHER THE CONTRACTOR OR THE OWNER MUST WORK NEAR ENERGIZED OVERHEAD POWER LINES, CALL THE POWER COMPANY FOR THE LINES TO BE DE-ENERGIZED AND/OR MOVED AT THEIR EXPENSE.

5. CONSTRUCTION SHALL COMPLY WITH THE LATEST OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING TRENCHING AND SHORING. CONTRACTOR SHALL PROVIDE A TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM, THE REQUIREMENTS OF OSHA SAFETY AND HEALTH REGULATION, PART 1926, SUB-PART P AS PUBLISHED IN THE FEDERAL REGISTER, VOLUME 54, NO. 209, DATED OCTOBER 31, 1989, AND LATEST AMENDMENT THERETO AND TEXAS HEALTH AND SAFETY CODE ANN., §756.021 (VERNON 1991).

6. DETAILS PREPARED BY BLEYL ENGINEERING DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING THE PLANS AND SPECIFICATION REQUIRED BY CHAPTER 756, SUBCHAPTER "C" OF THE TEXAS HEALTH AND SAFETY CODE.

7. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE PROJECT ENGINEER. ALL CONSTRUCTION RUNOFF SHALL COMPLY WITH STORM WATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES AND THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.

8. EXISTING PAVEMENT, CURBS, SIDEWALKS AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO EXISTING OR BETTER CONDITIONS. ALL ASPHALT AND CONCRETE DRIVEWAYS EXCAVATED DURING CONSTRUCTION SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND (CSS) AND RETURNED TO EXISTING CONDITIONS. ALL STATE AND COUNTY HIGHWAY PAVEMENT AND RAILROAD RIGHT-OF-WAYS TO BE BORED ACCORDING TO THE RULES, REGULATIONS, AND REQUIREMENTS FOR APPROVAL AND ACCEPTANCE BY SAID AGENCIES.

9. EXISTING ROADS AND/OR RIGHT-OF-WAYS DISTURBED DURING CONSTRUCTION SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO STARTING THE WORK, UPON COMPLETION OF THE PROJECT.

10. ALL SAWCUTS OF EXISTING PAVED SURFACES SHALL BE FULL DEPTH SAWCUTS.

11. AFTER ALL DISTURBED AREAS WITHIN THE CONSTRUCTION LIMITS HAVE BEEN COMPLETED TO THE LINES, GRADES, AND CROSS-SECTIONS SHOWN ON THE PLANS, HYDROMULCHING AND OR SOLID SODDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS IN ORDER TO ESTABLISH ADEQUATE VEGETATION COVERAGE TO ELIMINATE EROSION. IF NO ACTIVITY HAS BEEN PERFORMED WITH IN THE DISTURBED CONSTRUCTION AREAS FOR 14 DAYS, THESE AREAS MUST BE HYDROMULCHED TO AVOID EROSION. IF NO PROVISION FOR PLANTING GRASS IS INCLUDED IN THE PLANS OR SPECIFICATIONS, THE MINIMUM REQUIREMENT FOR THIS ITEM WILL BE IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR "SODDING OR SEEDING FOR EROSION CONTROL".

12. CONTRACTOR / OWNER ARE TO OBTAIN ALL APPLICABLE PERMITS REQUIRED BY GOVERNING AUTHORITIES AT THEIR EXPENSE PRIOR TO COMMENCEMENT OF WORK.

13. CONTRACTOR / OWNER SHALL GIVE 48 HOURS NOTICE TO ALL AUTHORIZED AGENCIES IN CHARGE OF PRIVATE AND PUBLIC UTILITIES PRIOR TO COMMENCEMENT OF WORK WITHIN THE AUTHORIZED AGENCIES' RIGHTS-OF-WAY OR EASEMENTS.

GENERAL CONSTRUCTION NOTES (CONTINUED)

DWG. NO.

14. CONTRACTOR / OWNER SHALL COVER ANY OPEN EXCAVATIONS WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS, ALONG EXISTING ROADWAYS AND TRAFFIC AREAS.

15. CONTRACTOR / OWNER SHALL PROVIDE ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING TRAFFIC CONTROL DEVICES, DURING CONSTRUCTION IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL". CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC OPEN IN EACH DIRECTION DURING WORKING HOURS OR PROVIDE ALL-WEATHER DETOURS AROUND CONSTRUCTION SITE, PROVIDE PUBLIC NOTIFICATION, AND USE UNIFORMED POLICE OFFICERS TO CONTROL TRAFFIC, ESPECIALLY IN HEAVY TRAFFIC LOCATIONS.

16. CONTRACTOR / OWNER SHALL ERECT AND MAINTAIN BARRICADES TO ADEQUATELY PROTECT THE PAVEMENT, SIDEWALKS, DRIVEWAY, ROADWAY, AND PARKING LOTS FROM DAMAGED CAUSED BY ANIMALS OR FOOT TRAFFIC, THE CONTRACTOR SHALL HAVE PERSONNEL ON SITE UNTIL THE PAVEMENT HAS REACHED SUFFICIENT STRENGTH WHILE PAVEMENT IS CURING AND UNTIL REACHED 75% STRENGTH.

17. CONTRACTOR / OWNER SHALL BE RESPONSIBLE ON A DAILY BASIS FOR REMOVING MUD, DIRT, AND DEBRIS DEPOSITED ON EXISTING PAVEMENT DUE TO CONSTRUCTION ACTIVITY. ALL EXISTING STREETS AND ADJACENT PAVEMENT AREAS IMPACTED BY CONSTRUCTION ACTIVITY SHALL BE CLEANED USING STREET SWEEPER. THIS ACTIVITY SHALL BE INCIDENTAL TO ALL OTHER ITEMS.

18. THE CONTRACTOR / OWNER SHALL BE RESPONSIBLE FOR THE COORDINATION OF THEIR CONSTRUCTION ACTIVITIES WITH THE UTILITY COMPANIES AS TO THE RELOCATION OF THEIR FACILITIES, IF NEEDED.

19. THE CONTRACTOR / OWNER SHALL REMOVE ALL NON-PERMANENT SIGNS FROM THE R.O.W. AND/OR EASEMENT LIMITS, AND RETURN THEM TO THE SIGN OWNER FOR THEM TO HAVE PLACED AT THEIR EXPENSE ON PROPERTY OTHER THAN THAT STATED ABOVE UNLESS OTHERWISE SPECIFIED.

20. THE CONTRACTOR / OWNER SHALL DETERMINE THE EXACT LOCATION AND DEPTHS OF ALL EXISTING UTILITIES BEFORE COMMENCING ANY WORK, AND SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES CAUSED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UNDERGROUND UTILITIES. THE LOCATION OF EXISTING UTILITIES ON THESE PLANS ARE SHOWN IN AN APPROXIMATE LOCATION ONLY.

21. THE CONTRACTOR / OWNER SHALL BE RESPONSIBLE FOR RELOCATING OR REPLACING ALL EXISTING FENCES INSIDE THE WORK ZONE, TO EXISTING OR BETTER CONDITION, EXCEPT FOR THOSE THAT FALL WITHIN A ROAD RIGHT-OF-WAY, IN WHICH THE FENCE SHALL BE RELOCATED OR REPLACED TO A DISTANCE OF ONE (1) FOOT OUTSIDE THAT RIGHT-OF-WAY.

22. THE CONTRACTOR / OWNER IS RESPONSIBLE FOR RELOCATING ALL EXISTING IRRIGATION OUTSIDE OF THE RIGHT-OF-WAY AND/OR EASEMENT UNLESS OTHERWISE SPECIFIED ON THE PLANS.

23. ALL EQUIPMENT SHALL BE REMOVED FROM THE PROJECT SITE ONCE THE PROJECT IS COMPLETED, AS WELL AS, ALL REMAINING DEBRIS WITHIN PROJECT SHALL BE REMOVED AND PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL SITE.

STANDARD STORM SEWER CONSTRUCTION NOTES

DWG. NO.

1. STORM SEWER AND LEADS SHALL BE REINFORCED CONCRETE PIPE, ASTM C-76, CLASS III, WITH O-RING RUBBER GASKET JOINTS, AND SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE EXCAVATION, BEDDING AND BACK FILL PROCEDURES SPECIFIED BY THE ENGINEER.

2. FOR BOX CULVERT INSTALLATION:
   A.) ALL BOX CULVERTS INSTALLED SHALL BE PLACED ON A MINIMUM OF 6 INCHES OF CEMENT STABILIZED SAND (CEMENT STABILIZED SAND SHALL BE 2 SACKS CEMENT PER TON.)
   B.) FOR INSTALLATION OF MONOLITHIC REINFORCED CONCRETE BOX CULVERTS IN POOR SOIL CONDITIONS, A 4 INCH THICK CLASS "C" REINFORCED CONCRETE SEAL SLAB SHALL BE INSTALLED, PRIOR TO INSTALLATION OF THE BOX CULVERT.

3. ALL STORM SEWER MANHOLES, INLETS AND JUNCTION BOXES SHALL BE STANDARD PRE-CAST, UNLESS OTHERWISE SPECIFIED.

4. ALL STORM SEWER LEADS SHALL HAVE AN INTERNAL DIAMETER OF (18") EIGHTEEN INCH MINIMUM, STORM SEWER SMALLER THAN THIS MUST BE REMOVED AND REPLACED, UNLESS OTHERWISE SPECIFIED

5. GRADE DROP ON LEADS BETWEEN INLETS TO BE A MINIMUM OF 0.20 FOOT, GRADE DROP BETWEEN INLET AND MANHOLES TO BE 0.20 FOOT UNLESS OTHERWISE SHOWN.

6. MANHOLE FRAME AND COVER SHALL BE A 32" EAST JORDAN IRON WORKS V-1418 FRAME AND COVER OR APPROVED EQUAL

7. FOR ADJUSTMENT OF MANHOLE LIDS USE STANDARD CONCRETE RING, NOT TO EXCEED TWELVE (12) INCHES.

8. ALL CONCRETE USED FOR ALL POURED-IN-PLACE MANHOLES, INLETS, WINGWALLS, HEADWALLS AND OTHER APPURTENANCES TO BE 4,000 P.S.I. STRENGTH AT 28 DAYS.

9. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO $\frac{3}{4}$" .

10. ALL FIRST STAGE INLET CONSTRUCTION SHALL BE PROTECTED WITH 3 INCH THICK BOARDS AT ALL TIMES UNTIL FINAL COMPLETION OF INLET.

STANDARD PAVING CONSTRUCTION NOTES

DWG. NO.

THE FOLLOWING NOTES OR PHRASES ARE SPECIFIC TO PAVING IMPROVEMENTS AND ARE TO BE INCLUDED IN ALL SETS OF CONSTRUCTION DRAWINGS CONTAINING ANY PAVING IMPROVEMENTS. THE PLAN AND PROFILE SHEETS MAY IDENTIFY AND REFERENCE THE NOTES OR PHRASES IN THE PLAN VIEW BY NOTE NUMBER OF THE SPECIFIC TREATMENT REQUIRED.

1. IF PROPOSED SEMI-RIGID BASE WITH 2 INCH TYPE "D" HOT MIX ASPHALTIC CONCRETE SURFACING, FOR URBAN ESTATES ONLY, SEMI-RIGID BASE MAY BE 8 INCH CRUSHED LIMESTONE, OR 6 INCH HOT MIX ASPHALTIC CONCRETE.

2. EXPOSE 15 INCHES OF REINFORCING STEEL AT ALL PROPOSED SAWED JOINTS. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS PER NOT #4.

3. REQUIRE A ONE (1) INCH REDWOOD EXPANSION BOARD OR PRE-MOLDED NON-EXTRUDING JOINT BETWEEN SIDEWALK AND BACK OF CURB.

4. HORIZONTAL DOWELS SHALL BE NO. 6 BARS, 24 INCHES LONG, DRILLED AND EMBEDDED 8 INCHES INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL. DOWELS SHALL BE 24 INCHES CENTER TO CENTER UNLESS OTHERWISE SPECIFIED.

5. WHEN PROPOSED PAVEMENT ENDS AT A CONSTRUCTION JOINT LEAVE 15 INCHES OF REINFORCING STEEL EXPOSED BEYOND PAVEMENT, COAT WITH ASPHALT, AND WRAP WITH BURLAP FOR FUTURE PAVEMENT TIE-IN. AT EXPANSION JOINTS, EXTEND DOWELS 5 INCHES; COAT AND WRAP SAME AS CONSTRUCTION JOINTS.

6. CONTINUOUS REINFORCED CONCRETE PAVEMENT, WHEN SPECIFIED SHALL BE PER TXDOT STANDARD DETAILS.

7. WHEREVER A SIDEWALK IS REQUIRED, PROVIDE WHEELCHAIR RAMP AND/OR SIDEWALKS IN ACCORDANCE WITH THE "TEXAS DEPARTMENT OF TRANSPORTATION STANDARD WHEELCHAIR RAMP AND SIDEWALK DETAILS".

8. ADJUST EXISTING MANHOLE FRAMES AND COVERS TO FIT NEW GRADE.

9. ADJUST EXISTING WATER VALVE BOXES TO NEW PAVING GRADE. REPLACE ALL MISSING OR DAMAGED VALVE BOXES AND COVERS.

10. PLACE WHITE OR YELLOW PLASTIC MARKER OR PAINT AS SHOWN BY THE UNIFORM TRAFFIC MANUAL FOR PAVEMENT MARKINGS.

11. PROVIDE A CONCRETE PAVING HEADER AT THE END OF THE PAVEMENT.

12. TC INDICATES TOP OF CURB ELEVATION AND TP INDICATES TOP OF PAVEMENT ELEVATION.

13. CURB RADII AT STREET INTERSECTIONS TO BE 24.50 FEET TO BACK OF CURB WITH A MINIMUM OF ONE(1) PERCENT GRADE UNLESS OTHERWISE NOTED.

14. GUIDELINES SET FORTH IN THE "TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" WILL BE OBSERVED.

15. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT ALL RADIUS RETURNS AND AT A MAXIMUM SPACING OF 60 FOOT INTERVALS.

16. CONTRACTOR WILL USE CONTINUOUS LONGITUDINAL REINFORCING BARS IN CURBS.

17. CYLINDER COMPRESSION TEST OR BEAM FLEXURAL TEST SHALL BE REQUIRED. TWO SAMPLES SHALL BE TAKEN FOR EACH 100 CUBIC YARDS OF CONCRETE POURED. FOR SMALLER QUANTITIES, TWO SAMPLES SHALL BE TAKEN REGARDLESS OF THE AMOUNT OF CONCRETE POURED EACH DAY. CONCRETE SHALL HAVE 5 SACKS CEMENT PER CUBIC YARD AND A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS OR A MINIMUM FLEXURAL STRENGTH OF 600 PSI IN 28 DAYS. NO TRAFFIC SHALL BE ALLOWED ON CONCRETE FOR 28 DAYS. IF EXTRA TESTS ARE MADE 75% OF THE 28 DAY STRENGTH IS ACHIEVED THE ENGINEER MAY ALLOW TRAFFIC ON THE PAVEMENT IF IT DEEMS NECESSARY.

18. PRIOR TO PLAN APPROVAL, A CERTIFIED LAB SHALL DETERMINE THE PERCENTAGE OF CEMENT CONTENT FOR SUBGRADE STABILIZATION IN SANDY SOILS WITH P.I. LESS THAN 10 TO OBTAIN A COMPRESSIVE STRENGTH OF 400 PSI IN 28 DAYS. THE LAB SHALL ALSO DETERMINE THE PERCENTAGE OF LIME CONTENT FOR SUBGRADE STABILIZATION IN CLAY SOILS WITH A P.I. GREATER THAN 20. ALL STREETS SHALL BE TESTED EVERY 200 FEET AND SUBGRADE SHALL BE STABILIZED UNLESS THE LAB CERTIFIES THE P.I. TO BE BETWEEN 10 AND 20 AND THAT STABILIZATION IS NOT NEEDED.

19. A CONCRETE MIX DESIGNED BY THE CERTIFIED LAB SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS POURED.

STANDARD PAVING CONSTRUCTION NOTES (CONTINUED)

DWG. NO.

20. A MINIMUM OF OF TWO (2) COMPACTION TESTS SHALL BE PERFORMED A MAXIMUM DISTANCE OF 500 FEET, AND FOR EACH 2'-6" MAXIMUM THICK LAYERS OF FILL. IN AREAS WHERE NO FILL IS REQUIRED, TWO (2) SAMPLES SHALL BE TAKEN AT A MAXIMUM DISTANCE OF 500 FEET. ADDITIONAL TESTING SHALL BE PERFORMED IF SEEN NECESSARY BY THE ENGINEER. NO ADDITIONAL LAYERS OF FILL SHALL BE MADE WITHOUT HAVING THE LAB'S WRITTEN APPROVAL OF COMPLETED LAYERS. PROOF ROLLING SHALL BE REQUIRED BY THE INSPECTOR ON EACH LAYER PLACED AND ANY "PUMPING" AREAS SHALL BE REMOVED IMMEDIATELY AND REPLACED OR STABILIZED AND RE-COMPACTED TO A PASSING DENSITY.

21. CONSTRUCTION OF ITEMS THAT ARE NOT SPECIFICALLY ADDRESSED TO BE IN ACCORDANCE WITH THE TxDOT SPECIFICATIONS (LATEST REVISION).

22. RIGHT-OF-WAY SHALL BE SLOPED FROM THE PROPERTY TO THE TOP OF CURB AND HYDROMULCHED OR SODDED.

23. MEMBRANE CURING TYPE 2, WHITE PIGMENTED CONFORMING TO DMS-4650, SHALL BE USED FOR CURING ALL CONCRETE SURFACES IMMEDIATELY AFTER FINISHING OF SURFACES AND SHALL BE IN ACCORDANCE WITH TxDOT ITEM 360.

24. MATERIAL USED FOR FILL SHALL BE CERTIFIED BY A LAB TO HAVE A PLASTICITY INDEX BETWEEN 10 AND 20. FORMS SHALL BE SET TO THE PROPER GRADE AND PROPERLY SUPPORTED SO THAT NO DISPLACEMENT OCCURS WITH THE PAVING ACTIVITIES.

25. ALL CONCRETE SHALL BE VIBRATED BY MECHANICAL MEANS TO ENSURE PROPER COMPACTION AND NOT HONEY COMBS. CONCRETE SHALL NOT BE PLACED WHEN THE TEMPERATURE IS BELOW 40° F AND FALLING, BUT MAY BE PLACED WHEN TEMPERATURE IS ABOVE 35° F AND RISING. THE TEMPERATURE SHALL BE TAKEN IN THE SHADE AND AWAY FROM ARTIFICIAL HEAT.

26. THE CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES TO ADEQUATELY PROTECT THE PAVEMENT. THE CONTRACTOR SHALL HAVE PERSONNEL ON SITE UNTIL THE PAVEMENT HAS REACHED SUFFICIENT STRENGTH AS NOT TO BE DAMAGED BY ANIMALS OR FOOT TRAFFIC.

27. JOINT SEALING MATERIAL SHALL BE A HOT POURED RUBBER TYPE AND SHALL MEET THE REQUIREMENTS IN ACCORDANCE WITH DMS-6310. TAR WILL NOT BE ALLOWED.

28. JOINTS SHALL BE CLEANED OF ALL SCALE, DIRT, DUST, CURING COMPOUND, AND CONCRETE TO THE WIDTH AND DEPTH OF THE JOINT AND SHALL BE DRY BEFORE SEALING IS PERFORMED.

29. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM 615 GRADE 60 (GRADE 40 ONLY FOR BARS REQUIRING BENDING). REINFORCING STEEL SHALL BE SUPPORTED ON CHAIRS STRONG ENOUGH TO HOLD IT IN PLACE AND BE TIED.

ABBREVIATIONS

AE	ACCESS EASEMENT
ARV	AIR RELEASE VALVE
ASPH	ASPHALT
BC	BACK OF CURB
BFE	BASE FLOOD ELEVATION
BL	BUILDING LINE
BOV	BLOW–OFF VALVE
CL	CENTERLINE
CLD	CENTERLINE OF DITCH
CONC	CONCRETE
CSS	CEMENT STABILIZED SAND
DBL	DOUBLE
DGFL	DEPRESSED GUTTER FLOW LINE
DIA	DIAMETER
DA	DRAINAGE AREA
DE	DRAINAGE EASEMENT
DWY	DRIVEWAY
EA	EACH
ESMT	EASEMENT
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
EXT	EXTENSION
FC	FACE OF CURB
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FND	FOUND
FM	FORCE MAIN
FP	FLOODPLAIN
FW	FLOODWAY
GV	GATE VALVE
GV&B	GATE VALVE AND BOX
GFL	GUTTER FLOW LINE
GUY	GUY WIRE
HB	HIGH BANK
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HMAC	HOT MIX ASPHALT CONCRETE
INT	INTERSECTION
IP	IRON PIPE
IR	IRON ROD
JB	JUNCTION BOX
LT	LEFT
LF	LINEAR FEET
MH	MANHOLE
ME	MATCH EXISTING ELEVATION
MEP	MATCH EXISTING PAVEMENT
MAX	MAXIMUM
MIN	MINIMUM
NG	NATURAL GROUND
OCEW	ON CENTER EACH WAY
OFST	OFFSET
OHE	OVERHEAD ELECTRIC
OPR	OFFICIAL PUBLIC RECORD
PVMT	PAVEMENT
POB	POINT OF BEGINNING
POC	POINT OF COMMENCEMENT
PVI	POINT OF VERTICAL INTERSECTION
PVC	POLYVINYL CHLORIDE PIPE
PP	POWER POLE
PROP	PROPOSED
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
RT	RIGHT
ROW	RIGHT OF WAY
S	SLOPE
SAN	SANITARY SEWER
SHT	SHEET
SHLDR	SHOULDER
SNGL	SINGLE
SF	SQUARE FEET
STA	STATION
STM	STORM SEWER
SY	SQUARE YARDS
TB	TOP OF BANK
TEMP	TEMPORARY
TC	TOP OF CURB
TG	TOP OF GRATE
TP	TOP OF PAVEMENT
TRC	TOP OF RIBBON CURB
TW	TOP OF WALK/SIDEWALK
TPE	TREE PRESERVATION EASEMENT
TPZ	TREE PRESERVATION ZONE
TYP	TYPICAL
UE	UTILITY EASEMENT
WTR	WATER LINE
WSE	WATER SURFACE ELEVATION

CAUTION!! BEFORE YOU DIG – CALL

TEXAS 811	811
ENTERGY	(800) 368–3749
RELIANT ENERGY	(866) 222–7100

CONTRACTOR SHALL USE CAUTION DURING CONSTRUCTION IN THE VICINITY OF ALL OVERHEAD ELECTRIC. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS IN REGARDS TO CLEARANCES AND CONSTRUCTION ACTIVITIES.

CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS, AND CONFIRM POINTS OF CONNECTIONS TO EXISTING IMPROVEMENTS, INCLUDING CONFIRMATION OF ELEVATIONS AND GRADES OF EXISTING FACILITIES AND UTILITIES PRIOR TO STARTING ANY GRADING, PAVING OR UTILITY INSTALLATION. VERIFICATION OF LOCATIONS AND FUNCTIONS OF EACH EXISTING STRUCTURE OR SYSTEM AND ALL EXISTING UTILITY GRADES AND INVERT ELEVATIONS IS THE CONTRACTOR'S RESPONSIBILITY. NOTIFY THE ENGINEER OF ANY DISCREPANCIES IMMEDIATELY. ANY CONFLICTS OR ERRORS BETWEEN EXISTING FIELD CONDITIONS AND ENGINEERING PLANS MUST BE RESOLVED PRIOR TO STARTING EXCAVATION OR SETTING ANY GRAVITY SEWER (STORM OR SANITARY) AND APPURTENANCES.

