

DS #: 4615

APN: 125-18-301-025

PROJECT: NORTH CREEK (PREVIOUSLY SABLE CREEK)
(PROJECT IN CLARK COUNTY FOR CLV CONCURRENCE)

SUBMITTAL: 4TH

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____





CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		July 16, 2014
TO: Land Development Services Department of Building and Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: North Creek (Previously a portion of Sable Creek) (Project in Clark County for CLV Concurrence)		COPIES TO: Slater Hanifan Group
Cross Streets:	SWC of Farm & Grand Canyon	Lennar Homes
File Number:	F:\Depot\DSMemos\DS4615D.doc	Bart Anderson, P.E., DevCo
Parcel Number:	125-18-301-025	Doug Rankin, Planning
Zoning Action:	ANX-49991	
FEMA Flood Zone	YES NO X	
Proposed Storm Drain	YES X NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	7/25/2013	8/8/2013	See Comments Below	\$400.00	327894: \$400
2nd Submittal	9/19/2013	10/03/2013	See Comments Below	\$400.00	333895: \$400
3rd Submittal	11/14/2013	12/03/2013	See Comments Below	\$100.00	339410: \$100
4th Submittal	7/3/2014	7/16/2014	See Comments Below	\$100.00	362465: \$100
TOTAL FEES (LDDRS):				\$1,000.00	----

REMARKS: 2nd Submittal to address City comments for County Concurrence.
3rd Submittal addresses minor modifications and includes streetscape improvements.
4th Submittal (Update #4) revised northwest drainage channel.

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions: must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

The City of Las Vegas Flood Control Staff understands that this site has completed the Annexation process to become a part of the City.

1. The flood wall details shown on Sheet PP-6 have been revised. The revised flood walls are approved based upon the reduced flow impacting the site. Add a note to the plans *"Flood Wall to be a minimum 8-inch CMU, solid grouted."*
A copy of the approved Flood Wall design needs to be submitted to Flood Control.
2. Coordinate the Streetscape Improvements along Farm Road and Grand Canyon Drive with the Planning Department. The 5-foot landscape amenity zone is conceptually approved using stamped concrete with tree wells provided at intervals acceptable to the Planning Department based upon the tree sizes provided. Provide details for the stamped concrete that include the pattern, thickness, base material and tree wells.

In an effort to increase administrative efficiency, the City of Las Vegas Public Works Department requires all soil reports, drainage studies and traffic impact analysis submittals to be accompanied by an electronic copy of the submittal. Electronic documents must be submitted with one original hard copy of the study. Electronic documents should be on a universal computer-readable digital output replicating your submittal to be used for archival or display purposes. This may be more than one file if necessary. An Indexed Portable Document Format (PDF) or Print Ready CAD file formats with a minimum of 300dpi are the desired formats, but provided it is a high quality digitized replication of the submittal, other formats may be acceptable. If figures are in color, they must be scanned in color and saved as a separate file. The new submittal requirement is effective on **July 1, 2011**. If there are any questions regarding these new requirements, please contact Albert Sung in the Flood Section at (702) 229-2001 or Rick Schroder in Traffic Engineering at (702) 229-6327.

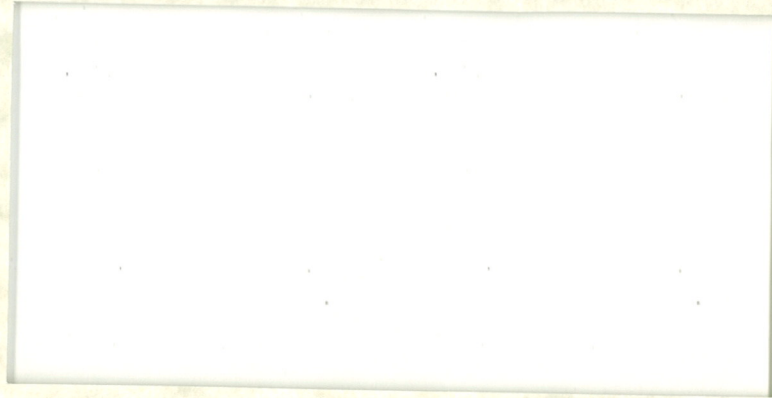
NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

END OF REMARKS

Ays/pbj

T/R/S: T19S/R60E/23
AREA G-23

Recd: 7/3/14



DS 4615-2

G-23

\$100-

S-I-G SLATER
HANIFAN
GROUP

CONSULTING ENGINEERS & PLANNERS

5740 S. ARVILLE STREET, SUITE 216

LAS VEGAS, NEVADA 89118

PHONE: 702-284-5300 • FAX: 702-284-5399

UPDATE No.4 TO THE TECHNICAL DRAINAGE STUDY

North Creek

City of Las Vegas, Nevada

Job No.: LEN1308.000

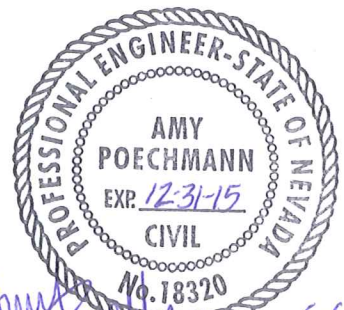
Date: June 2014

Prepared By:

Slater Hanifan Group, Inc.
5740 S. Arville Street, Suite 216
Las Vegas, Nevada 89118
Phone: 702-284-5300 • Fax: 702-284-5399

Prepared For:

Lennar Homes
2490 Paseo Verde Parkway, Suite 120
Henderson, Nevada 89014
Phone: 702-736-9100 • Fax: 702-736-9200



Amy Poechmann 6-6-14

Amy Poechmann, P.E.
NV Professional Engineer No. 18320

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: North Creek Update No. 4 Date: June 2014
 Location of Development: a) Descriptive (Cross Streets): North/South: Grand Canyon Drive
East/West: Farm Road
 b) Section: 18 Township: 19 S Range: 60 E
 c) APN: 125-18-301-025 and 125-18-312-021

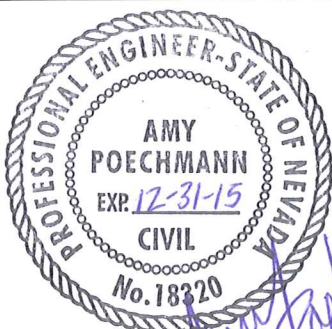
Name of Owner/Developer: Lennar Homes
 Telephone No.: 702-736-9100 Fax No.: 702-736-9200 E-mail Address: robert.johnson@lennar.com
 Address: 2490 Paseo Verde Parkway, Suite 120, Henderson, Nevada 89014

Contact Person – Name: Amy Poechmann, PE Telephone No.: 702-284-5300
 *E-mail Address: APoechmann@shg-inc.com Fax No.: 702-284-5399
 Firm: Slater Hanifan Group
 Address: 5740 S. Arville Street, Suite 216; Las Vegas, NV 89118

Type of Land Development/Land Disturbance Process:

☐ Rezoning	☐ Subdivision Map	☐ Clearing and grading Only
☐ Parcel Map	☒ Planned Unit Development	☐ Other (Please specify below)
☐ Large Parcel Map	☐ Building Permit	☐ Parking lot

- Total Owned Land Area: At Site: 20 +/- Acres Being Developed/Disturbed: 20 +/- Acres
- Is a portion or all of the subject property located in a FEMA Flood Hazard Area? ☐ Yes** ☒ No
- Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ Yes** ☒ No
- Proposed type of development (Residential, Commercial, Etc.): Residential
- Approximate upstream land area which drains to the subject site: 428 acres +/-
- Has the site drainage been evaluated in the past? ☒ Yes** ☐ No If yes, please identify documentation: TDS and Updates for North Creek (DS#4615 & HTE#13-18100)
- If known, please briefly identify the proposed discharge point(s) of runoff from the site: Runoff will be discharged into Grand Canyon Drive through drainage easements.
- Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over The subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.

***Newly Required Field**

**Review and concurrence of the Clark County Regional Flood Control District is required

Local Entity File No.	Revision	Date

REFERENCE: LEN1308.000

STANDARD FORM 1

Updated 05/01/2008

LEN1308.000

June 6, 2014

Peter Jackson, CFM – Senior Engineering Associate
City of Las Vegas - Department of Public Works
333 N. Rancho Drive
Las Vegas, Nevada 89106

**Subject: Update No.4 to the Technical Drainage Study for North Creek CLV# DS4615
(Previously a portion of Sable Creek)**

Dear Mr. Jackson:

This letter is intended to serve as Update No. 4 to the *Technical Drainage Study for North Creek*. The North Creek Update No. 2 was approved by the City of Las Vegas on October 3, 2013. Note that the North Creek project is a portion of what was once Sable Creek and was originally in unincorporated Clark County. Both the Technical Drainage Study for Sable Creek, Update No. 1 and Update No. 2 were submitted and approved while the North Creek site was in unincorporated Clark County. However, Update No. 2 was submitted to the City of Las Vegas with the understanding that North Creek was in the process of being annexed into the City of Las Vegas.

Update No. 3 was submitted while the improvement plans were under review at the City of Las Vegas in order to shift the site entry on Farm Road. Update No. 3 was approved by the City of Las Vegas on December 4, 2013. Refer to Appendix A for approval letters.

The improvement plans are fully approved at this time. Therefore, the revisions to the plans will be submitted as a revision to the approved plans once the drainage study update has been approved.

Purpose of Update

The purpose of this update is to reduce the flood wall heights in the Farm collector channel. Since the time of the original approval, the concrete portion of the Farm collector channel has been constructed although the flood walls above the concrete channel were not. In addition, field measurements provided by the client show that the inside width of the concrete channel is 15-ft. Refer to Appendix E for field documentation of channel width. The Sable Creek study used an inside width of 13-ft. Therefore, the computations for the Farm collector channel have been adjusted to reflect the as-built width of the channel.

In addition, since the time of the Sable Creek study, large portions of the upstream Providence (formerly Cliff's Edge) development have been constructed. Therefore, the flow to the Farm collector channel is reduced with the upstream development. Further discussion of the reduction in flow rate and the revised channel computations follows.

Reduced Flow Rate in Farm Collector Channel

The Farm collector channel is in the northwest corner of the project site adjacent to the undeveloped property to the west. There is an existing wash on the undeveloped property which conveys the flow from Farm Road south onto the undeveloped property. The purpose of the Farm collector channel is to route these flows back into Farm Road. Note that this channel is only necessary until the undeveloped property to the west is developed at which time the flows in Farm Road will be conveyed in the street rather than south through the undeveloped property.

The original Sable Creek drainage study and subsequent updates analyzed an interim and an ultimate condition. Both conditions referenced offsite flows in Farm Road from reference studies. Refer to the table below for a comparison of the offsite flows impacting Farm Road just west of the North Creek project site.

Compare Interim and Ultimate Flow Rates in Farm Road		
Point of Comparison	Interim Condition (Q_{100}/Q_{10}) cfs	Ultimate Condition (Q_{100}/Q_{10}) cfs
Farm Road Surface Flow	628/363 (C2A)	465/135 (C2A - SD)
Farm Road Storm Drain Flow	N/A	85/85 (in 36" SD in Farm per NWNS)
Farm Road Total Flow	628/363 (C2A)	550/220 (C2A)

The interim condition generated the highest flow rate in Farm Road west of the North Creek site and therefore, the highest flow rate in the Farm collector channel. However, since the time of the original technical drainage study, Providence (previously known as Cliff's Edge) has been substantially developed. Although pockets of undeveloped property remain in the upstream basins, enough infrastructure has been completed so that the interim condition flow rate is no longer applicable. Instead the ultimate condition flows can be assumed for the flows in Farm Road. Refer to Appendix A for relevant reference material.

In addition, the 36-inch storm drain in Farm Road will be extended west past the project site so that the flows remain in the storm drain rather than bubbling out into Farm Road. Therefore, only the surface flow in Farm Road (465/135 cfs) impacts the Farm collector channel. Refer to Appendix A for relevant reference material.

The total flow at the Farm collector channel includes the surface flows in Farm Road per the table above plus flows from the North Creek offsite basin OF.E1. Basin OF.E1 represents the portion of the undeveloped property just west of North Creek which contributes flows to Farm Road and therefore, to the Farm collector channel. Note that although ultimate condition flow rates are being used for the Farm Road flows, the interim condition Basin OF.E1 is still appropriate for use at this time because the property to the west remains undeveloped. The table below compares the flow rates to the Farm collector channel from the previous submittal (previous interim condition) and for this submittal (revised interim condition).

Compare Flow Rates in Farm Collector Channel		
Point of Comparison	Previous Interim Condition (Q_{100}/Q_{10}) cfs	Revised Interim Condition (Q_{100}/Q_{10}) cfs
C2A	628/363 (C2A)	465/135 (C2A - SD)
OF.E1	5/1	5/1
Total Flow (C2A + OF.E1)	633/364	470/136

Refer to Exhibit F3, included in Appendix B, for a detailed illustration of the revised interim condition presented with this submittal. Note that not only the flow rate for the Farm collector channel is being revised with this update and that therefore, only information relevant to the Farm collector channel flow rate is provided on the exhibit. Refer to reference material for complete hydrologic information.

Revisions to Farm Collector Channel

The flow rate to the channel has been reduced per the above discussion; however, the intent is to keep the same design parameters used for the original channel design with one exception. The north channel wall along Farm Road above the sidewalk is being removed. This will allow the flows in the collector channel to weir out into Farm over a longer distance.

Design Parameters for original channel: The concrete channel depth was designed at 3-ft which was based on the actual water surface elevation in the channel per the WSPG model. The channel walls were then extended up to the energy grade line. An additional 6-inches of freeboard were added to the wall adjacent to the lots (west wall and south wall) at the request of Clark County to account for sedimentation in the channel.

The starting water surface elevation at the system headworks was based on a FlowMaster calculation to determine the depth in the existing wash which is conveying the flows into the Farm collector channel. Then a weir computation was provided to determine the minimum weir length in order to keep the flows into Farm Road at less than 1.5-ft. Refer Appendix A for referenced report excerpts and computations from the original technical drainage study and addenda.

