DUPLICATE

TOM GREEN COUNTY CLERK
124 W. BEAUREGARD
SAN ANGELO, TX 76903
(325)659-6553

ISSUED TO: PLAT APPLICATION

RECEIPT #: 379239 **DATE: 07/03/2012 11:18:47 AM**
DEPARTMENT: RE **WORK STATION: INDEX01**

SERVICE	PAGES	FEE
MISCELLANEOUS,APPLIC	1	150.00
MISCELLANEOUS,ADDITI	12	120.00
Total Amount Due		270.00

CHECK 2010 270.00
STONEWALL RANCHES /SKG ENGINEERING

Total Amount Paid 270.00

THANK YOU

TOM GREEN COUNTY

Subdivision Application Form
(Please Print or Type)

Document must be filled out COMPLETELY, leaving no blank areas. N/A may be used if appropriate

Name of Proposed Subdivision: STONEWALL RESERVE - SECTION SIX

Location: HIDDEN VIEW LANE, TOM GREEN COUNTY, TEXAS

Has Plat been reviewed by Plat Reviewer? Yes X
No ____ **STOP! PLAT MUST BE REVIEWED BY PLAT REVIEWER**

Is location within the ETJ? Yes ____ **STOP! PLAT MUST BE FILED WITH CITY**
No X TGC Pct. # 2

Type of Request: Preliminary ____ Final X Replat ____
Amended ____ Vacation ____ Revised ____

Owner(s) of Subdivision: STONEWALL RANCHES

Address: P.O. BOX 3300, SAN ANGELO, TEXAS 76902

Phone # 659.1652 Fax: ____

Existing Land Use: VACANT

Proposed Land Use: RESIDENTIAL

Total Acreage: 66.0 Number of Proposed Lots: 12

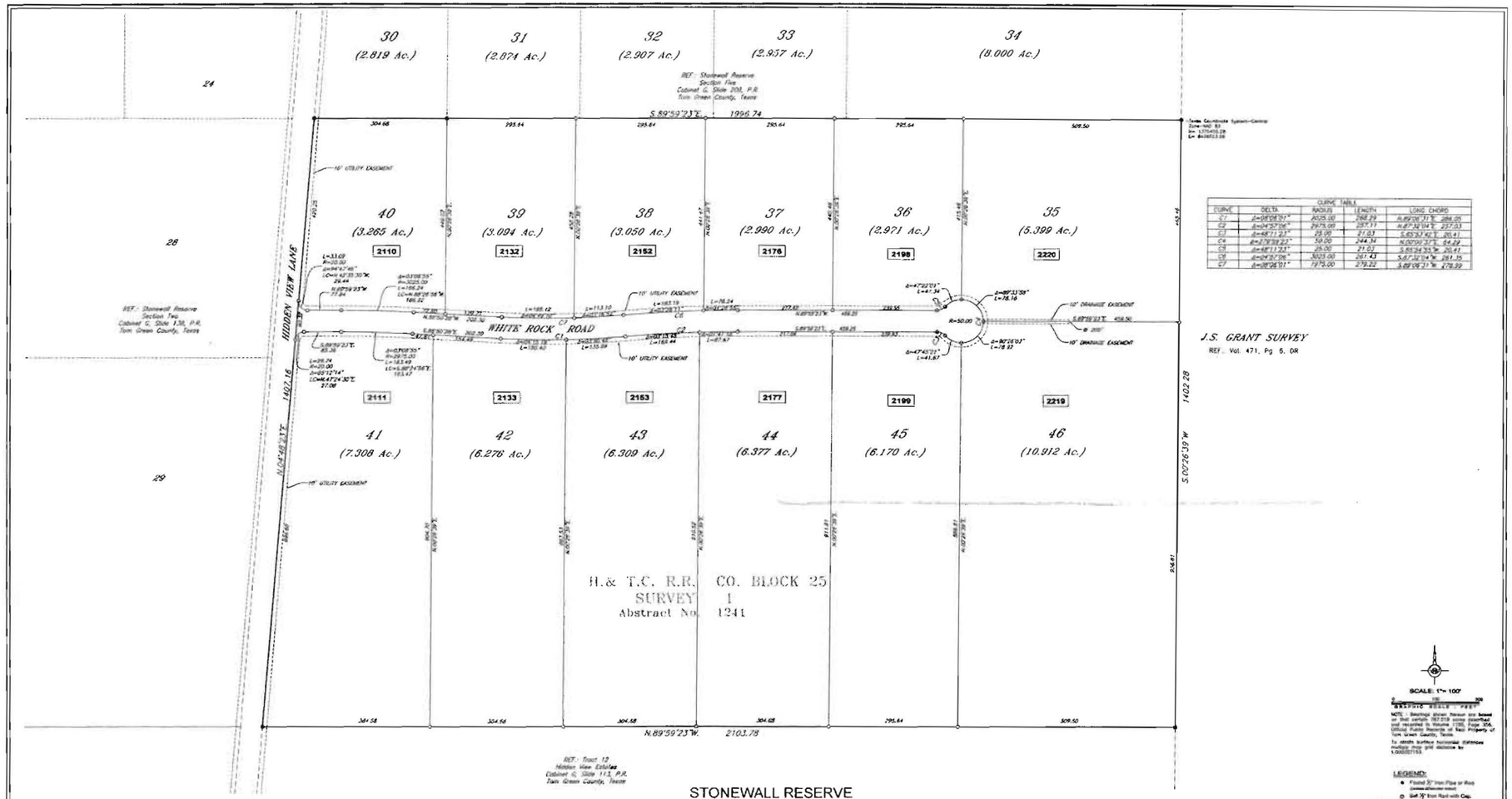
Proposed Source of Water Supply: Individual Well ____ Water Supply X

Name of Water System CONCHO RURAL WATER

Proposed Sewage Disposal System: Individual Septic Tank X

Private Sewage System ____

Are any off-site drainage, access or other easements necessary for this subdivision? No X
Yes ____ (Please explain) ____



CURVE TABLE				
CURVE	DELTA	RADIUS	LENGTH	LONG CHORD
C1	Δ=08°06'01"	2025.00	288.29	N.89°06'31"E. 288.05
C2	Δ=04°57'06"	2975.00	257.11	N.87°32'04"E. 257.03
C3	Δ=48°11'23"	25.00	21.03	S.65°53'42"E. 20.41
C4	Δ=278°38'23"	50.00	244.34	N.00°00'37"E. 64.29
C5	Δ=48°11'23"	25.00	21.03	S.65°54'35"W. 20.41
C6	Δ=04°57'06"	3025.00	261.43	S.87°32'04"W. 261.35
C7	Δ=08°06'01"	1975.00	279.22	S.89°06'31"W. 278.99

STONEWALL RESERVE
SECTION SIX
TOM GREEN COUNTY, TEXAS

OWNER: STONEWALL RANCHES, a Texas General Partnership

DESCRIPTION: Being 46.000 Acres out of H. & T.C. R.R. Co. Block 25, Survey No. 1, Abstract No. 1241, Tom Green County, Texas, and being out of the certain 446.032 Ac. Tract described and recorded as Instrument No. 806380 Official Public Records of Real Property, Tom Green County, Texas.

This Document is recorded as Instrument # _____

at Plat Cabinet _____ Slide _____

Field Notes are recorded as Instrument # _____

SKG ENGINEERING
SURVEYING • ENVIRONMENTAL • LABORAT

TOM GREEN COUNTY NOTES
No construction or development within this subdivision may begin until all Tom Green County requirements have been satisfied.

No structure in this subdivision shall be occupied until connected to a public sewer system or to an on-site wastewater system that has been approved and permitted by the Tom Green County Environmental Health Department.

Tom Green County Commissioner's Court makes no representation whatsoever as to the ground water availability for any tract in this subdivision.

COUNTY COMMISSIONER'S COURT
of Tom Green County, Texas
Approved for recording this ____ day of _____ 20____.

By: _____
County Judge

911 COORDINATOR
Approved for recording this ____ day of _____ 20____.

By: _____

COUNTY CLERK
Approved for record this ____ day of _____ 20____ @ _____
County Clerk of Tom Green Co., Tx.

By: _____

ACKNOWLEDGEMENT/DEDICATION
We, Stonewall Ranches, do hereby adopt this plat as the subdivision of our property and dedicate for the use of the public the street and easements shown hereon.

_____
David R. Currie, Managing Partner

STATE OF TEXAS
COUNTY OF TOM GREEN
This instrument was acknowledged before me on _____
by David R. Currie, in the capacity shown.

_____
Notary Public, State of Texas

Preliminary, this document shall not be recorded for any purpose

SURVEYOR'S CERTIFICATE
Know all men by these presents: that I, Russell T. Gully RPLS, do hereby certify that I prepared this plat from an actual and accurate survey of the land and that corner monuments shown hereon will be, or were properly placed, under my supervision, in accordance with the Order Establishing Regulations For The Development of Subdivisions and Manufactured Home Rental Communities adopted by the Commissioner's Court of Tom Green County, Texas and with the Rules of the Texas Board of Professional Land Surveying.

11-E-0390

COLLATERALIZED ESCROW AGREEMENT

This agreement is entered into by and between STONEWALL RANCHES, a Texas General Partnership, acting by and through its Manager, hereinafter referred to as "Developer" and GEORGE W. HARRISON, hereinafter referred to as "Escrow Agent".

WITNESSETH:

WHEREAS, Developer is the Owner of Stonewall Reserve, Section Six, located in Tom Green County, Texas, and has filed a proposed plat of Stonewall Reserve, Section Six, with the Commissioner's Court in and for Tom Green County, Texas, with the proposed plat thereof being depicted and shown on Exhibit "A", attached hereto and made a part hereof for all purposes; and

WHEREAS, Tom Green County requires that all roads within any proposed subdivision must be completed prior to the filing of any plat; and

WHEREAS, White Rock Road associated with and situated within the proposed Stonewall Reserve, Section Six, and depicted in said Exhibit "A", has not been completed in accordance with the Order Establishing Regulations for the Development of Subdivisions and Manufactured Home Rental Communities dated September 28, 1999, ("Subdivision Regulations"), and Developer desires to assure Tom Green County that this Road will be timely completed in accordance with the Subdivision Regulations, and thereby allow Developer to file the plat and sell lots created thereby prior to the completion of White Rock Road.