THE DESIGN OF THE PROJECT WILL HAVE NO NEGATIVE EFFECT ON THIS DEVELOPMENT OR ON THE SURFACE WATER ELEVATION AND/OR THE ADJACENT PROPERTIES. NOR WILL THE DESIGN UNREASONABLY:

A) IMPEDE THE NATURAL FLOW OF SURFACE WATERS FROM HIGHER ADJACENT PROPERTIES.

B) ALTER THE NATURAL FLOW OF SURFACE WATERS SO AS TO DISCHARGE THEM UPON ADJACENT PROPERTIES AT A MORE RAPID RATE, IN GREATER QUANTITIES OR IN A DIFFERENT LOCATION THAN WOULD RESULT FROM THE PRE DEVELOPMENT NATURAL FLOW OF SURFACE WATERS;

C) COLLECT OR CONCENTRATE THE FLOW OF SURFACE WATERS FOR DISCHARGE INTO AN EXISTING NATURAL OR ARTIFICIAL DRAINAGE WAY IN A MANNER WHICH EXCEEDS THE CAPACITY OF THE RECEIVING WATER COURSE.

STANDARD NOTES

1. THE CONTRACTOR SHALL ADHERE TO ALL APPLICABLE STANDARD DETAILS AND SPECIFICATIONS FOR PROPOSED IMPROVEMENTS.
2. REVISIONS TO THESE ENGINEERING PLANS MUST BE AUTHORIZED BY BLEYL ENGINEERING PRIOR TO CONSTRUCTION. BLEYL ENGINEERING – (936) 441–7833
3. THE CONTRACTOR SHALL:
   a. NOTIFY BLEYL ENGINEERING (936–441–7833) AND ALL OTHER PERTINENT AGENCIES 48 HRS BEFORE STARTING WORK.
   b. NOTIFY ALL APPROPRIATE UTILITY COMPANIES 48 HOURS PRIOR TO ANY EXCAVATION.
   c. NOTIFY THE ENGINEER AND ALL PERTINENT AGENCIES OF ALL DESIRED FIELD CHANGES. THE ENGINEER'S APPROVAL MAY BE REQUIRED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY AND SAFETY PROVISIONS REQUIRED TO PROTECT INDIVIDUALS, EQUIPMENT, MATERIALS AND WORKMANSHIP NECESSARY FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIALS IN SAFE AND WORKMANLIKE MANNER TO PREVENT INJURIES DURING AND AFTER WORKING HOURS UNTIL PROJECT COMPLETION.
5. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF ANY APPARENT OR SPECIAL NEEDS TO COMPLETE THE SCOPE OF WORK INCLUDED IN THIS PROJECT. THESE MAY INCLUDE THE NEED FOR OWNER PROVIDED SERVICES SUCH AS WATER, STAFF AVAILABILITY, ETC.
6. ACCURATE RECORDS SHOWING THE INSTALLED LOCATIONS OF ALL IMPROVEMENTS SHALL BE MAINTAINED DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MAINTAIN ACCESS DURING THE CONSTRUCTION PERIOD. SCHEDULING OF ACTIVITIES SHOULD EMPHASIZE ACCESSIBILITY TO THE PROJECT SITE. EXTENDED PERIODS OF RESTRICTED ACCESS MUST BE LIMITED.
8. THE CONTRACTOR SHALL PROTECT EXISTING MONUMENTS, YARDS, PRIVATE UTILITIES, DRIVES, CURBS, MAIL BOXES, SIGNS, IMPROVEMENTS, CULVERTS, AND OWNER'S FACILITIES FROM DAMAGE DURING CONSTRUCTION. DAMAGE DONE TO THESE ITEMS SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL MOVE AND REPLACE SUCH MOVABLE ITEMS AS MAIL BOXES, TRAFFIC CONTROL, BUSINESS SIGNS, AND STREET SIGNS AS NECESSARY FOR CONSTRUCTION. FENCES OR STRUCTURES WHICH REQUIRE DISMANTLING OR REMOVAL SHALL BE RECONSTRUCTED OR REPLACED TO EQUAL OR BETTER THAN ORIGINAL CONDITION.
9. AT THE END OF ALL CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL RESTORE EXISTING FACILITY (I.E. PROPERTY) EQUAL TO OR BETTER THAN EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. CLEAN–UP ACTIVITIES SHALL BE MAINTAINED THROUGHOUT THE CONTRACT PERIOD.
10. THE CONTRACTOR SHALL TAKE SPECIAL CARE TO ENSURE THAT SURFACE DRAINAGE IS NOT IMPEDED BY CONSTRUCTION WORK.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PROTECTION OF CONSTRUCTION ACTIVITIES DURING THE CONTRACT PERIOD. THIS SHALL INCLUDE ANY EROSION CONTROL MEASURES AND RE–GRADING NECESSARY TO ACHIEVE THE LINES AND GRADES SET FORTH BY THESE PLANS.
12. SIGNING, BARRICADING AND LIGHTING FOR CONSTRUCTION WITHIN HIGHWAY RIGHT–OF–WAY SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND OTHER APPLICABLE STATE OR LOCAL STANDARDS. SIGNS, BARRICADES AND LIGHTS SHALL BE KEPT CLEAN, OPERATIONAL AND PROPERLY POSITIONED TO ASSURE PROPER SAFETY PRECAUTIONS.
13. ALL TESTING PROCEDURES USED ON THIS PROJECT SHALL CONFORM TO THE TXDOT, TCEQ, AWWA, NSF OR APPLICABLE STANDARDS. THE TESTING EXPENSE SHALL BE BORNE BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.
14. THE CONTRACTOR SHOULD BE AWARE THAT THERE ARE OVERHEAD AND UNDERGROUND ELECTRICAL, TELEPHONE, ETC. LINES WITHIN THE PROJECT SITE. THE CONTRACTOR AND HIS PERSONNEL SHALL EXERCISE CARE AROUND THESE LINES TO PREVENT DAMAGE TO LINES AND INJURY TO THE PERSONNEL. ANY DAMAGE SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.
15. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES WITH FACILITIES IN THE PROJECT LOCATION NO LESS THAN 48 HOURS PRIOR TO CONSTRUCTION ACTIVITIES IN THE RESPECTIVE WORK AREAS. ADEQUATE PROVISIONS FOR PROTECTING EXISTING FACILITIES SHOULD BE EMPLOYED.
16. ALL UNDERGROUND UTILITY LINES, SIZES, AND MATERIAL TYPES SHOWN ON THE PLANS ARE FOR THE PURPOSE OF MAKING THE CONTRACTOR AWARE THAT THEY EXIST. NEITHER THE OWNER, NOR THE ENGINEER GUARANTEES THE ACCURACY THEREOF. ALSO, THE LOCATIONS OF SOME EXISTING UTILITY LINES ARE NOT KNOWN AND THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE AND MATERIAL TYPES OF ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE FINAL ALIGNMENT OF THE PROPOSED MAIN LINES ARE SUBJECT TO MODIFICATION PENDING THE ESTABLISHMENT OF EXISTING UTILITY LOCATIONS.
17. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" TO DETERMINE IF CONFLICTS EXIST BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICTS.
18. THE LATEST TCEQ REGULATIONS MUST BE FOLLOWED FOR CROSSINGS OF SANITARY SEWER MAINS AND WATER MAINS. IT IS THE INTENT THAT THE MOST ECONOMICALLY ACCEPTABLE ALTERNATIVE BE ELECTED. ACCORDINGLY, FIELD VERIFICATION OF EXISTING UTILITY GRADES IS IMPERATIVE.
19. FINAL COVER OF INSTALLED LINES SHALL NOT BEGIN PRIOR TO OBSERVATION AND ACCEPTANCE BY THE OWNER OR ENGINEER. THE CONTRACTOR SHALL CONTACT THE OWNER BY 4:00 P.M. REGARDING THE SCHEDULING OF THESE MONITORING VISITS.
20. CONNECTIONS TO EXISTING LINES SHALL INCLUDE ALL REQUIRED FITTINGS, MATERIALS REQUIRED TO MAKE A SUCCESSFUL TIE IN MEETING ALL APPLICABLE STANDARDS.
21. THE LOADING AND UNLOADING OF ALL MATERIALS AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL AT ALL TIMES BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. THE CONTRACTOR SHALL LOCATE AND PROVIDE THE NECESSARY STORAGE AREAS FOR MATERIALS AND EQUIPMENT.
22. ALL MATERIALS AND EQUIPMENT SHALL BE BOTH FURNISHED AND INSTALLED UNLESS OTHERWISE NOTED.
23. CONTRACTOR SHALL PROVIDE SHEETING, SHORING AND BRACING AS NECESSARY TO PROTECT WORKMEN AND EXISTING UTILITIES DURING ALL PHASES OF CONSTRUCTION AS PER OSHA REQUIREMENTS.

REV	DATE	BY	APP	COMMENT

PREPARED FOR:
NORTHERN OAKS LLC
15925 FM 3083, STE 6
PMB 8512
CONROE, TX 77302

BLEYL ENGINEERING
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100 Nugent Street, Conroe, TX 77301
Texas Firm Registration No. F-678
Tel. 936-441-7833 Fax 936-760-3833
www.bleylengineering.com

AUSTIN BRYAN CONROE HOUSTON

CONSTRUCTION NOTES

LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A–112 AND THE
ELIJAH ANDERSON SURVEY, A–2
WALKER COUNTY, TEXAS

THIS SET OF PLANS WAS PREPARED UNDER THE DIRECTION OF GREGORY M. STRUBE P.E., SEAL No.103290 ON JANUARY 13, 2020. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY AND NOT TO BE USED FOR CONSTRUCTION.

DESIGN: GREG M. STRUBE, PE	
CAD: SGK	RVW: RVW
PROJECT NO: 12529	
SHEET: 2	OF: 17

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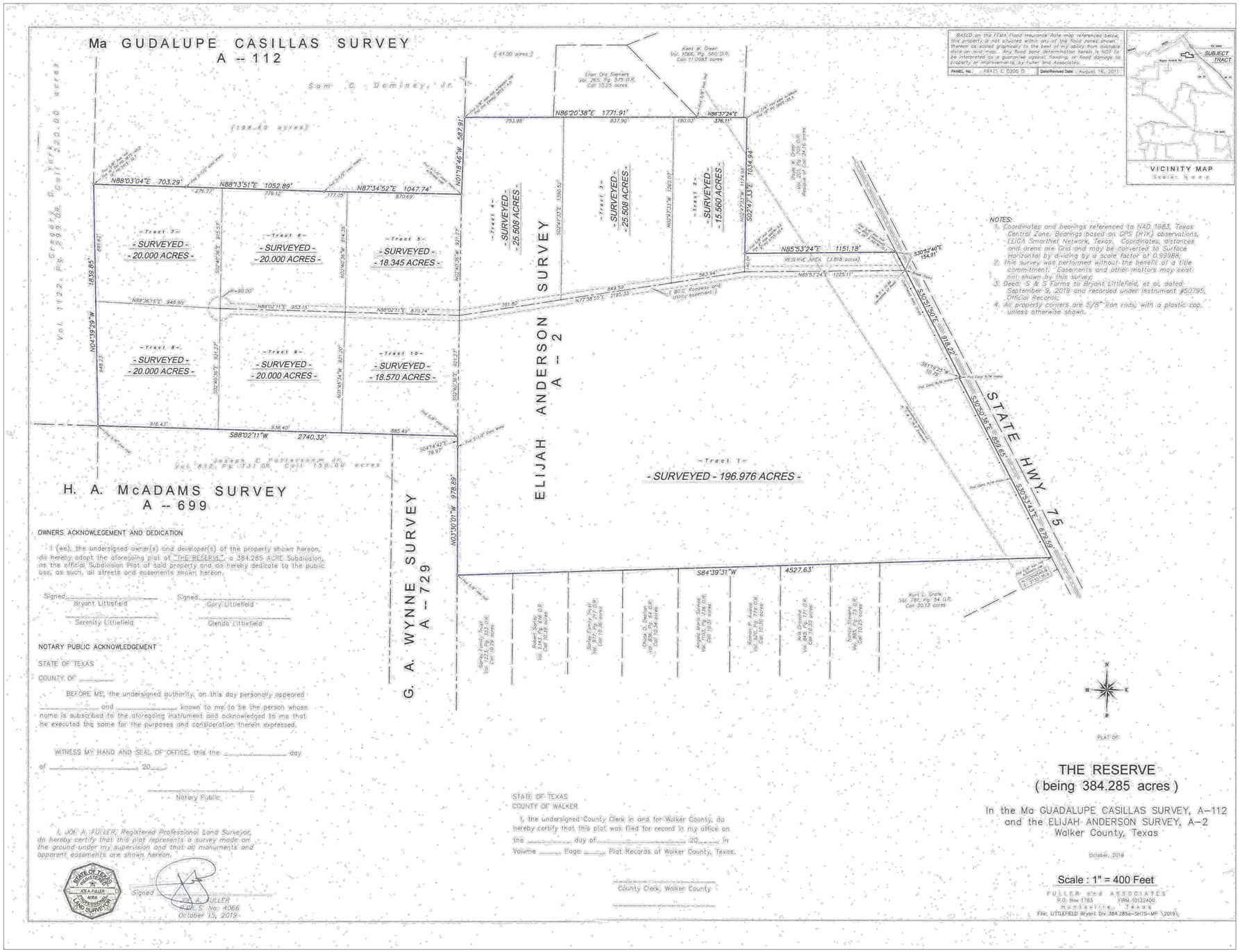


BASED on the FEMA Flood Insurance Rate map referenced below, this property is not situated within any of the flood zones shown thereon as scaled graphically to the best of my ability from available data on said map. Any flood zone determination herein is NOT to be interpreted as a guarantee against flooding, or flood damage to property or improvements, by Fuller and Associates.

PANEL No.	48471 C 0200 D	Date/Revised Date	August 16, 2011

NOTES:

1. Coordinates and bearings referenced to NAD 1983, Texas Central Zone. Bearings based on GPS (HIK) observations, LEICA SmartNet Network, Texas. Coordinates, distances and areas are Grid and may be converted to Surface Horizontal by dividing by a scale factor of 0.99988.
2. This survey was performed without the benefit of a title commitment. Easements and other matters may exist not shown by this survey.
3. Deed: S & S Farms to Bryant Littlefield, et al, dated September 9, 2019 and recorded under Instrument #50795, Official Records;
4. All property corners are 5/8" iron rods, with a plastic cap, unless otherwise shown.

OWNERS ACKNOWLEGEMENT AND DEDICATION

I (we), the undersigned owner(s) and developer(s) of the property shown hereon, do hereby adopt the aforegoing plat of "THE RESERVE", a 384.285 ACRE Subdivision, as the official Subdivision Plat of said property and do hereby dedicate to the public use, as such, all streets and easements shown hereon.

Signed _____ Signed _____
Bryant Littlefield Cary Littlefield

_____ _____
Serenity Littlefield Glenda Littlefield

NOTARY PUBLIC ACKNOWLEDGEMENT

STATE OF TEXAS

COUNTY OF _____

BEFORE ME, the undersigned authority, on this day personally appeared _____ and _____, known to me to be the person whose name is subscribed to the aforegoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

WITNESS MY HAND AND SEAL OF OFFICE, this the _____ day of _____, 20___.

_____
Notary Public

I, JOE A. FULLER, Registered Professional Land Surveyor, do hereby certify that this plat represents a survey made on the ground under my supervision and that all monuments and apparent easements are shown hereon.

STATE OF TEXAS REGISTERED JOE A. FULLER 4066 PROFESSIONAL LAND SURVEYOR

Signed _____
Joe A. FULLER
R.P.L.S. No. 4066
October 15, 2019

STATE OF TEXAS
COUNTY OF WALKER

I, the undersigned County Clerk in and for Walker County, do hereby certify that this plat was filed for record in my office on the _____ day of _____, 20____, in Volume _____, Page _____, Plat Records of Walker County, Texas.

_____
County Clerk, Walker County

PLAT OF

THE RESERVE
(being 384.285 acres)

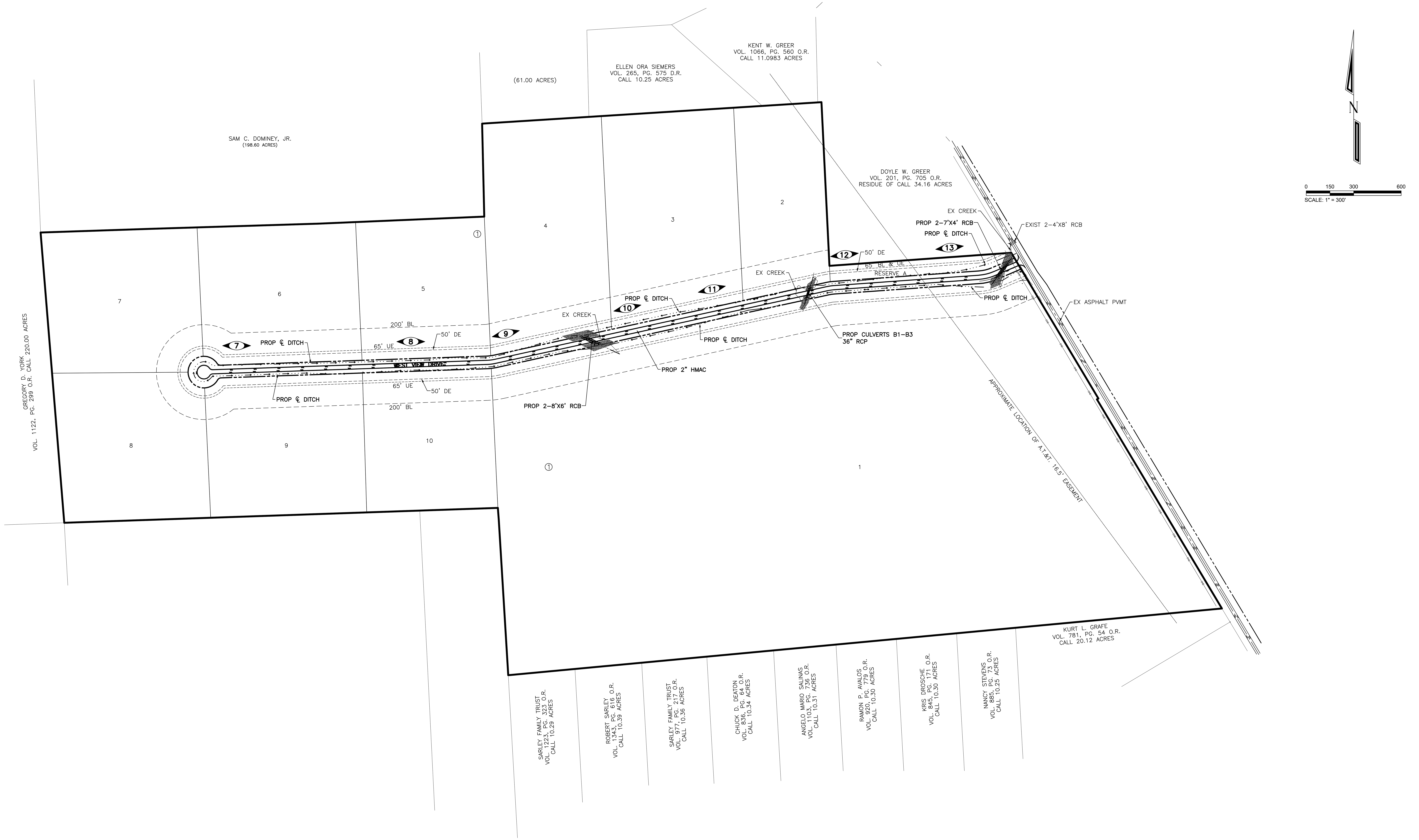
In the Ma GUADALUPE CASILLAS SURVEY, A-112
and the ELIJAH ANDERSON SURVEY, A-2
Walker County, Texas

October, 2019

Scale : 1" = 400 Feet

FULLER and ASSOCIATES
P.O. Box 1785 FIRM 10122400
Huntsville, Texas
File: LITTLEFIELD Bryant Div 384.285a-SH75-MP 2019

ORIGINAL LAYOUT SIZE – 22X34



CONTRACTOR SHALL USE CAUTION DURING CONSTRUCTION IN THE VICINITY OF ALL OVERHEAD ELECTRIC. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS IN REGARDS TO CLEARANCES AND CONSTRUCTION ACTIVITIES.

LOCATION AND ELEVATION OF EXISTING UTILITIES SHOWN HEREIN ARE PROVIDED BY OTHERS. CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AT ALL CROSSINGS AND CONNECTION POINTS PRIOR TO ANY WORK. ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

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REV	DATE	BY	APP	COMMENT

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CONROE, TX 77302

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AUSTIN BRYAN CONROE HOUSTON

OVERALL

LEGACY ESTATES

384.285 ACRES OF LAND IN THE MA GUADALUPE CASILLAS SURVEY, A-112 AND THE ELIJAH ANDERSON SURVEY, A-2 WALKER COUNTY, TEXAS

THIS SET OF PLANS WAS PREPARED UNDER THE DIRECTION OF GREGORY M. STRUBE P.E., SEAL No.103290 ON JANUARY 13, 2020. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY AND NOT TO BE USED FOR CONSTRUCTION.

DESIGN: GREG M. STRUBE, PE
CAD: SGK | RVW: RVW
PROJECT NO: 12529
SHEET: 4 OF: 17

ORIGINAL LAYOUT SIZE – 22X34

0 150 300 600
SCALE: 1" = 300'

DRAINAGE AREA FLOW (25 YEAR)	A1 — 1.23 ACREAGE / 1.45 FLOW
DITCH FLOW	ACRES A1–A3,B2,C4 AREAS; 3.56 4.89 FLOW; EVENT (25 YR)
CULVERT FLOW	ACRES A1–A3,B2,C4 AREAS; A 3.56 4.89 FLOW; (25 YR) EVENT; CULVERT
OFF SITE DRAINAGE ARROW	
ON SITE DRAINAGE ARROW	
DRAINAGE AREA	

OFFSITE DRAINAGE AREAS AND CULVERT CALCULATIONS ARE FOUND IN THE DRAINAGE REPORT FOR THE LEGACY ESTATES. SEE SHEET 6 FOR DITCH CALCULATIONS.

SECTION "A–A"
NTS

SECTION "B–B"
NTS

SECTION "C–C"
NTS

SECTION "D–D"
NTS

SECTION "E–E"
NTS

CONTRACTOR SHALL USE CAUTION DURING CONSTRUCTION IN THE VICINITY OF ALL OVERHEAD ELECTRIC. CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS IN REGARDS TO CLEARANCES AND CONSTRUCTION ACTIVITIES.

FLOOD PLAIN: THIS PROJECT DOES LIE PARTIALLY WITHIN THE 100 YEAR FLOOD PLAIN IN ACCORDANCE WITH FEMA COMMUNITY MAP PANEL NO. 48471C0200D, WALKER COUNTY, TEXAS. EFFECTIVE DATE AUGUST 16, 2011.