Changes to Channel Computations: As discussed above, the flow rate to the Farm collector channel has been reduced. Therefore, the FlowMaster computation for the water surface elevation at the system headworks has been revised for the reduced flow rate.

In addition, the width of the channel has been revised to 15-ft rather than the 13-ft per the Sable Creek study. The revised width is based on field measurements provided by the client. The flowline is assumed to be at the center of the channel and the flowline elevations are assumed per the original design plans.

The weir computation at the system outlet is not revised with this submittal because the flow is reduced and therefore, the weir depth would be lower. Since the weir depth was acceptable at the higher flow rate, a revised computation is not necessary to show that the weir depth meets requirements.

The WSPG model for the channel has been revised to reflect the new flow rate, as-built width, and the revised water surface elevation at the system headworks. The table below compares the previous channel hydraulic properties with the revised channel hydraulic properties. Refer to Appendix C for the revised WSPG model.

Compare Farm Channel Hydraulics				
	Q ₁₀₀ (cfs)	Flow Depth at SH (ft)	Flow Depth (ft)	EGL (ft)
Previous	632	3.0	3.0	7.5
Revised	470	2.8	2.6 to 2.8	5.0
Note: All flow depths are from invert of channel				

The solid flood wall height along the east and south channel walls has been reduced to 4 courses based on the energy grade line at 5.0-ft above the channel flowline (5.0-ft less the 3-ft concrete channel plus the 6-inches of freeboard for sedimentation divided by 8-inches per foot to get the number of courses). Note that the west channel wall is to be a total of 5.0-ft tall based on the energy grade line with no freeboard for sedimentation.

Changes to Channel Design: The reduction in flow rate has allowed for a reduction in the height of the flood wall height above the concrete channel per the above discussion. Refer to the revised Sheet PP-6, included in Appendix F, for profiles and details for the Farm collector channel.

In addition, the northern edge of the channel (along Farm Road) has been reduced to the height of the sidewalk. Therefore, as soon as the channel becomes shallow enough, flow will begin weiring out into Farm Road. This should increase the available weir length and therefore, reduce the depth of the flow exiting the channel.

The previously approved improvement plans and the revised improvement plans are provided in Appendix D and F, respectively. If you have any questions or require additional information, please do not hesitate to contact us at 284-5300.

Respectfully Submitted,

SLATER HANIFAN GROUP



Amy Poehmann, P.E.
Flood Control Division

cc: Steve Jones, P.E. - SHG
Tracy Stratton - SHG
Jerry Slater, P.E. - SHG

LIST OF APPENDICES

Appendix A	Reference Material North Creek (aka Sable Creek) Technical Drainage Study and Updates - Approval Letters - Referenced Drainage Exhibits - Referenced Report Excerpts - Referenced Channel Calculations
Appendix B	Revised Drainage Exhibits
Appendix C	Revised Channel Computations
Appendix D	Previously Approved Improvement Plans
Appendix E	Field Documentation of Channel Width
Appendix F	Revised Improvement Plans

APPENDIX A

Reference Material

*Technical Drainage Study for North Creek
(aka Sable Creek)*

By Slater Hanifan Group (DS4616, HTE 13-18100)

Approval Letter

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		December 4, 2013
TO: Land Development Services Department of Building and Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:	COPIES TO:
	North Creek (Previously a portion of Sable Creek) (Project in Clark County for CLV Concurrence)	Slater Hanifan Group
Cross Streets:	SWC of Farm & Grand Canyon	Lennar Homes
File Number:	F:\Depot\DSMemos\DS4615C.doc	Bart Anderson, P.E., DevCo
Parcel Number:	125-18-301-025	Doug Rankin, Planning
Zoning Action:	ANX-49991	CCPW
FEMA Flood Zone	YES NO X	
Proposed Storm Drain	YES X NO	

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TOTAL FEES (LDDRS):				\$900.00	

REMARKS: 2nd Submittal to address City comments on Concurrence.

3rd Submittal addresses minor modifications and includes streetscape improvements.

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

City of Las Vegas Flood Control staff has reviewed the Technical Drainage Study, including Update #2 and Addendum #1 & #2 to Update #2 in the Clark County jurisdictional area. The review of this project was limited to issues of flood control significance to the City of Las Vegas.

The City of Las Vegas Flood Control Staff understands that this site is currently undergoing the Annexation process to become a part of the City.

1. The City of Las Vegas has received the Conditional Approval from the County and the City of Las Vegas concurs with the acceptance of this drainage study. The previous comments have been addressed and submitted to the City.
2. Coordinate the Streetscape Improvements along Farm Road and Grand Canyon Drive with the Planning Department. The 5-foot landscape amenity zone is conceptually approved using stamped concrete with tree wells provided at intervals acceptable to the Planning Department based upon the tree sizes provided. Provide details for the stamped concrete that include the pattern, thickness, base material and tree wells.

In an effort to increase administrative efficiency, the City of Las Vegas Public Works Department requires all soil reports, drainage studies and traffic impact analysis submittals to be accompanied by an electronic copy of the submittal. Electronic documents must be submitted with one original hard copy of the study. Electronic documents should be on a universal computer-readable digital output replicating your submittal to be used for archival or display purposes. This may be more than one file if necessary. An Indexed Portable Document Format (PDF) or Print Ready CAD file formats with a minimum of 300dpi are the desired formats, but provided it is a high quality digitized replication of the submittal, other formats may be acceptable. If figures are in color, they must be scanned in color and saved as a separate file. The new submittal requirement is effective on **July 1, 2011**. If there are any questions regarding these new requirements, please contact Albert Sung in the Flood Section at (702) 229-2001 or Rick Schroder in Traffic Engineering at (702) 229-6327.

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END OF REMARKS

Ays/pbj

T/R/S: T19S/R60E/23

AREA G-23



Department of Public Works

500 S Grand Central Pky • Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@ClarkCountyNV.gov

Drainage Study Supplement Approval Letter

Date: October 7, 2013
Firm: SHG
Engineer: Amy Poechmann, P.E.
Address: 5740 S. Arville Street, Suite 216, Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5399
E-mail: apoechmann@shg-inc.com

Subject: Technical Drainage Study Update for North Creek (formerly Sable Creek)
Location: SWC of Farm Road and Grand Canyon Drive
APN: 125-18-301-025 & 125-18-312-021
Sec, Township, Range: S18, T19S, R60E
Flood Zone & Panel: Zone X, 1745E, Dated September 27, 2002
Application Tracking #: 13-18100UP



Submittals	Date Received	Date Returned	Reviewer	Miscellaneous
Update	05/01/2013	06/03/2013	WG	
Addendum #1	07/26/2013	09/04/2013	WG	
Supplement	09/19/2013	10/07/2013	WLW	

Concurrence Required: (Must be obtained prior to permit issuance)		Reason Concurrence is required
	City of Henderson	Adjacent to or Impacts Henderson
X	City of Las Vegas	Adjacent to or Impacts Las Vegas
	City of North Las Vegas	Adjacent to or Impacts North Las Vegas
	Nevada Department of Transportation	Adjacent to or Impacts NDOT Facility
	Union Pacific Rail Road	Adjacent to or Impacts a UPRR Facility
	US Army Corp of Engineers	Impacts a USACE Facility
	Clark County Regional Flood Control District	Regional Significance, Adjacent to or Impacts CCRFCD MPU Facility or in a SFHA

The referenced **Technical Drainage Study Update** has been reviewed and is accepted as complying with minimum improvement standards. As set forth in the subject drainage study, the following measures will be taken to mitigate flood hazards.

This supplement id too add storm drain inlet and revise other areas on the plans and details. The update was to revise the northern half of the site. The previously approved Technical Drainage Studies are: HTE# 04-48459, 06-1974.

The site shall be graded with respect to drainage as shown on "North Creek", grading plan sheets C-1, C-2, G-1, G-2, D-1, D-2, D-3, PP-1, PP-2, PP-3, PP-4, PP-5, PP-6, signed and sealed by Todd J. Steadham, P.E., on September 19, 2013.

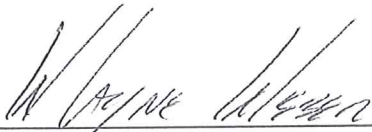
Check appropriate conditions

	Retaining/screen wall combination may be in excess of current Clark County Unified Development Code, Chapter 30.64.050.
	A FEMA Elevation Certificate, completed by a licensed surveyor, must be submitted to and approved by CCPW Development Review Plan Check prior to the issuance of Certificates of Occupancy for those structures.
X	Mylars of the grading plan must be submitted to the CCPW Development Review Plan Check for approval signatures prior to map recordation (residential) or permit issuance (commercial).
	An administrative variance to allow the finished floor elevation(s) to be set below the current Clark County criteria must be approved. The finished floor variance must be submitted to CCPW Development Review front counter after drainage study approval and prior to offsite final review.
	The grading plan will be reviewed by the Building Office Operations Division to ensure compliance with the ADA access requirements. Revisions to the grading plan may be required if the site accessibility design does not comply with the requirements set forth in the Accessibility Chapter of the Clark County Building Code.
X	The plans show work is proposed on another property. Notarized written permission must be obtained prior to plan approval. A grading permit must be obtained from Building Dept prior to grading.
X	Right-of-way dedication must be verified.
X	Any previously approved drainage easements that are not being used must be vacated.
	<i>Per Regional Flood Control District policies and Procedures manual, Section VIII. D. 13. Uniform Regulations for the Control of Drainage</i> , the Engineer of Record shall provide As-Built plans or record drawings to the District after completion and final inspection of such privately installed flood control facilities that have regional flood control significance.
	Structural calculations are required. The structural calculations, plans, and details must be approved prior to "Offsite" submittal and prior to CCRFCD submittal, if applicable.
X	Plan revisions can be found on the red-lined plans and must be addressed.
X	Prepare drainage easement documents as shown on the grading plans.

1. Verify the Farm Road ROW width and detached sidewalk location matches the TM 12-500013 and VS 12-731

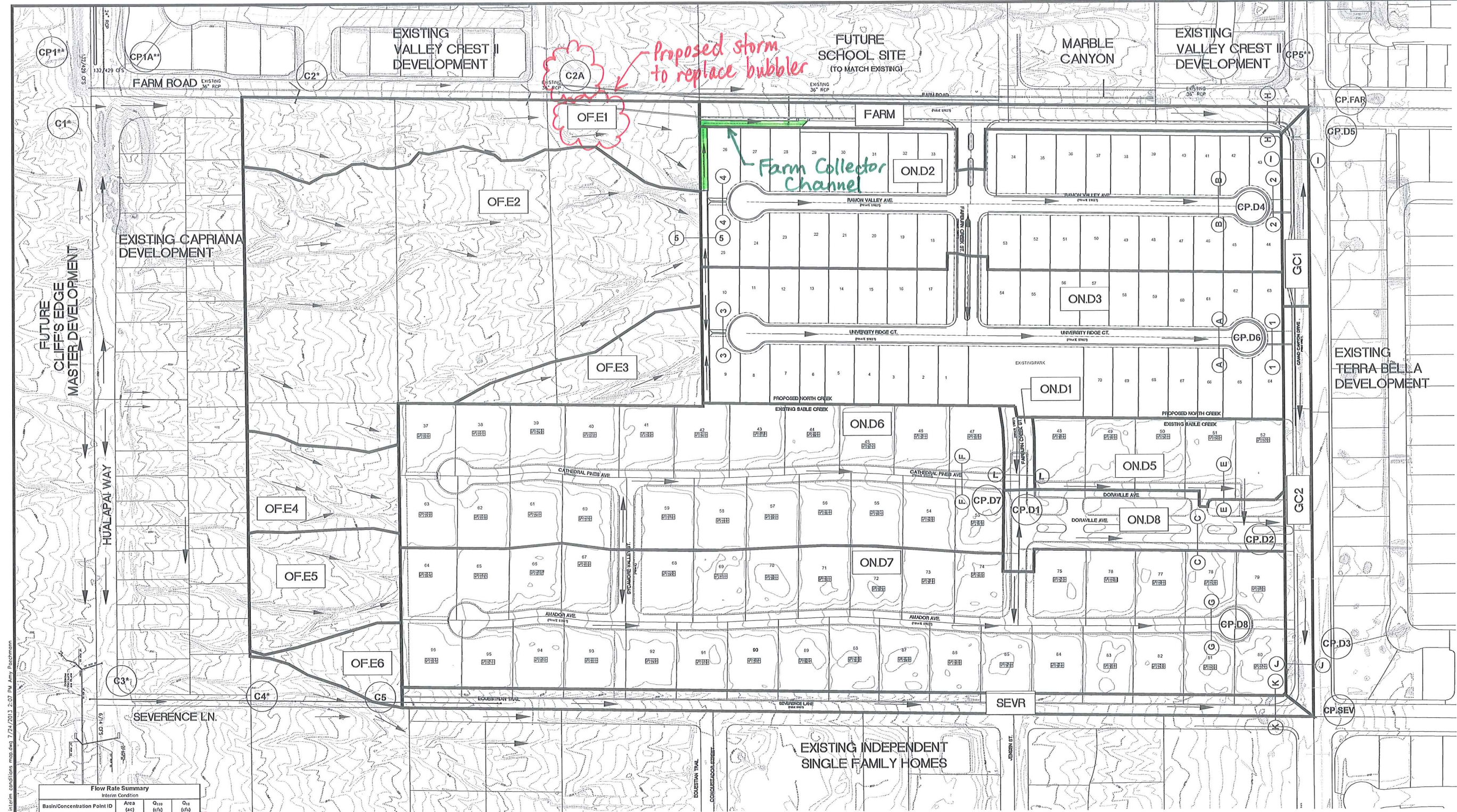
The County's review is solely based on the information submitted by the Engineer of Record. The County's review is strictly limited to compliance with minimum County Codes and Standards. The Engineer of Record is responsible for researching and addressing situations that may require designs above and beyond the minimum codes for issues of public safety and impacts to upstream, downstream and adjacent properties. The County assumes no liability for information data, designs or conclusions of the Engineer of Record.