NOW, THEREFORE, for and in consideration of the premises, and in order to induce Tom Green County to approve the filing of the plat for Stonewall Reserve, Section Six, prior to the completion of the above road, it is understood and agreed by and between the parties hereto of the following, to-wit:

1. Developer and Reece Albert, Inc., a Texas Corporation, acting by and through its duly authorized officer, ("Contractor"), have entered into an Agreement for the construction of White Rock Road in Stonewall Reserve, Section Six, to Tom Green County, Texas, ("Construction Proposal"), with said Construction Proposal being attached hereto as Exhibit "B", reference to which Construction Proposal is hereby made for all purposes.

2. Among other provisions, the Construction Proposal dated May 25, 2012 provides a fixed Contract price of $131,100.00, for the completion of White Rock Road.

3. Developer, upon the full execution of this Collateralized Escrow Agreement by all parties, will immediately place the sum of $131,100.00 in the form of a cashier's check or direct deposit with Escrow Agent, for the purpose of assuring to Tom Green County that White Rock Road will be satisfactorily and timely completed in accordance with the Subdivision Regulations.

4. Developer hereby authorizes Escrow Agent to disperse the escrowed funds to Contractor in accordance with the Construction Proposal in accordance with the terms thereof. All sums held by Escrow Agent, in excess of the amounts due Contractor under the Construction Proposal will be dispersed and returned to Developer.

5. Failure by Contractor to complete the construction of White Rock Road in accordance with the terms, conditions and covenants contained in the Construction Proposal on or before 6 months, will result in Escrow Agent dispersing all Escrowed Funds to Russell T. Gully, SKG Engineering, 1122 S. Bryant Blvd., San Angelo, Texas 76903, Phone 325-655-1288, as Construction Manager in order to finish the Road Project. All escrowed funds shall be used by the Construction Manager for the purpose of completing the roads. Any funds remaining after paying for the completion of the roads, including reasonable attorney's fees, costs, and expenses of the Construction Manager, shall be returned to Developer. Completion of the roads by the Construction Manager shall not obligate Tom Green County, Texas to be responsible for maintenance of the roads.

6. Escrow Agent is hereby authorized to deposit all escrowed funds to a passbook savings account at any national or state bank or any federally insured savings and loan association or such other investment account as Escrow Agent deems reasonable.

7. Escrow Agent shall be protected in acting upon any notice, request, waiver, consent, receipt of other paper or document believed by Escrow Agent to be genuine and to be signed by the proper party or parties.

8. Escrow Agent shall not be liable for any error of judgment or for any act done or step taken or omitted by it in good faith, or for any mistake of fact or law, or for anything which it may do or refrain from doing in connection herewith, except its own willful misconduct, and Escrow Agent shall have no duties to anyone except those signing this instrument.

9. Escrow Agent may consult with legal counsel in the event of any dispute or questions as to the construction of the foregoing instructions, or Escrow Agent's duties hereunder, and Escrow Agent shall incur no liability and shall be fully protected in acting in accordance with the opinion and instructions of such counsel.

10. Escrow Agent shall not be required to take or be bound by notice of any default of any person, or to take any action with respect to such default involving any expense or liability, unless notice is given in writing to Escrow Agent of such default and unless he is indemnified in a manner satisfactory to him against any such expense or liability. These instructions shall not be subject to rescission or modification.

11. In the event that Escrow Agent performs any service not specifically provided hereinabove, or that there is any assignment or attachment of any interest in the subject matter of this escrow or any modification thereof, or that any controversy arises hereunder, or that Escrow Agent is made a party to, or intervenes in, any litigation pertaining to this escrow or the subject matter thereof, Escrow Agent shall be reasonably compensated therefor and reimbursed for all costs and expenses occasioned thereby, and the parties hereto agree jointly and severally to pay the same, to indemnify Escrow Agent against any loss, liability or expense incurred in any act or thing done by him hereunder, it being understood and agreed that Escrow Agent may interplead the subject matter of this escrow into any court of competent jurisdiction, and the act of such interpleader shall immediately relive Escrow Agent of his duties, liabilities and responsibilities hereunder.

ACCEPTED AND AGREED TO THIS 28th day of June, 2012, in triplicate.

DEVELOPER

STONEWALL RANCHES, a Texas General Partnership

By: _____

ESCROW AGENT

_____

GEORGE W. HARRISON

RECEIPT

Receipt of $131,100.00 in the form of direct deposit is acknowledged to Escrow Account at Bank of San Angelo.

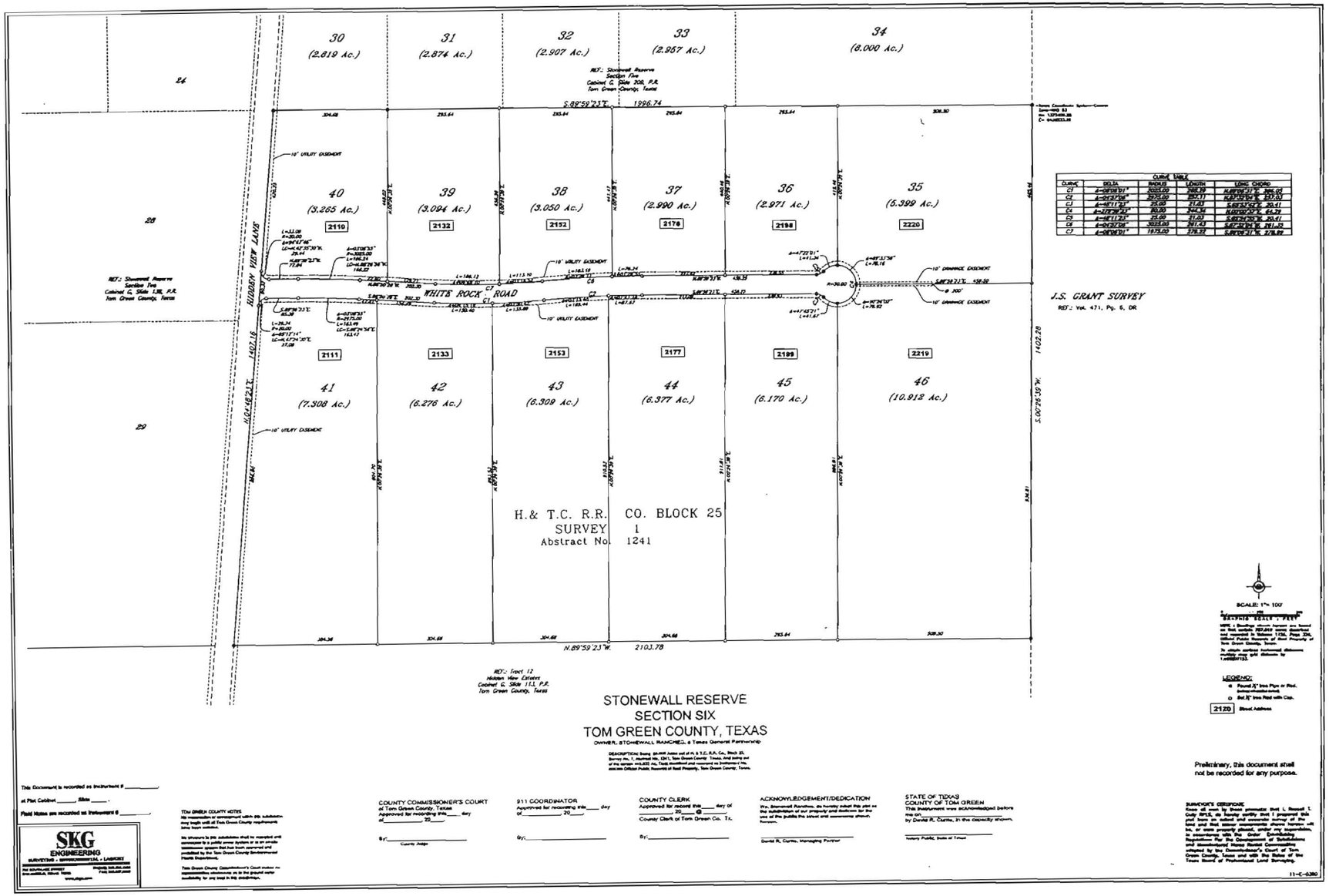
Escrow Agent: George W. Harrison
2 South Koenigheim
San Angelo, Texas 76903

Date: June 29th, 2012

Telephone: 325-653-3291

By: _____
George W. Harrison
Escrow Agent

EXHIBIT "A"



CURVE TABLE				
CURVE	DELTA	RADIUS	LENGTH	LONG CHORD
C1	4-08°08'01"	3025.00	268.39	N.89°55'21"E. 268.30
C2	4-07°37'06"	3075.00	392.11	N.89°55'56"E. 391.83
C3	4-46°11'32"	25.00	21.03	S.66°53'42"E. 20.41
C4	4-119°36'33"	30.00	62.63	N.60°00'33"E. 52.21
C5	4-46°11'32"	25.00	21.03	S.66°53'42"E. 20.41
C6	4-07°37'06"	3025.00	387.43	S.87°55'56"E. 387.15
C7	4-08°08'01"	3075.00	276.52	S.89°55'21"E. 276.39

EXHIBIT "B"

REECE ALBERT, INC.

HEAVY CONSTRUCTION, UTILITIES AND PAVING

PROPOSAL

To	David Currie	Date	May 25, 2012
	P.O. Box 3300	Project	Stonewall Reserve Section 6
	San Angelo, TX 76902	Location	US 277 South, Tom Green County

WE, THE UNDERSIGNED, PROPOSE TO FURNISH THE NECESSARY MATERIAL, EQUIPMENT, AND LABOR TO DO THE FOLLOWING MENTIONED WORK ON ABOVE PROJECT:

Stonewall Reserve Section 6 - White Rock Road

a. Excavation and embankment required to achieve design subgrade.
b. Compact subgrade and install 6" (TXDOT type A, grade 2) limestone base.
c. Prime base and pave with a 2-course penetration pavement consisting of two courses of pre-coated aggregate and asphalt.