LOCATION AND ELEVATION OF EXISTING UTILITIES SHOWN HEREIN ARE PROVIDED BY OTHERS. CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AT ALL CROSSINGS AND CONNECTION POINTS PRIOR TO ANY WORK. ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

REV	DATE	BY	APP	COMMENT

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DRAINAGE PLAN

LEGACY ESTATES

384.285 ACRES OF LAND IN THE MA
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SHEET: 5	OF: 17

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ORIGINAL LAYOUT SIZE - 22X34

DRAINAGE SUMMARY TABLE

Drainage Areas		Runoff Coefficients					Tc	Rational Flowrate			
		Individual Runoff Coefficient									
Drainage Area	Area	WOODLANDS [0.30]	PASTURE [0.35]	ROADWAY [0.95]	Composite "c"	Cumulative CA	Design T_c	25-yr Intensity	25-yr Flow, Q	100-yr Intensity	100-yr Flow, Q
ID	ac	ac	ac	ac	"c"	ac	min	in/hr	cfs	in/hr	cfs
A	4.06	0.00	3.12	0.94	0.49	1.99	10.00	2.51	5.48	3.23	8.01
B	3.13	0.00	2.26	0.87	0.52	1.62	10.00	2.60	4.63	3.33	6.73
C	23.08	23.08	0.00	0.00	0.30	6.92	44.63	3.48	26.51	4.37	37.82
D	1.98	0.00	1.63	0.35	0.46	0.90	10.00	4.45	4.42	5.57	6.29
E	1.68	1.68	0.00	0.00	0.30	0.50	11.61	8.06	4.47	10.11	6.37
F	0.49	0.00	0.37	0.12	0.50	0.24	10.00	7.46	2.00	9.34	2.84
G	0.37	0.37	0.00	0.00	0.30	0.11	10.00	8.20	1.00	10.30	1.43
H	0.43	0.00	0.30	0.13	0.53	0.23	10.00	6.33	1.59	7.91	2.26
I	48.31	3.62	44.69	0.00	0.35	16.73	93.67	2.44	44.90	3.15	65.86
J	1.96	1.96	0.00	0.00	0.30	0.59	35.31	3.73	2.41	4.68	3.44
K	0.18	0.00	0.11	0.07	0.58	0.11	10.00	8.82	1.02	11.10	1.46
L	0.68	0.00	0.53	0.15	0.48	0.33	10.00	7.21	2.60	9.02	3.70

CULVERT SUMMARY TABLE

(SEE DRAINAGE REPORT)

DITCH SUMMARY TABLE

	Ditch Flow Calculations [Cumulative Drainage Area]							Ditch Characteristics [Variable Inputs]							Capacity Calculations [Shallowest Slope of Reach]					Velocity Calculations [Steepest Slope of Reach]				
Ditch ID	Ditch Drainage Area	Rational Method Coefficient	Pipe C*A	Ditch Time of Concentration (minimum of 10 minutes)	Rainfall Event	Ditch Intensity	Rational Method Ditch Flow	Mannings 'n'	Left Side Slope (##:1)	Right Side Slope (##:1)	Bottom Width	Ditch Length	Ditch Slope (Lowest)	Ditch Slope (Highest)	Flow Depth	Cross Sectional Area	Wetted Perimeter	Hydraulic Radius	Design Flow	Flow Depth	Cross Sectional Area	Wetted Perimeter	Hydraulic Radius	Max Velocity [from steepest slope]
ID	ac.	C	CA	min.	-	in./hr.	cfs	n	ft.	ft.	ft.	ft.	%	%	ft.	sq. ft.	ft.	ft.	cfs	ft.	sq. ft.	ft.	ft.	ft./sec.
REACH A	4.06	0.49	1.985	10.00	25-year	9.92	**21.67**	0.04	6.0	4.0	9.0	2700	0.30%	6.54%	**0.97**	13.36	18.86	0.71	21.67	0.42	4.60	13.24	0.35	**4.71**
REACH B	3.13	0.52	1.6175	10.00	25-year	9.92	**17.66**	0.04	6.0	4.0	9.0	2555	0.20%	6.61%	**0.97**	13.34	18.85	0.71	17.66	0.37	4.00	12.76	0.31	**4.42**
REACH C	23.08	0.30	6.924	44.63	25-year	4.49	**34.20**	0.04	6.0	4.0	10.0	1045	0.20%	2.84%	**1.31**	21.61	23.34	0.93	34.20	0.64	8.50	16.56	0.51	**4.02**
REACH D	1.98	0.46	0.903	10.00	25-year	9.92	**9.86**	0.04	6.0	4.0	4.0	911	0.20%	3.71%	**0.95**	8.27	13.66	0.61	9.86	0.46	2.87	8.66	0.33	**3.44**
REACH E	1.68	0.30	0.504	11.61	25-year	9.31	**5.16**	0.04	6.0	4.0	0.0	380	0.20%	5.58%	**1.00**	4.99	10.20	0.49	5.16	0.54	1.43	5.46	0.26	**3.60**
REACH F	0.49	0.50	0.2435	10.00	25-year	9.92	**2.66**	0.04	6.0	4.0	0.0	393	0.20%	5.25%	**0.78**	3.03	7.95	0.38	2.66	0.42	0.89	4.31	0.21	**2.98**
REACH G	0.37	0.30	0.111	10.00	25-year	9.92	**1.21**	0.04	6.0	4.0	0.0	329	0.24%	14.98%	**0.56**	1.57	5.72	0.27	1.21	0.26	0.33	2.64	0.13	**3.63**
REACH H	0.43	0.53	0.2285	10.00	25-year	9.92	**2.49**	0.04	6.0	4.0	0.0	365	0.48%	6.23%	**0.65**	2.08	6.59	0.32	2.49	0.40	0.80	4.07	0.20	**3.13**
REACH I	48.31	0.35	16.7275	93.67	25-year	2.76	**50.79**	0.04	6.0	4.0	8.0	882	0.60%	3.60%	**1.31**	19.01	21.35	0.89	50.79	0.82	10.00	16.42	0.61	**5.08**
REACH J	1.96	0.30	0.588	35.31	25-year	5.19	**3.35**	0.04	6.0	4.0	0.0	870	0.20%	6.15%	**0.85**	3.61	8.67	0.42	3.35	0.45	1.00	4.56	0.22	**3.36**
REACH K	0.18	0.58	0.105	10.00	25-year	9.92	**1.15**	0.04	6.0	4.0	0.0	107	0.20%	8.15%	**0.57**	1.61	5.80	0.28	1.15	0.28	0.40	2.89	0.14	**2.85**
REACH L	0.68	0.48	0.328	10.00	25-year	9.92	**3.58**	0.04	6.0	4.0	0.0	429	0.20%	3.66%	**0.87**	3.79	8.89	0.43	3.58	0.50	1.27	5.15	0.25	**2.81**

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DRAINAGE CALCULATIONS

LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A-112 AND THE
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WALKER COUNTY, TEXAS

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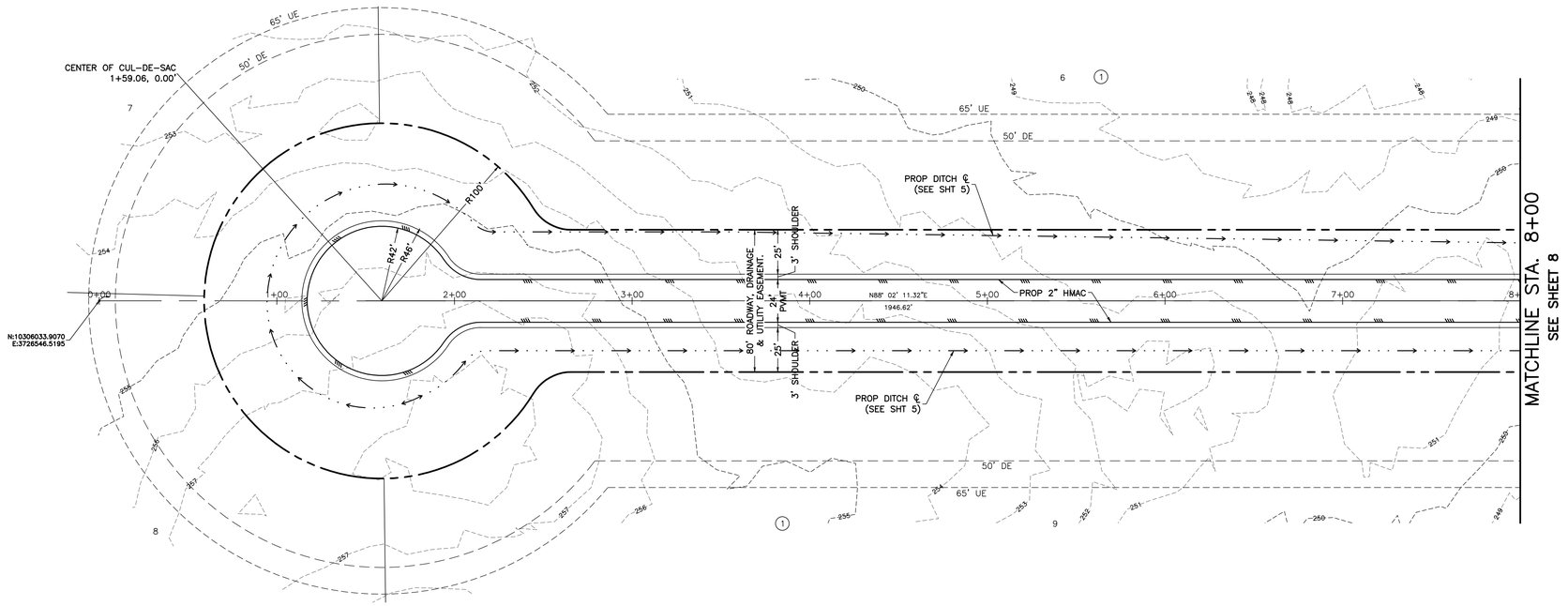
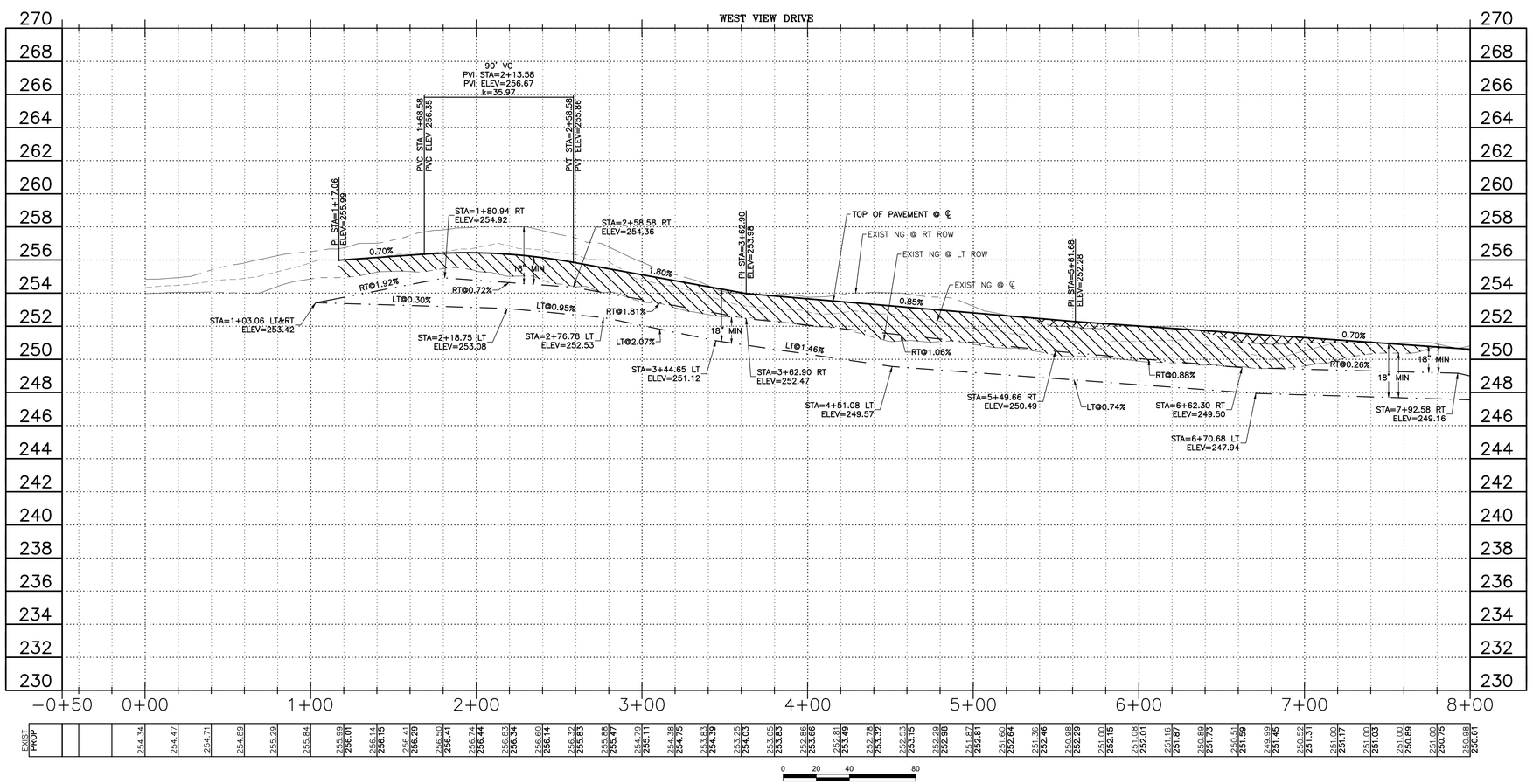
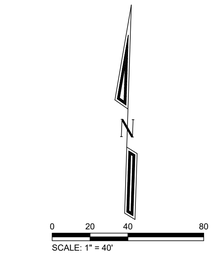
ORIGINAL LAYOUT SIZE – 22X34







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PROP DITCH(ES)
PROP DITCH LT
PROP DITCH RT
EXIST NG ℄
EXIST NG LT
EXIST NG RT
LEFT FILL
RIGHT FILL
LT/RT FILL
RIPRAP

REV	DATE	BY	APP	COMMENT

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SHEET: 7	OF: 17

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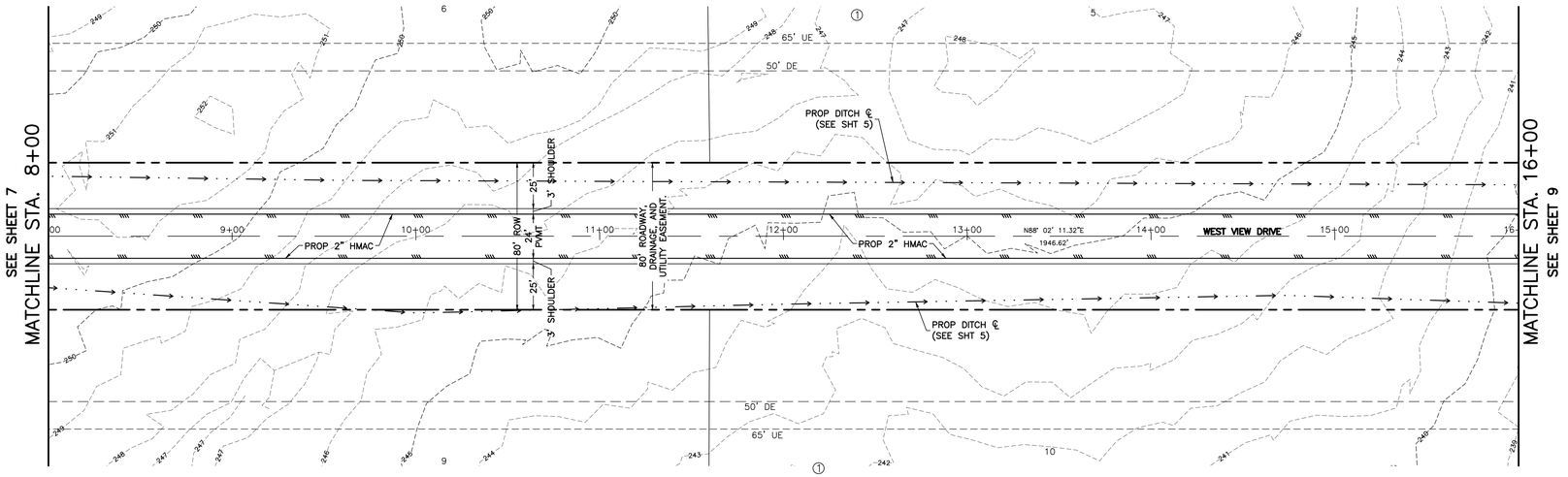
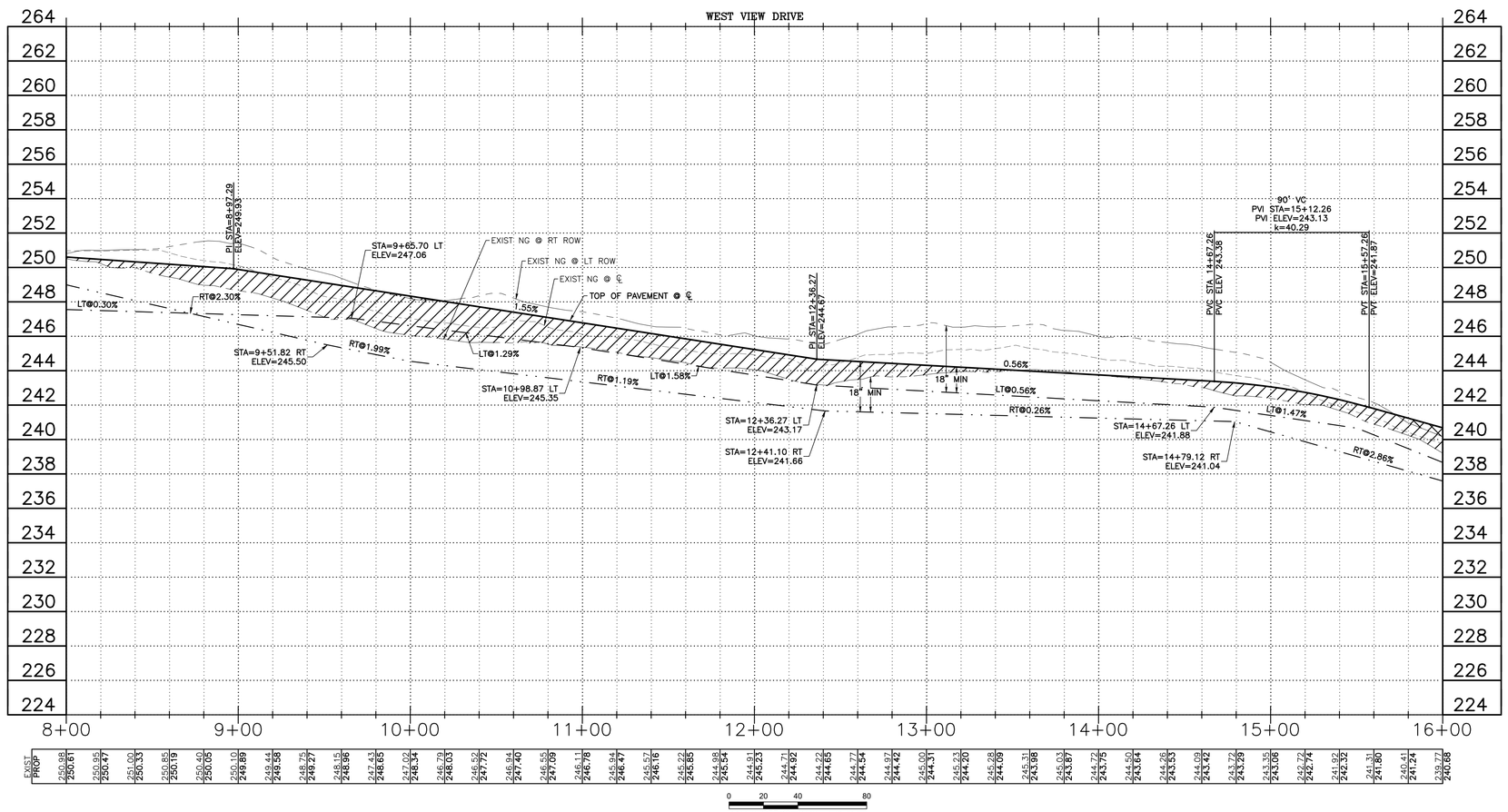
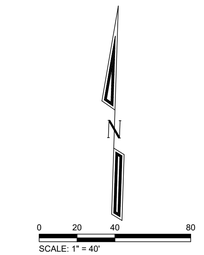
ORIGINAL LAYOUT SIZE – 22X34





SCALE: HORZ. 1" = 40' ; VERT. 1"=4'



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PROP DITCH LT
PROP DITCH RT
EXIST NG ℄
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LEFT FILL
RIGHT FILL
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RIPRAP

REV	DATE	BY	APP	COMMENT

PREPARED FOR:
NORTHERN OAKS LLC
15925 FM 3083, STE 6
PMB 8512
CONROE, TX 77302

BLEYL ENGINEERING
PLANNING • DESIGN • MANAGEMENT
100 Nugent Street, Conroe, TX 77301
Texas Firm Registration No. F-678
Tel. 936-441-7833 Fax 936-760-3833
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AUSTIN BRYAN CONROE HOUSTON

WEST VIEW DRIVE
STA 8+00 TO 16+00

LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A-112 AND THE
ELIJAH ANDERSON SURVEY, A-2
WALKER COUNTY, TEXAS

THIS SET OF PLANS WAS PREPARED UNDER THE DIRECTION OF GREGORY M. STRUBE P.E., SEAL No.103290 ON JANUARY 13, 2020. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY AND NOT TO BE USED FOR CONSTRUCTION.