By



W. Layne Weber, P.E., CFM
Principal Engineer
Clark County Public Works
Development Review

Referenced Drainage Exhibits



Flow Rate Summary			
Interim Condition			
Basin/Concentration Point ID	Area (ac)	Q ₁₀ (cfs)	Q ₁₅ (cfs)
OF.E1	3.30	5	1
OF.E2	11.27	18	4
OF.E3	1.43	2	1
OF.E4	1.43	2	1
OF.E5	1.80	3	1
OF.E6	0.72	1	0
ON.D1	0.27	1	1
ON.D2	9.93	12	3
ON.D3	9.05	12	3
ON.D4	Combined with ON.D3		
ON.D5	2.07	3	0
ON.D6	9.58	10	2
ON.D7	13.62	14	2
ON.D8	1.65	8	4
FARM	1.73	7	4
GC1	0.56	2	1
GC2	1.29	5	3
SEVR	2.95	8	4
CP.D1	N/A	13	3
CP.D2	N/A	21	6
CP.D3	N/A	55	13
CP.D4	N/A	30	7
CP.D5	N/A	31	7
CP.D6	N/A	14	3
CP.D7	N/A	13	2
CP.D8	N/A	17	3
CP.FAR	N/A	681	353
CP.SEV	N/A	112	29

Summary Of Referenced Flow Rates in Farm			
Interim Condition			
Basin/Concentration Point ID	Area (ac)	Q ₁₀ (cfs)	Q ₁₅ (cfs)
C1*	N/A	44	11
C2*	N/A	614	363
C3*	N/A	633	363
C4*	N/A	633	363
OF.D6**	5.0	15	7
OF.D7**	6.0	27	12
OF.D8**	4.2	7	2
CP1A**	N/A	43	13
CP1A**	N/A	559	363

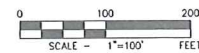
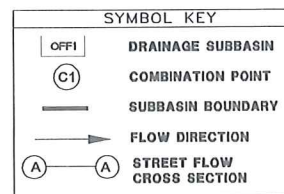
* REFERENCED FROM THE CAPRIANA TECHNICAL DRAINAGE STUDY
** REFERENCED FROM THE VALLEY CREST II TECHNICAL DRAINAGE STUDY
NOTE: C2 ON FARM HAS BEEN REVISED FROM CAPRIANA STUDY TO INCLUDE BASIN ONDS FROM VALLEY CREST. C2A IS ADDED AS PART OF THIS STUDY TO INCLUDE VALLEY CREST BASIN OND7 WITH C2.

Summary Of Referenced Flow Rates in Severe			
Interim Condition			
Basin/Concentration Point ID	Area (ac)	Q ₁₀ (cfs)	Q ₁₅ (cfs)
C3*	N/A	43	11
C4*	N/A	53	14

Perimeter Street Flow Summary					
Interim Condition					
Cross Section	Flow (cfs)	Velocity (fps)	Depth (ft)	D ₁₀ /D ₁₅	V ₁₀ /V ₁₅
H-H Farm Road	633/363	12.63/10.14	1.12/0.84	14.15/9.53	
I-I Grand Canyon (North)	31/7	3.05/2.62	0.55/0.35	1.77/0.94	
J-J Grand Canyon (South)	55/13	2.48/1.78	0.75/0.51	1.65/0.91	
K-K Severe Lane	53/14	4.88/4.18	0.69/0.54	4.34/2.26	

Street Flow Summary					
Interim Condition					
Cross Section/Combination Point	Combination Point	Q ₁₀ (cfs)	V ₁₀ (fps)	D ₁₀ (ft)	D ₁₅ /D ₁₀
A-A University Ridge	CP.D5	14	4.27	0.34	1.45
B-B Raymon Valley	CP.D4	30	4.94	0.43	2.12
C-C Doraville Avenue	CP.D2	29	5.49	0.44	2.42
D-D University Ridge	Removed				
E-E Doraville Avenue	ON.D5	3	3.55	0.28	0.92
F-F Cathedral Pines	CP.D7	14	4.32	0.34	1.45
G-G Amador Avenue	CP.D8	17	4.93	0.34	1.68
H-H Fairburn Creek	ON.D1	1	1.64	0.19	0.31

Summary of Drainage Easement Hydraulic Properties					
Interim Condition - 100-year Flow					
Section	Width (ft)	Basin	Flow (cfs)	Flow Type	Velocity (fps)
Section 1 University Ridge (0+00)	30	CP.D5	14	Weir	4.70
Section 2 Raymon Valley (0+00)	30	CP.D4	30	Channel	5.30
Section 3 University Ridge (0+00)	15	OF.E3	2	Weir	2.08
Section 4 Raymon Valley (0+00)	15	OF.E2	18	Channel	3.51
Section 5 Western Property Line	16	OF.E2	18	Weir	1.06



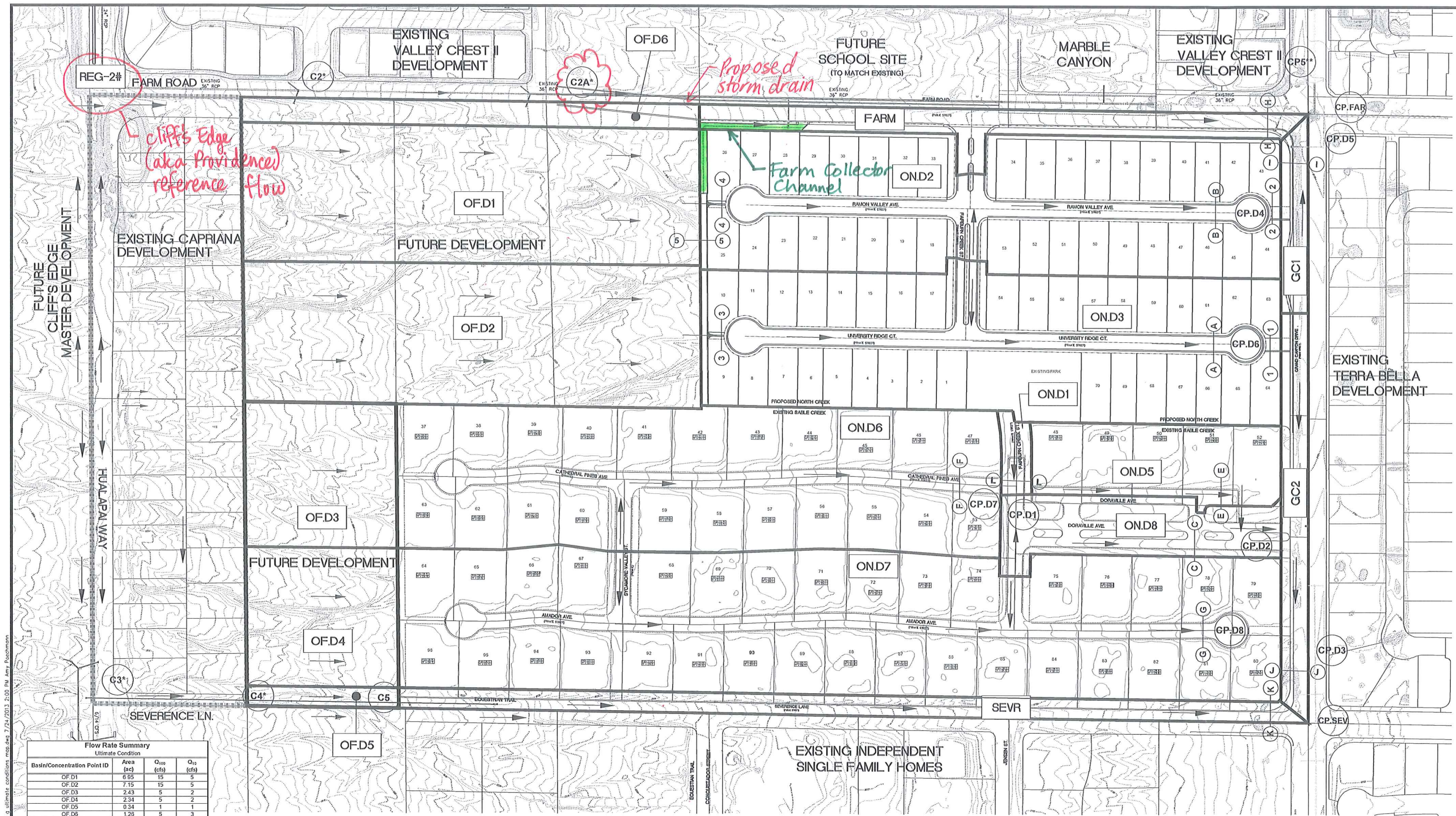
SLATER
HANIFAN
GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89110
PHONE (702) 264-5300 FAX (702) 264-5300

LENNAR
NORTH CREEK
INTERIM CONDITIONS MAP

DATE: JUL 2013
DRAFTER: ARP
DESIGNER: ARP
CHECKED: MF
PROJECT NO.
LEN1308-000

EXHIBIT F
SHEET 1 OF 1
ADD1 UPDATE NO. 2

\\s0402-004_north_creek_drainage\subsite_studies\conditions\figures\len1308_exhibit_g_ultimate_conditions.mxd 7/24/2013 2:00 PM Amy Puchman



Flow Rate Summary			
Ultimate Condition			
Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₅ (cfs)
OF.D1	6.95	15	5
OF.D2	7.15	15	5
OF.D3	2.43	5	2
OF.D4	2.34	5	2
OF.D5	0.34	1	1
OF.D6	1.25	5	3
ON.D1	0.27	1	1
ON.D2	8.93	12	3
ON.D3	9.05	12	3
ON.D4	2.07	3	0
ON.D5	9.58	12	2
ON.D6	13.62	14	2
ON.D7	1.85	6	3
ON.D8	1.73	7	4
FARM	0.58	2	1
GC1	1.20	5	3
GC2	2.05	8	4
SEVR	N/A	18	3
CP.D1	N/A	22	6
CP.D2	N/A	70	18
CP.D3	N/A	25	7
CP.D4	N/A	37	13
CP.D5	N/A	27	7
CP.D6	N/A	19	3
CP.D7	N/A	18	4
CP.D8	N/A	582	230
CP.FAR	N/A	90	27

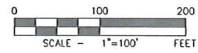
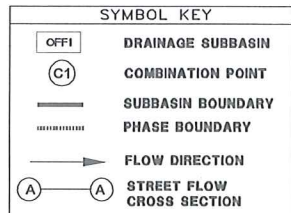
Summary Of Referenced Flow Rates in Farm			
Ultimate Condition			
Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₅ (cfs)
C1*	N/A	44	11
C2*	N/A	614	363
C2A*	N/A	628	369
ON.D5**	5.0	15	7
ON.D7**	9.0	27	12
OFFSE**	4.2	7	2
CP5**	N/A	43	13
REG-2**	N/A	428 (85)	132 (85)

Summary Of Referenced Flow Rates in Severance			
Ultimate Condition			
Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₅ (cfs)
C3*	N/A	43	11
C4*	N/A	53	14

Perimeter Street Flow Summary			
Ultimate Condition			
Cross Section	Flow Q ₁₀₀ /Q ₁₅ (ft/s)	Velocity V ₁₀₀ /V ₁₅ (ft/s)	Depth D ₁₀₀ /D ₁₅ (ft)
H-4 Farm Road	443278	10.97/9.13	9.99/0.87
14 Grand Canyon (South)	37.13	3.17/2.63	0.60/0.43
J-4 Grand Canyon (South)	70.18	2.69/1.83	0.62/0.57
R-4 Severance Lane	13.5	4.10/3.18	0.53/0.37

Street Flow Summary			
Ultimate Condition			
Cross Section/Subbasin	Combination Point	Q ₁₀₀ (cfs)	Q ₁₅ (cfs)
A-A University Ridge	CP.D6	27	4.85
B-B Raymon Valley	CP.D4	25	4.76
C-C Dorville Avenue	CP.D2	43	5.94
D-D University Ridge	CP.D1	3	3.55
E-E Dorville Avenue	CP.D7	16	3.63
F-F Cathedral Pines	CP.D8	18	2.63
G-G Amador Avenue	ON.D1	1	1.64

Summary of Drainage Easement Hydraulic Properties			
Ultimate Condition - 100 year Flow			
Section	Width (ft)	Basin	Flow Type
Section 1 University Ridge (left)	30	CP.D6	27
Section 2 Raymon Valley (left)	30	CP.D4	25
Section 3 University Ridge (right)	15	OF.E3	15
Section 4 Raymon Valley (right)	15	OF.E2	15
Section 5 University Ridge (right)	18	OF.D2	15



* REFERENCED FROM THE CAPRIANA TECHNICAL DRAINAGE STUDY
** REFERENCED FROM THE VALLEY CREST II TECHNICAL DRAINAGE STUDY
*** REFERENCED FROM THE CLIFFS EDGE MASTER TECHNICAL DRAINAGE STUDY. VALUES IN PARENTHESIS REPRESENT FLOW IN 36-INCH STORM DRAIN. TOTAL FLOW IN REG-2 INCLUDES (501/204 CFS) FROM BASIN REG-2 AND (131/13) FROM DSD1 PER CLIFFS EDGE MASTER DRAINAGE STUDY.
NOTE: C2 ON FARM HAS BEEN REVISED FROM CAPRIANA STUDY TO INCLUDE BASIN ON.D6 FROM VALLEY CREST. C2A IS ADDED AS PART OF THIS STUDY TO INCLUDE VALLEY CREST BASIN ON.D7 WITH C2.