	Total Lump Sum Base Bid	**$112,700.00**
Lime (5%) stabilize 6" of subgrade.	**Add to Base Bid Above**	**$~~29,500.00~~**
Install 10" base in lieu of 6".	**Add to Base Bid Above**	**$18,400.00**

NOTES:

> The above pricing is based on base material from Scherz pit. Base material will not be available until end of July or August of this year.
> Includes subgrade densities, base densities, and base depth check (one per 500 LF of roadway).

EXCLUSIONS:

This quote excludes all work not specifically listed above, including but not limited to the following items:

> Any costs or filings associated with T.C.E.Q. storm water runoff protection before, during, and after construction.
> Periodic inspections and maintenance of storm water controls required by TCEQ permits.
> Sales tax.
> Adjustment of utilities.

PLEASE SIGN AND RETURN 1 COPY

This Proposal may be withdrawn by us if not accepted within 30 days

Said amount is due and payable in San Angelo, Tom Green County, Texas. Full payment for work accomplished shall be due on receipt of invoice. A 1% per month carrying fee will added to past due accounts. 18% of amount due shall be added if suit is brought thereon.

Accepted David R. Currie

By Stonewall Ranches

Date 6-25-12

Yours very truly,

REECE ALBERT, INC.

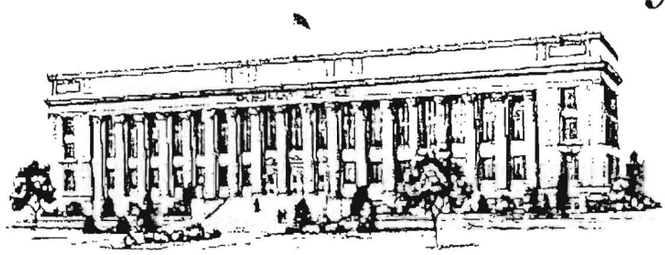
By

SKIP KLEMENT, ESTIMATOR

ARTBA American Road & Transportation Builders Association

P.O. BOX 62030 SAN ANGELO, TEXAS 76906-2030 / (325) 653-1241 FAX (325) 653-6086

Tom Green County



Environmental Health
Pamela Weishuhn

113 W. Beauregard
San Angelo, Texas 76903
325-658-1038/Fax: 325-659-5441

Environmental Health
Karel Zaleski

Mr. Herb Hooker
SK Engineering
1122 South Bryant
San Angelo, TX 76903

Apr 19, 2012

Re: Stonewall Reserve, Section 6 OSSF review

Dear Mr. Hooker,

We have received and reviewed the plat and planning materials for the above subdivision. The area is not located in a regulated floodplain and the soils appear generally limited for a conventional onsite septic systems (OSSF) based on the clay content. Each lot will have a site evaluation preformed to determine the type of OSSF to be installed . The lot sizes are sufficient size for onsite sewage systems.

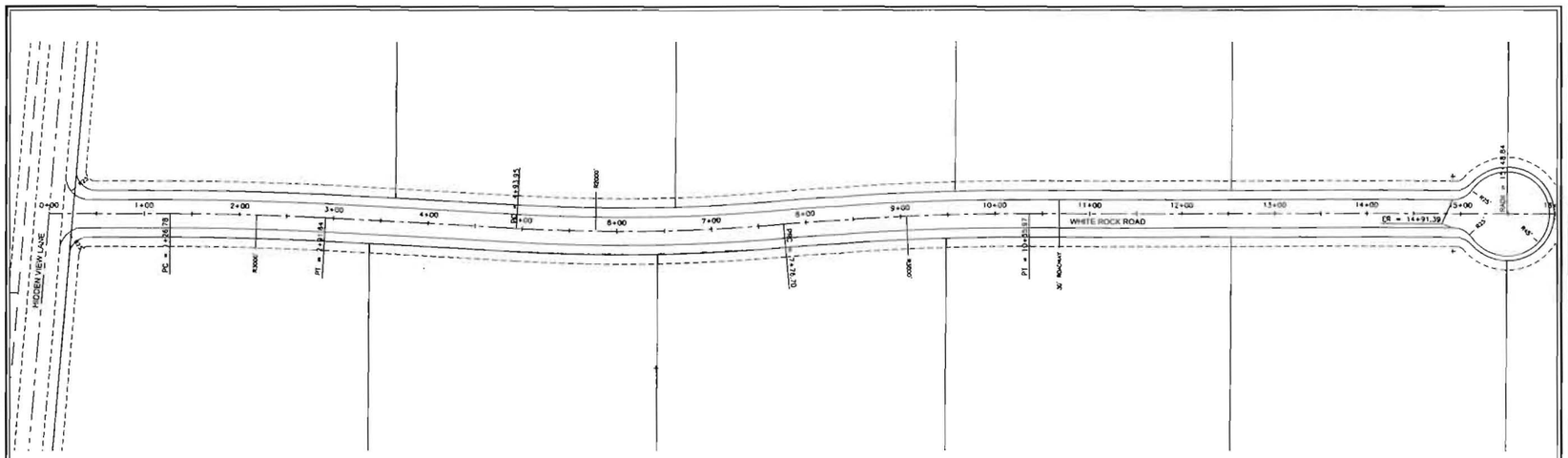
No wells are present in the subdivision at time of approval. If wells are installed after approval then wells must be 100 feet from existing or new septic systems.

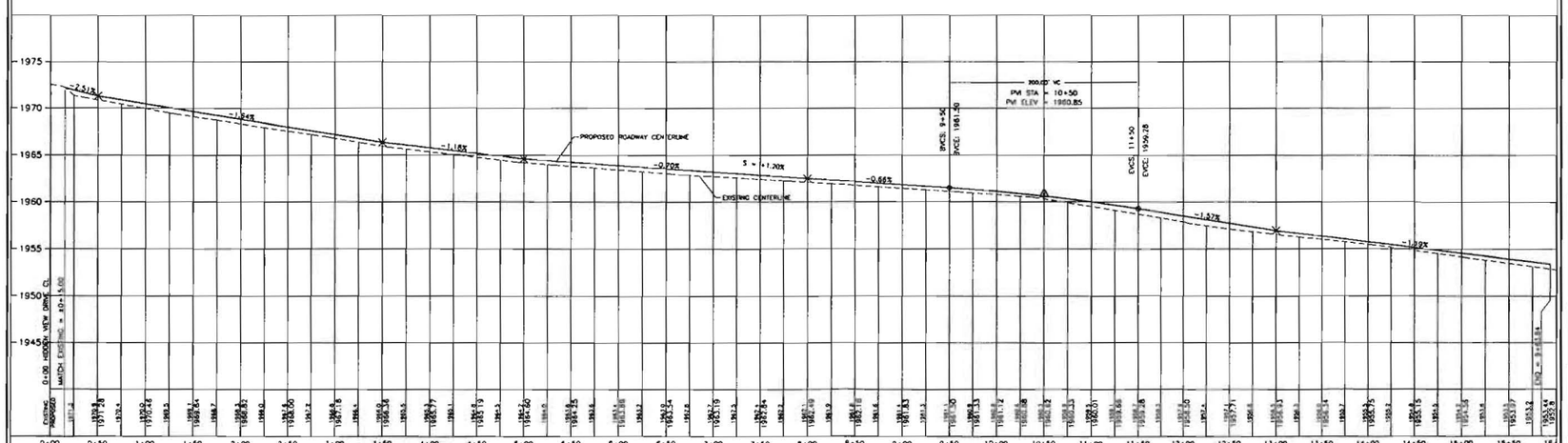
All OSSFs in the subdivision must be constructed in compliance with the existing rules and regulations.

If these conditions are met, this department has no objections to the approval of the subdivision.

Sincerely,
Pam Weishuhn

Pamela Weishuhn
Tom Green County Designated Representative



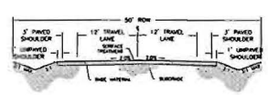


GENERAL NOTES:

1. ALL WORK AND ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE TCM GREEN COUNTY SUBDIVISION REGULATIONS.
2. BASE MATERIAL
   a. TYPE I – TYPE A CRUSHED LIMESTONE, GRADE 1 CONFORMING TO TXDOT ITEM 247 "FLEXIBLE BASE" WITH A MINIMUM PLASTIC INDEX OF 8 ALLOWED OR
   B. TYPE II – CRUSHED CALCHE CONFORMING TO THE PARAMETERS OF GRADE 2, TXDOT ITEM 247 "FLEXIBLE BASE" AS SET FORTH BEREIN FOR (3%) WEIGHT GRADATION BEFORE SIZE: PASS 1.5 LOSS LIME, 8 MAX, AND PI.0 PLASTICITY INDEX, MAX.
3. BOTH SUBGRADE AND BASE MATERIAL SHALL BE COMPACTED TO AT LEAST 95% (MODIFIED PROCTOR) OF MAXIMUM DRY DENSITY.
4. THESE STANDARDS OF QUALITY FOR MATERIALS AND CONSTRUCTION SHALL BE VERIFIED BY WRITTEN REPORT TO THE APPROPRIATE COUNTY AUTHORITY. SUCH REPORTS SHALL BE PREPARED BY A REGISTERED PROFESSIONAL ENGINEER OR AN ACCEPTABLE TESTING LABORATORY VERIFYING THE RECOMMENDATIONS OF THE REGULATIONS.
5. ALL SIGNAGE SHALL BE PROVIDED AND INSTALLED ON ROADWAYS BY THE CONTRACTOR AND SHALL BE AS SHOWN IN THE CURRENT VERSION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS APPROVED BY THE TEXAS DEPARTMENT OF TRANSPORTATION.