DESIGN: GREG M. STRUBE, PE	
CAD: SGK	RVW: RVW
PROJECT NO: 12529	
SHEET: 8	OF: 17

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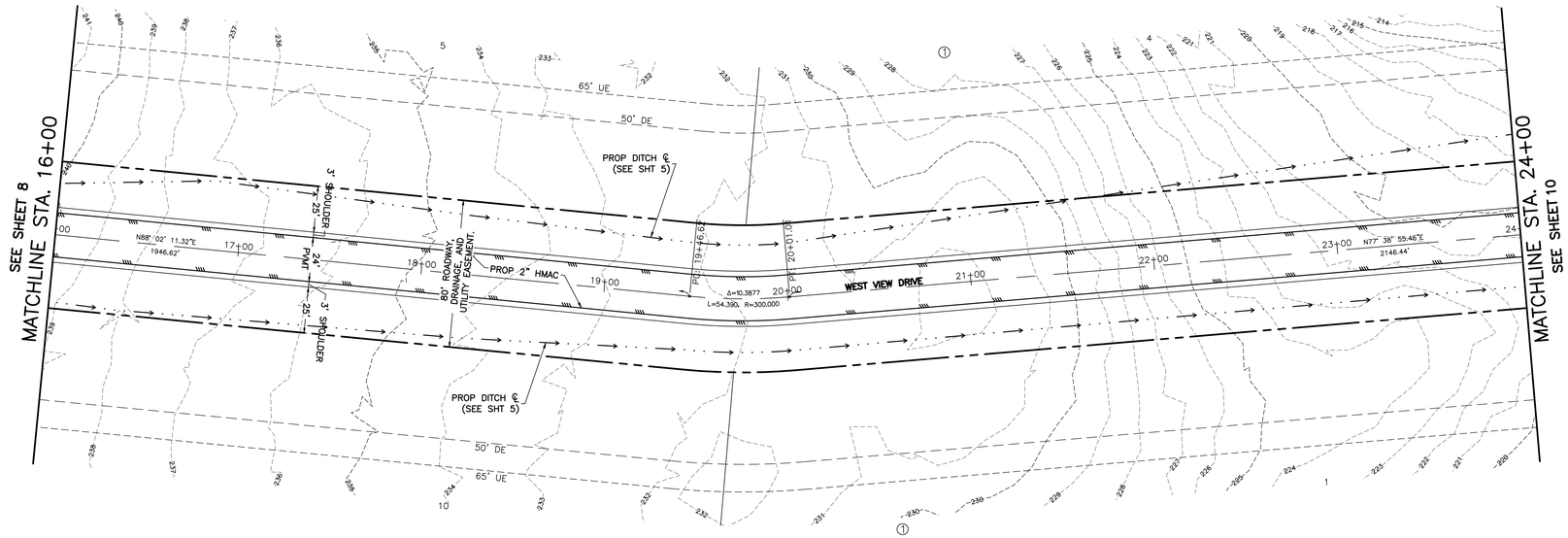
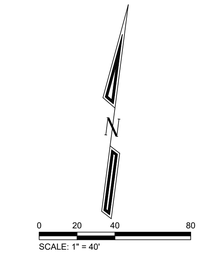
ORIGINAL LAYOUT SIZE – 22X34





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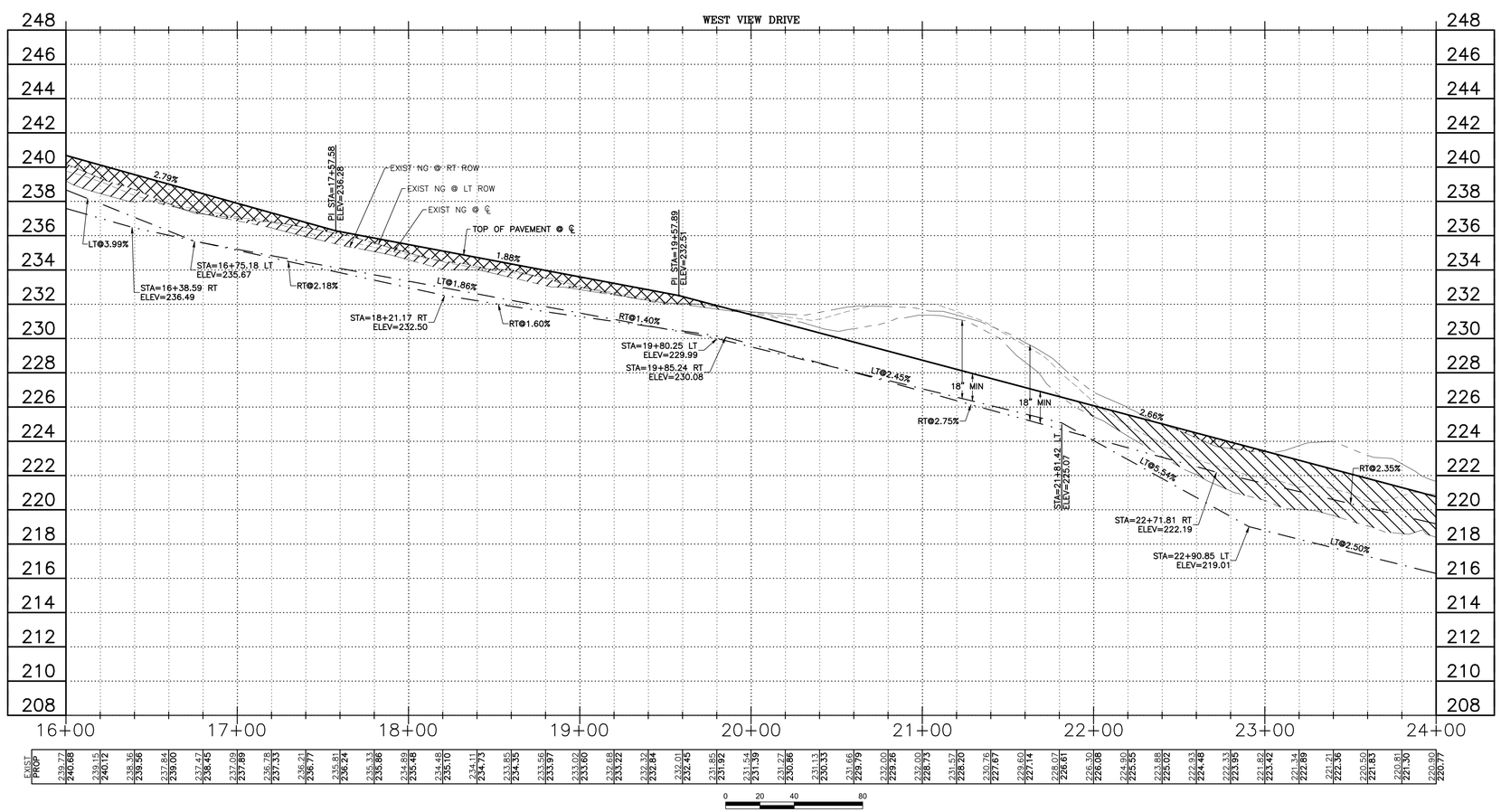

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PREPARED FOR:
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15925 FM 3083, STE 6
PMB 8512
CONROE, TX 77302

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AUSTIN BRYAN CONROE HOUSTON

WEST VIEW DRIVE
STA 16+00 TO 24+00

LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
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DESIGN: GREG M. STRUBE, PE	
CAD: SGK	RVW: RVW
PROJECT NO: 12529	
SHEET: 9	OF: 17

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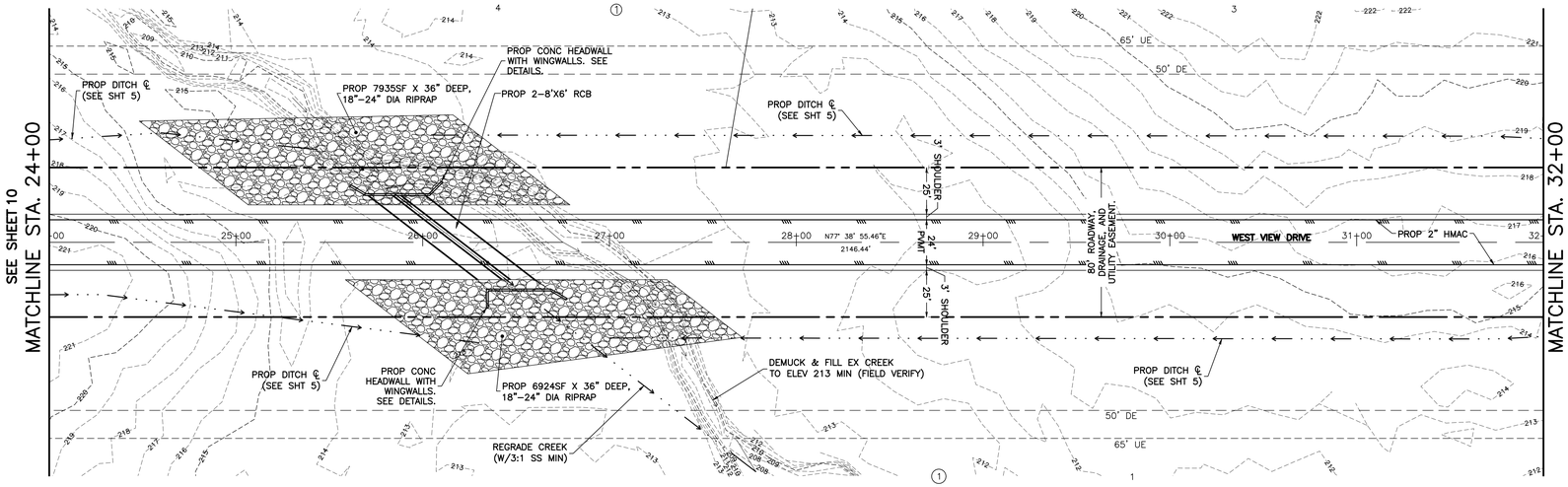
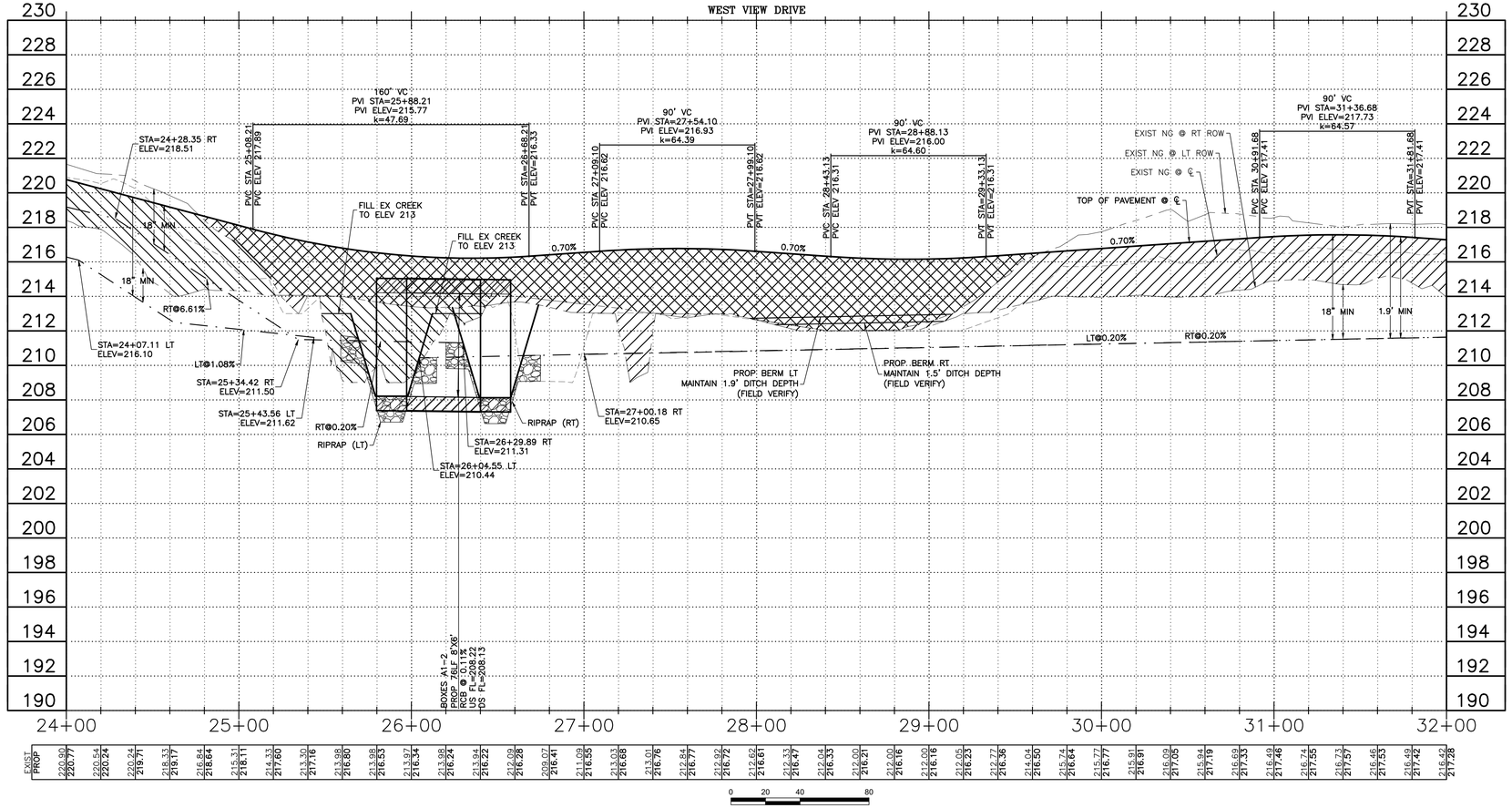
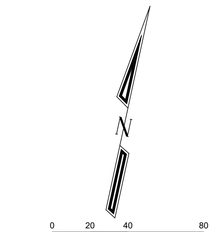
ORIGINAL LAYOUT SIZE – 22X34





SCALE: HORZ. 1" = 40' ; VERT. 1"=4'



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WEST VIEW DRIVE
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LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
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PROJECT NO: 12529	
SHEET: 10	OF: 17

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1/13/2020 3:42:39 PM
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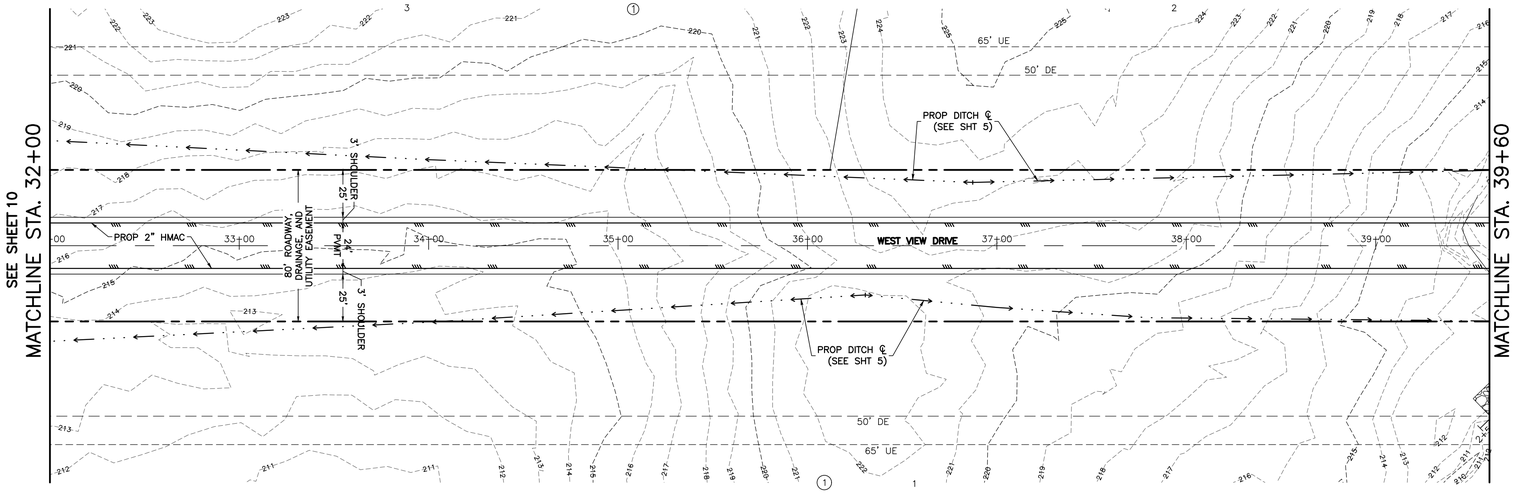
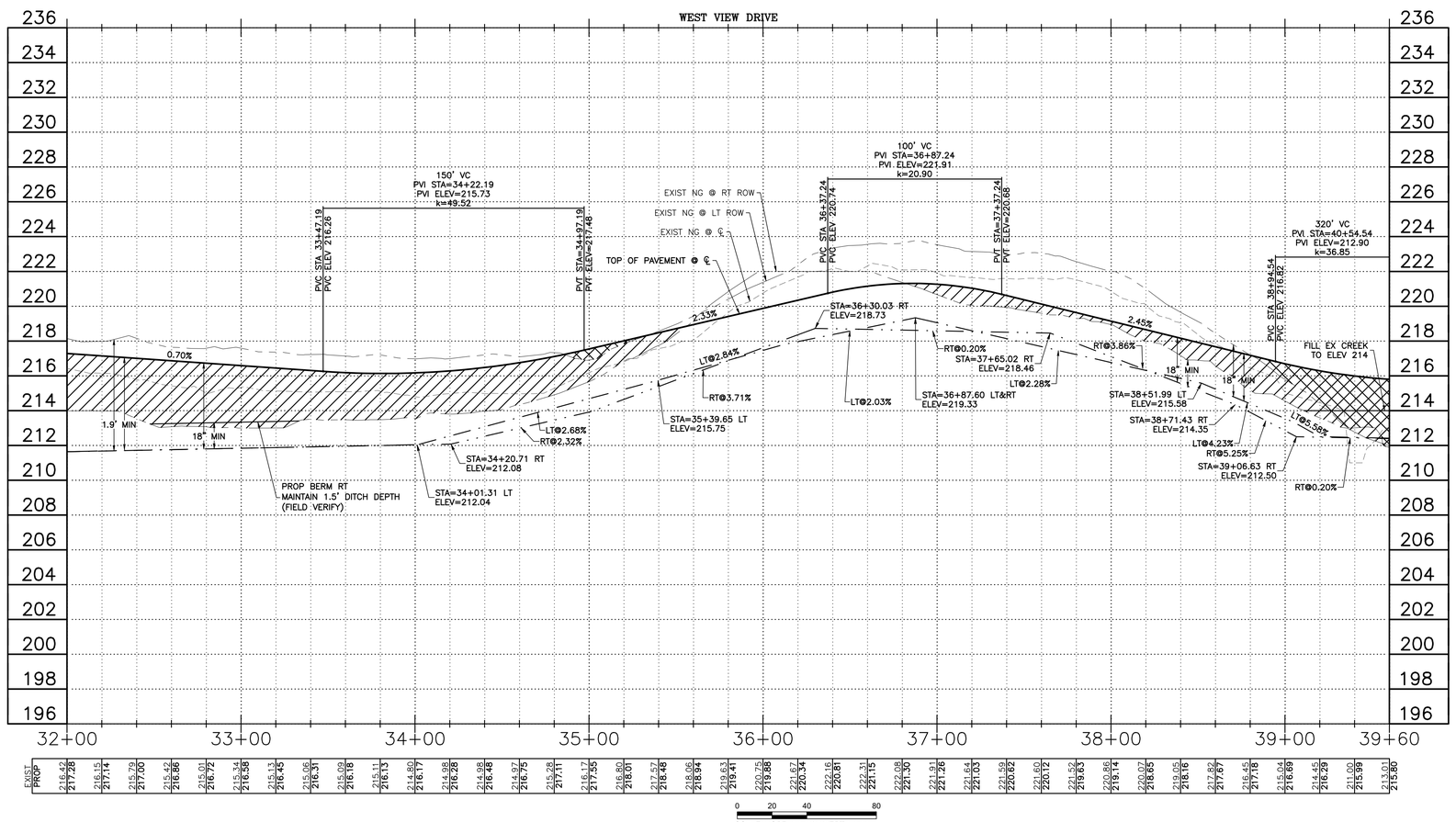
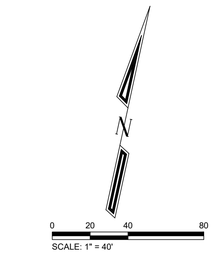
ORIGINAL LAYOUT SIZE – 22X34







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REV	DATE	BY	APP	COMMENT

PREPARED FOR:
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15925 FM 3083, STE 6
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CONROE, TX 77302

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LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
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DESIGN: GREG M. STRUBE, PE	
CAD: SGK	RVW: RVW
PROJECT NO: 12529	
SHEET: 11	OF: 17

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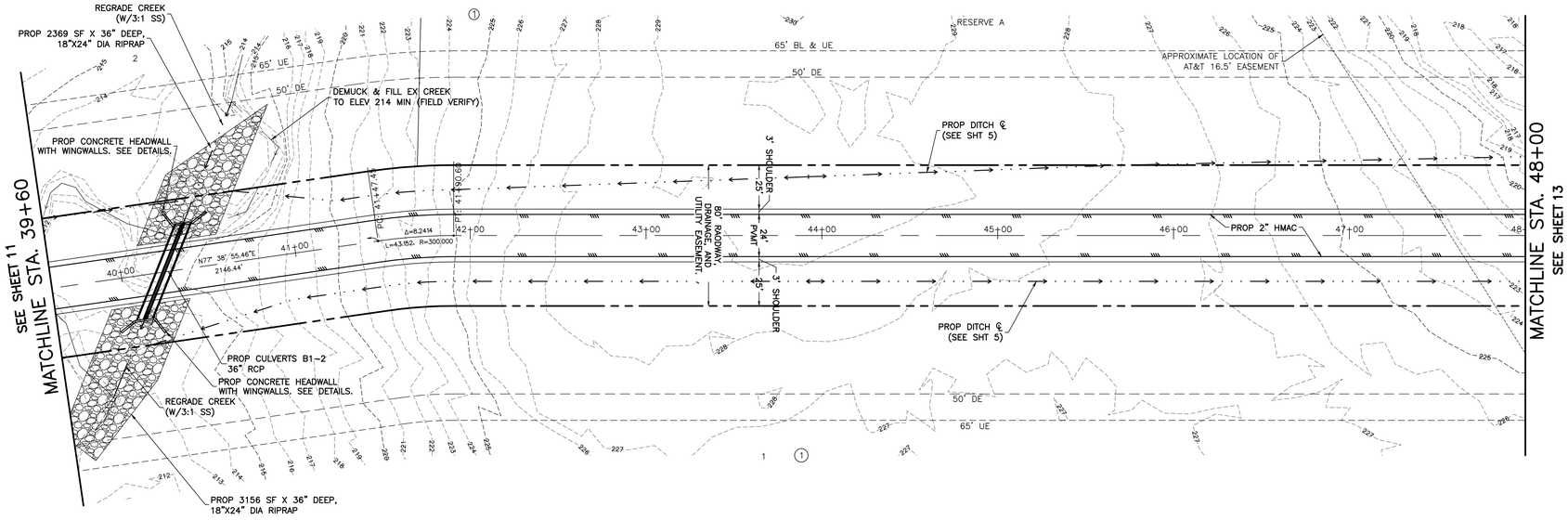