see HEC-1 for C2A values

see Cliffs Edge maps

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LENNAR
NORTH CREEK
ULTIMATE CONDITIONS MAP

DATE: JUL 2013
DRAFTER: ARP
DESIGNER: ARP
CHECKED: MF
PROJECT NO.
LEN1308-000

EXHIBIT G
SHEET 1 OF 1
ADD1 UPDATE NO. 2

DEVELOPED ONSITE		
BASIN	Q10	Q100
102A	27	56
102B	17	34
103	34	71
104	13	33
105	23	56
106A	38	79
106B	22	45
107	59	117
108	35	70
109	36	73
110A	9	31
110B	9	31
111	9	31
112A	7	23
112B	2	8
113	25	61
114A	23	58
114B	13	33
115A	40	85
115B	11	22
116A	26	56
116B	27	56
117A	23	58
117B	13	33
118	52	109
119	29	73
121	34	71
122	32	69
123	50	123
123A	13	32
124	12	41
125	19	39
126	32	67
127	7	24
201	33	73
202	35	73
203	35	72
204	35	72
205A	54	108
205B	22	43
206	59	118
207A	52	107
207B	17	37
208A	20	41
208B	19	40
209	45	114
210	18	50
211	68	140
212	42	89
301	38	76
302	8	25
302A	7	18
303	38	76
303A	38	76
304	17	43
305	32	70
306	92	198
307	38	76
308	22	46
308A	8	18
309	39	77
OUT1	6	16
OUT2	9	21

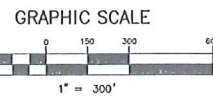
COMBINATION POINTS		
NAME	Q10	Q100
CP-1	75	189
CP-9	76	152
CP-10	88	207
CP-13	32	86
CP-20	63	227
CP-21	70	146
CP-50	31	121
CP-51	70	145
CP-53	62	128
CP-56	106	238
CP-57	53	107
CP-61	207	414
CP-62	74	150
CP-68	74	152
CP-75	67	168
CP-76	5	62
CP-77	63	151
CP-78	63	197
CP-84	12	39

DEVELOPED OFFSITE		
NAME	Q10	Q100
DEV-1	14	60
DEV-2	17	64
DEV-3	4	36
DEV-4	2	26
DEV-5	14	65
DEV-6	23	85
DEV-7	31	114
DEV-8	31	113

MISC.		
NAME	Q10	Q100
DIV1	35	82
DIV2	18	44
D1	14	33
D2	6	14
DIVSD1	49	115
DSD1	13	13
KYDET	363	363
RETD1	14	33



1" = 300'



FLOWS DISCHARGING AT BORDERS OF SITE	
0	10-YR SURFACE FLOW (CFS)
0	100-YR SURFACE FLOW (CFS)
25	10-YR STORM DRAIN FLOW (CFS)
1267	100-YR STORM DRAIN FLOW (CFS)

FLOWS IN INTERIOR OF SITE	
2	STORM DRAIN TYPE -- SEE DESCRIPTION ON RIGHT
0	10-YR SURFACE FLOW (CFS)
25	100-YR SURFACE FLOW (CFS)
68	10-YR STORM DRAIN FLOW (CFS)
115	100-YR STORM DRAIN FLOW (CFS)

- SD TYPE**
1. DESCRIPTION: ULTIMATE CONDITION 10-YEAR FLOW CONTAINED IN STORM DRAIN
 2. DESCRIPTION: ULTIMATE CONDITION 100-YEAR FLOW (MINUS CURB HEIGHT FLOW) CONTAINED IN STORM DRAIN
 3. DESCRIPTION: REGIONAL FACILITY -- ULTIMATE CONDITION 100-YEAR FLOW CONTAINED IN STORM DRAIN
 4. DESCRIPTION: FLOW CORRIDOR TO BE CONSTRUCTED WITH INDIVIDUAL PODS. ASSUME TO BE EASEMENTS WITH ANY TRIBUTARY STORM DRAIN DISCHARGING INTO EASEMENT

LEGEND

- DEV-1 OFFSITE BASIN NAME
- CP-9 COMBINATION POINT
- REG-4 LARGE BASIN -- SEE FIGURE REG
- DIV25 FLOW REMAINING IN REC-1 DIVERSION CARD
- D25 FLOW SPLIT OUT IN REC-1 DIVERSION CARD
- 126 ONSITE BASIN NAME / POD NUMBER
- FLOW CORRIDOR LOCATIONS
- INFRASTRUCTURE FLOW LOCATIONS
- FLOW PATTERNS WITHIN BASINS
- BASIN / POD DELINEATION

FIGURE 5-N
BASIN MAP
INTERIM CONDITION
NORTH OF ELKHORN
CLIFFS EDGE
ADD #1 TO MDS
W.O. #5999

storm drain flow

Flows from Basin REG-2 plus storm drain Flows from DSD1

BASIN/CP	INFLOW/OUTFLOW FROM BASIN				REVISED PEAK FLOW	
	Q10	Q100	Q10	Q100	Q10	Q100
CP-REG	42	128	0	0	42	128
REG-2	204	501	13	13	0	0
REG-3	169	493	0	0	169	493
REG-4	160	407	190	190	0	0
REG-7	133	371	0	0	133	371
REG-567	410	1077	190	190	0	0

REG-2A COMPRSED OF BASINS DEV-1 201 203	REG-3A COMPRSED OF BASINS 106 205B 207A 208B	REG-4A COMPRSED OF BASINS DEV-5 119 211 212	REG-6A COMPRSED OF BASINS DEV-6 301 302 303A 304
REG-2B COMPRSED OF BASINS DEV-2 107 109 201 203 205A 206	REG-3B COMPRSED OF BASINS DEV-3 108 109 112A 113A 115B 116B 205B 207A 208A 210	REG-4B COMPRSED OF BASINS DEV-5 118 212	REG-6B COMPRSED OF BASINS DEV-6 305 307 309
REG-2C COMPRSED OF BASINS DEV-2 107 109 201 203 205A 206	REG-3C COMPRSED OF BASINS DEV-3 108 109 112A 113A 115B 116B 205B 207A 208A 210	REG-4C COMPRSED OF BASINS DEV-5 118 212	REG-6C COMPRSED OF BASINS DEV-6 305 307 309
REG-2D COMPRSED OF BASINS DEV-2 107 109 201 203 205A 206	REG-3D COMPRSED OF BASINS DEV-3 108 109 112A 113A 115B 116B 205B 207A 208A 210	REG-4D COMPRSED OF BASINS DEV-5 118 212	REG-6D COMPRSED OF BASINS DEV-6 305 307 309

Flows in Interior of Site

2	STORM DRAIN TYPE - SEE DESCRIPTION BELOW
0	10-YR SURFACE FLOW (CFS)
55	100-YR SURFACE FLOW (CFS)
119	100-YR STORM DRAIN FLOW (CFS)

SO TYPE

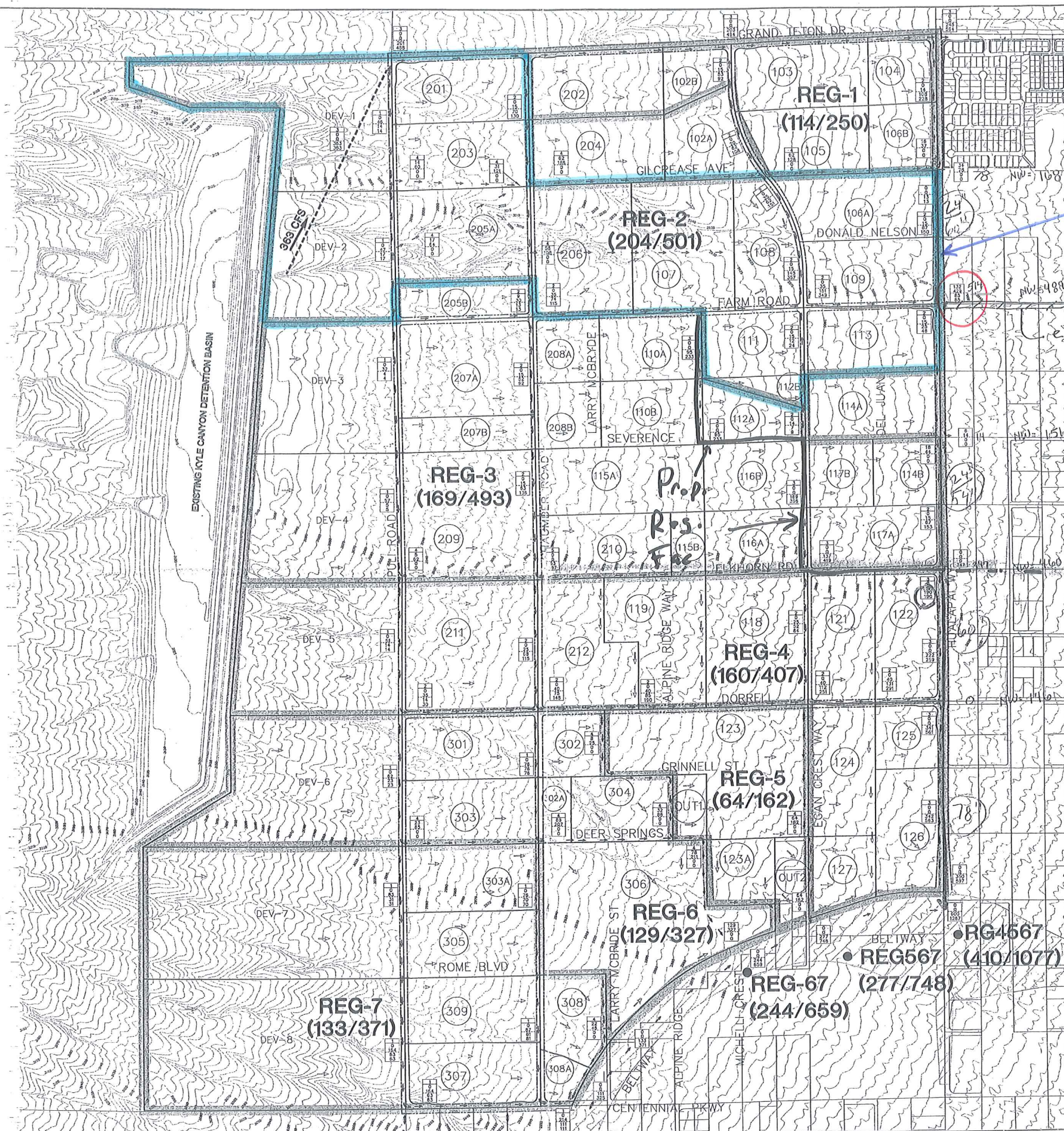
1	DESCRIPTION
1	ULTIMATE CONDITION 10-YEAR FLOW CONTAINED IN STORM DRAIN
2	ULTIMATE CONDITION 100-YEAR FLOW (MINUS CURB HEIGHT FLOW) CONTAINED IN STORM DRAIN
3	REGIONAL FACILITY - ULTIMATE CONDITION 100-YEAR FLOW CONTAINED IN STORM DRAIN
4	FLOW CORRIDOR TO BE CONSTRUCTED WITH INDIVIDUAL PODS. ASSUME TO BE EASEMENTS WITH ANY TRIBUTARY STORM DRAIN DISCHARGING INTO EASEMENT

Flows Discharging at Borders of Site

0	10-YR SURFACE FLOW (CFS)
55	100-YR SURFACE FLOW (CFS)
119	100-YR STORM DRAIN FLOW (CFS)

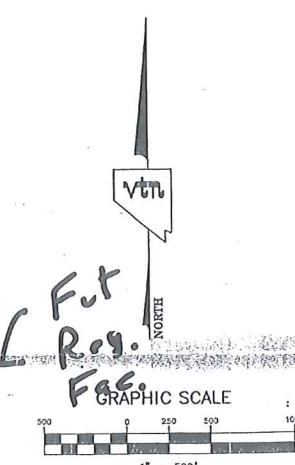
NOTES

- 1- NORTHWEST NEIGHBORHOOD FLOW VALUES ARE SHOWN IN GRAND TETON DRIVE FROM PULI ROAD TO HUALAPAI WAY.
- 2- SEE "STREET GRADE AND STORM DRAIN EXHIBIT" FOR STREET ELEVATIONS/SLOPES AND FOR DETAILS OF STORM DRAIN SIZES, SLOPES AND LOCATIONS.
- 3- THIS FIGURE IS INTENDED TO SHOW THE LARGE BASINS USED TO QUANTIFY FLOW TRIBUTARY TO WASH LINE STORM DRAIN FACILITIES. HOWEVER, IT IS ALSO USED TO PROVIDE AN OVERVIEW OF THE SITE AND SHOWS FLOW VALUES DETERMINED FOR STREETS, FLOW CORRIDORS AND STORM DRAINS. SEE FIGURES 2-5 AND 5-11 FOR DETAILS OF THE BASINS AND COMBINATION POINTS USED TO QUANTIFY THESE FLOW VALUES.



offsite basin
draining to
Farm & Hualapai

existing 36"



XX approx size
proposed
pipe

LEGEND

REG-2 LARGE BASIN COMPRISED OF SEVERAL PODS
(40/225) 10/100 YEAR PEAK FLOW RATES

● **RG67** LARGE BASIN COMPRISED OF TWO OR MORE REG BASINS

— BASIN DELINEATION
— POD DELINEATION

This grading plan is a part of drainage study # 3404 which was received on 3/2/04 and on 10/20/04

FIGURE REG
LARGE BASIN TO CALCULATE FACILITY FLOWS

Referenced HEC-1 Models

Interim Condition HEC-1

INT.OUT

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1*****
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*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*
* JUN 1998
*
* VERSION 4.1
*
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* RUN DATE 27MAR13 TIME 09:00:42
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*
* U.S. ARMY CORPS OF ENGINEERS
*
* HYDROLOGIC ENGINEERING CENTER
*
* 609 SECOND STREET
*
* DAVIS, CALIFORNIA 95616
*
* (916) 756-1104
*

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X X X X X
X X XXXXXX XXXX XXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT

PAGE 1

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*DIAGRAM
ID SLATER HANIFAN GROUP
ID NORTH CREEK
ID INTERIM CONDITION ONSITE/OFFSITE ANALYSIS
ID
ID RETURN PERIOD ----- 100 AND 10-YEAR
ID DISTRIBUTION ----- 6-HOUR SDN3
ID PROJECT NO. ----- PIN0402.004
ID FILENAME ----- INT.H1
ID DATE ----- MARCH 2013
ID MODELED BY ----- ARP
ID
ID PRECIPITATION
ID STORM EVENT RATIO
ID 100-YEAR 1.00
ID 10-YEAR 0.55
ID
ID IT 5 0 0 300
ID IO 5 0 0
ID IN 5 0 0
ID JR PREC 1.00 0.55
*

21 KK OF.E1
22 KM
23 BA .0052
24 PB 3.15
25 PC .000 .020 .057 .070 .087 .108 .124 .130 .130 .130
26 PC .130 .130 .130 .133 .140 .142 .148 .158 .172 .181
27 PC .190 .197 .199 .200 .201 .204 .214 .229 .241 .249
28 PC .251 .256 .270 .278 .281 .283 .295 .322 .352 .409
29 PC .499 .590 .710 .744 .781 .812 .819 .835 .851 .856
30 PC .860 .868 .876 .888 .910 .926 .937 .950 .970 .976
31 PC .982 .985 .987 .989 .990 .993 .994 .995 .995 .998
32 PC .998 .999 1.000
33 LS 77
34 UD .148
*

35 KK OFF1E
36 KM VALLEY CREST - EXISTING OFFSITE BASIN
37 BA .0750
38 LS 78
39 UD .264
*

40 KK OFF2E
41 KM VALLEY CREST - EXISTING OFFSITE BASIN 2
42 BA .1672
43 LS 86
44 UD .274
*

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1

HEC-1 INPUT

PAGE 2

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

45 KK KYLDET
46 KM VALLEY CREST - KYLE CANYON DETENTION BASIN OUTFALL
47 BA 57.73
48 QI 0 0 0 0 0 0 0 0 0 0
49 QI 0 0 0 0 0 0 0 0 0 0
50 QI 0 0 0 1 2 2 3 4 5
51 QI 6 7 8 10 12 14 18 22 28 37
52 QI 47 61 80 104 127 134 143 156 162 168

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Page 1

					INT. OUT					
53	QI	177	187	198	211	225	237	242	248	254
54	QI	266	273	279	285	292	296	300	303	307
55	QI	315	318	322	326	329	332	336	339	341
56	QI	345	347	349	350	351	353	354	355	356
57	QI	357	358	359	359	360	360	361	361	361
58	QI	362	362	362	362	362	362	362	363	363
59	QI	363	363	363	363	363	363	363	363	363
60	QI	363	363	362	362	362	362	362	362	362
61	QI	362	362	362	362	362	362	362	361	361
62	QI	361	361	361	361	361	361	361	361	361
63	QI	360	360	360	360	360	360	360	360	360
64	QI	360	360	360	359	359	359	359	359	359

65 KK CP1
66 KM VALLEY CREST - COMBINE OFF1E, KYLEDET, AND OFF2E
67 HC 3
*

68 KK OFF3E
69 KM VALLEY CREST - EXISTING OFFSITE BASIN 3
70 BA .2656
71 LS 81
72 UD .477
*

73 KK CP1A
74 KM VALLEY CREST - COMBINE CP1 AND OFF3E
75 HC 2
*

76 KK OFF1
77 KM CAPRIANA - OFFSITE BASIN
78 BA .0558
79 LS 77
80 UD .299
*

81 KK HUAL1
82 KM CAPRIANA - OFFSITE BASIN
83 BA .0015
84 LS 98
85 UD .074
*

1

HEC-1 INPUT

PAGE 3

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

86 KK C1
87 KM CAPRIANA - COMBINE OFF1 AND HUAL1
88 HC 2
*

89 KK ON6D
90 KM VALLEY CREST - DEVELOPED BASIN
91 BA .0078
92 LS 92
93 UD .109
*

94 KK ON1
95 KM CAPRIANA - ONSITE BASIN
96 BA .0058
97 LS 84
98 UD .134
*

99 KK FARM
100 KM CAPRIANA - OFFSITE BASIN
101 BA .0006
102 LS 98
103 UD .05
*

104 KK C2
105 KM CAPRIANA - COMBINE VALLEY CREST CP1A, CAPRIANA C1, ON1, FARM
106 HC 5
*

107 KK ON7D
108 KM VALLEY CREST - DEVELOPED BASIN
109 BA .0141
110 LS 92
111 UD .120
*

112 KK C2A
113 KM COMBINE C2 WITH VALLEY CREST BASIN ON7D
114 HC 2
*

115 KK RC3
116 KM ROUTE POINT C2A DOWN FARM TO GRAND CANYON
117 RK 1600 .0325 .015 TRAP 80 2
*

118 KK FARM
119 KM NORTH CREEK BASIN - MODIFIED WITH UP2
120 BA .0027
121 LS 98
122 UD .055
*

1

HEC-1 INPUT

PAGE 4

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

123 KK OFF9E
124 KM VALLEY CREST - DEVELOPED BASIN
125 BA .0066
126 LS 77

INT.OUT

127	UD	.128	
	*		
128	KK	C2B	
129	KM	COMBINE C2A WITH OF.E1, FARM, AND VALLEY CREST OFF9E	
130	HC	4	
	*		
131	KK	OFF8E	
132	KM	VALLEY CREST - EXISTING OFFSITE BASIN	
133	BA	.0106	77
134	LS		
135	UD	.196	
	*		
136	KK	DIV1	
137	KM	VALLEY CREST - BASIN OFF8E SPLITS AT DELL RIDGE AND TINY TORTOISE	
138	DT	D1	
139	DI	2	
140	DQ	1	
	*		
141	KK	ON4D	
142	KM	VALLEY CREST - DEVELOPED BASIN	
143	BA	.0013	92
144	LS		
145	UD	.038	
	*		
146	KK	CP4	
147	KM	VALLEY CREST - COMBINE DIV1 AND ON4D	
148	HC	2	
	*		
149	KK	OFF6E	
150	KM	VALLEY CREST - DEVELOPED BASIN	
151	BA	.0056	77
152	LS		
153	UD	.128	
	*		
154	KK	OFF7E	
155	KM	VALLEY CREST - EXISTING OFFSITE BASIN	
156	BA	.0103	77
157	LS		
158	UD	.157	
	*		

1

HEC-1 INPUT

PAGE 5

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
159	KK ON5D
160	KM VALLEY CREST - DEVELOPED BASIN
161	BA .0047
162	LS 92
163	UD .095
	*
164	KK RETD1
165	KM VALLEY CREST - RETRIEVE FLOW SPLIT AT DELL RIDGE AND TINY TORTOISE
166	DR D1
	*
167	KK CP3
168	KM VALLEY CREST - COMBINE OFF6E, OFF7E, RETD1 AND ON5D
169	HC 4
	*
170	KK CP5
171	KM VALLEY CREST - COMBINE ALL FLOW AT FARM AND GRAND CANYON
172	HC 2
	*
173	KK OF.E2
174	KM
175	BA .0176
176	LS 77
177	UD .148
	*
178	KK ON.D2
179	KM ONSITE BASIN - LOTS ON RAMON - MOD UP2
180	BA .0140
181	LS 75
182	UD .181
	*
183	KK CP.D4
184	KM COMBINE OF.E2 AND ON.D2
185	HC 2
	*
186	KK GC1
187	KM GRAND CANYON WHICH FLOWS NORTH
188	BA .0009
189	LS 98
190	UD .05
	*
191	KK CP.D5
192	KM COMBINE CP.D4 AND OF.E1, FARM, AND GC1
193	HC 2
	*

1

HEC-1 INPUT

PAGE 6

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
194	KK CP.FAR
195	KM TOTAL FLOW IN FARM AT GRAND CANYON
196	HC 3

INT.OUT

197	KK	OF.E4	
198	KM		
199	BA	.0023	
200	LS		77
201	UD	.106	
	*		
202	KK	ON.D6	
203	KM		
204	BA	.0150	
205	LS		72
206	UD	.185	
	*		
207	KK	CP.D7	
208	KM		
209	HC	2	
	*		
210	KK	ON.D1	
211	KM	ONSITE BASIN - FAIRBURN CREEK - MODIFIED UP2	
212	BA	.0004	
213	LS		98
214	UD	.028	
	*		
215	KK	CP.D1	
216	KM	MODIFIED UP2	
217	HC	2	
	*		
218	KK	ON.D5	
219	KM		
220	BA	.0032	
221	LS		72
222	UD	.135	
	*		
223	KK	ON.D8	
224	KM		
225	BA	.0029	
226	LS		98
227	UD	.05	
	*		

1

HEC-1 INPUT

PAGE 7

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

228	KK	CP.D2	
229	KM	COMBINE ON.D1, D5 & D8 FOR FLOW AT EAST ENTRANCE - MOD UP2	
230	HC	3	
	*		
231	KK	OF.E5	
232	KM		
233	BA	.0028	
234	LS		77
235	UD	.089	
	*		
236	KK	OF.E6	
237	KM		
238	BA	.0011	
239	LS		77
240	UD	.101	
	*		
241	KK	ON.D7	
242	KM		
243	BA	.0216	
244	LS		72
245	UD	.218	
	*		
246	KK	CP.D8	
247	KM		
248	HC	3	
	*		
249	KK	OF.E3	
250	KM		
251	BA	.0023	
252	LS		77
253	UD	.110	
	*		
254	KK	ON.D3	
255	KM	ONSITE BASIN - UNIVERSITY - MODIFIED UP2	
256	BA	.0141	
257	LS		75
258	UD	.181	
	*		
259	KK	CP.D6	
260	KM	COMBINE OF.E3 & ON.D3 - MODIFIED UP2	
261	HC	2	
	*		

1

HEC-1 INPUT

PAGE 8

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

262	KK	GC2	
263	KM	GRAND CANYON WHICH FLOWS SOUTH	
264	BA	.0019	
265	LS		98
266	UD	.07	
	*		

		INT.OUT
267	KK	CP.D3
268	KM	COMBINE ALL ONSITE FLOW AND GRAND CANYON AND FARM
269	HC	4
	*	
270	KK	OFF2
271	KM	CAPRIANA - OFFSITE BASIN
272	BA	.0297
273	LS	77
274	UD	.184
	*	
275	KK	OFF3
276	KM	CAPRIANA - OFFSITE BASIN
277	BA	.0128
278	LS	77
279	UD	.0172
	*	
280	KK	HUAL
281	KM	CAPRIANA - OFFSITE BASIN
282	BA	.0016
283	LS	98
284	UD	.080
	*	
285	KK	C3
286	KM	CAPRIANA - COMBINE OFF2, OFF3, AND HUAL
287	HC	3
	*	
288	KK	ON2
289	KM	CAPRIANA - DEVELOPED ONSITE BASIN
290	BA	.006
291	LS	84
292	UD	.125
	*	
293	KK	SEVR
294	KM	CAPRIANA - DEVELOPED OFFSITE BASIN
295	BA	.0005
296	LS	98
297	UD	.05
	*	

1

HEC-1 INPUT

PAGE 9

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

298	KK	C4
299	KM	CAPRIANA - COMBINE C3, ON2, AND SEVR
300	HC	3
	*	
301	KK	RC4
302	KM	ROUTE C4 FROM CAPRIANA DOWN SEVERANCE TO GRAND CANYON
303	RK	2300 .03 .015 TRAP 60 2
	*	
304	KK	SEVR
305	KM	
306	BA	.0032
307	LS	98
308	UD	.073
	*	
309	KK	CP.SEV
310	KM	COMBINE CP.D3, CP.D4, AND ROUTED C4 FROM CAPRIANA
311	HC	3
	*	
312	KK	TOT
313	KM	
314	HC	2
315	ZZ	

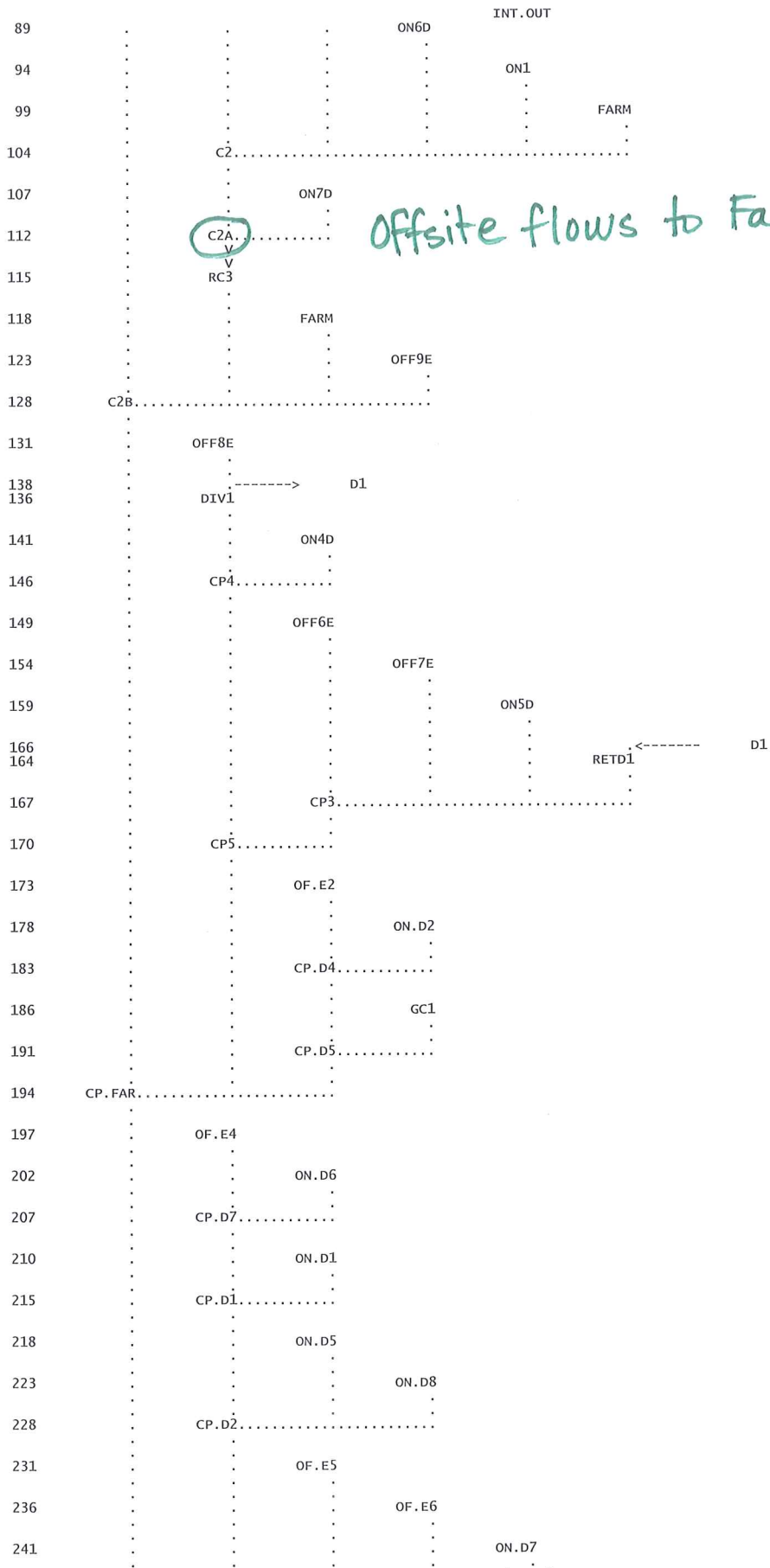
1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE (V) ROUTING (--->) DIVERSION OR PUMP FLOW
 NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW

21	OF.E1		
35	OFF1E		
40		OFF2E	
45			KYLDET
65	CP1		
68		OFF3	
73	CP1A		
76		OFF1	
81			HUAL1
86		C1	

North Creek offsite basin to Farm Collector Channel



INT.OUT

LENGTH, ELEVATION
FLOW
STORAGE VOLUME
SURFACE AREA
TEMPERATURE

FEET
CUBIC FEET PER SECOND
ACRE-Feet
ACRES
DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
1.00 .55

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION	
					RATIO 1 1.00	RATIO 2 .55
HYDROGRAPH AT	OF.E1	.01	1	FLOW	5.	1.
+				TIME	3.58	3.58
HYDROGRAPH AT	OFF1E	.08	1	FLOW	63.	17.
+				TIME	3.67	3.75
HYDROGRAPH AT	OFF2E	.17	1	FLOW	198.	73.
+				TIME	3.67	3.75
HYDROGRAPH AT	KYLDET	57.73	1	FLOW	363.	363.
+				TIME	8.92	8.92
3 COMBINED AT	CP1	57.97	1	FLOW	392.	363.
+				TIME	3.75	8.92
HYDROGRAPH AT	OFF3	.27	1	FLOW	193.	58.
+				TIME	3.92	4.00
2 COMBINED AT	CP1A	58.24	1	FLOW	559.	363.
+				TIME	3.83	8.92
HYDROGRAPH AT	OFF1	.06	1	FLOW	43.	11.
+				TIME	3.75	3.83
HYDROGRAPH AT	HUAL1	.00	1	FLOW	4.	2.
+				TIME	3.50	3.50
2 COMBINED AT	C1	.06	1	FLOW	44.	11.
+				TIME	3.75	3.75
HYDROGRAPH AT	ON6D	.01	1	FLOW	15.	7.
+				TIME	3.50	3.50
HYDROGRAPH AT	ON1	.01	1	FLOW	8.	3.
+				TIME	3.58	3.58
HYDROGRAPH AT	FARM	.00	1	FLOW	2.	1.
+				TIME	3.50	3.50
5 COMBINED AT	C2	58.31	1	FLOW	614.	363.
+				TIME	3.75	8.92
HYDROGRAPH AT	ON7D	.01	1	FLOW	27.	12.
+				TIME	3.58	3.58
2 COMBINED AT	C2A	58.32	1	FLOW	628.	363.
+				TIME	3.75	8.92
ROUTED TO	RC3	58.32	1	FLOW	623.	363.
+				TIME	3.75	9.00
HYDROGRAPH AT	FARM	.00	1	FLOW	7.	4.
+				TIME	3.50	3.50
HYDROGRAPH AT	OFF9E	.01	1	FLOW	7.	2.
+				TIME	3.58	3.58
4 COMBINED AT	C2B	58.34	1	FLOW	633.	363.
+				TIME	3.75	9.00
HYDROGRAPH AT	OFF8E	.01	1	FLOW	10.	2.
+				TIME	3.67	3.67
DIVERSION TO	D1	.01	1	FLOW	5.	1.
+				TIME	3.67	3.67
HYDROGRAPH AT						

← offsite basin with this study
impacting channel

offsite referenced
basins impacting
Farm

← offsite referenced flow
impacting Farm

						INT. OUT
+	DIV1	.01	1	FLOW	5.	1.
				TIME	3.67	3.67
	HYDROGRAPH AT					
+	ON4D	.00	1	FLOW	3.	1.
				TIME	3.50	3.50
	2 COMBINED AT					
+	CP4	.01	1	FLOW	7.	2.
				TIME	3.50	3.50
	HYDROGRAPH AT					
+	OFF6E	.01	1	FLOW	6.	2.
				TIME	3.58	3.58
	HYDROGRAPH AT					
+	OFF7E	.01	1	FLOW	10.	2.
				TIME	3.58	3.58
	HYDROGRAPH AT					
+	ON5D	.00	1	FLOW	10.	4.
				TIME	3.50	3.50
	HYDROGRAPH AT					
+	RETD1	.00	1	FLOW	5.	1.
				TIME	3.67	3.67
	4 COMBINED AT					
+	CP3	.02	1	FLOW	30.	9.
				TIME	3.58	3.58
	2 COMBINED AT					
+	CP5	.03	1	FLOW	36.	11.
				TIME	3.58	3.58
	HYDROGRAPH AT					
+	OF.E2	.02	1	FLOW	18.	4.
				TIME	3.58	3.58
	HYDROGRAPH AT					
+	ON.D2	.01	1	FLOW	12.	3.
				TIME	3.58	3.67
	2 COMBINED AT					
+	CP.D4	.03	1	FLOW	30.	7.
				TIME	3.58	3.67
	HYDROGRAPH AT					
+	GC1	.00	1	FLOW	2.	1.
				TIME	3.50	3.50
	2 COMBINED AT					
+	CP.D5	.03	1	FLOW	31.	7.
				TIME	3.58	3.58
	3 COMBINED AT					
+	CP.FAR	58.40	1	FLOW	681.	363.
				TIME	3.75	9.00
	HYDROGRAPH AT					
+	OF.E4	.00	1	FLOW	2.	1.
				TIME	3.58	3.58
	HYDROGRAPH AT					
+	ON.D6	.01	1	FLOW	10.	2.
				TIME	3.67	3.75
	2 COMBINED AT					
+	CP.D7	.02	1	FLOW	13.	2.
				TIME	3.58	3.67
	HYDROGRAPH AT					
+	ON.D1	.00	1	FLOW	1.	1.
				TIME	3.50	3.50
	2 COMBINED AT					
+	CP.D1	.02	1	FLOW	13.	3.
				TIME	3.58	3.67
	HYDROGRAPH AT					
+	ON.D5	.00	1	FLOW	3.	0.
				TIME	3.58	3.58
	HYDROGRAPH AT					
+	ON.D8	.00	1	FLOW	8.	4.
				TIME	3.50	3.50
	3 COMBINED AT					
+	CP.D2	.02	1	FLOW	21.	6.
				TIME	3.50	3.50
	HYDROGRAPH AT					
+	OF.E5	.00	1	FLOW	3.	1.
				TIME	3.50	3.58
	HYDROGRAPH AT					
+	OF.E6	.00	1	FLOW	1.	0.
				TIME	3.50	3.58
	HYDROGRAPH AT					
+	ON.D7	.02	1	FLOW	14.	2.
				TIME	3.67	3.75
	3 COMBINED AT					
+	CP.D8	.03	1	FLOW	17.	3.
				TIME	3.67	3.75
	HYDROGRAPH AT					
+	OF.E3	.00	1	FLOW	2.	1.
				TIME	3.58	3.58
	HYDROGRAPH AT					

						INT. OUT
+	ON.D3	.01	1	FLOW TIME	12. 3.58	3. 3.67
2 COMBINED AT						
+	CP.D6	.02	1	FLOW TIME	14. 3.58	3. 3.67
HYDROGRAPH AT						
+	GC2	.00	1	FLOW TIME	5. 3.50	3. 3.50
4 COMBINED AT						
+	CP.D3	.07	1	FLOW TIME	55. 3.58	13. 3.58
HYDROGRAPH AT						
+	OFF2	.03	1	FLOW TIME	27. 3.58	7. 3.67
HYDROGRAPH AT						
+	OFF3	.01	1	FLOW TIME	18. 3.50	5. 3.50
HYDROGRAPH AT						
+	HUAL	.00	1	FLOW TIME	4. 3.50	2. 3.50
3 COMBINED AT						
+	C3	.04	1	FLOW TIME	43. 3.50	11. 3.50
HYDROGRAPH AT						
+	ON2	.01	1	FLOW TIME	9. 3.58	3. 3.58
HYDROGRAPH AT						
+	SEVR	.00	1	FLOW TIME	1. 3.50	1. 3.50
3 COMBINED AT						
+	C4	.05	1	FLOW TIME	53. 3.50	14. 3.50
ROUTED TO						
+	RC4	.05	1	FLOW TIME	51. 3.58	14. 3.67
HYDROGRAPH AT						
+	SEVR	.00	1	FLOW TIME	8. 3.50	4. 3.50
3 COMBINED AT						
+	CP.SEV	.12	1	FLOW TIME	112. 3.58	29. 3.58
2 COMBINED AT						
+	TOT	58.52	1	FLOW TIME	769. 3.75	363. 9.00

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING

(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

INTERPOLATED TO
COMPUTATION INTERVAL

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)

FOR PLAN = 1 RATIO= 1.00

RC3	MANE	.51	627.42	226.35	.21	5.00	622.88	225.00	.21
-----	------	-----	--------	--------	-----	------	--------	--------	-----

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6592E+03 EXCESS= .0000E+00 OUTFLOW= .6584E+03 BASIN STORAGE= .8548E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .55

RC3	MANE	.65	366.21	1495.04	.20	5.00	363.00	540.00	.20
-----	------	-----	--------	---------	-----	------	--------	--------	-----

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6269E+03 EXCESS= .0000E+00 OUTFLOW= .6260E+03 BASIN STORAGE= .7829E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= 1.00

RC4	MANE	1.51	52.16	213.93	1.31	5.00	51.46	215.00	1.31
-----	------	------	-------	--------	------	------	-------	--------	------

INT.OUT

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3518E+01 EXCESS= .0000E+00 OUTFLOW= .3533E+01 BASIN STORAGE= .2834E-04 PERCENT ERROR= -.4

FOR PLAN = 1 RATIO= .55

RC4	MANE	2.48	14.35	216.30	.40	5.00	14.06	220.00	.40
-----	------	------	-------	--------	-----	------	-------	--------	-----

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1057E+01 EXCESS= .0000E+00 OUTFLOW= .1066E+01 BASIN STORAGE= .2751E-04 PERCENT ERROR= -.9

*** NORMAL END OF HEC-1 ***

Ultimate Condition HEC-1

ULT.OUT

1*****

 *
 *
 * FLOOD HYDROGRAPH PACKAGE (HEC-1) *
 *
 * JUN 1998 *
 *
 * VERSION 4.1 *
 *
 *
 * RUN DATE 27MAR13 TIME 08:04:26 *
 *
 *