LEGEND:

STA – Station
CL – Centerline
ER – End of Radius
PVI – Point of Vertical Intersection
PVT – Point of Vertical Tangent
PVC – Point of Vertical Curve
PRC – Point of Reverse Curve
LT – Left
RT – Right



TYPICAL SECTION
RESIDENTIAL ROADWAY
50' ROW

SKG ENGINEERING
SURVEYING • ENGINEERING • LANDCAPE ARCHITECTURE
110 SOUTH MAIN STREET
SAN ANGELO, TEXAS 76903
PHONE: 325.653.2006
FAX: 325.653.9176
TBPLS FIRM NO. 10018800
www.skgc.com

STATE OF TEXAS
RUSSELL T. CULLY
81772
REGISTERED
PROFESSIONAL ENGINEER
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY RUSSELL T. CULLY, P.E. 81772
MAY 10 2013

Scale: 1"=50'H
1"=5'V

STONEWALL RESERVE
SECTION SIX
TOM GREEN COUNTY, TEXAS

WHITE ROCK ROAD
STREET PLAN-PROFILE
STA. 0+00 to End

DRAWN BY: KSG	DATE: 05-10-2013
JOB NO: 11-E-0398	SHEET NO: ST6
SCALE: 1"=50'	

SKG
ENGINEERING, LLC
FIRM REGISTRATION NUMBER F-7608
SURVEYING • ENVIRONMENTAL • LAB/CMT

706 SOUTH ABE STREET
SAN ANGELO, TEXAS 76903

PHONE: 325.655.1288
FAX: 325.657.8189

DRAINAGE STUDY

FOR

STONEWALL RESERVE

SECTION 6

TOM GREEN COUNTY, TEXAS

May 21, 2012

STATE OF TEXAS
RUSSELL T. GULLY
87727
LICENSED
PROFESSIONAL ENGINEER

5.21.12
F. 7608

SKG Engineering performed a drainage study at Stonewall Reserve, Section 6 in order to determine the amount of runoff running across the property and to demonstrate that the proposed street section with borrow ditches running along both sides will have sufficient capacity to convey the water it is collecting.

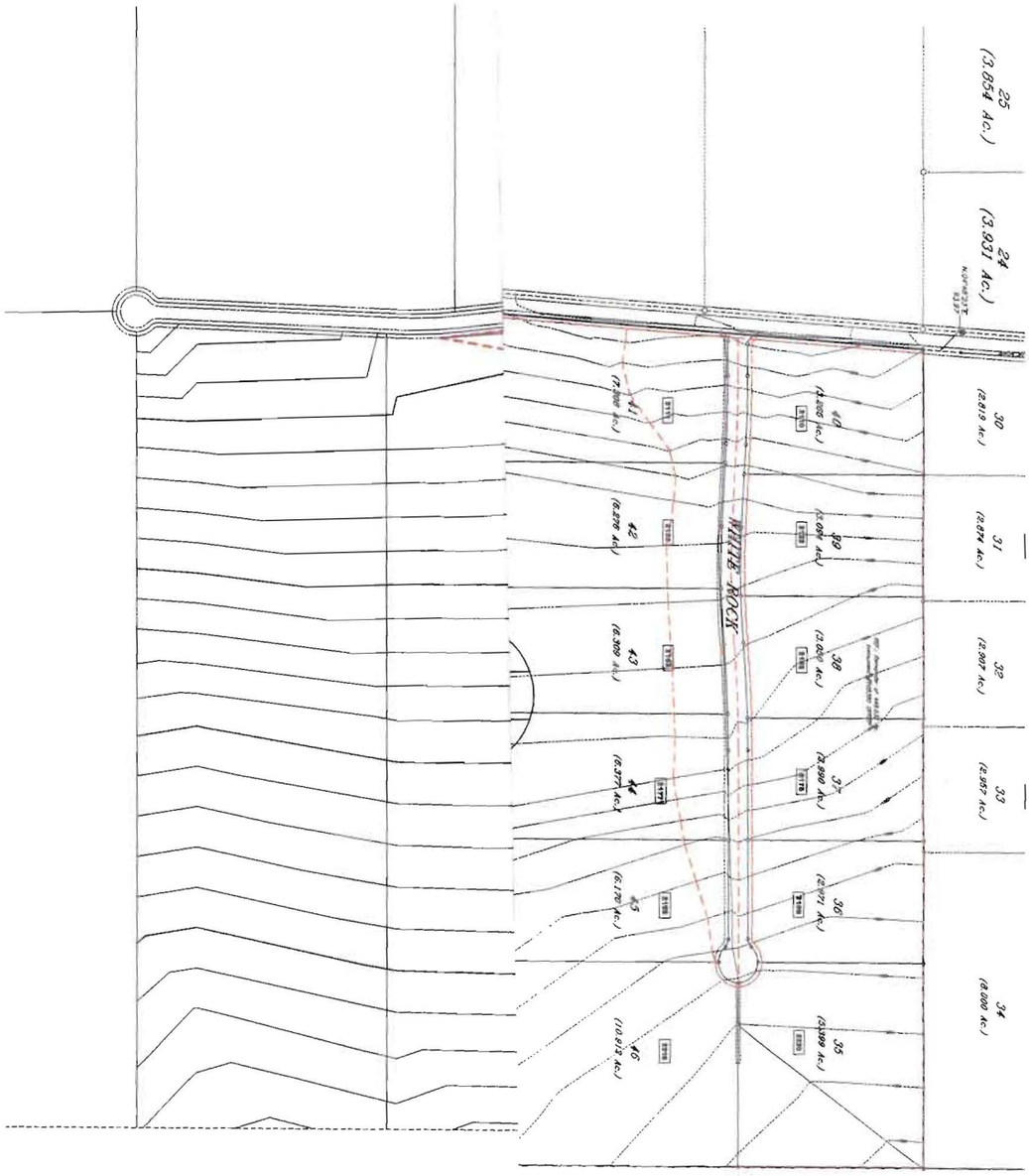
In order to determine the rainfall amounts within Section 6, a drainage area map was compiled to show the areas of both off-site and on-site drainage. This drainage area map can be found in Appendix A. Using the areas found, calculations were executed to determine the rainfall amounts for each storm event 2 through 100. These calculations can be found in Appendix B.

A drainage area map showing the areas contributing to the ditches was compiled and can be found in Appendix C. These areas were used to calculate the amount of rainfall running within the ditches. These calculations can be found in Appendix D.

Utilizing the calculations and maps mentioned above, a model of the ditches was run to determine if the ditches could convey all storm water being collected within the contributing drainage areas. Cross sections of the typical ditch and the corresponding water surface elevations for the 2 year and 100 year events can be found in Appendix E.

SKG's analysis demonstrates that the proposed ditches can properly convey the 2-year and 100-year storm events.

APPENDIX A



LEGEND:

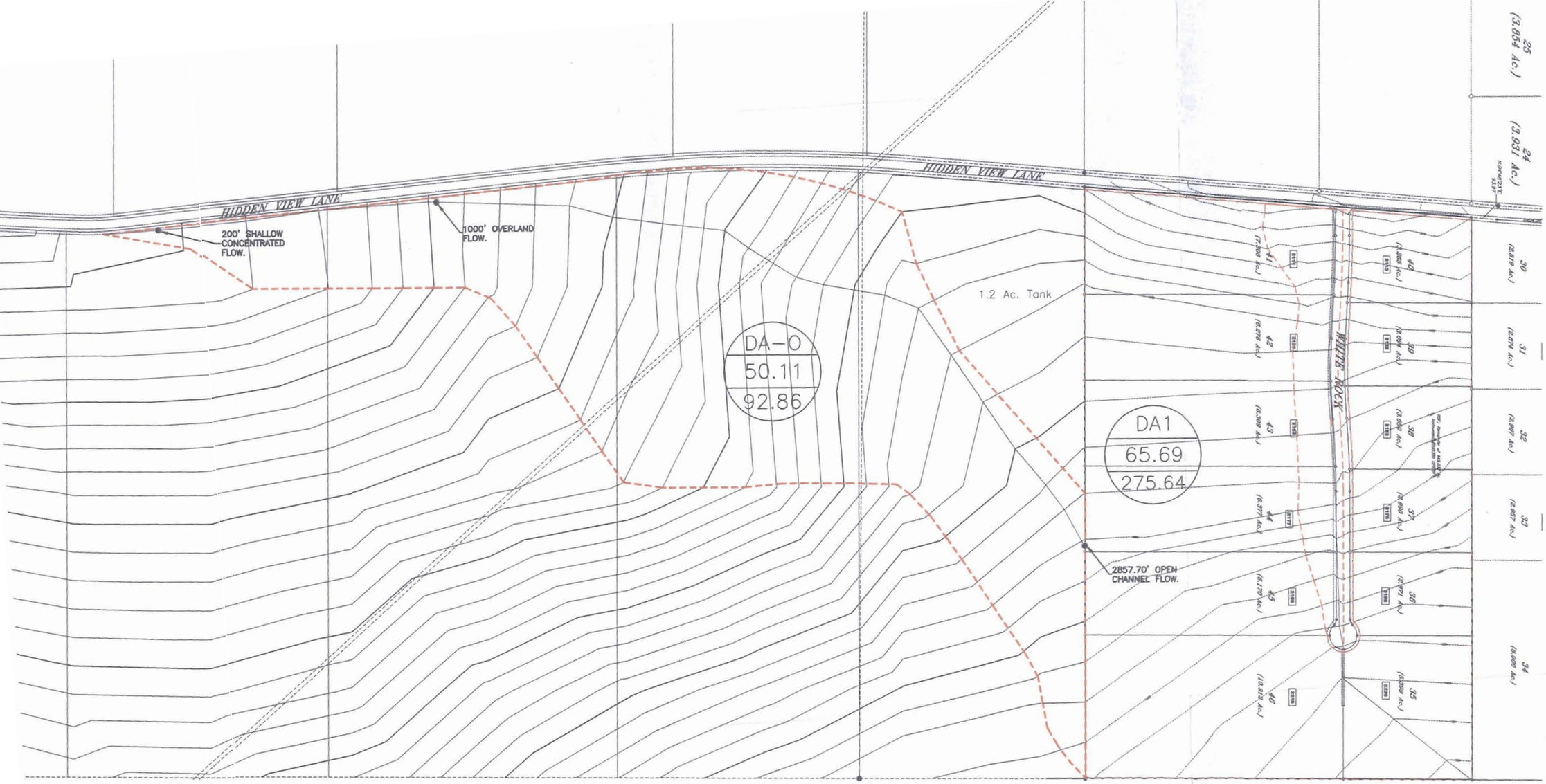
DA1	DRAINAGE AREA ID
AC	DRAINAGE AREA
CFS	DRAINAGE AREA FLOW FLOW RATE-100 YEAR

SKG
ENGINEERING
SURVEYING • ENVIRONMENTAL • LAB/CMT
706 SOUTH ABE STREET
SAN ANGELO, TEXAS 76903
PHONE: 325.655.1286
FAX: 325.657.2189
www.skga.com