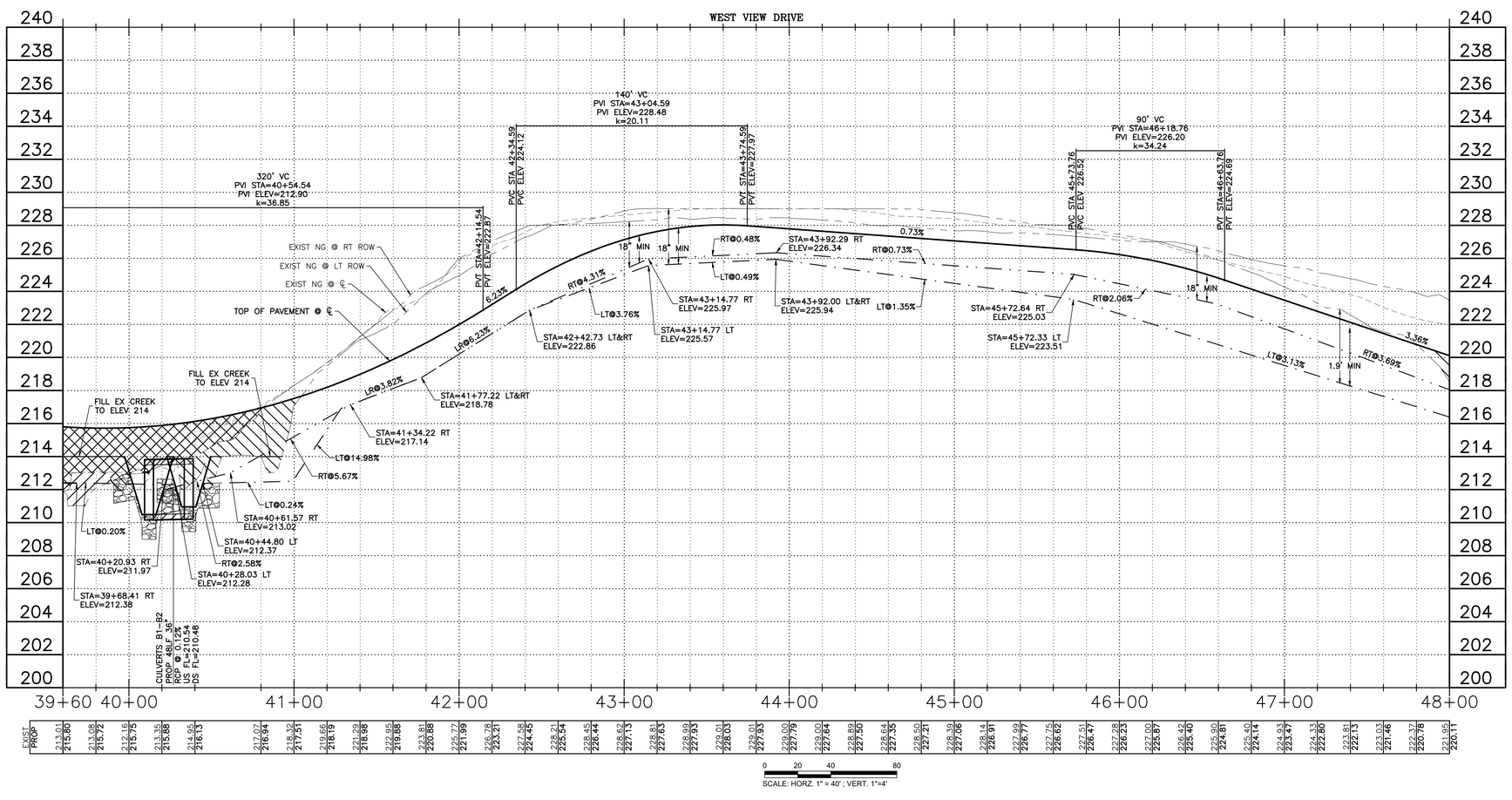

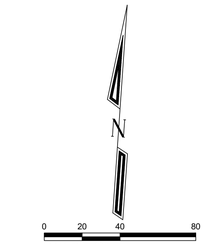

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CONROE, TX 77302

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AUSTIN BRYAN CONROE HOUSTON

WEST VIEW DRIVE
STA 39+60 TO 48+00

LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A-112 AND THE
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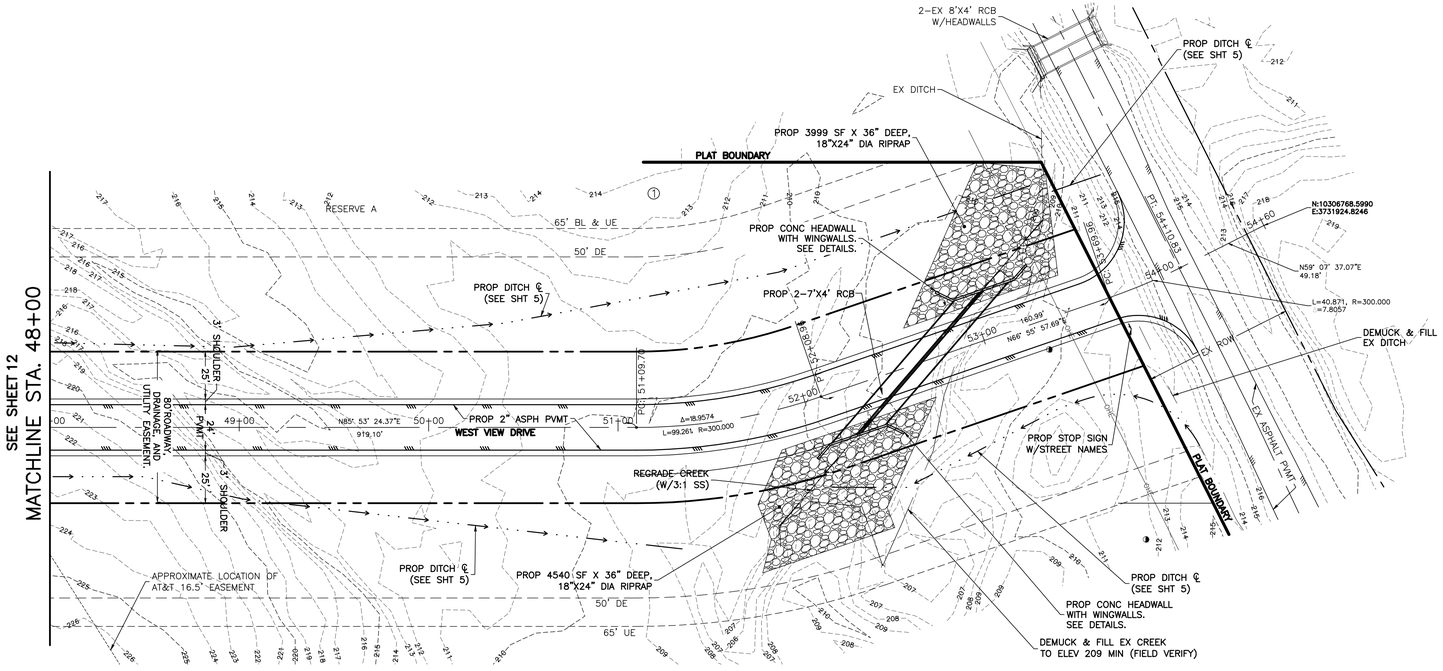
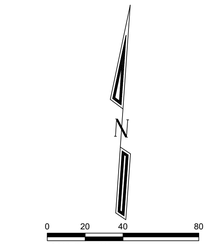
CAD: SGK	RVW: RVW
PROJECT NO: 12529	
SHEET: 12	OF: 17





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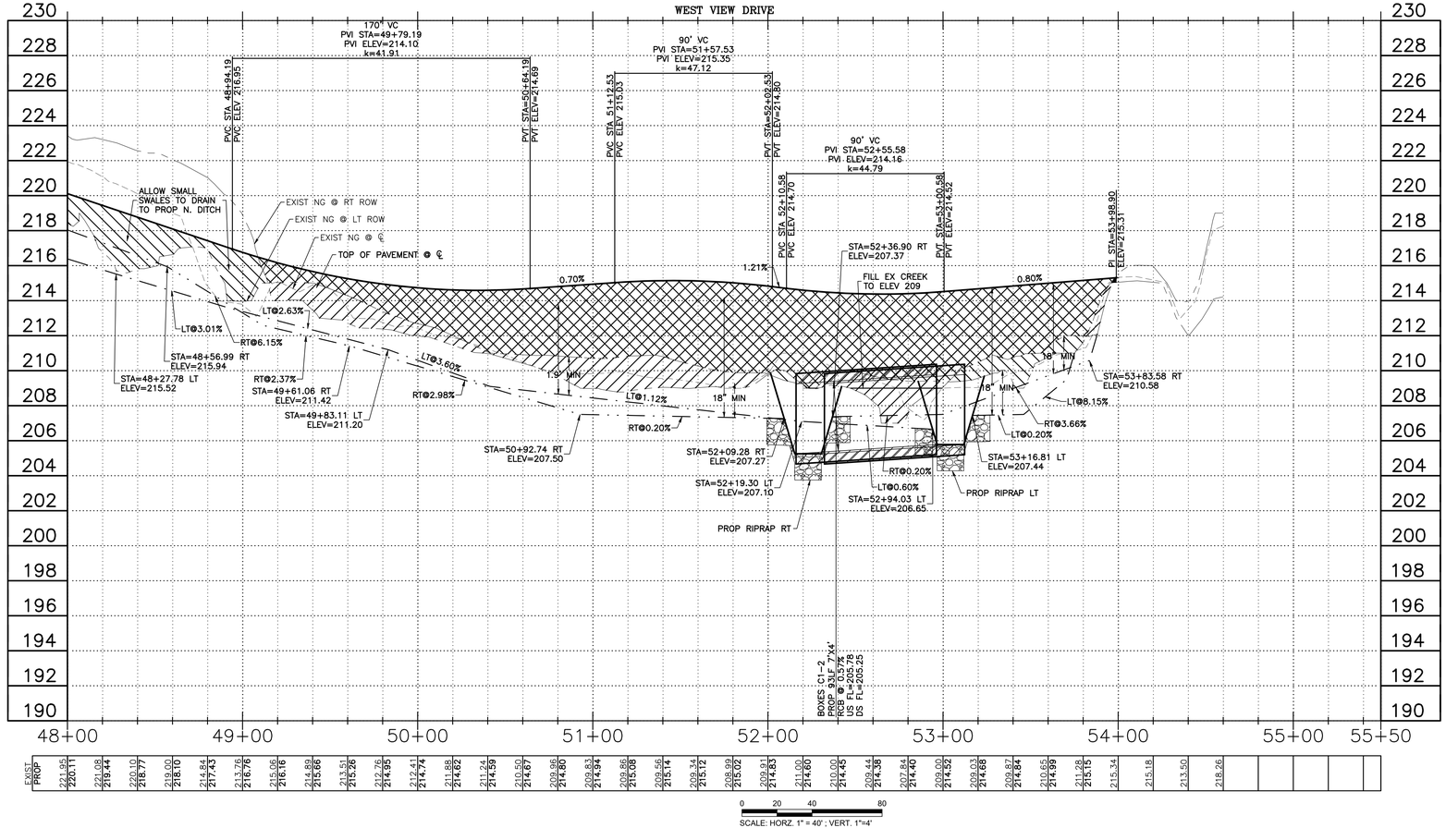

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WEST VIEW DRIVE STA 48+00 TO END

LEGACY ESTATES

384.285 ACRES OF LAND IN THE MA GUADALUPE CASILLAS SURVEY, A-112 AND THE ELIJAH ANDERSON SURVEY, A-2 WALKER COUNTY, TEXAS

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DESIGN: GREG M. STRUBE, PE
CAD: SGK | RVW: RVW
PROJECT NO: 12529
SHEET: 13 OF: 17

ORIGINAL LAYOUT SIZE – 22X34

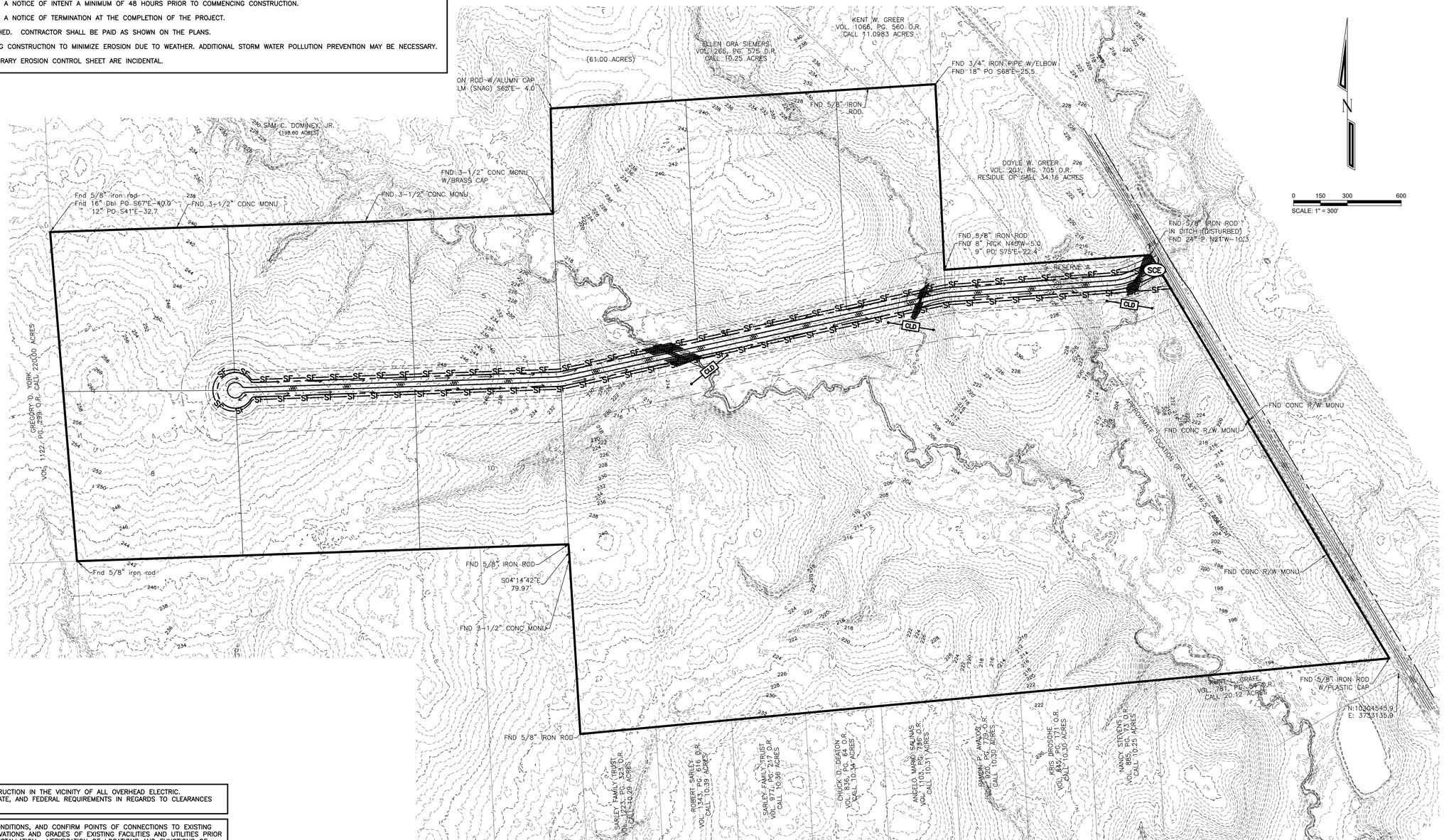
EROSION CONTROL NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG DRIVE AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TEMPORARY EROSION CONTROL PLAN TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STREAM.
2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.
3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.
4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.
   - DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
   - AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
   - STRUCTURAL CONTROL MEASURES.
   - LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.
6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.
7. THE SITE SUPERINTENDENT, OR HIS REPRESENTATIVE, SHALL MAKE A VISUAL INSPECTION OF ALL SILTATION CONTROLS AND NEWLY STABILIZED AREAS ON A DAILY BASIS, ESPECIALLY AFTER A RAINFALL TO ENSURE THAT ALL CONTROLS ARE MAINTAINED AND PROPERLY FUNCTIONING. ANY DAMAGED CONTROLS SHALL BE REPAIRED PRIOR TO THE END OF THE WORK DAY, INCLUDING RE-SEEDING AND MULCHING OR RE-SODDING IF NECESSARY. ALL INSPECTIONS SHALL BE DOCUMENTED WITH A WRITTEN REPORT WITHIN 24 HOURS, WHICH MUST DETAIL ANY REPAIRS DEEMED NECESSARY. SUCH REPAIRS SHALL BE INITIATED WITHIN 24 HOURS OF THE REPORT.
8. ALL SEDIMENT TRAPPING DEVICES SHALL BE INSTALLED AS SOON AS PRACTICAL AFTER THE AREA HAS BEEN DISTURBED. ALL SEDIMENT TRAPPING DEVICES SHALL BE CLEANED WHEN THE SEDIMENT LEVEL REACHES 25% CAPACITY. SEDIMENT SHALL BE DISPOSED OF BY SPREADING ON SITE OR HAULING AWAY IF NOT SUITABLE FOR FILL.
9. SEDIMENT FENCE, HAY BALE BARRIERS, OR OTHER SEDIMENT TRAPPING DEVICES SHALL CONTROL ALL STORM WATER LEAVING THE WORK AREA. ALL FILL OR CUT AREAS SHALL BE HYDRO-MULCHED OR SODDED AS PER THE ENGINEERS' PLANS UPON COMPLETION OR WITHIN 14 DAYS OF SOIL DISTURBING ACTIVITIES.
10. THE CONTRACTOR SHALL SEED ALL AREAS WHEN SOIL-DISTURBING ACTIVITIES CEASE FOR A PERIOD OF MORE THAN 14 DAYS.
11. SILTATION CONTROL (AS SHOWN ON THE DETAIL SHEETS) WILL BE PROVIDED AT ALL STORM DRAIN INLETS ONCE THEY ARE ABLE TO CONVEY WATER. THE SILTATION CONTROL WILL BE REMOVED ONCE TURF IS ESTABLISHED.
12. CONTRACTOR SHALL HYDROMULCH SEED ALL DISTURBED AREAS. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SEEDING TILL 75% GERMINATION IS ESTABLISHED.
13. THE CONTRACTOR IS RESPONSIBLE FOR FILING A NOTICE OF INTENT A MINIMUM OF 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
14. THE CONTRACTOR IS RESPONSIBLE FOR FILING A NOTICE OF TERMINATION AT THE COMPLETION OF THE PROJECT.
15. ALL DISTURBED AREAS SHALL BY HYDROMULCHED. CONTRACTOR SHALL BE PAID AS SHOWN ON THE PLANS.
16. CONTRACTOR SHALL TALE PRECAUTIONS DURING CONSTRUCTION TO MINIMIZE EROSION DUE TO WEATHER. ADDITIONAL STORM WATER POLLUTION PREVENTION MAY BE NECESSARY.
17. ADDITIONAL ITEMS NOT SHOWN ON THE TEMPORARY EROSION CONTROL SHEET ARE INCIDENTAL.

BENCHMARK:

NOTE:

1. ALL DISTURBED AREAS SHALL BE HYDROMULCHED. CONTRACTOR SHALL BE PAID AS SHOWN ON PLANS.
2. CONTRACTOR SHALL TAKE PRECAUTIONS DURING CONSTRUCTION TO MINIMIZE EROSION DUE TO WEATHER. ADDITIONAL STORM WATER POLLUTION PREVENTION MAY BE NECESSARY.
3. ADDITIONAL ITEMS NOT SHOWN ON THE TEMPORARY EROSION CONTROL SHEET ARE INCIDENTAL.



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CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS, AND CONFIRM POINTS OF CONNECTIONS TO EXISTING IMPROVEMENTS, INCLUDING CONFIRMATION OF ELEVATIONS AND GRADES OF EXISTING FACILITIES AND UTILITIES PRIOR TO STARTING ANY GRADING, PAVING OR UTILITY INSTALLATION. VERIFICATION OF LOCATIONS AND FUNCTIONS OF EACH EXISTING STRUCTURE OR SYSTEM AND ALL EXISTING UTILITY GRADES AND INVERT ELEVATIONS IS THE CONTRACTOR'S RESPONSIBILITY. NOTIFY THE ENGINEER OF ANY DISCREPANCIES IMMEDIATELY. ANY CONFLICTS OR ERRORS BETWEEN EXISTING FIELD CONDITIONS AND ENGINEERING PLANS MUST BE RESOLVED PRIOR TO STARTING EXCAVATION OR SETTING ANY GRAVITY SEWER (STORM OR SANITARY) AND APPURTENANCES.

APPROVED BY WALKER COUNTY ENGINEER _____ DATE _____

REV	DATE	BY	APP	COMMENT

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NORTHERN OAKS LLC
15925 FM 3083, STE 6
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CONROE, TX 77302

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BRYAN CONROE HOUSTON AUSTIN

TEMPORARY EROSION CONTROL PLAN

LEGACY ESTATES

384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A-112 AND THE
ELIJAH ANDERSON SURVEY, A-2
WALKER COUNTY, TEXAS

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DESIGN: GREG M. STRUBE, PE	
CAD: SGK	RVW: RVW
PROJECT NO: 12529	
SHEET: 14	OF: 17

SKEFER
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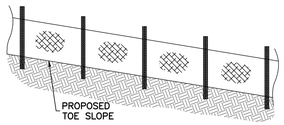
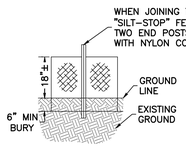
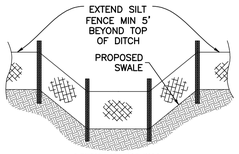
LITTLEFIELD RESIDENTIAL – THE RESERVE\04 CAD\CD-12529\14 TEMPORARY EROSION CONTROL PLAN.DWG



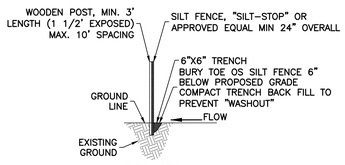
SILT FENCE DETAILS



FRONT VIEW



VIEW AT DITCH



SIDE VIEW

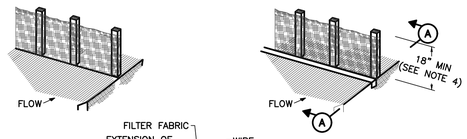
SILT FENCING NOTES:
1. POST TO BE AT 3 ft. MAXIMUM SPACING. IF FACTORY PRE-ASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 ft. MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS AND FOLDED.

—SF—SF—SF—

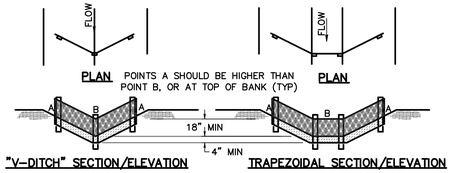
SILT FENCING
TERO-001
SCALE: NTS | 10/26/18

1. SET POSTS AND EXCAVATE 4"x4" TRENCH UPSLOPE ALONG LINE OF POSTS (SEE NOTE 1).
2. SECURE WIRE FENCING TO POSTS (SEE NOTE 2).

3. ATTACH FILTER MATERIAL TO WIRE FENCE AND EXTEND IT INTO THE TRENCH (SEE NOTE 3).
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SECTION A

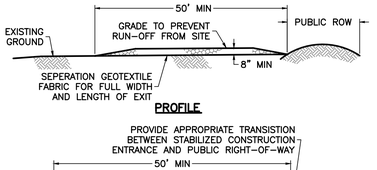


"V-DITCH" SECTION/ELEVATION **TRAPEZOIDAL SECTION/ELEVATION**

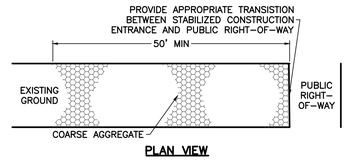
NOTES:
1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX. OF 6 FEET APART AND EMBEDDED A MIN. OF 12 INCHES.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE
3. FENCE, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.

—RFB—RFB—RFB—

REINFORCED FABRIC FENCE
TERO-002
SCALE: NTS | 10/26/18



PROFILE

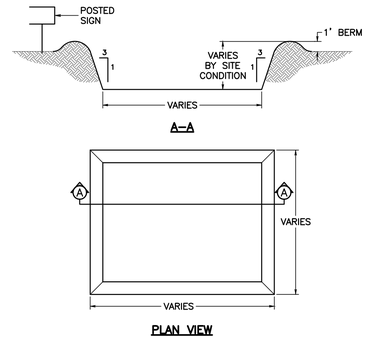


PLAN VIEW

NOTES:
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A TRUCK WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.
6. SEE SECTION 01569 – STABILIZED CONSTRUCTION EXIT.
7. STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

SCE

STABILIZED CONSTRUCTION ENTRANCE
TERO-003
SCALE: NTS | 10/26/18



PLAN VIEW

CTW

CONCRETE WASH OUT
TERO-009
SCALE: NTS | 03/01/19

GENERAL NOTES

1. POST A SIGN READING "CONCRETE WASH OUT PIT" NEXT TO THE PIT.
2. VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASH OUT THEIR TRUCKS IN THE PIT AND NO WHERE ELSE.
3. UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASH OUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASH OUT SITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
5. CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.

REV	DATE	BY	APP	COMMENT

PREPARED FOR:
NORTHERN OAKS LLC
15925 FM 3083, STE 6
PMB 8512
CONROE, TX 77302

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LEGACY ESTATES

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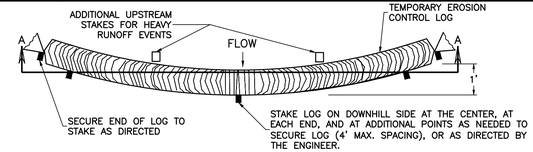
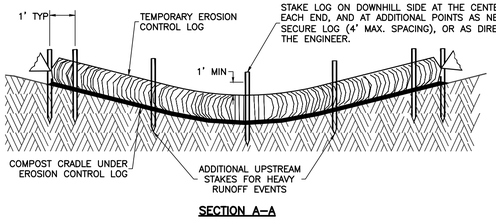


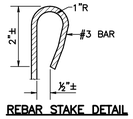
PLAN VIEW



SECTION A-A

NOTES

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2"x2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. TURN THE ENDS OF EACH ROW OF LOGS UP-SLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
8. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



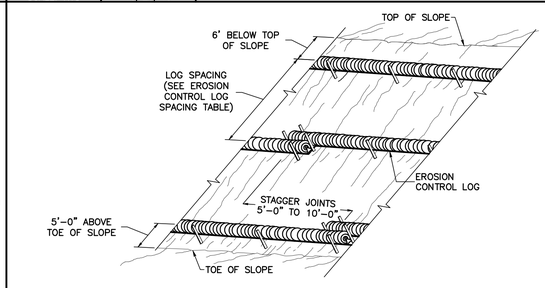
REBAR STAKE DETAIL

INSTALLATION AND USE GUIDELINES

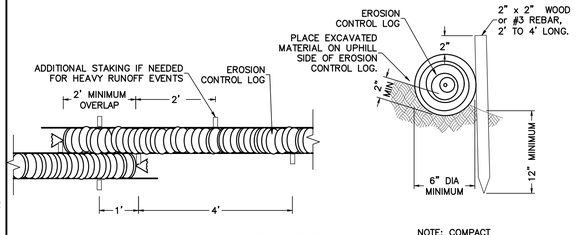
1. THE DRAINAGE AREA FOR A SEDIMENT TRAP SHOULD NOT EXCEED 5 ACRES.
2. CONTROL LOGS SHOULD BE PLACED IN THE FOLLOWING LOCATIONS:
   - 2.1. WITHIN DRAINAGE DITCHES SPACED AS NEEDED OR MIN. 500' ON CENTER
   - 2.2. IMMEDIATELY PRECEDING DITCH INLETS OR DRAIN INLETS
   - 2.3. JUST BEFORE THE DRAINAGE ENTERS A WATER COURSE
   - 2.4. JUST BEFORE THE DRAINAGE LEAVES THE RIGHT-OF-WAY
   - 2.5. JUST BEFORE THE DRAINAGE LEAVES THE CONSTRUCTION LIMITS WHERE DRAINAGE FLOWS AWAY FROM THE PROJECT.
3. THE LOGS SHOULD BE CLEANED WHEN THE SEDIMENT HAS ACCUMULATED TO A DEPTH OF ½ THE LOG DIAMETER.