*
 *
 * U.S. ARMY CORPS OF ENGINEERS *
 *
 * HYDROLOGIC ENGINEERING CENTER *
 *
 * 609 SECOND STREET *
 *
 * DAVIS, CALIFORNIA 95616 *
 *
 * (916) 756-1104 *
 *

```

X  X  XXXXXX  XXXXX  X
X  X  X      X      XX
X  X  X      X      X
XXXXXX XXXX  X      XXXXX
X  X  X      X      X
X  X  X      X      X
X  X  XXXXXX  XXXXX  XXX
  
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.
 THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
 THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT

PAGE 1

LINE	ID	1	2	3	4	5	6	7	8	9	10
	*DIAGRAM										
1	ID	SLATER HANIFAN GROUP									
2	ID	NORTH CREEK									
3	ID	ULTIMATE CONDITION ONSITE/OFFSITE ANALYSIS									
4	ID										
5	ID	RETURN PERIOD -----	100	AND	10-YEAR						
6	ID	DISTRIBUTION -----	6-HOUR	SDN3							
7	ID	PROJECT NO. -----	PIN0402.004								
8	ID	FILENAME -----	ULT.H1								
9	ID	DATE -----	MARCH 2013								
10	ID	MODELED BY -----	ARP								
11	ID										
12	ID	PRECIPITATION									
13	ID	STORM EVENT									
14	ID	100-YEAR									
15	ID	10-YEAR									
16	ID										
17	IT	5	0	0	300						
18	IO	5	0	0							
19	IN	5	0	0							
20	JR	PREC	1.00	0.55							
	*										
21	KK	OF.D6									
22	KM	OFFSITE DEVELOPED BASIN FOR FUTURE FARM									
23	BA	.0020									
24	PB	3.15									
25	PC	.000	.020	.057	.070	.087	.108	.124	.130	.130	.130
26	PC	.130	.130	.130	.133	.140	.142	.148	.158	.172	.181
27	PC	.190	.197	.199	.200	.201	.204	.214	.229	.241	.249
28	PC	.251	.256	.270	.278	.281	.283	.295	.322	.352	.409
29	PC	.499	.590	.710	.744	.781	.812	.819	.835	.851	.856
30	PC	.860	.868	.876	.888	.910	.926	.937	.950	.970	.976
31	PC	.982	.985	.987	.989	.990	.993	.993	.994	.995	.998
32	PC	.998	.999	1.000							
33	LS		98								
34	UD	.05									
	*										
35	KK	ON.D2									
36	KM	ONSITE BASIN - LOTS ON RAMON - MODIFIED UP2									
37	BA	.0140									
38	LS		75								
39	UD	.181									
	*										
40	KK	OF.D1									
41	KM	FUTURE DEVELOPED OFFSITE BASIN 1									
42	BA	.0109									
43	LS		82.0								
44	UD	.130									
	*										

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HEC-1 INPUT

PAGE 2

LINE	ID	1	2	3	4	5	6	7	8	9	10
45	KK	CP.D4									
46	KM	COMBINE OF.D1 AND ON.D2									
47	HC	2									
	*										
48	KK	FARM									
49	KM	NORTH CREEK BASIN - MODIFIED UP2									
50	BA	.0027									

51 LS 98
52 UD .055
*
53 KK GC1
54 KM GRAND CANYON WHICH FLOWS NORTH
55 BA .0009
56 LS 98
57 UD .05
*
58 KK CP.D5
59 KM COMBINE CP.D4, OF.D6, FARM & GC1
60 HC 4
*
61 KK OFF8E
62 KM VALLEY CREST - EXISTING OFFSITE BASIN
63 BA .0106
64 LS 77
65 UD .196
*
66 KK DIV1
67 KM VALLEY CREST - BASIN OFF8E SPLITS AT DELL RIDGE AND TINY TORTOISE
68 DT D1
69 DI 2
70 DQ 1
*
71 KK ON4D
72 KM VALLEY CREST - DEVELOPED BASIN
73 BA .0013
74 LS 92
75 UD .038
*
76 KK CP4
77 KM VALLEY CREST - COMBINE DIV1 AND ON4D
78 HC 2
*

1

HEC-1 INPUT

PAGE 3

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

79 KK OFF6E
80 KM VALLEY CREST - DEVELOPED BASIN
81 BA .0056
82 LS 77
83 UD .128
*
84 KK OFF7E
85 KM VALLEY CREST - EXISTING OFFSITE BASIN
86 BA .0103
87 LS 77
88 UD .157
*
89 KK ON5D
90 KM VALLEY CREST - DEVELOPED BASIN
91 BA .0047
92 LS 92
93 UD .095
*
94 KK RETD1
95 KM VALLEY CREST - RETRIEVE FLOW SPLIT AT DELL RIDGE AND TINY TORTOISE
96 DR D1
*
97 KK CP3
98 KM VALLEY CREST - COMBINE OFF6E, OFF7E, RETD1 AND ON5D
99 HC 4
*
100 KK OFF9E
101 KM VALLEY CREST - DEVELOPED BASIN
102 BA .0066
103 LS 77
104 UD .128
*
105 KK CP5
106 KM VALLEY CREST - COMBINE ALL FLOW AT FARM AND GRAND CANYON
107 HC 3
*
108 KK OFF1
109 KM CAPRIANA - OFFSITE BASIN
110 BA .0558
111 LS 77
112 UD .299
*

1

HEC-1 INPUT

PAGE 4

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

113 KK HUAL1
114 KM CAPRIANA - OFFSITE BASIN
115 BA .0015
116 LS 98
117 UD .074
*
118 KK REG-2
119 KM CLIFFS EDGE REG2 BASIN
120 BA .5078
121 LS 89
122 UD .496
*

ULT.OUT

123	KK	C1	
124	KM	CAPRIANA - COMBINE OFF1 AND HUAL1	
125	HC	3	
	*		
126	KK	ON6D	
127	KM	VALLEY CREST - DEVELOPED BASIN	
128	BA	.0078	
129	LS		92
130	UD	.109	
	*		
131	KK	ON1	
132	KM	CAPRIANA - ONSITE BASIN	
133	BA	.0058	
134	LS		84
135	UD	.134	
	*		
136	KK	FARM	
137	KM	CAPRIANA - OFFSITE BASIN	
138	BA	.0006	
139	LS		98
140	UD	.05	
	*		
141	KK	C2	
142	KM	CAPRIANA - COMBINE VALLEY CREST CP1A, CAPRIANA C1, ON1, FARM	
143	HC	4	
	*		
144	KK	ON7D	
145	KM	VALLEY CREST - DEVELOPED BASIN	
146	BA	.0141	
147	LS		92
148	UD	.120	
	*		

1

HEC-1 INPUT

PAGE 5

LINE	ID	1	2	3	4	5	6	7	8	9	10
149	KK	C2A									
150	KM										
151	HC	2									
	*										
152	KK	CP.FAR									
153	KM	TOTAL FLOW IN FARM AT GRAND CANYON									
154	HC	3									
	*										
155											
156	KK	OF.D3									
157	KM	FUTURE DEVELOPED OFFSITE BASIN 3									
158	BA	.0038									
159	LS										
160	UD	.110									
	*										
161	KK	ON.D6									
162	KM										
163	BA	.0150									
164	LS										
165	UD	.185									
	*										
166	KK	CP.D7									
167	KM										
168	HC	2									
	*										
169	KK	ON.D1									
170	KM	ONSITE BASIN - FAIRBURN CREEK - MODIFIED UP2									
171	BA	.0004									
172	LS										
173	UD	.028									
	*										
174	KK	CP.D1									
175	KM	MODIFIED UP2									
176	HC	2									
	*										
177	KK	ON.D5									
178	KM										
179	BA	.0032									
180	LS										
181	UD	.135									
	*										

1

HEC-1 INPUT

PAGE 6

LINE	ID	1	2	3	4	5	6	7	8	9	10
182	KK	ON.D8									
183	KM										
184	BA	.0023									
185	LS										
186	UD	.048									
	*										
187	KK	CP.D2									
188	KM	COMBINE ON.D5, D6 & D8 FOR FLOW AT EAST ENTRANCE									
189	HC	3									
	*										
190	KK	OF.D4									
191	KM	FUTURE DEVELOPED OFFSITE BASIN 4									
192	BA	.0037									

193	LS		82.0	ULT.OUT
194	UD	.110		
	*			
195	KK	ON.D7		
196	KM			
197	BA	.0216		
198	LS		72	
199	UD	.218		
	*			
200	KK	CP.D8		
201	KM			
202	HC	2		
	*			
203	KK	OF.D2		
204	KM	FUTURE DEVELOPED OFFSITE BASIN 2		
205	BA	.0112		
206	LS		82.0	
207	UD	.130		
	*			
208	KK	ON.D3		
209	KM	ONSITE BASIN - UNIVERSITY - MODIFIED UP2		
210	BA	.0141		
211	LS		75	
212	UD	.181		
	*			
213	KK	CP.D6		
214	KM	COMBINE OF.D2 AND ON.D3 - MODIFIED UP2		
215	HC	2		
	*			

1

HEC-1 INPUT

PAGE 7

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

216	KK	GC2		
217	KM	GRAND CANYON WHICH FLOWS SOUTH		
218	BA	.0019		
219	LS		98	
220	UD	.07		
	*			
221	KK	CP.D3		
222	KM	COMBINE ALL ONSITE FLOW AND GRAND CANYON AND FARM		
223	HC	4		
	*			
224	KK	HUAL		
225	KM	CAPRIANA - OFFSITE BASIN		
226	BA	.0016		
227	LS		98	
228	UD	.080		
	*			
229	KK	ON2		
230	KM	CAPRIANA - DEVELOPED ONSITE BASIN		
231	BA	.006		
232	LS		84	
233	UD	.125		
	*			
234	KK	SEVR		
235	KM	CAPRIANA - DEVELOPED OFFSITE BASIN		
236	BA	.0005		
237	LS		98	
238	UD	.05		
	*			
239	KK	C4		
240	KM	CAPRIANA - COMBINE C3, ON2, AND SEVR		
241	HC	3		
	*			
242	KK	OF.D5		
243	KM	OFFSITE DEVELOPED BASIN FUTURE SEVERANCE		
244	BA	.0005		
245	LS		98	
246	UD	.05		
	*			
247	KK	C5		
248	KM	COMBINE C4 AND OF.D5		
249	HC	2		
	*			

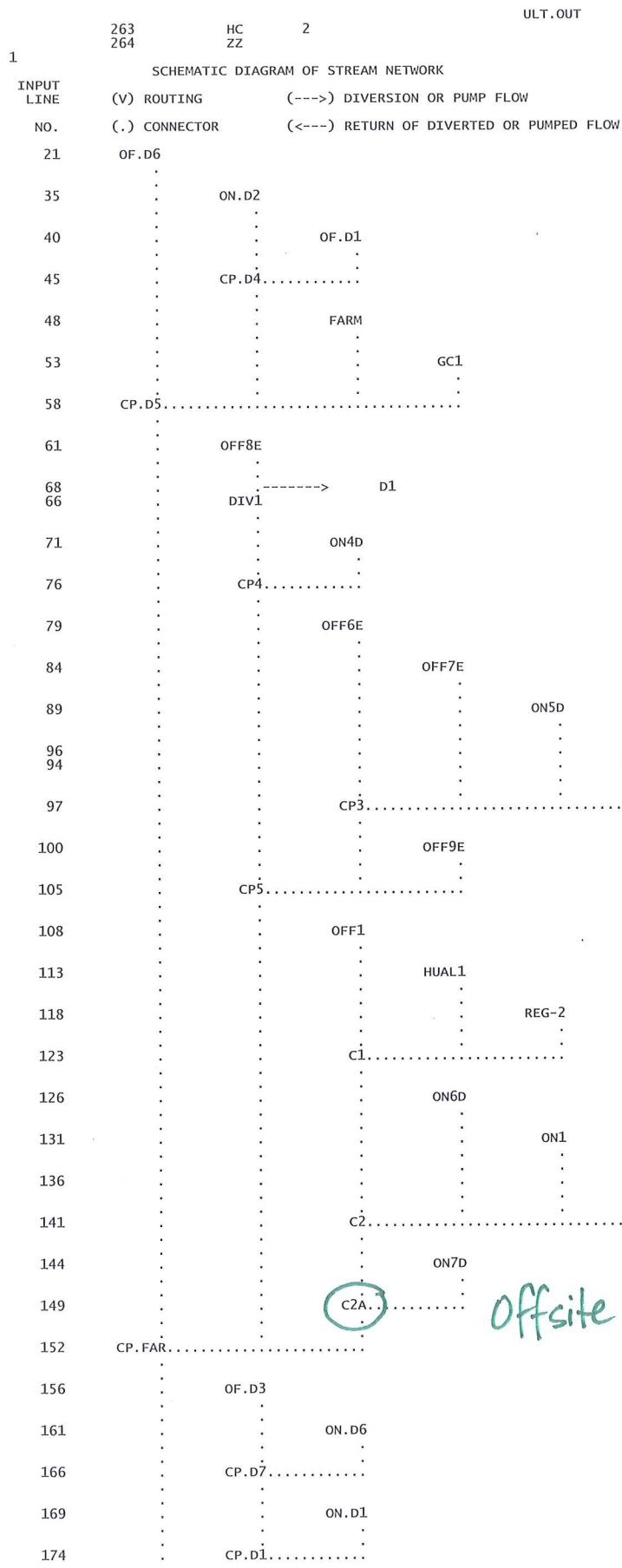
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HEC-1 INPUT

PAGE 8

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

250	KK	RC5		
251	KM	ROUTE C5 FROM CAPRIANA DOWN SEVERANCE TO GRAND CANYON		
252	RK	2000 .03 .015 TRAP 60 2		
	*			
253	KK	SEVR		
254	KM			
255	BA	.0032		
256	LS		98	
257	UD	.073		
	*			
258	KK	CP.SEV		
259	KM	COMBINE CP.D3, CP.D4, AND ROUTED C4 FROM CAPRIANA		
260	HC	3		
	*			
261	KK	TOT		
262	KM			



177	.	.	.	ON. D5	.	.	.
182	.	.	.	.	.	ON. D8	.
187	.	.	CP. D2	.	.	.	.
190	.	.	.	OF. D4	.	.	.
195	.	.	.	.	.	ON. D7	.
200	.	.	.	CP. D8	.	.	.
203	.	.	.	.	.	OF. D2	.
208	.	.	.	.	.	.	ON. D3
213	.	.	.	.	.	CP. D6	.
216	.	.	.	.	.	.	GC2
221	.	.	CP. D3	.	.	.	.
224	.	.	.	HUAL	.	.	.
229	.	.	.	.	.	ON2	.
234	.	.	.	.	.	.	SEVR
239	.	.	.	C4	.	.	.
242	.	.	.	.	.	OF. D5	.
247	.	.	.	C5	.	.	.
250	.	.	.	V	.	.	.
253	.	.	.	RC5	.	SEVR	.
258	.	.	CP. SEV	.	.	.	.
261	TOT	.	.	.	.	.	.