SCALE: 1"= 200'

0 200 400
GRAPHIC SCALE : FEET

11-E-0390



DRAINAGE AREA MAP FOR OVERALL SITE

APPENDIX B

Project: Stonewall Reserve-Section 6
Project Number: 11-E-0390
Design By: Erica Carter

DRAINAGE AREA:DA-D

TABLE 1

STEP 1	SHALLOW CONCENTRATED FLOW		OVERLAND FLOW					OPEN CHANNEL FLOW						Total Time of Concentration
	**HYDRAULIC LENGTH (L)	*TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	**SLOPE (S)	*C_{VALUE}	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	HYDRAULIC RADIUS (R	**SLOPE (S)	*MANNING'S COEFFICIENT (n)	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	
Existing Conditions	200	15	1000	0.0055	16	1.19	5	2857.7	0.75	0.008	0.035	3.14	15.15	35.15

* TAKEN FROM CITY OF SAN ANGELO DRAINAGE MANUAL
** REFER TO DRAINAGE AREA MAPS

	UNITS USED
LENGTH	FT
T_c	MINS
VELOCITY	FT/SEC

1) VELOCITY (OVERLAND FLOW) $V = C\sqrt{S}$

2)TIME OF CONCENTRATION $T_c = L/(V \times 60)$

3) VELOCITY (OPEN CHANNEL FLOW) $V = \frac{1.49 \times R^{\frac{2}{3}} \times \sqrt{S}}{n}$

TABLE 2

Step 2	Existing Conditions			
	*e	*b	*d	Intensity (I)
2-yr	0.865	53.5	10.32	1.97
5-yr	0.848	68.5	11.47	2.63
10-yr	0.836	75.5	11.47	3.04
25-yr	0.805	77.2	10	3.59
50-yr	0.826	104	13.52	4.20
100-yr	0.816	112.5	14.7	4.63

* TAKEN FROM CITY OF SAN ANGELO DRAIANGE MANUAL

1) INTENSITY $I = b/(T_c + d)^e$

TABLE 3

Step 4	EXISTING CONDITIONS			
	***C	**Intensity	*Area	Q
2-yr	0.40	1.97	50.11	39.48
5-yr	0.40	2.63	50.11	52.81
10-yr	0.40	3.04	50.11	60.95
25-yr	0.40	3.59	50.11	72.04
50-yr	0.40	4.20	50.11	84.20
100-yr	0.40	4.63	50.11	92.86

* REFER TO DRAINAGE ARE MAPS
** CALCULATED IN TABLE 2
***San Angelo Drainage Manual

	UNITS USED
AREA	ACRES
Q	CFS

1) CALCULATED FLOW RATE $Q = CIA$

Project: Stonewall Reserve-Section 6
Project Number: 11-E-0390
Design By: Erica Carter

DRAINAGE AREA: DA-1

TABLE 1

STEP 1	SHALLOW CONCENTRATED FLOW		OVERLAND FLOW					OPEN CHANNEL FLOW						Total Time of Concentration
	**HYDRAULIC LENGTH (L)	*TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	**SLOPE (S)	*C_{VALUE}	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	HYDRAULIC RADIUS (R	**SLOPE (S)	*MANNING'S COEFFICIENT (n)	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	
Existing Conditions	0	0	0	0	0	0.00	0	2262	0.75	0.009	0.029	4.02	9.37	9.37

* TAKEN FROM CITY OF SAN ANGELO DRAINAGE MANUAL
** REFER TO DRAINAGE AREA MAPS

	UNITS USED
LENGTH	FT
T_c	MINS
VELOCITY	FT/SEC

1) VELOCITY (OVERLAND FLOW) $V = C\sqrt{S}$

2)TIME OF CONCENTRATION $T_c = L/(V \times 60)$

3) VELOCITY (OPEN CHANNEL FLOW) $v = \frac{1.49 \times R^{\frac{2}{3}} \times \sqrt{S}}{n}$

TABLE 2

Step 2	Existing Conditions			
	*e	*b	*d	Intensity (I)
2-yr	0.865	53.5	10.32	4.06
5-yr	0.848	68.5	11.47	5.22
10-yr	0.836	75.5	11.47	5.96
25-yr	0.805	77.2	10	7.10
50-yr	0.826	104	13.52	7.83
100-yr	0.816	112.5	14.7	8.39

* TAKEN FROM CITY OF SAN ANGELO DRAIANGE MANUAL

1) INTENSITY $I = b/(T_c + d)^{e}$

TABLE 3

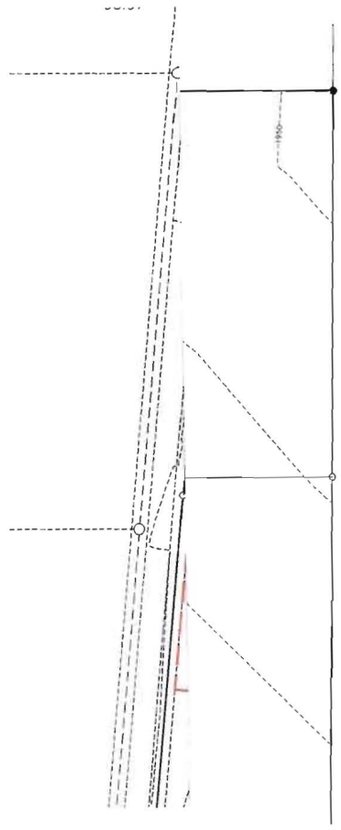
Step 4	EXISTING CONDITIONS			
	***C	**Intensity	*Area	Q
2-yr	0.50	4.06	65.69	133.45
5-yr	0.50	5.22	65.69	171.29
10-yr	0.50	5.96	65.69	195.80
25-yr	0.50	7.10	65.69	233.32
50-yr	0.50	7.83	65.69	257.30
100-yr	0.50	8.39	65.69	275.64

* REFER TO DRAINAGE ARE MAPS
** CALCULATED IN TABLE 2
***San Angelo Drainage Mariual

	UNITS USED
AREA	ACRES
Q	CFS

1) CALCULATED FLOW RATE $Q = CIA$

APPENDIX C



LEGEND:

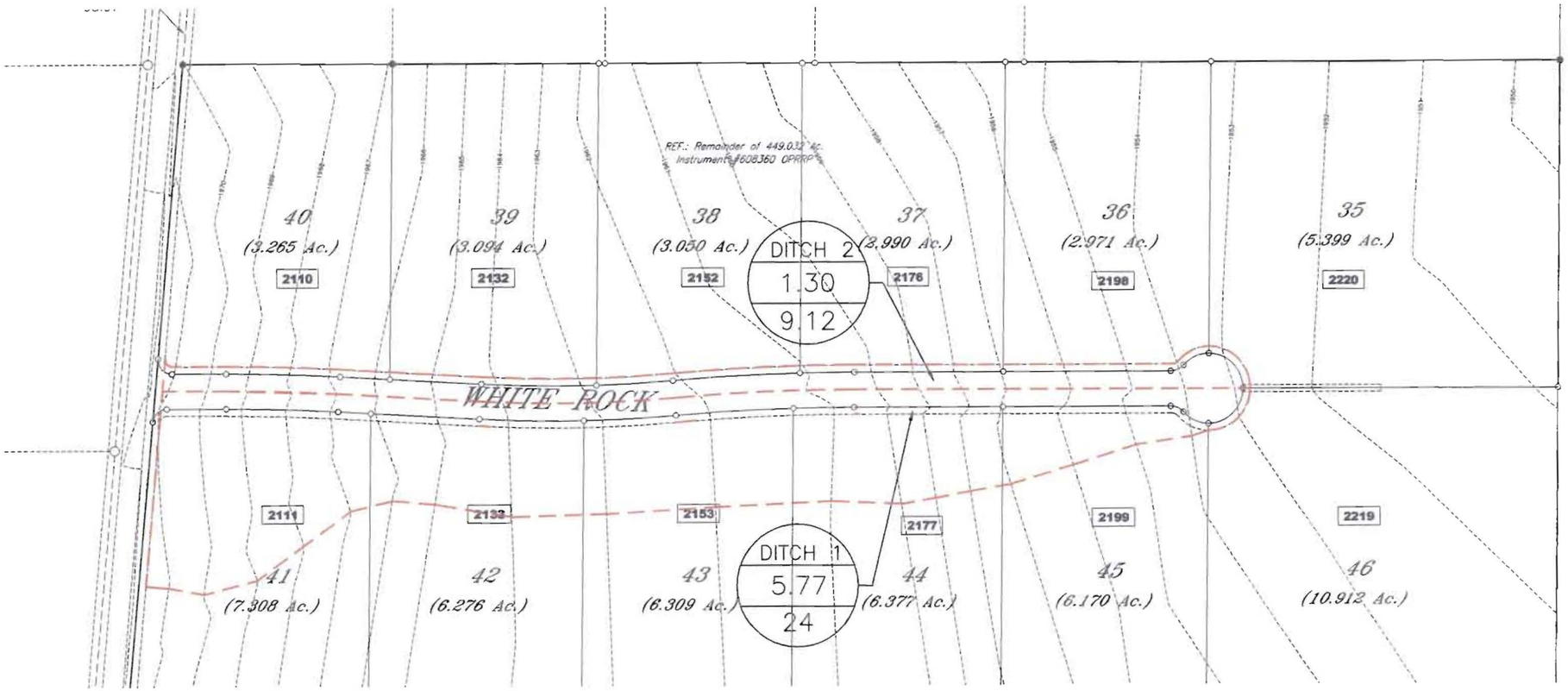
DA1	DRAINAGE AREA ID
AC	DRAINAGE AREA
CFS	DRAINAGE AREA FLOW FLOW RATE-100 YEAR

SKG
ENGINEERING
SURVEYING • ENVIRONMENTAL • LAB/CMT
706 SOUTH ABE STREET
SAN ANGELO, TEXAS 76903
PHONE: 325.655.1285
FAX: 325.657.8189
www.skgs.com