—CL—D—

EROSION CONTROL LOG DAM
TERO-005
SCALE: NTS | 10/31/18



PLAN VIEW



STAKE AND TRENCHING

NOTE: COMPACT EXCAVATED SOIL TO PREVENT UNDERCUTTING.

* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE: SOFT, LOAMY SOILS–ADJUST ROWS CLOSER TOGETHER; HARD, ROCKY SOILS– ADJUST ROWS FARTHER APART

SYMBOL

EROSION CONTROL LOG SLOPE PROTECTION
TERO-006
SCALE: NTS | 12/13/18

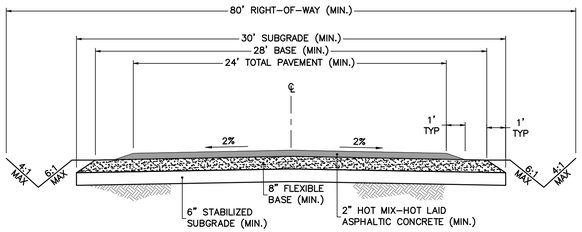
EROSION CONTROL LOG SPACING TABLE

SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

TRENCH DEPTH TABLE

LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

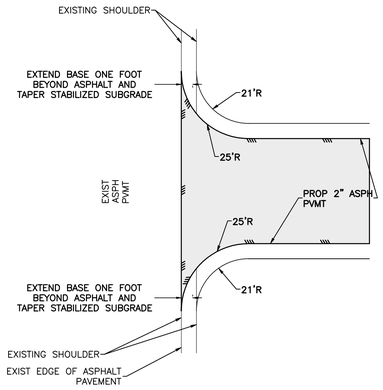
APPROVED BY WALKER COUNTY ENGINEER — DATE



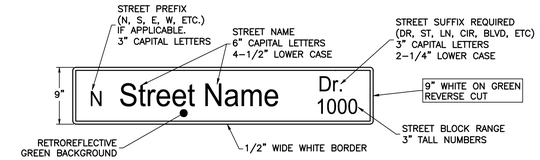
DITCH EROSION CONTROL
DITCH VELOCITY OF <3 FPS NEED SEEDING / HYDRO MULCH
DITCH VELOCITY OF 3-5 FPS NEED VEGETATION BLOCK SOD
DITCH VELOCITY OF >5 FPS NEED RIGID LINING (PAVERS, STONE RIPRAP, CONC)

MINIMUM DESIGN SPEED | SPEED LIMIT 30

RURAL
VOLUME PER DAY
LESS THAN 1,000

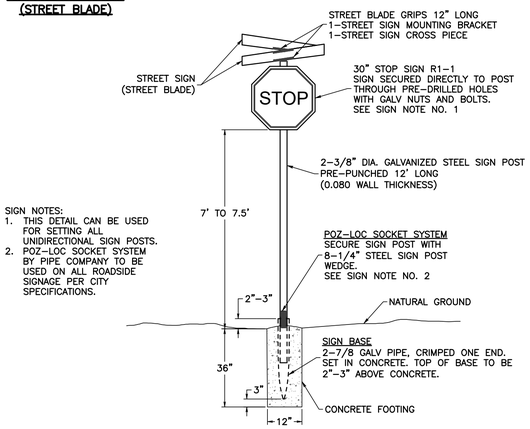


ASPHALT PAVEMENT TIE-IN	
PAV-205	
SCALE: NTS	10/10/19



NOTE: FONT SHALL BE WHITE "HIGHWAY B" STYLE LETTERING

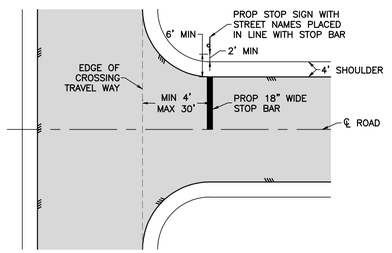
STREET SIGN DETAIL (STREET BLADE)



SIGN NOTES:
1. THIS DETAIL CAN BE USED FOR SETTING ALL UNIDIRECTIONAL SIGN POSTS.
2. POZ-LOC SOCKET SYSTEM BY PIPE COMPANY TO BE USED ON ALL ROADSIDE SIGNAGE PER CITY SPECIFICATIONS.

SIGN POST INSTALLATION

STOP SIGN WITH STREET BLADE	
TRF-102	
SCALE: NTS	10/10/19



STOP SIGN AND STOP BAR LOCATION	
TRF-101	
SCALE: NTS	10/10/19

REV	DATE	BY	APP	COMMENT

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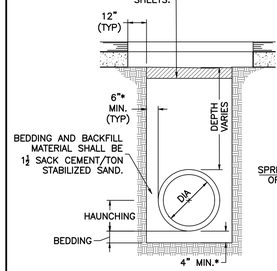
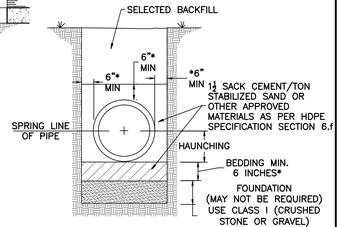
PROJECT NO: 12529	
SHEET: 16	OF: 17

ORIGINAL LAYOUT SIZE - 22X34

NOTE: FILL ONLY TO BOTTOM OF PROPOSED SUBGRADE. SEE PVMT. DESIGN ELEVATIONS ON PROFILE SHEETS.



TYP. ROADWAY TRENCH BEDDING



TYP. TRENCH BEDDING

FOUNDATION
A FOUNDATION IS REQUIRED WHEN THE TRENCH BOTTOM IS UNSTABLE. ANY FOUNDATION THAT WILL SUPPORT A RIGID PIPE WITHOUT CAUSING LOSS OF GRADE OR FLEXURAL BREAKING WILL BE MORE THAN ADEQUATE FOR PVC PIPES.

BEDDING
THE BEDDING DIRECTLY UNDERNEATH THE PIPE IS REQUIRED ONLY TO BRING THE TRENCH BOTTOM UP TO GRADE. IT SHOULD NOT BE SO THICK OR SOFT THAT THE PIPE WILL SETTLE AND LOSE GRADE. THE PURPOSE OF THE BEDDING IS TO PROVIDE A FIRM, STABLE AND UNIFORM SUPPORT OF THE PIPE. A LAYER OF MATERIAL SUFFICIENT TO ESTABLISH LINE, GRADE, AND SUPPORT SHOULD BE PLACED. BELL HOLES SHOULD BE EXCAVATED TO ENSURE UNIFORM BEARING.

HAUNCHING
HAUNCHING AND INITIAL BACKFILL ARE THE MOST IMPORTANT AREAS IN TERMS OF LIMITING THE HORIZONTAL DEFLECTION OF A FLEXIBLE PIPE. THESE AREAS SHOULD BE COMPACTED TO REQUIRED OR SPECIFIED DENSITY.

* NOTE: WHEN USING HDPE PIPE, THE BACKFILL MATERIAL SHALL BE CEMENT STABILIZED SAND (1 1/2 SACK CEMENT/TON) OR OTHER APPROVED BACKFILL MATERIAL AS SPECIFIED BY THE ENGINEER, AND IN ACCORDANCE TO CITY OF CONROE HDPE SPECIFICATION, SECTION 6.f FURTHER, THE BACKFILL MATERIAL SHALL BE USED FOR THE WHOLE DEPTH AND WIDTH OF ALL DITCHES, TRENCHES, ETC. UNDER ANY ROADWAY OR PAVED SURFACES. WHEN PIPES ARE NOT UNDER PAVED SURFACES, THE BACKFILL MATERIAL SHALL BE USED TO A MINIMUM OF 6" UNDER AND AROUND THE PIPE, BUT SHALL COVER THE FULL WIDTH OF THE TRENCH TO THE UNDISTURBED WALLS. THE MINIMUM DIMENSION OF THE TRENCH FOR THE HDPE PIPE SHALL BE AS SPECIFIED IN THE HDPE SPECIFICATION, TABLE 6.1.

ASTM D-2321
DESCRIPTION OF EMBEDMENT MATERIALS

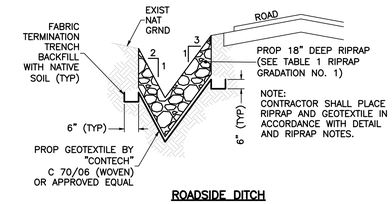
CLASS I
ANGULAR, 1/4" TO 1-1/2" GRADED STONE, INCLUDING A NUMBER OF FILL MATERIALS THAT HAVE REGIONAL SIGNIFICANCE, SUCH AS CORAL, SLAG, CINDERS, CRUSHED STONE AND CRUSHED SHELLS.

CLASS II
COARSE SANDS AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF 1-1/2", INCLUDING VARIOUSLY GRADED SANDS, AND GRAVELS CONTAINING SMALL PERCENTAGES OF FINES, GENERALLY GRANULAR AND NON-COHESIVE EITHER WET OR DRY. SOIL TYPES GW, GP, SW, AND SP ARE INCLUDED IN THIS CLASS.

CLASS III
FINE SANDS AND CLAYEY GRAVELS, INCLUDING FINE SANDS AND SAND-CLAY MIXTURES, AND GRAVEL CLAY MIXTURES. SOIL TYPES GM, GC, SM AND SC ARE INCLUDED IN THIS CLASS.

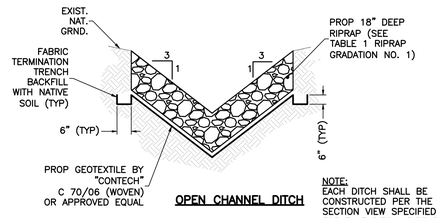
TYPICAL STORM SEWER BEDDING AND TRENCH DETAIL
NTS

RIPRAP NOTES:
1. PROVIDE RIPRAP CONSISTING OF BROKEN CONCRETE OR STONE. PROVIDE RIPRAP THAT IS DENSE, DURABLE AND HARD MATERIAL FREE FROM CRACKS, SEAMS AND OTHER DEFECTS WHICH WOULD INCREASE DETERIORATION FROM HANDLING AND NATURAL CAUSES. PROVIDE A GEOTEXTILE MATTING BELOW RIPRAP IN ACCORDANCE WITH NOTE 14 BELOW.
2. CONTRACTOR TO PROVIDE ENGINEER 24 HOURS NOTICE TO INSPECT GEOTEXTILE FABRIC PRIOR TO FINAL INSTALLATION OF RIP RAP MATERIAL.
3. PROVIDE RIPRAP IN CUBIC FORM, RATHER THAN ELONGATED (FLAT) SHAPES.
4. PROVIDE RIPRAP WITH A MINIMUM THICKNESS OF 6 INCHES.
5. NO MORE THAN 25 PERCENT SHALL HAVE A LENGTH GREATER THAN 2-1/2 TIMES THE WIDTH OR THICKNESS. NO LENGTH SHALL EXCEED 3 TIMES THE WIDTH OR THICKNESS.
6. WHERE BROKEN CONCRETE IS USED, CUT EXPOSED METAL FLUSH WITH THE SURFACE PRIOR TO PLACING THE RIPRAP.
7. TRIM AND DRESS THE CHANNEL BOTTOM AND SIDE SLOPES TO PROPER LINES AND GRADE PRIOR TO PLACING RIPRAP.
8. PLACE THE RIPRAP TO THE SLOPES, LINES AND GRADES AS SHOWN ON THE PLANS.
9. TO ESTABLISH A WELL-GRADED MASS OF RIPRAP WITH MINIMAL VOIDS, FILL VOIDS BETWEEN LARGER RIPRAP BLOCKS WITH SPALLS AND SMALLER BLOCKS OF THE LARGEST FEASIBLE SIZE TO FORM A COMPACT MASS. DO NOT PLACE SPALLS AND SMALL BLOCKS IN PLACE OF LARGER SIZE RIPRAP.
10. INSTALL RIPRAP MAT TO THE THICKNESS AS SHOWN ON THE PLANS.
11. PLACE THE RIPRAP TO AVOID DISPLACEMENT OR DAMAGE TO THE PREPARED SURFACE OR GEOTEXTILE IN A MANNER TO AVOID SEGREGATION OF PARTICLE SIZES.
12. PROVIDE GEOTEXTILE FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS, COMPOSED OF AT LEAST 95 PERCENT BY WEIGHT POLYESTERS OR POLYOLEFINS. THESE FIBERS SHALL BE FORMED INTO A STABLE NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN THEIR DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING THE EDGES. MATERIAL SHALL BE RESISTANT TO DETERIORATION FROM ULTRAVIOLET RADIATION, HEAT EXPOSURE AND COMMONLY ENCOUNTERED SOIL CHEMICALS, MILDEW, ROT AND INSECTS.
13. MANUFACTURER RECOMMENDS TO MINIMIZE DAMAGE DUE TO ULTRAVIOLET RADIATION. DO NOT INSTALL A GEOTEXTILE IF IT HAS BEEN REMOVED FROM ITS PROTECTIVE COVERING LONGER THAN THE MANUFACTURER RECOMMENDS.
14. FOR PLACEMENT OF GEOTEXTILE, FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AT A MINIMUM:
    a. PLACE THE GEOTEXTILE DIRECTLY ON THE PREPARED AREA. LAY THE GEOTEXTILE SMOOTHLY ON THE SUBGRADE TO MINIMIZE TENSION, STRESS, FOLDS AND WRINKLES.
    b. AFTER PLACEMENT, DO NOT UNNECESSARILY WALK ON OR DISTURB THE GEOTEXTILE UNLESS REQUIRED TO PRESERVE CONTACT WITH THE SUBGRADE. EQUIPMENT IS NOT ALLOWED ON THE UNPROTECTED GEOTEXTILE. PROTECT THE GEOTEXTILE FROM CLOGGING, PENETRATIONS, TEARS AND OTHER DAMAGE DURING INSTALLATION.
    c. PLACE THE GEOTEXTILE STRIPS FROM DOWNSTREAM TO UPSTREAM. OVERLAP SUCCESSIVE GEOTEXTILE SHEETS SUCH THAT THE UPSTREAM SHEET IS PLACED OVER THE DOWNSTREAM SHEET AND/OR THE UPSLOPE OVER THE DOWNSLOPE.
    d. OVERLAP ADJOINING GEOTEXTILE SECTIONS A MINIMUM OF 2 FEET.
    e. REPLACE OR REPAIR ANY GEOTEXTILE DAMAGED DURING THE PLACEMENT OF RIPRAP OR OTHER MATERIALS AT NO ADDITIONAL COST TO THE DISTRICT. PLACE A GEOTEXTILE PATCH OF THE SAME MATERIAL OVER THE AREA AND EXTEND A MINIMUM OF 3 FEET BEYOND THE PERIMETER OF THE TEAR AND/OR DAMAGE. ORIENT THE PATCH MATERIAL SO THAT ITS FIBERS ARE ALIGNED WITH THE DAMAGED GEOTEXTILE FIBERS.
15. USE EVENLY GRADED, RIPRAP PER TABLE 1 BELOW.



NOTE: CONTRACTOR SHALL PLACE RIPRAP AND GEOTEXTILE IN ACCORDANCE WITH DETAIL AND RIPRAP NOTES.

ROADSIDE DITCH



OPEN CHANNEL DITCH

NOTE: EACH DITCH SHALL BE CONSTRUCTED PER THE SECTION VIEW SPECIFIED FOR THAT DITCH. RIPRAP WILL THEN BE INSTALLED PER THE CRITERIA ABOVE.

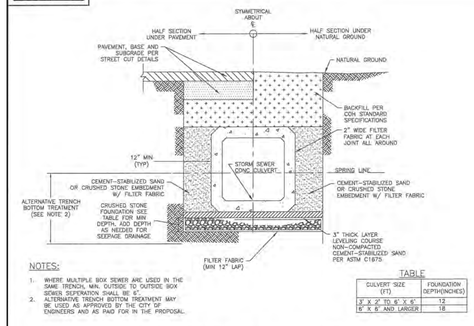
TABLE 1 – RIP RAP GRADATION

% LIGHTER BY WEIGHT	STONE WEIGHT LBS		WOLUME CUBICAL CUBIC FT (2)		SHAPE SPHERICAL FT (EACH SIDE)		SHAPE FT (DIA)	
	LOWER LIMIT	UPPER LIMIT	LOWER LIMIT	UPPER LIMIT	LOWER LIMIT	UPPER LIMIT	LOWER LIMIT	UPPER LIMIT
100	180	265	1.20	1.77	1.06	1.21	1.31	1.50
50	80	110	0.53	0.73	0.81	0.90	1.01	1.12
15	40	60	0.27	0.40	0.64	0.74	0.80	0.91

GRADATION NOTES:
1. THE THEORETICAL CUBE AND SPHERE SIZE IS PRESENTED FOR GUIDANCE ONLY.
2. VOLUME IS BASED ON 150 PCF, UNIT WEIGHT.
3. RIPRAP GRADATION NO. 1 IS TO BE USED WHERE AN 18 INCH THICK RIPRAP MAT IS NOTED ON THE PLANS.

ROADSIDE DITCH AND OPEN CHANNEL RIPRAP
PERO-003
SCALE: NTS | 10/31/18

02317-06



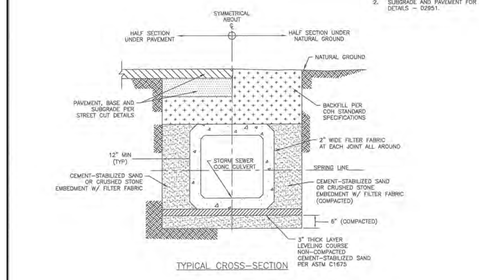
NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6'.
2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PAID FOR IN THE PROPOSAL.

TABLE

CULVERT SIZE (FT)	FOUNDATION DEPTH(INCHES)
3' X 2' TO 6' X 6'	12
8' X 6' AND LARGER	18

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL FOR WET STABLE TRENCH
NTS

02317-05



TYPICAL CROSS-SECTION

NOTES:
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6'.
2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS – D0951.

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH
NTS

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. The Department shall not be responsible for incorrect results or damages resulting from its use.

DATE:
FILE:

TABLE OF DIMENSIONS & REINFORCING STEEL
(Wings for One Structure End)

Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities (3) per ft of wing length (2-Wings) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	43.43	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#6	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2-Wings)

Bar	Size	No.	Spa
DL	#5	~	1'-0"
DS	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
RS	#5	3	~
RL	#5	3	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

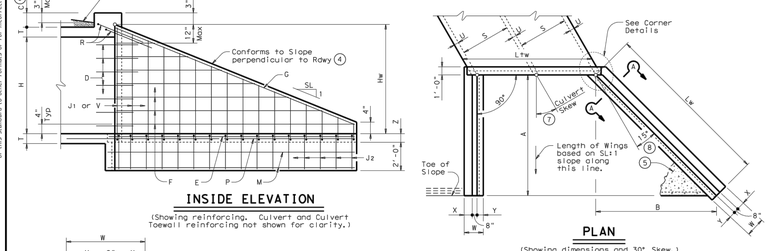
Bar	Size	No.	Spa
L	#4	1	~
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION CALCULATIONS:

Formulas: (All values are in Feet)
Hw = H + T + C - 0.250'
A = (Hw - 0.333') (SL)
B = (A) [Tangent (Θ + 15°)]
Lw = (A) ÷ [Cosine (Θ + 15°)]
For Cast-In-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ (Cosine Θ)
For Precast Culverts:
Ltw = [(N) (2U + S) + (N - 1) (0.500')] ÷ (Cosine Θ)
Total Wingwall Area (Two Wings = S.F.) = (0.5) (Hw + 0.333') (Lw + A)

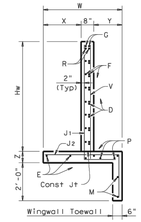
Hw = Height of Wingwall
SL:1 = Side Slope Ratio (Horizontal:1 Vertical)
A = Length of Short Wingwall
Lw = Length of Long Wingwall
Ltw = Culvert Toewall Length
N = Number of Culvert Spans
Θ = Culvert Skew

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

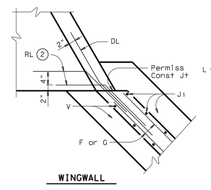


INSIDE ELEVATION
(Showing reinforcing. Culvert and Culvert Toewall reinforcing not shown for clarity.)

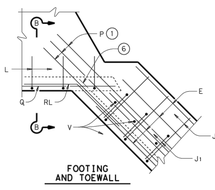
PLAN
(Showing dimensions and 30° Skew.)



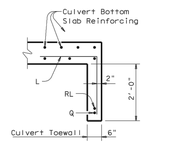
SECTION A-A



WINGWALL

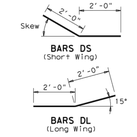


FOOTING AND TOEWALL

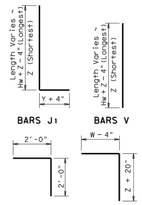


SECTION B-B (5)

CORNER DETAILS
(Culvert and Culvert Toewall reinforcing not shown for clarity.)



(1) Extend Bars P 3'-0" minimum into bottom slab of Box Culvert.
(2) Adjust to fit as necessary to maintain 1 ¼" clear cover and 4" minimum between bars.
(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by 0.5 x (A+Lw).
(4) Recommended values of Slope are: 2:1, 3:1, 4:1, & 6:1.
(5) When shown elsewhere on the plans, a 5" deep concrete riprap shall be constructed. Payment for riprap shall be as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, the riprap shall have a 6" wide by 1'-6" deep reinforced concrete toewall along all edges adjacent to natural ground; the toewall shall be reinforced by extending typical riprap reinforcing into the toewall; construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
(6) At Contractor's option, Culvert Toewall may be ended flush with Wingwall Toewall. Adjust reinforcing from that shown as necessary.
(7) Applicable values of of Skew are: 15°, 30°, and 45°.
(8) Typical wingwall angle for all skews.
(9) 0° min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standards. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standards.
(10) For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.



GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
All reinforcing steel shall be Grade 60.
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.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
All reinforcing bars shall be adjusted to provide a minimum of 1 ¼" clear cover.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See BCS sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Texas Department of Transportation | Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

FW-S

FILE: fw-sd08.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-20: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.

THIS SET OF PLANS WAS PREPARED UNDER THE DIRECTION OF GREGORY M. STRUBE P.E., SEAL No.103290 ON JANUARY 13, 2020. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW ONLY AND NOT TO BE USED FOR CONSTRUCTION.

DESIGN:	GREG M. STRUBE, PE
CAD:	SGK
RVW:	RVW
PROJECT NO:	12529
SHEET:	17 OF: 17

REV	DATE	BY	APP	COMMENT

PREPARED FOR:
NORTHERN OAKS LLC
15925 FM 3083, STE 6
PMB 8512
CONROE, TX 77302

BLEYL ENGINEERING
PLANNING • DESIGN • MANAGEMENT
100 Nugent Street, Conroe, TX 77301
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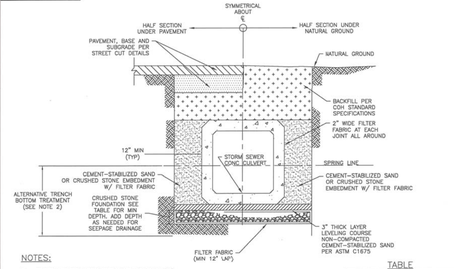
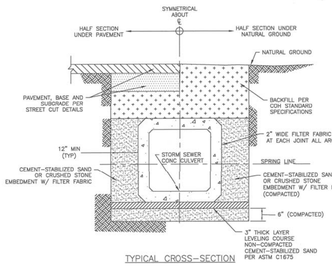
Tel. 936-441-7833 Fax 936-760-3833
www.bleylengineering.com
AUSTIN BRYAN | CONROE HOUSTON

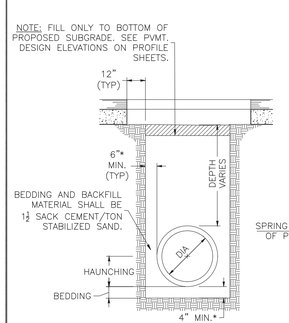
STORM DETAILS

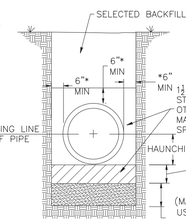
LEGACY ESTATES
384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A-112 AND THE
ELIJAH ANDERSON SURVEY, A-2
WALKER COUNTY, TEXAS

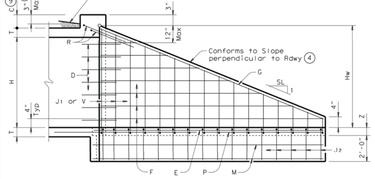
DUSTINW
F:\12500\12529 LITTLEFIELD RESIDENTIAL - THE RESERVE\04 CAD\CD-12529\16-17 DETAILS.DWG
1/13/2020 3:53:03 PM

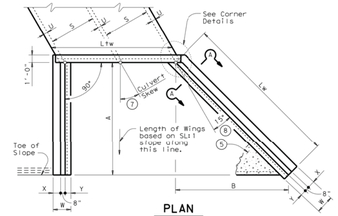


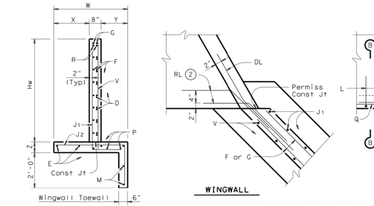


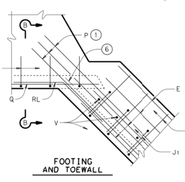


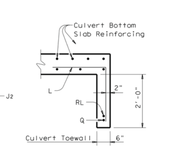


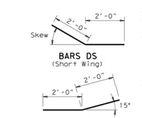


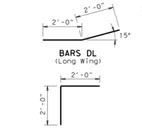


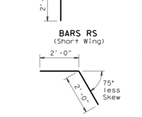


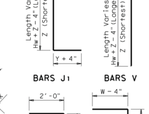


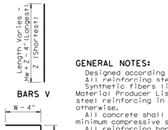


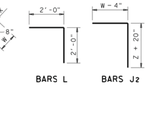


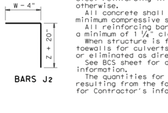


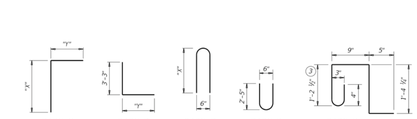


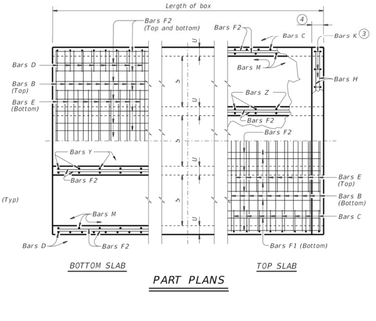


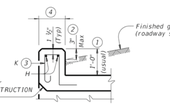












ORIGINAL LAYOUT SIZE - 22X34

02317-06

NOTES:

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TABLE

CULVERT SIZE (FT)	FOUNDATION DEPTH(INCHES)
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6' X 6' AND LARGER	18

PRECAST CONCRETE BOX STORM SEWER
BEDDING AND BACKFILL FOR WET STABLE TRENCH
NTS

02317-05

NOTES:

1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS – 02951.

PRECAST CONCRETE BOX STORM SEWER
BEDDING AND BACKFILL FOR DRY STABLE TRENCH
NTS

NOTE: FILL ONLY TO BOTTOM OF PROPOSED SUBGRADE. SEE PVMT. DESIGN ELEVATIONS ON PROFILE SHEETS.

FOUNDATION
A FOUNDATION IS REQUIRED WHEN THE TRENCH BOTTOM IS UNSTABLE. ANY FOUNDATION THAT WILL SUPPORT A RIGID PIPE WITHOUT CAUSING LOSS OF GRADE OR FLEXURAL BREAKING WILL BE MORE THAN ADEQUATE FOR PVC PIPES.

BEDDING
THE BEDDING DIRECTLY UNDERNEATH THE PIPE IS REQUIRED ONLY TO BRING THE TRENCH BOTTOM UP TO GRADE. IT SHOULD NOT BE SO THICK OR SOFT THAT THE PIPE WILL SETTLE AND LOSE GRADE. THE PURPOSE OF THE BEDDING IS TO PROVIDE A FIRM, STABLE AND UNIFORM SUPPORT OF THE PIPE. A LAYER OF MATERIAL SUFFICIENT TO ESTABLISH LINE, GRADE, AND SUPPORT SHOULD BE PLACED. BELL HOLES SHOULD BE EXCAVATED TO ENSURE UNIFORM BEARING.

HAUNCHING
HAUNCHING AND INITIAL BACKFILL ARE THE MOST IMPORTANT AREAS IN TERMS OF LIMITING THE HORIZONTAL DEFLECTION OF A FLEXIBLE PIPE. THESE AREAS SHOULD BE COMPACTED TO REQUIRED OR SPECIFIED DENSITY.

* NOTE: WHEN USING HDPE PIPE, THE BACKFILL MATERIAL SHALL BE CEMENT STABILIZED SAND (1 1/2 SACK CEMENT/TON) OR OTHER APPROVED BACKFILL MATERIAL AS SPECIFIED BY THE ENGINEER, AND IN ACCORDANCE TO CITY OF CONROE HDPE SPECIFICATION, SECTION 6.f FURTHER, THE BACKFILL MATERIAL SHALL BE USED FOR THE WHOLE DEPTH AND WIDTH OF ALL DITCHES, TRENCHES, ETC. UNDER ANY ROADWAY OR PAVED SURFACES. WHEN PIPES ARE NOT UNDER PAVED SURFACES, THE BACKFILL MATERIAL SHALL BE USED TO A MINIMUM OF 6" UNDER AND AROUND THE PIPE, BUT SHALL COVER THE FULL WIDTH OF THE TRENCH TO THE UNDISTURBED WALLS. THE MINIMUM DIMENSION OF THE TRENCH FOR THE HDPE PIPE SHALL BE AS SPECIFIED IN THE HDPE SPECIFICATION, TABLE 6.1.

ASTM D-2321
DESCRIPTION OF EMBEDMENT MATERIALS

CLASS I
ANGULAR, 1/4" TO 1-1/2" GRADED STONE, INCLUDING A NUMBER OF FILL MATERIALS THAT HAVE REGIONAL SIGNIFICANCE, SUCH AS CORAL, SLAG, CINDERS, CRUSHED STONE AND CRUSHED SHELLS.

CLASS II
COARSE SANDS AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF 1-1/2", INCLUDING VARIOUSLY GRADED SANDS, AND GRAVELS CONTAINING SMALL PERCENTAGES OF FINES, GENERALLY GRANULAR AND NON-COHESIVE EITHER WET OR DRY. SOIL TYPES GW, GP, SW, AND SP ARE INCLUDED IN THIS CLASS.

CLASS III
FINE SANDS AND CLAYEY GRAVELS, INCLUDING FINE SANDS AND SAND-CLAY MIXTURES, AND GRAVEL CLAY MIXTURES. SOIL TYPES GM, GC, SM AND SC ARE INCLUDED IN THIS CLASS.

TYPICAL STORM SEWER BEDDING
AND TRENCH DETAIL
NTS

TABLE OF DIMENSIONS & REINFORCING STEEL (Wings for One Structure End)

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

TABLE OF WINGWALL REINFORCING (2~Wings)

Bar	Size	No.	Spa
DL	#5	~	1'-0"
DS	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
RS	#5	3	~
RL	#5	3	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

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

WING DIMENSION CALCULATIONS:

Formulas: (All values are in Feet)

$Hw = H + T + C - 0.250'$

$A = (Hw - 0.333')\ (SL)$

$B = (A)\ [\text{Tangent}\ (\theta + 15°)]$

$Lw = (A) \div [\text{Cosine}\ (\theta + 15°)]$

For Cast-in-place culverts:

$Ltw = [(N)\ (S) + (N + 1)\ (U)] \div (\text{Cosine}\ \theta)$

For Precast culverts:

$Ltw = [(N)\ (2U + S) + (N - 1)\ (0.500')] \div (\text{Cosine}\ \theta)$

$\text{Total Wingwall Area (Two Wings} \sim \text{S.F.)} = (0.5)\ (Hw + 0.333')\ (Lw + A)$

Hw = Height of Wingwall
SL:1 = Side Slope Ratio (Horizontal:1 Vertical)
A = Length of Short Wingwall
Lw = Length of Long Wingwall
Ltw = Culvert Toewall Length
N = Number of Culvert Spans
θ = Culvert Skew

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

① Extend Bars P 3'-0" minimum into bottom slab of Box Culvert.

② Adjust to fit as necessary to maintain 1 ¼" clear cover and 4" minimum between bars.

③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by 0.5 x (A+Lw).

④ Recommended values of Slope are: 2:1, 3:1, 4:1, & 6:1.

⑤ When shown elsewhere on the plans, a 5" deep concrete riprap shall be constructed. Payment for riprap shall be as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, the riprap shall have a 6" wide by 1'-6" deep reinforced concrete toewall along all edges adjacent to natural ground; the toewall shall be reinforced by extending typical riprap reinforcing into the toewall; construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

⑥ At Contractor's option, Culvert Toewall may be ended flush with Wingwall Toewall. Adjust reinforcing from that shown as necessary.

⑦ Applicable values of of Skew are: 15°, 30°, and 45°.

⑧ Typical wingwall angle for all skews.

⑨ 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.

⑩ For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
All reinforcing steel shall be Grade 60.
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.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
All reinforcing bars shall be adjusted to provide a minimum of 1 ¼" clear cover.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See BCS sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Texas Department of Transportation | Bridge Division Standard
CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS
FW-S
FILE: fw-sstde.dgn | DN: GAF | CK: CAT | DW: TxDOT | CK: GAF
©TxDOT February 2010 | CONT | SECT | JOB | HIGHWAY
REVISIONS
11-10: Add note for synthetic fibers.
DIST | COUNTY | SHEET NO.

TABLE OF BAR DIMENSIONS

H	"X"	"Y"
4'-0"	4'-9 ½"	5'-2 ½"
5'-0"	5'-9 ½"	5'-2 ½"
6'-0"	6'-9 ½"	5'-2 ½"
7'-0"	7'-9 ½"	5'-2 ½"
8'-0"	8'-9 ½"	5'-2 ½"
9'-0"	9'-9 ½"	5'-2 ½"

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

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

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

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

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

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

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

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

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

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

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

HL93 LOADING | SHEET 1 OF 2
Texas Department of Transportation | Bridge Division Standard
MULTIPLE BOX CULVERTS
CAST-IN-PLACE
8'-0" SPAN
2' TO 23' FILL
MC-8-23

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

NUMBER OF SPANS	S	H	T	U	Bars B No.	Bars B Size	Bars B Spa	Bars B Length	Bars B Wt	Bars C & D No.	Size	Spa	Bars C Length	Bars C Wt	Bars D Length	Bars D Wt	Bars E No.	Bars E Size	Bars E Spa	Bars E Length	Bars E Wt	Bars F1 ~ #4 No.	Spa	Length	Wt	Bars F2 ~ #4 No.	Spa	Length	Wt	Bars M ~ #4 No.	Spa	Length	Wt	Bars Y & Z ~ #4 No.	Spa	Bars Y Length	Bars Y Wt	Bars Z Length	Bars Z Wt	Bars H 4 ~ #4 Length	Wt	Bars K No.	Wt	Per foot of Barrel Conc (CY)	Renf (Lb)	Curb Conc (CY)	Curb Renf (Lb)	Total Conc (CY)	Total Renf (Lb)
2	8'-0"	3'-0"	11"	9"	162	#6	6"	18'-0"	4,380	108	#6	9"	9'-0"	1,460	8'-6"	1,379	162	#6	6"	8'-4"	2,028	12	18"	39'-9"	319	56	18"	39'-9"	1,487	108	9"	3'-0"	216	54	9"	5'-2"	186	7'-10"	283	18'-0"	48	38	106	1.489	293.5	1.3	154	60.9	11,892
3	8'-0"	3'-0"	11"	9"	162	#6	6"	26'-9"	6,509	108	#6	9"	9'-0"	1,460	8'-6"	1,379	162	#6	6"	16'-4"	3,974	18	18"	39'-9"	478	80	18"	39'-9"	2,124	108	9"	3'-0"	216	108	9"	5'-2"	373	7'-10"	565	26'-9"	71	56	156	2.167	427.0	2.0	227	88.7	17,305
4	8'-0"	3'-0"	11"	9"	162	#6	6"	35'-6"	8,638	108	#6	9"	9'-0"	1,460	8'-6"	1,379	162	#6	6"	24'-4"	5,921	24	18"	39'-9"	637	104	18"	39'-9"	2,762	108	9"	3'-0"	216	162	9"	5'-2"	559	7'-10"	848	35'-6"	95	74	206	2.844	560.5	2.6	301	116.4	22,721
5	8'-0"	3'-0"	11"	9"	162	#6	6"	44'-3"	10,767	108	#6	9"	9'-0"	1,460	8'-6"	1,379	162	#6	6"	32'-4"	7,867	30	18"	39'-9"	797	128	18"	39'-9"	3,399	108	9"	3'-0"	216	216	9"	5'-2"	745	7'-10"	1,130	44'-3"	118	92	256	3.522	694.0	3.3	374	144.2	28,134
6	8'-0"	3'-0"	11"	9"	162	#6	6"	53'-0"	12,896	108	#6	9"	9'-0"	1,460	8'-6"	1,379	162	#6	6"	40'-4"	9,814	36	18"	39'-9"	956	152	18"	39'-9"	4,036	108	9"	3'-0"	216	270	9"	5'-2"	932	7'-10"	1,413	53'-0"	142	108	301	4.199	827.6	3.9	443	171.9	33,545
2	8'-0"	4'-0"	11"	9"	162	#6	6"	18'-0"	4,380	108	#6	9"	10'-0"	1,622	8'-6"	1,379	162	#6	6"	8'-4"	2,028	12	18"	39'-9"	319	56	18"	39'-9"	1,487	108	9"	4'-0"	289	54	9"	5'-2"	186	9'-10"	355	18'-0"	48	38	106	1.573	301.1	1.3	154	64.3	12,199
3	8'-0"	4'-0"	11"	9"	162	#6	6"	26'-9"	6,509	108	#6	9"	10'-0"	1,622	8'-6"	1,379	162	#6	6"	16'-4"	3,974	18	18"	39'-9"	478	80	18"	39'-9"	2,124	108	9"	4'-0"	289	108	9"	5'-2"	373	9'-10"	709	26'-9"	71	56	156	2.278	436.4	2.0	227	93.1	17,684
4	8'-0"	4'-0"	11"	9"	162	#6	6"	35'-6"	8,638	108	#6	9"	10'-0"	1,622	8'-6"	1,379	162	#6	6"	24'-4"	5,921	24	18"	39'-9"	637	104	18"	39'-9"	2,762	108	9"	4'-0"	289	162	9"	5'-2"	559	9'-10"	1,064	35'-6"	95	74	206	2.983	571.8	2.6	301	122.0	23,172
5	8'-0"	4'-0"	11"	9"	162	#6	6"	44'-3"	10,767	108	#6	9"	10'-0"	1,622	8'-6"	1,379	162	#6	6"	32'-4"	7,867	30	18"	39'-9"	797	128	18"	39'-9"	3,399	108	9"	4'-0"	289	216	9"	5'-2"	745	9'-10"	1,419	44'-3"	118	92	256	3.688	707.1	3.3	374	150.8	28,658
6	8'-0"	4'-0"	11"	9"	162	#6	6"	53'-0"	12,896	108	#6	9"	10'-0"	1,622	8'-6"	1,379	162	#6	6"	40'-4"	9,814	36	18"	39'-9"	956	152	18"	39'-9"	4,036	108	9"	4'-0"	289	270	9"	5'-2"	932	9'-10"	1,774	53'-0"	142	108	301	4.394	842.5	3.9	443	179.7	34,141
2	8'-0"	5'-0"	11"	9"	162	#6	6"	18'-0"	4,380	108	#6	9"	11'-0"	1,784	8'-6"	1,379	162	#6	6"	8'-4"	2,028	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	5'-0"	361	54	9"	5'-2"	186	11'-10"	427	18'-0"	48	38	106	1.656	312.8	1.3	154	67.6	12,664
3	8'-0"	5'-0"	11"	9"	162	#6	6"	26'-9"	6,509	108	#6	9"	11'-0"	1,784	8'-6"	1,379	162	#6	6"	16'-4"	3,974	18	18"	39'-9"	478	88	18"	39'-9"	2,337	108	9"	5'-0"	361	108	9"	5'-2"	373	11'-10"	854	26'-9"	71	56	156	2.389	451.2	2.0	227	97.6	18,276
4	8'-0"	5'-0"	11"	9"	162	#6	6"	35'-6"	8,638	108	#6	9"	11'-0"	1,784	8'-6"	1,379	162	#6	6"	24'-4"	5,921	24	18"	39'-9"	637	114	18"	39'-9"	3,027	108	9"	5'-0"	361	162	9"	5'-2"	559	11'-10"	1,281	35'-6"	95	74	206	3.122	589.7	2.6	301	127.5	23,888
5	8'-0"	5'-0"	11"	9"	162	#6	6"	44'-3"	10,767	108	#6	9"	11'-0"	1,784	8'-6"	1,379	162	#6	6"	32'-4"	7,867	30	18"	39'-9"	797	140	18"	39'-9"	3,717	108	9"	5'-0"	361	216	9"	5'-2"	745	11'-10"	1,707	44'-3"	118	92	256	3.855	728.1	3.3	374	157.5	29,498
6	8'-0"	5'-0"	11"	9"	162	#6	6"	53'-0"	12,896	108	#6	9"	11'-0"	1,784	8'-6"	1,379	162	#6	6"	40'-4"	9,814	36	18"	39'-9"	956	166	18"	39'-9"	4,408	108	9"	5'-0"	361	270	9"	5'-2"	932	11'-10"	2,134	53'-0"	142	108	301	4.588	866.6	3.9	443	187.5	35,107
2	8'-0"	6'-0"	11"	9"	162	#6	6"	18'-0"	4,380	108	#6	9"	12'-0"	1,947	8'-6"	1,379	162	#6	6"	8'-4"	2,028	12	18"	39'-9"	319	68	18"	39'-9"	1,806	108	9"	6'-0"	433	54	9"	5'-2"	186	13'-10"	499	18'-0"	48	38	106	1.739	324.4	1.3	154	70.9	13,131
3	8'-0"	6'-0"	11"	9"	162	#6	6"	26'-9"	6,509	108	#6	9"	12'-0"	1,947	8'-6"	1,379	162	#6	6"	16'-4"	3,974	18	18"	39'-9"	478	96	18"	39'-9"	2,549	108	9"	6'-0"	433	108	9"	5'-2"	373	13'-10"	998	26'-9"	71	56	156	2.500	466.0	2.0	227	102.0	18,867
4	8'-0"	6'-0"	11"	9"	162	#6	6"	35'-6"	8,638	108	#6	9"	12'-0"	1,947	8'-6"	1,379	162	#6	6"	24'-4"	5,921	24	18"	39'-9"	637	124	18"	39'-9"	3,293	108	9"	6'-0"	433	162	9"	5'-2"	559	13'-10"	1,497	35'-6"	95	74	206	3.261	607.6	2.6	301	133.1	24,605
5	8'-0"	6'-0"	11"	9"	162	#6	6"	44'-3"	10,767	108	#6	9"	12'-0"	1,947	8'-6"	1,379	162	#6	6"	32'-4"	7,867	30	18"	39'-9"	797	152	18"	39'-9"	4,036	108	9"	6'-0"	433	216	9"	5'-2"	745	13'-10"	1,996	44'-3"	118	92	256	4.022	749.2	3.3	374	164.2	30,341
6	8'-0"	6'-0"	11"	9"	162	#6	6"	53'-0"	12,896	108	#6	9"	12'-0"	1,947	8'-6"	1,379	162	#6	6"	40'-4"	9,814	36	18"	39'-9"	956	180	18"	39'-9"	4,780	108	9"	6'-0"	433	270	9"	5'-2"	932	13'-10"	2,495	53'-0"	142	108	301	4.782	890.8	3.9	443	195.2	36,075
2	8'-0"	7'-0"	11"	9"	162	#6	6"	18'-0"	4,380	108	#6	9"	13'-0"	2,109	8'-6"	1,379	162	#6	6"	8'-4"	2,028	12	18"	39'-9"	319	68	18"	39'-9"	1,806	108	9"	7'-0"	505	54	9"	5'-2"	186	15'-10"	571	18'-0"	48	38	106	1.823	332.1	1.3	154	74.3	13,437
3	8'-0"	7'-0"	11"	9"	162	#6	6"	26'-9"	6,509	108	#6	9"	13'-0"	2,109	8'-6"	1,379	162	#6	6"	16'-4"	3,974	18	18"	39'-9"	478	96	18"	39'-9"	2,549	108	9"	7'-0"	505	108	9"	5'-2"	373	15'-10"	1,142	26'-9"	71	56	156	2.611	475.5	2.0	227	106.4	19,245
4	8'-0"	7'-0"	11"	9"	162	#6	6"	35'-6"	8,638	108	#6	9"	13'-0"	2,109	8'-6"	1,379	162	#6	6"	24'-4"	5,921	24	18"	39'-9"	637	124	18"	39'-9"	3,293	108	9"	7'-0"	505	162	9"	5'-2"	559	15'-10"	1,713	35'-6"	95	74	206	3.400	618.9	2.6	301	138.6	25,055
5	8'-0"	7'-0"	11"	9"	162	#6	6"	44'-3"	10,767	108	#6	9"	13'-0"	2,109	8'-6"	1,379	162	#6	6"	32'-4"	7,867	30	18"	39'-9"	797	152	18"	39'-9"	4,036	108	9"	7'-0"	505	216	9"	5'-2"	745	15'-10"	2,285	44'-3"	118	92	256	4.188	762.3	3.3	374	170.8	30,864
6	8'-0"	7'-0"	11"	9"	162	#6	6"	53'-0"	12,896	108	#6	9"	13'-0"	2,109	8'-6"	1,379	162	#6	6"	40'-4"	9,814	36	18"	39'-9"	956	180	18"	39'-9"	4,780	108	9"	7'-0"	505	270	9"	5'-2"	932	15'-10"	2,856	53'-0"	142	108	301	4.977	905.7	3.9	443	203.0	36,670
2	8'-0"	8'-0"	11"	9"	162	#6	6"	18'-0"	4,380	108	#6	9"	14'-0"	2,271	8'-6"	1,379	162	#6	6"	8'-4"	2,028	12	18"	39'-9"	319	74	18"	39'-9"	1,965	108	9"	8'-0"	577	54	9"	5'-2"	186	17'-10"	643	18'-0"	48	38	106	1.906	343.7	1.3	154	77.6	13,902
3	8'-0"	8'-0"	11"	9"	162	#6	6"	26'-9"	6,509	108	#6	9"	14'-0"	2,271	8'-6"	1,379	162	#6	6"	16'-4"	3,974	18	18"	39'-9"	478	104	18"	39'-9"	2,762	108	9"	8'-0"	577	108	9"	5'-2"	373	17'-10"	1,287	26'-9"	71	56	156	2.722	490.3	2.0	227	110.9	19,837
4	8'-0"	8'-0"	11"	9"	162	#6	6"	35'-6"	8,638	108	#6	9"	14'-0"	2,271	8'-6"	1,379	162	#6	6"	24'-4"	5,921	24	18"	39'-9"	637	134	18"	39'-9"	3,558	108	9"	8'-0"	577	162	9"	5'-2"	559	17'-10"	1,930	35'-6"	95	74	206	3.539	636.8	2.6	301	144.2	25,771
5	8'-0"	8'-0"	11"	9"	162	#6	6"	44'-3"	10,767	108	#6	9"	14'-0"	2,271	8'-6"	1,379	162	#6	6"	32'-4"	7,867	30	18"	39'-9"	797	164	18"	39'-9"	4,355	108	9"	8'-0"	577	216	9"	5'-2"	745	17'-10"	2,573	44'-3"	118	92	256	4.355	783.3	3.3	374	177.5	31,705
6	8'-0"	8'-0"	11"	9"	162	#6	6"	53'-0"	12,896	108	#6	9"	14'-0"	2,271	8'-6"	1,379	162	#6	6"	40'-4"	9,814	36	18"	39'-9"	956	194	18"	39'-9"	5,151	108	9"	8'-0"	577	270	9"	5'-2"	932	17'-10"	3,216	53'-0"	142	108	301	5.171	929.8	3.9	443	210.8	37,635

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.