SCALE: 1"= 100'

0 100 200
GRAPHIC SCALE - FEET

11-E-0390



DRAINAGE AREA MAP FOR DITCHES

APPENDIX D

Project: Stonewall Reserve-Section 6
Project Number: 11-E-0390
Design By: Erica Carter

DITCH 1

TABLE 1

STEP 1	SHALLOW CONCENTRATED FLOW		OVERLAND FLOW					OPEN CHANNEL FLOW						Total Time of Concentration
	**HYDRAULIC LENGTH (L)	*TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	**SLOPE (S)	*C_{VALUE}	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	HYDRAULIC RADIUS (R	**SLOPE (S)	*MANNING'S COEFFICIENT (n)	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	
Existing Conditions	200	15	1000	0.01	20	2	8.333333	482	0.75	0.01	0.029	5.11	1.57	24.91

* TAKEN FROM CITY OF SAN ANGELO DRAINAGE MANUAL
** REFER TO DRAINAGE AREA MAPS

	UNITS USED
LENGTH	FT
T_C	MINS
VELOCITY	FT/SEC

1) VELOCITY (OVERLAND FLOW) $$V = C\sqrt{S}$$

2)TIME OF CONCENTRATION $$T_C = L/(V \times 60)$$

3) VELOCITY (OPEN CHANNEL FLOW) $$V = \frac{1.49 \times R^{\frac{2}{3}} \times \sqrt{S}}{n}$$

TABLE 2

Step 2	Existing Conditions			
	*e	*b	*d	Intensity (I)
2-yr	0.865	53.5	10.32	2.46
5-yr	0.848	68.5	11.47	3.25
10-yr	0.836	75.5	11.47	3.74
25-yr	0.805	77.2	10	4.42
50-yr	0.826	104	13.52	5.11
100-yr	0.816	112.5	14.7	5.59

* TAKEN FROM CITY OF SAN ANGELO DRAINAGE MANUAL

1) INTENSITY $$I = b/(T_c + d)^{e}$$

TABLE 3

Step 4	EXISTING CONDITIONS			
	***C	**Intensity	*Area	Q
2-yr	0.75	2.46	5.77	10.63
5-yr	0.75	3.25	5.77	14.07
10-yr	0.75	3.74	5.77	16.19
25-yr	0.75	4.42	5.77	19.13
50-yr	0.75	5.11	5.77	22.10
100-yr	0.75	5.59	5.77	24.19

* REFER TO DRAINAGE ARE MAPS
** CALCULATED IN TABLE 2
***San Angelo Drainage Manual

	UNITS USED
AREA	ACRES
Q	CFS

1) CALCULATED FLOW RATE $$Q = CIA$$

Project: Stonewall Reserve-Section 6
Project Number: 11-E-0390
Design By: Erica Carter

DITCH 2

TABLE 1

STEP 1	SHALLOW CONCENTRATED FLOW		OVERLAND FLOW					OPEN CHANNEL FLOW						Total Time of Concentration
	**HYDRAULIC LENGTH (L)	*TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	**SLOPE (S)	*C_{VALUE}	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	**HYDRAULIC LENGTH (L)	HYDRAULIC RADIUS (R	**SLOPE (S)	*MANNING'S COEFFICIENT (n)	VELOCITY (V)	TIME OF CONCENTRATION (T_c)	
Existing Conditions	0	0	0	0	0	0.00	0	1624	0.75	0.01	0.029	4.24	6.38	6.38

* TAKEN FROM CITY OF SAN ANGELO DRAINAGE MANUAL
** REFER TO DRAINAGE AREA MAPS

	UNITS USED
LENGTH	FT
T_C	MINS
VELOCITY	FT/SEC

1) VELOCITY (OVERLAND FLOW) $V = C\sqrt{S}$

2)TIME OF CONCENTRATION $T_C = L/(V \times 60)$

3) VELOCITY (OPEN CHANNEL FLOW) $V = \frac{1.49 \times R^{\frac{2}{3}} \times \sqrt{S}}{n}$

TABLE 2

Step 2	Existing Conditions			
	*e	*b	*d	Intensity (I)
2-yr	0.865	53.5	10.32	4.68
5-yr	0.848	68.5	11.47	5.95
10-yr	0.836	75.5	11.47	6.78
25-yr	0.805	77.2	10	8.13
50-yr	0.826	104	13.52	8.79
100-yr	0.816	112.5	14.7	9.35

* TAKEN FROM CITY OF SAN ANGELO DRAIANGE MANUAL

1) INTENSITY $I = b/(T_c + d)^e$

TABLE 3

Step 4	EXISTING CONDITIONS			
	***C	**Intensity	*Area	Q
2-yr	0.75	4.68	1.30	4.57
5-yr	0.75	5.95	1.30	5.80
10-yr	0.75	6.78	1.30	6.62
25-yr	0.75	8.13	1.30	7.93
50-yr	0.75	8.79	1.30	8.57
100-yr	0.75	9.35	1.30	9.12

* REFER TO DRAINAGE ARE MAPS
** CALCULATED IN TABLE 2
***San Angelo Drainage Manual

	UNITS USED
AREA	ACRES
Q	CFS

1) CALCULATED FLOW RATE $Q = CIA$

APPENDIX E

DITCH 1 - 2-YR EVENT

Worksheet
Worksheet for Irregular Channel

Project Description	
Project File	e:\cross se.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	1.0000 %	
Elevation range: 0.00 ft to 1.80 ft.		

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	1.50	0.00	9.00	0.029
4.50	0.00	9.00	25.00	0.016
9.00	1.50			
25.00	1.80			

Discharge	10.63	cfs

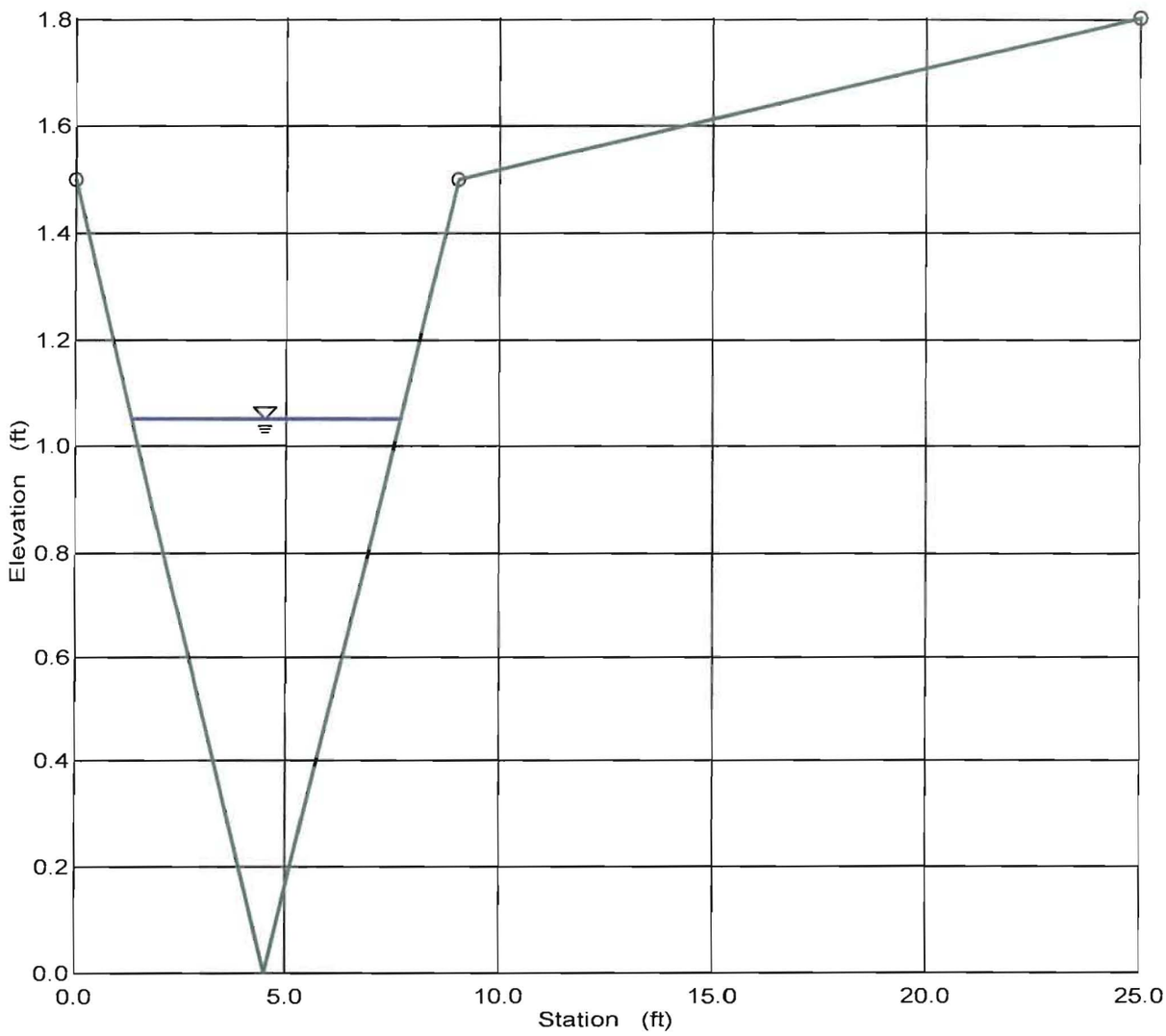
Results		
Wtd. Mannings Coefficient	0.029	
Water Surface Elevation	1.05	ft
Flow Area	3.30	ft^2
Wetted Perimeter	6.64	ft
Top Width	6.30	ft
Height	1.05	ft
Critical Depth	0.95	ft
Critical Slope	0.016839	ft/ft
Velocity	3.22	ft/s
Velocity Head	0.16	ft
Specific Energy	1.21	ft
Froude Number	0.78	
Flow is subcritical.		