GREGORY M. STRUBE
103290
4/8/2020

HL93 LOADING | SHEET 2 OF 2
Texas Department of Transportation | Bridge Division Standard
MULTIPLE BOX CULVERTS
CAST-IN-PLACE
8'-0" SPAN
2' TO 23' FILL
MC-8-23

REV	DATE	BY	APP	COMMENT
1	4/8/20	GS		DETAILS ADDED

PREPARED FOR:
NORTHERN OAKS LLC
15925 FM 3083, STE 6
PMB 8512
CONROE, TX 77302

BLEYL ENGINEERING
PLANNING • DESIGN • MANAGEMENT
100 Nugent Street, Conroe, TX 77301
Texas Firm Registration No. F-678
Tel. 936-441-7833 Fax 936-760-3833
www.bleylengineering.com
AUSTIN BRYAN CONROE HOUSTON

STORM DETAILS

LEGACY ESTATES
(PRIVATE SUBDIVISION)
384.285 ACRES OF LAND IN THE MA
GUADALUPE CASILLAS SURVEY, A-112 AND THE
ELIJAH ANDERSON SURVEY, A-2
WALKER COUNTY, TEXAS

GREGORY M. STRUBE
103290
4/1/2020

DESIGN: GREG M. STRUBE, PE
CAD: SGK | RVW: RVW
PROJECT NO: 12529
SHEET: 19 | OF: 40

4/8/2020 9:29:30 AM
LITTLEFIELD RESIDENTIAL - THE RESERVE\04 CAD\CD-12529\18-19 DETAILS.DWG
DUSTINW
F:\12500\12529

LINE	BEARING	DISTANCE
D302	S77°38'55"W	123.74'
D303	S30°52'40"E	39.63'
D304	S30°52'40"E	80.75'
D305	S30°52'40"E	34.54'
D306	N66°55'58"E	155.51'
D307	S66°55'58"W	166.48'
D308	S61°19'25"W	10.79'
D309	N04°14'42"W	79.97'

BASED on the FEMA Flood Insurance Rate map referenced below, this property is not situated within any of the flood zones shown thereon as scaled graphically to the best of my ability from available data on said map. Any flood zone determination herein is NOT to be interpreted as a guarantee against flooding, or flood damage to property or improvements, by Fuller and Associates.

PANEL No.: 48471 C 0200 D	Date/Revised Date: August 16, 2011

VICINITY MAP
Scale: None

NOTES:

1. Coordinates and bearings referenced to NAD 1983, Texas Central Zone. Bearings based on GPS (RTK) observations, LEICA SmartNet Network, Texas. Coordinates, distances and areas are Grid and may be converted to Surface Horizontal by dividing by a scale factor of 0.99988;
2. This survey was performed without the benefit of a title commitment. Easements and other matters may exist not shown by this survey;
3. Deed: S & S Farms to Bryant Littlefield, et al, dated September 9, 2019 and recorded under Instrument #50795, Official Records (call 384.24 acres);
4. All property corners are 5/8" iron rods, with a plastic cap, marked "Joe A. Fuller, RPLS 4066", unless otherwise shown.
5. Lots will have access to private roadway. Utility easements will be addressed through deeds and restrictive covenants.

Based on calculations made from available data, if the impervious cover (structures, driveways, sidewalks, etc) on each lot does not exceed 63,000 square feet, then the existing detention on the property will be sufficient. However, if the impervious cover of the property exceeds or surpasses 63,000 square feet then further study will be necessary and possible drainage/detention improvements may be required in accordance with current Local, State, and Federal Regulation including the Walker County Subdivision Regulations. Local approval or allowance must be given by Walker County in writing prior to alteration of the drainage infrastructure. It is the responsibility of lot owners to comply with any regulations or limitations noted, and permits issued by Walker County for development do not act as a waiver or variance of the lot owner's responsibility to provide for excess runoff and drainage created by the permitted development.

Ryan J. Londeen
Licensed Professional Engineer
Texas Registration No. 127074

Bleyl Engineering
TBPELS Firm No. 678
100 Nugent Street
Conroe, TX 77301

CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	260.00'	86.03'	18°57'27"	S76°24'41"W	85.63'
C2	340.00'	112.50'	18°57'27"	S76°24'41"W	111.98'
C3	340.00'	20.72'	3°29'30"	S84°08'39"W	20.72'
C4	340.00'	28.18'	4°44'59"	S80°01'25"W	28.18'
C5	260.00'	37.40'	8°14'29"	S81°46'10"W	37.37'
C6	260.00'	20.34'	4°28'53"	N79°53'22"E	20.33'
C7	260.00'	26.80'	5°54'23"	S85°05'00"W	26.79'
C8	340.00'	33.86'	5°42'20"	S80°30'06"W	33.84'
C9	340.00'	27.78'	4°40'56"	S85°41'43"W	27.78'
C10	25.00'	25.60'	58°40'04"	N62°37'47"W	24.49'
C11	100.00'	103.64'	59°22'51"	N62°59'10"W	99.06'
C12	100.00'	153.12'	87°44'02"	S43°27'23"W	138.60'
C13	100.00'	161.03'	92°15'58"	S46°32'37"E	144.19'
C14	100.00'	101.15'	57°57'17"	N58°20'46"E	96.89'
C15	25.00'	25.60'	58°40'04"	S58°42'09"W	24.49'

LINE	BEARING	DISTANCE
E1	S85°53'24"W	259.70'
E2	S77°38'55"W	123.74'
E3	S28°52'13"W	80.46'
E4	N56°30'43"W	27.64'
E5	N21°27'42"E	48.98'
E6	S77°38'55"W	621.26'
E7	N77°38'55"E	205.98'
E8	N77°38'55"E	231.46'
E9	N77°38'55"E	268.93'
E10	N68°05'37"W	816.21'
E11	S86°20'38"W	155.04'
E12	S02°41'55"E	202.83'
E13	S39°54'51"E	336.08'
E15	N77°38'55"E	300.96'
E16	N77°38'55"E	216.43'
E17	N09°37'25"W	241.72'
E18	S86°23'33"W	83.50'
E19	S17°25'27"W	292.79'
E20	N66°55'58"E	161.47'

OWNERS ACKNOWLEGEMENT AND DEDICATION

I (we), the undersigned owner(s) and developer(s) of the property shown hereon, do hereby adopt the aforegoing plat of LEGACY ESTATES 384.285 ACRE Subdivision, as the official Subdivision Plat of said property.

ALL LOTS WITHIN THE SUBDIVISION AND THE OWNERS THEREOF MUST CONTINUE TO ACCEPT ALL EXISTING DRAINAGE FLOWS AND DRAINAGE STRUCTURES IN PLACE AT THE TIME OF DEVELOPMENT WHICH ARE A PART OF OR NECESSARY TO THE PUBLIC ROADS INFRASTRUCTURE OR PUBLIC SYSTEM OF DRAINAGE, IN ADDITION TO ALL NATURAL FLOWS OF WATER ENTERING ONTO OR CROSSING THE PROPERTY.

Signed____________________ Bryant Littlefield

Signed____________________ Gary Littlefield

____________________ Serenity Littlefield

____________________ Glenda Littlefield

NOTARY PUBLIC ACKNOWLEDGEMENT

STATE OF TEXAS

COUNTY OF _______

BEFORE ME, the undersigned authority, on this day personally appeared ____________ and ____________, known to me to be the person whose name is subscribed to the aforegoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

WITNESS MY HAND AND SEAL OF OFFICE, this the ____________ day of __________________, 20___.

____
Notary Public

I, JOE A. FULLER, Registered Professional Land Surveyor, do hereby certify that this plat represents a survey made on the ground under my supervision and that all monuments and apparent easements are shown hereon.

Signed ____________________
JOE A. FULLER
R.P.L.S. No. 4066
October 15, 2019

CERTIFICATION BY THE ENGINEER
STATE OF TEXAS
COUNTY OF WALKER

I, Gregory M. Strube, licensed Professional Engineer No. 103290, hereby certify that proper engineering consideration has been given this plat regarding design, construction and layout of the improvements.

Gregory M. Strube
Licensed Professional Engineer
Texas Registration No. 103290

Bleyl Engineering
TBPELS Firm No. 678
100 Nugent Street
Conroe, TX 77301

STATE OF TEXAS
COUNTY OF WALKER

I, the undersigned County Clerk in and for Walker County, do hereby certify that this plat was filed for record in my office on the _________ day of ________________, 20____, in Volume ____, Page ____, Plat Records of Walker County, Texas.

____
County Clerk, Walker County

STATE OF TEXAS
COUNTY OF WALKER

This is to certify that the Commissioners of Walker County, Texas, has on this ______ day of ______________, 20___, approved this plat and subdivision of the LEGACY ESTATES 384.285 Acre SUBDIVISION.

____
County Judge

____
Commissioner, Pct. 2

____
Commissioner, Pct. 4

____
Commissioner, Pct. 1

____
Commissioner, Pct. 3

PRELIMINARY ONLY
Not for recording purposes

PLAT OF

LEGACY ESTATES SUBDIVISION
(a Private Subdivision)
(being 384.285 acres)

In the Ma GUADALUPE CASILLAS SURVEY, A–112
and the ELIJAH ANDERSON SURVEY, A–2
Walker County, Texas

October, 2019

Scale : 1" = 400 Feet

FULLER and ASSOCIATES
P.O. Box 1783 FIRM 10122400
Huntsville, Texas
File: LITTLEFIELD Bryant Div 384.285a–SH75–MP \2019\

AFFIDAVIT

STATE OF TEXAS
COUNTY OF Montgomery

Before me, the undersigned authority, on this day (May 27, 2020) personally appeared
Bryant Littlefield

Known to me, who being by me duly sworn upon his, deposed and said:

1) My name is Bryant Littlefield
2) I am over the age of 18 and am a resident of the State of Texas, I have personal knowledge of the facts herein, and, if called as a witness, could testify competently thereto.
3) I certify that there will be no lots sold or transferred in Legacy Estates prior to all the improvements are complete and have been approved by Walker County and recordation of the final plat has been made.

Bryant Littlefield

State of Texas
County of Montgomery

Sworn to and subscribed before me, the undersigned authority, on the 27th day of May, 2020

NOTARY PUBLIC

CHRISTY POUNDS
Notary Public, State of Texas
Comm. Expires 06-28-2021
Notary ID 128373204

Deer Forest Subdv.

WCFM-10

VARIANCE REQUEST FORM
FOR
WALKER COUNTY SUBDIVISION POLICY

To: Utility Director
Walker County
1313 University Ave.
Huntsville, Texas 77340

Date of Submission:
5-27-20

Name of Property Owner:
Tribute Ranch, LLC
LAST FIRST MI

I. Description of lot or tract of land for which variance is requested:

1) Survey and abstract:
J.M. DE LA GARZA, A-22

2) Name on Deed:
Tribute Ranch, LLC.

3) County Records:
Volume Inst. No. 43972
Page

4) Previous owner Name and Recording:
Name 306.44ac HWY 150 FINCA, LLC
Volume 1304
Page 507

5) Tax Number:
46065 & 47443

6) If in a subdivision or being subdivided, give name of subdivision:
N/A

7) Date lot or tract was created:

8) Name of person causing lot or tract to be created (Owner, developer, or other):
TRIBUTE RANCH, LLC

9) Name and address of lienholder of property(if none, so state):
NONE

10) Give :
Section 5.3 Page 11 of 32 Paragraph 1
of the subdivision document for which variance is requested.

II. Variance requested and reason.

1) Describe what variance is desired (Add additional pages if needed):
3 TO 1 DEPTH TO WIDTH RATIO

2) Give reason why your are unable to comply with the Walker County Subdivision Policy as shown. Normal cost of creating and complying with the Walker County Subdivision Policy is not necessarily an acceptable reason. (Add additional pages if needed):
Lot Configuration so that septic spray Area will be able to be utilized.

Signature of Applicant

Jacob Slott
Print name

Subscribed and sworn before me
this 27th day of May, 2020

ANNETTE CLOWERS OLIVIER
Notary Public, State of Texas
Comm. Expires 04-28-2024
Notary ID 124876036

Annette C. Olivier
NOTARY PUBLIC
Exp. Date 4-28-2024

If the lot or tract in question was created (divided) before January 1, 1996, complete the above Section I and II only.

If the lot or tract was created after January 19, 1996, have the previous owner or seller of the land complete and execute section III of this form.

III. To be completed by previous owner or seller of land for which variance is requested:

1) Name:

LAST _____ FIRST _____ MI _____

2) If a person other than you is requesting variance:
Are you related to the person requesting the variance?

_____

If "Yes", how?

_____

3) Were you familiar with the Walker County Subdivision Policy when this lot or tract was created? _____

4) Are you now familiar with the Walker County Subdivision Policy?

I have been given a copy of Section 232.001 - 232.005 of the Local Government Code which states that dividing my property into smaller tracts may qualify me as a subdivider and my property as a subdivision.

I am aware that as a subdivider, I am required to comply with the Walker County Subdivision Policy.

I am aware that failure to comply with the policy may make me subject penalties.

I am aware that failure to comply with the policy will mean that the grantee may be unable to obtain a permit for utilities and building.

_____
Signature of Prior Property Owner or seller

_____
Print Name

Subscribed and sworn before me
this _____ day of _____, _____.

_____
NOTARY PUBLIC

Exp. Date _____

IV. Commissioners Court action on Subdivision Variance Request:

1) Date of Action: _____

2) Approved as requested? _____

Yes or No

3) Approved with the following stipulation:

_____

_____

_____

_____

_____

Signature Walker County Judge

_____

Attested:
Walker County Clerk

WCFM-10 approved 10-16-97

Deer Forest Depth to Width Lot Summary

Total Lots	292	Pass 3:1 Ratio	126
Total Reserves	6	Fail 3:1 Raito	172

Average D:W Ratio	3.36	of all 292 Lots and 6 Reserves
Avg. rd frontage	138.25	of all 292 Lots and 6 Reserves
Avg. Lot Depth	383.03	of all 292 Lots and 6 Reserves

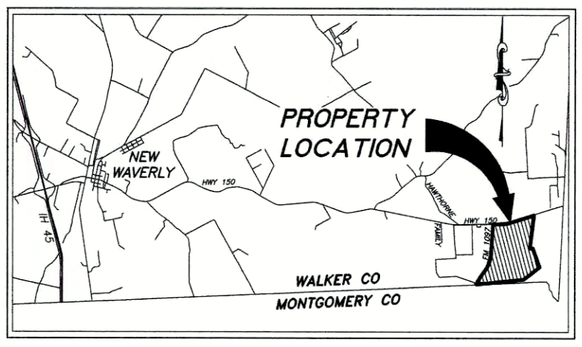
200.00	Lots and Res. pass at 3.15 Depth to Width ratio
225.00	Lots and Res. pass at 3.5 Depth to Width ratio
248.00	Lots and Res. pass at 4.0 Depth to Width ratio

** 26 Cul-de-sac Lots all fail by default and are included in all calculations shown

** 6 Reserve Tracts all fail by default and are included in all calculations shown

PRELIMINARY NOT FOR RECORD

DEER FOREST SUBDIVISION SHEET INDEX

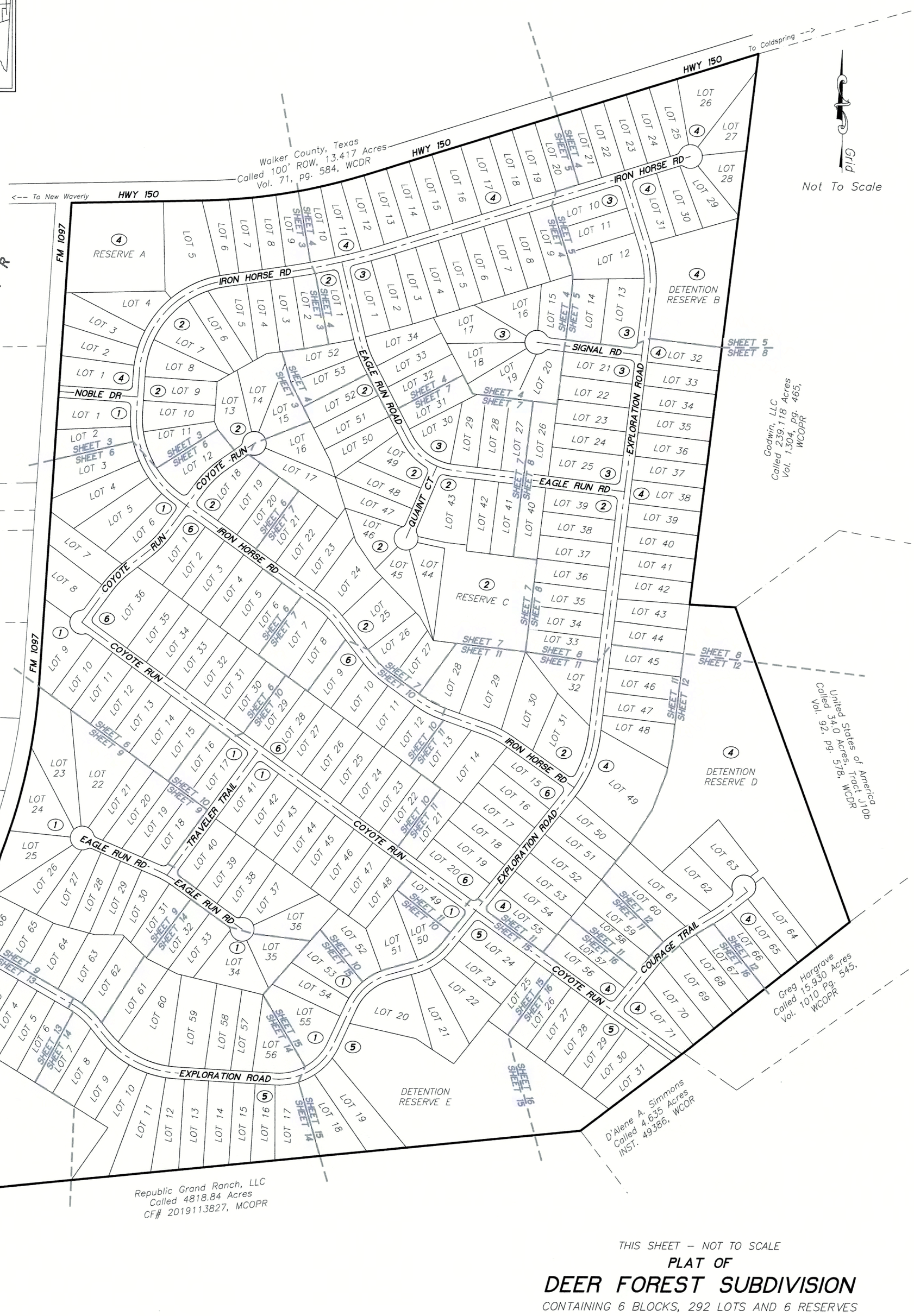


VICINITY MAP

Not To Scale

LEGEND

CF#	County Clerk's File Number
DE	Drainage Easement
PUE	Public Utility Easement
SHECO	Sam Houston Electric Cooperative
VWDE	Variable Width Private Drainage Easement
MCOPR	Montgomery County Official Public Records
WCDR	Walker County Deed Records
WCOPR	Walker County Official Public Records
WCOR	Walker County Official Records
WCPR	Walker County Plat Records
○	Set 5/8" Iron Rod w/cap marked "MICHAEL A. NAMKEN RPLS 6533", UNLESS otherwise noted
□	Found 5/8" Iron Rod w/cap marked "LSMC RPLS 1962"
●	Found Monument, size and type as noted
(4)	Block Number



THIS SHEET – NOT TO SCALE

PLAT OF

DEER FOREST SUBDIVISION

CONTAINING 6 BLOCKS, 292 LOTS AND 6 RESERVES

A SUBDIVISION CONTAINING 431.19 ACRES OF LAND, BEING ALL OF THE CALLED 200.00 ACRE DESCRIBED TRACT 1 AND BEING ALL OF THE CALLED 231.291 ACRE DESCRIBED AS TRACT 2 IN A DEED TO TRIBUTE RANCH, LLC RECORDED UNDER INSTRUMENT NUMBER 43972, OFFICIAL RECORDS, WALKER COUNTY, TEXAS,

JOSE MARIA DE LA GARZA GRANT, A-22, WALKER COUNTY, TEXAS

APRIL 2020

NAMKEN, INC.
P. O. Box 1158, New Waverly, TX 77358
TBPELS Firm No. 10194090
936-661-3325

Job No. 20-001

SHEET 1 OF 17

CERTIFICATION BY THE COUNTY CLERK

STATE OF TEXAS
COUNTY OF WALKER.

I, Kari A. French, County Clerk in and for Walker County, do hereby certify that this plat with its certificates of authentication was filed for record in my office

the _____ day of _____, 20_____,

in the Plat Records of Walker County in

Volume _____, Page _____.

By:_____
Kari A. French, County Clerk
Walker County, Texas

INDIVIDUAL SHEETS INDEX

SHEET	CONTENTS	SHEET	CONTENTS
1	**Vicinity Map, Sheet Number Layout**	10	Blocks 1 and 6
2	Certifications, Dedications and Notes	11	Blocks 1, 2, 4 and 6
3	Blocks 1, 2 and 4	12	Block 4
4	Blocks 2, 3 and 4	13	Block 5
5	Blocks 3 and 4	14	Blocks 1 and 5
6	Blocks 1, 2 and 6	15	Blocks 1 and 5
7	Blocks 2, 3 and 6	16	Blocks 4 and 5
8	Blocks 2, 3 and 4	17	Line and Curve Tables
9	Block 1		

P:\NSCI Jobs\01 Survey\JOBS-20\20-001 DEER FOREST\DWGs\PRELIM PLAT - DEER FOREST\20-001 PRELIM DEER FOREST PLAT.dwg, SHT 1, 5/20/2020 1:44:25 PM, AMH