DITCH 1- 2 YR EVENT

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	e:\cross se.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.029	
Channel Slope	1.0000	%
Water Surface Elevation	1.05	ft
Discharge	10.63	cfs



DITCH 1 - 100 YR EVENT

Worksheet
Worksheet for Irregular Channel

Project Description	
Project File	e:\cross se.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	1.0000 %	
Elevation range: 0.00 ft to 1.80 ft.		
Discharge	24.19	cfs

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	1.50	0.00	9.00	0.029
4.50	0.00	9.00	25.00	0.016
9.00	1.50			
25.00	1.80			

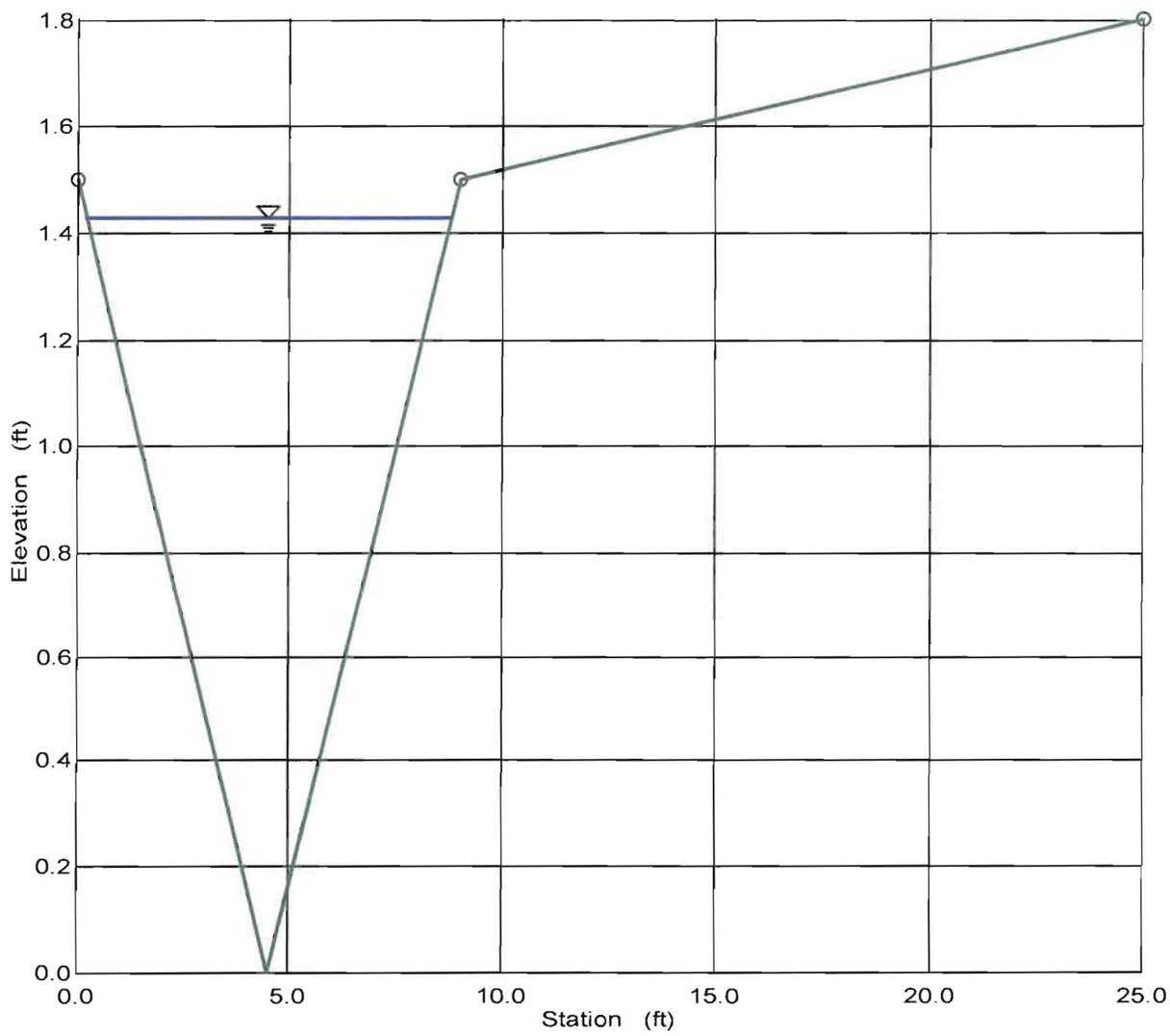
Results		
Wtd. Mannings Coefficient	0.029	
Water Surface Elevation	1.43	ft
Flow Area	6.12	ft^2
Wetted Perimeter	9.03	ft
Top Width	8.57	ft
Height	1.43	ft
Critical Depth	1.32	ft
Critical Slope	0.015091	ft/ft
Velocity	3.95	ft/s
Velocity Head	0.24	ft
Specific Energy	1.67	ft
Froude Number	0.82	
Flow is subcritical.		

DITCH 1 - 100 YR EVENT

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	e:\cross se.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.029	
Channel Slope	1.0000	%
Water Surface Elevation	1.43	ft
Discharge	24.19	cfs



DITCH 2 - TWO YEAR EVENT

Worksheet
Worksheet for Irregular Channel

Project Description	
Project File	untitled.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	1.0000 %	
Elevation range: 0.00 ft to 1.80 ft.		
Discharge	4.57	cfs

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	1.50	0.00	9.00	0.029
4.50	0.00	9.00	25.00	0.016
9.00	1.50			
25.00	1.80			

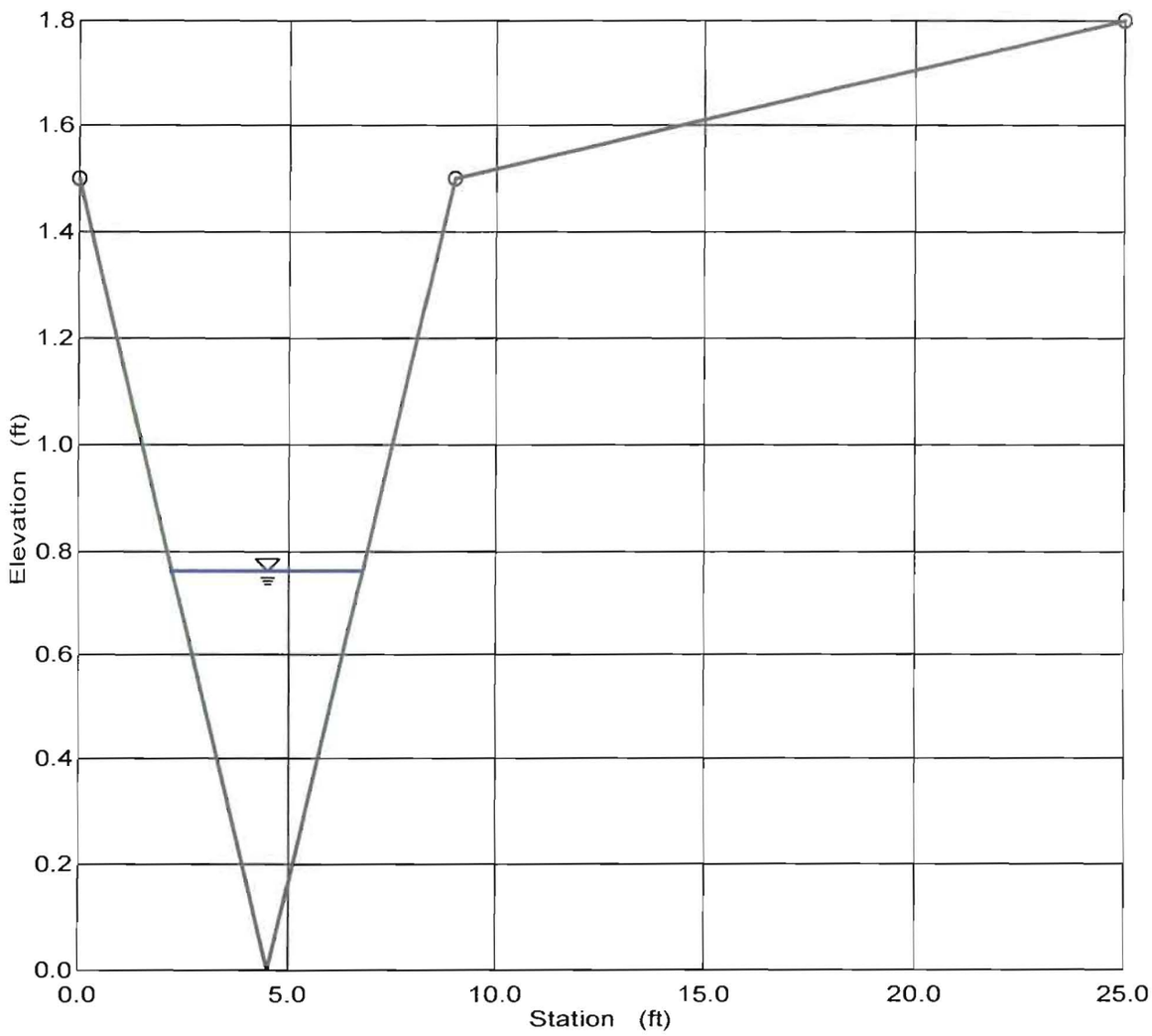
Results		
Wtd. Mannings Coefficient	0.029	
Water Surface Elevation	0.76	ft
Flow Area	1.75	ft^2
Wetted Perimeter	4.84	ft
Top Width	4.59	ft
Height	0.76	ft
Critical Depth	0.68	ft
Critical Slope	0.018846	ft/ft
Velocity	2.61	ft/s
Velocity Head	0.11	ft
Specific Energy	0.87	ft
Froude Number	0.74	
Flow is subcritical.		

DITCH 2- TWO YEAR EVENT

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	untitled.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.029	
Channel Slope	1.0000	%
Water Surface Elevation	0.76	ft
Discharge	4.57	cfs



DITCH 2- 100 YR EVENT

Worksheet
Worksheet for Irregular Channel

Project Description	
Project File	untitled.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	1.0000 %			
Elevation range: 0.00 ft to 1.80 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	1.50	0.00	9.00	0.029
4.50	0.00	9.00	25.00	0.016
9.00	1.50			
25.00	1.80			
Discharge	9.12 cfs			

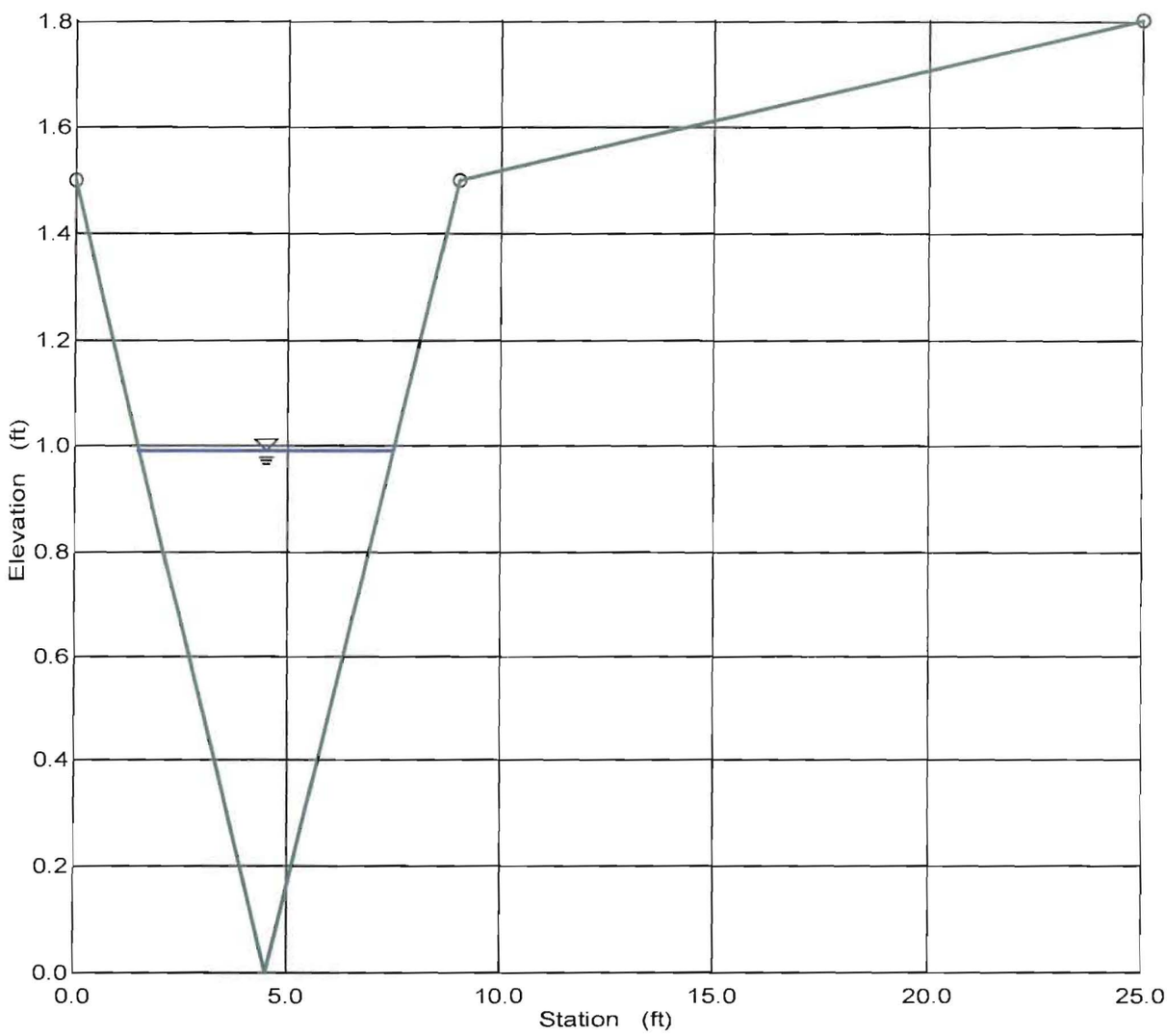
Results		
Wtd. Mannings Coefficient	0.029	
Water Surface Elevation	0.99	ft
Flow Area	2.94	ft²
Wetted Perimeter	6.27	ft
Top Width	5.94	ft
Height	0.99	ft
Critical Depth	0.90	ft
Critical Slope	0.017187	ft/ft
Velocity	3.10	ft/s
Velocity Head	0.15	ft
Specific Energy	1.14	ft
Froude Number	0.78	
Flow is subcritical.		

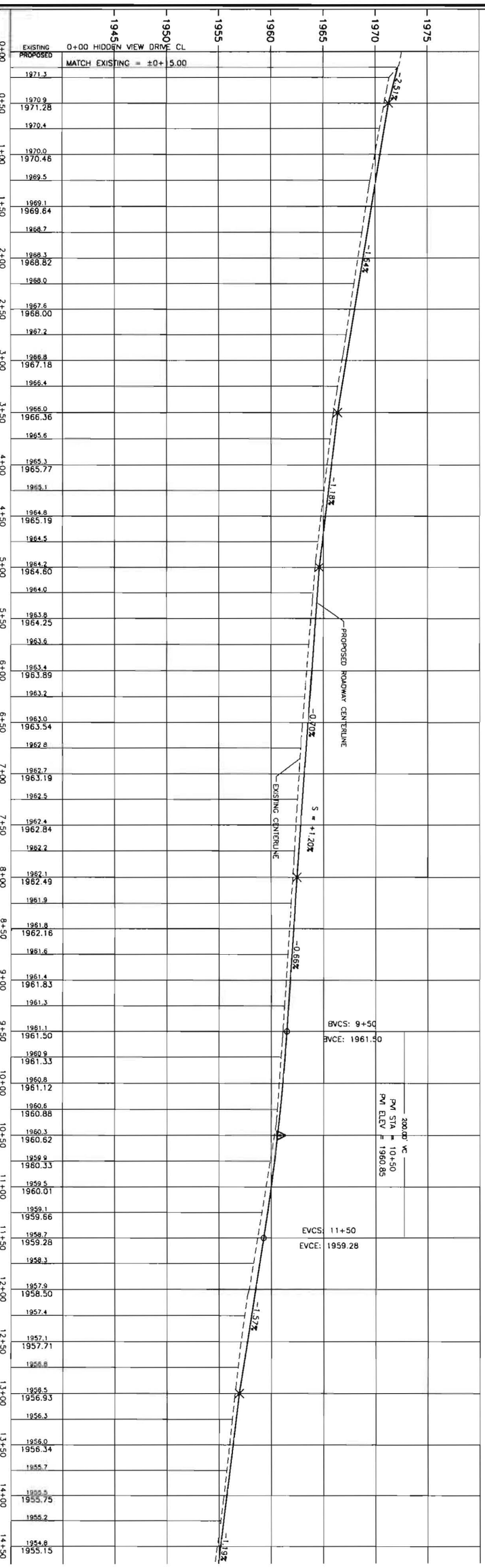
DITCH 2 - 100 YR EVENT

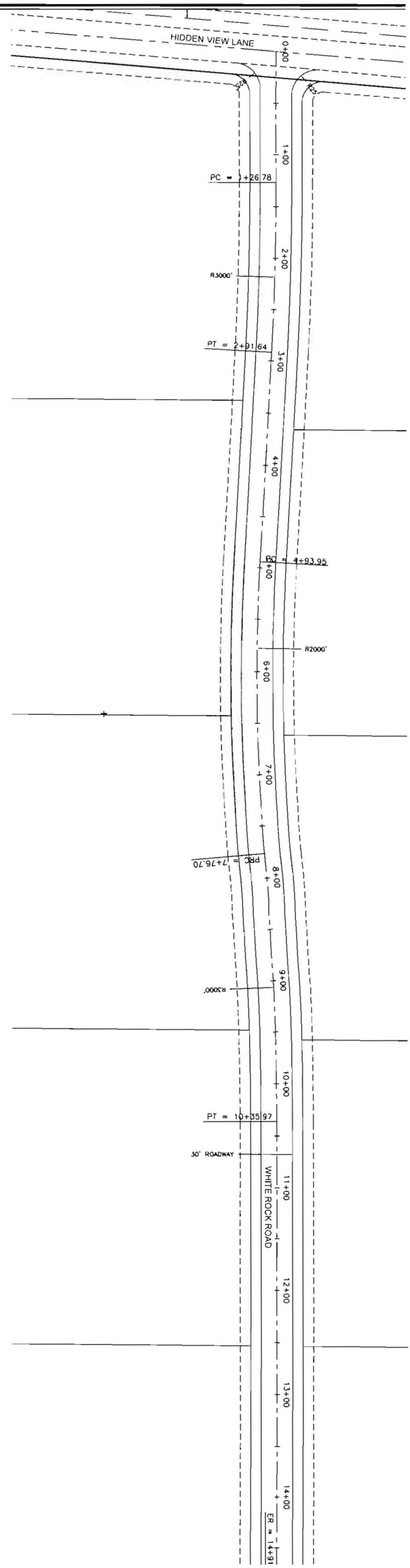
Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	untitled.fm2
Worksheet	Stonewall Reserve Section 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.029	
Channel Slope	1.0000	%
Water Surface Elevation	0.99	ft
Discharge	9.12	cfs







GENERAL NOTES:

1. ALL MATERIAL AND ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE TOM GREEN COUNTY SUBDIVISION REGULATIONS.
2. BASE MATERIAL
   A. TYPE 1 - TYPE A CRUSHED LIMESTONE GRADE 2 CONFORMING TO TXDOT ITEM 247 TYLENOL BASE WITH A MINIMUM PLASTIC INDEX OF 0 ALLOWED DRY

LEGEND:

STA - Station
CL - Centerline
ER - End of Radius
PVI - Point of Vertical Intersection
PVT - Point of Vertical Tangent
PVC - Point of Vertical Curve

3' PAVED | 12' TRAVEL | 50' ROW | 12' TRAVEL | 3' PAVED