```

1*****
*
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*
* JUN 1998
*
* VERSION 4.1
*
*
*
* RUN DATE 27MAR13 TIME 08:04:26
*
*
*****
*****

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☆
☆ U.S. ARMY CORPS OF ENGINEERS
☆ HYDROLOGIC ENGINEERING CENTER
☆ 609 SECOND STREET
☆ DAVIS, CALIFORNIA 95616
☆ (916) 756-1104
☆

PRECIPITATION STORM EVENT	RATIO
100-YEAR	1.00
10-YEAR	0.55

Page 6

ULT.OUT
 ITIME 0000 STARTING TIME
 NQ 300 NUMBER OF HYDROGRAPH ORDINATES
 NDDATE 2 0 ENDING DATE
 NDTIME 0055 ENDING TIME
 ICENT 19 CENTURY MARK
 COMPUTATION INTERVAL .08 HOURS
 TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS
 DRAINAGE AREA SQUARE MILES
 PRECIPITATION DEPTH INCHES
 LENGTH, ELEVATION FEET
 FLOW CUBIC FEET PER SECOND
 STORAGE VOLUME ACRE-Feet
 SURFACE AREA ACRES
 TEMPERATURE DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
 NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
 RATIOS OF PRECIPITATION
 1.00 .55

*** HEC-1 ERROR 1 *** INVALID CARD IDENTIFICATION CODE OR CARD OUT OF SEQUENCE
 CARD NO. 155

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
 TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1 1.00	RATIO 2 .55
HYDROGRAPH AT	OF.D6	.00	1	5.	3.
+			FLOW TIME	3.50	3.50
HYDROGRAPH AT	ON.D2	.01	1	12.	3.
+			FLOW TIME	3.58	3.67
HYDROGRAPH AT	OF.D1	.01	1	15.	5.
+			FLOW TIME	3.58	3.58
2 COMBINED AT	CP.D4	.02	1	26.	7.
+			FLOW TIME	3.58	3.58
HYDROGRAPH AT	FARM	.00	1	7.	4.
+			FLOW TIME	3.50	3.50
HYDROGRAPH AT	GC1	.00	1	2.	1.
+			FLOW TIME	3.50	3.50
4 COMBINED AT	CP.D5	.03	1	37.	13.
+			FLOW TIME	3.50	3.50
HYDROGRAPH AT	OFF8E	.01	1	10.	2.
+			FLOW TIME	3.67	3.67
DIVERSION TO	D1	.01	1	5.	1.
+			FLOW TIME	3.67	3.67
HYDROGRAPH AT	DIV1	.01	1	5.	1.
+			FLOW TIME	3.67	3.67
HYDROGRAPH AT	ON4D	.00	1	3.	1.
+			FLOW TIME	3.50	3.50
2 COMBINED AT	CP4	.01	1	7.	2.
+			FLOW TIME	3.50	3.50
HYDROGRAPH AT	OFF6E	.01	1	6.	2.
+			FLOW TIME	3.58	3.58
HYDROGRAPH AT	OFF7E	.01	1	10.	2.
+			FLOW TIME	3.58	3.58
HYDROGRAPH AT	ON5D	.00	1	10.	4.
+			FLOW TIME	3.50	3.50
HYDROGRAPH AT	RETD1	.00	1	5.	1.
+			FLOW TIME	3.67	3.67
4 COMBINED AT	CP3	.02	1	30.	9.
+			FLOW TIME	3.58	3.58
HYDROGRAPH AT	OFF9E	.01	1	7.	2.
+			FLOW TIME	3.58	3.58
3 COMBINED AT	CP5	.04	1	43.	13.
+			FLOW		7

				TIME	3.58	ULT. OUT 3.58
HYDROGRAPH AT	OFF1	.06	1	FLOW	43.	11.
+				TIME	3.75	3.83
HYDROGRAPH AT	HUAL1	.00	1	FLOW	4.	2.
+				TIME	3.50	3.50
HYDROGRAPH AT	REG-2	.51	1	FLOW	501.	204.
+				TIME	3.92	3.92
3 COMBINED AT	C1	.57	1	FLOW	537.	214.
+				TIME	3.92	3.92
HYDROGRAPH AT	ON6D	.01	1	FLOW	15.	7.
+				TIME	3.50	3.50
HYDROGRAPH AT	ON1	.01	1	FLOW	8.	3.
+				TIME	3.58	3.58
HYDROGRAPH AT	FARM	.00	1	FLOW	2.	1.
+				TIME	3.50	3.50
4 COMBINED AT	C2	.58	1	FLOW	543.	217.
+				TIME	3.92	3.92
HYDROGRAPH AT	ON7D	.01	1	FLOW	27.	12.
+				TIME	3.58	3.58
2 COMBINED AT	C2A	.59	1	FLOW	550.	220.
+				TIME	3.92	3.92
3 COMBINED AT	CP. FAR	.66	1	FLOW	582.	230.
+				TIME	3.83	3.92
HYDROGRAPH AT	OF.D3	.00	1	FLOW	5.	2.
+				TIME	3.58	3.58
HYDROGRAPH AT	ON.D6	.01	1	FLOW	10.	2.
+				TIME	3.67	3.75
2 COMBINED AT	CP.D7	.02	1	FLOW	15.	3.
+				TIME	3.58	3.58
HYDROGRAPH AT	ON.D1	.00	1	FLOW	1.	1.
+				TIME	3.50	3.50
2 COMBINED AT	CP.D1	.02	1	FLOW	16.	3.
+				TIME	3.58	3.58
HYDROGRAPH AT	ON.D5	.00	1	FLOW	3.	0.
+				TIME	3.58	3.58
HYDROGRAPH AT	ON.D8	.00	1	FLOW	6.	3.
+				TIME	3.50	3.50
3 COMBINED AT	CP.D2	.02	1	FLOW	22.	6.
+				TIME	3.50	3.50
HYDROGRAPH AT	OF.D4	.00	1	FLOW	5.	2.
+				TIME	3.58	3.58
HYDROGRAPH AT	ON.D7	.02	1	FLOW	14.	2.
+				TIME	3.67	3.75
2 COMBINED AT	CP.D8	.03	1	FLOW	18.	4.
+				TIME	3.67	3.67
HYDROGRAPH AT	OF.D2	.01	1	FLOW	15.	5.
+				TIME	3.58	3.58
HYDROGRAPH AT	ON.D3	.01	1	FLOW	12.	3.
+				TIME	3.58	3.67
2 COMBINED AT	CP.D6	.03	1	FLOW	27.	7.
+				TIME	3.58	3.58
HYDROGRAPH AT	GC2	.00	1	FLOW	5.	3.
+				TIME	3.50	3.50
4 COMBINED AT	CP.D3	.08	1	FLOW	70.	18.
+				TIME	3.58	3.58
HYDROGRAPH AT	HUAL	.00	1	FLOW	4.	2.
+						

offsite referenced basins
impacting Farm

← offsite referenced
flow impacting Farm

				TIME	3.50	ULT. OUT 3.50
HYDROGRAPH AT	ON2	.01	1	FLOW TIME	9. 3.58	3. 3.58
HYDROGRAPH AT	SEVR	.00	1	FLOW TIME	1. 3.50	1. 3.50
3 COMBINED AT	C4	.01	1	FLOW TIME	13. 3.50	5. 3.50
HYDROGRAPH AT	OF.D5	.00	1	FLOW TIME	1. 3.50	1. 3.50
2 COMBINED AT	C5	.01	1	FLOW TIME	15. 3.50	6. 3.50
ROUTED TO	RC5	.01	1	FLOW TIME	14. 3.58	6. 3.58
HYDROGRAPH AT	SEVR	.00	1	FLOW TIME	8. 3.50	4. 3.50
3 COMBINED AT	CP.SEV	.09	1	FLOW TIME	90. 3.58	27. 3.58
2 COMBINED AT	TOT	.75	1	FLOW TIME	632. 3.83	242. 3.92

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING

(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL			
						DT	PEAK	TIME TO PEAK	VOLUME
						(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= 1.00									
RC5	MANE	2.13	14.37	214.88	2.05	5.00	14.34	215.00	2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9296E+00 EXCESS= .0000E+00 OUTFLOW= .9379E+00 BASIN STORAGE= .1916E-04 PERCENT ERROR= -.9

FOR PLAN = 1 RATIO= .55									
RC5	MANE	2.94	5.92	215.08	.86	5.00	5.89	215.00	.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3888E+00 EXCESS= .0000E+00 OUTFLOW= .3946E+00 BASIN STORAGE= .1515E-04 PERCENT ERROR= -1.5

*** 1 ERROR(S) DETECTED BY HEC-1 ***

Referenced Report Excerpts

TECHNICAL DRAINAGE STUDY

Sable Creek

Unincorporated Clark County, Nevada

Job No.: PIN0402.001

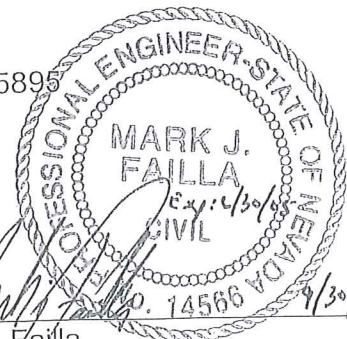
Date: September 2004

Prepared By:

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Mark J. Failla
NV Professional Engineer No. 14566

Assisted By: Justin D. Stoker, EI

Table 10: Summary of Drainage Easement Hydraulic Properties				
Description	Flow Type	Flowrate, Q (cfs)	Velocity, V (fps)	Depth, D (ft)
5-ft @ Hemme ⁴	Channel	2	3.60	0.31
	Weir	2	1.52	0.64
15-ft @ Messe (West) ⁵	Channel	15	3.75	0.71
	Weir	n/a	--	--
15-ft @ Tassajara Crossing (West) ⁶	Channel	18	4.50	0.71
	Weir	n/a	--	--
15-ft @ Hartz & San Ramon Creek (West) ⁷	Channel	5	6.28	0.27
	Weir	n/a	--	--
37-ft @ Tassajara Crossing (East) ⁸	Channel	26	3.61	0.49
	Weir	26	1.85	0.76
20-ft @ San Ramon Creek (East) ⁹	Channel	17	3.14	0.83
	Weir	18	2.28	0.95

Farm Road Drainage Easement: In order to intercept and convey the 633 cfs of offsite flow that impact the northwest corner of the site, a concrete lined channel facility is proposed. The facility will consist of a grouted riprap portion that is utilized to intercept the flow, a concrete lined rectangular channel section (3-ft high by 13-ft wide) and a concrete lined rectangular channel section that diminishes in height from 3-feet to finished grade in order to discharge the flow to Farm Road.

The interception portion of the facility has been designed with a width wider than the computed width of flow entering the facility, therefore not generating an obstructed flow condition. A normal depth section immediately upstream of the inlet facility was performed and has been included in Appendix H. The computation indicates the depth of flow to be 3-feet during the 100-year storm event. The portion of the facility adjacent to the site consists of a 3-foot high concrete wall with a minimum 4.5 foot flood wall extended above the concrete. The concrete portion was based on the normal depth of flow in the facility and the additional flood wall height was provided to extend above the computed energy grade line elevation.

The concrete lined rectangular channel portion of the facility was analyzed using the WSPG program. The program was utilized to determine the hydraulic grade (3-feet) and energy grade (7.5-feet) depths in the channel. The height of the concrete channel portion of the facility was designed to contain the normal 100-year water depth and a flood wall

⁴ 2-cfs runoff for both Interim and Ultimate Conditions.

⁵ 15-cfs runoff for Ultimate Conditions represents worst-case. Only 2-cfs in Interim Condition.

⁶ 18-cfs runoff for Interim Conditions represents worst-case. Ultimate Conditions estimated to be 15-cfs.

⁷ 5-cfs runoff for Ultimate Conditions represents worst-case for both easements. Hartz receives 2-cfs and San Ramon Creek 3-cfs in Interim Conditions.

⁸ 26-cfs runoff for Interim Conditions represents worst-case. Ultimate Conditions estimated to be 23-cfs.

⁹ 18-cfs runoff for Ultimate Conditions represents worst-case. Interim Conditions is 17-cfs.

Discussion of Farm Collector
Channel

has been provided above the channel to extend the remaining height to the energy grade depth. A copy of the WSPG analysis has been included in Appendix H.

The discharge end of the facility was designed to weir flow over the back of curb and into Farm Road. The total weir length of 136 feet was designed to limit the weir height over the back of sidewalk to 1.5 feet. This limit was based on an allowable 100-year street flow depth of 2-feet (1.5-foot weir+0.5-foot curb height). The weir flow computation has been included in Appendix H. Note that although the weir computation indicates that a weir length of 112 feet is necessary to discharge the design flow at an elevation of 1.5-feet, the extra length has been provided because the entire depth of 1.5 feet is not provided when the weir flow first begins.

Discussion of Farm
Collector Channel

Storm Drain: There is an existing 36-inch storm drain in Farm Road that was installed as part of the *Valley Crest Study*. This was provided in accordance with what the NWN Study dictates and in accordance with CLV policy. This project proposes to extend the 36-inch storm drain up Farm Road and stub the storm drain at the upstream property line. A WSPG analysis has been performed for the extended segment based on a design flow of 85 cfs as dictated by the NWN Study. A copy of the WSPG analysis has been included in Appendix F.

4.6 Summary of Finished Floor

Minimum finished floor elevations were determined to be a vertical distance above the gutter flowline of twice the depth of flow in the street on the high side of the lot or 18-inches above the adjacent street crown elevation, whichever is higher. All finished floor elevations are in compliance with the CCRFCD Manual criteria. A finished floor analysis has been provided in Appendix G.

The minimum garage finished floor elevations have been checked to insure that they are elevated a vertical distance above the gutter flowline of twice the depth of flow in the fronting street on the high side of the lot. Note that the proposed homes have a garage finished floor stepped down 6-inches. Please refer to the finished floor analysis in Appendix G.

5 ULTIMATE DRAINAGE CONDITION

5.1 Definition of Ultimate Condition

The ultimate condition considers the upstream watershed fully developed. The Cliff's Edge Master Development, currently under design and review, proposes improvements to all upstream properties between Hualapai and the Kyle Canyon Detention basin. The project site also is considered complete along with the adjacent full street improvements to all perimeter streets. The ultimate condition also considers the properties located between Capriana and Sable Creek to be fully developed. As previously mentioned this project lies within Clark County jurisdiction but is within an area that is enclosed by land that is within the jurisdiction of the City of Las Vegas. Both the *Valley Crest Study* and the *Cliff's Edge Study* are within the City of Las Vegas and therefore utilized the

TECHNICAL DRAINAGE STUDY RESPONSE TO COMMENTS NO.1

Sable Creek

Unincorporated Clark County, Nevada

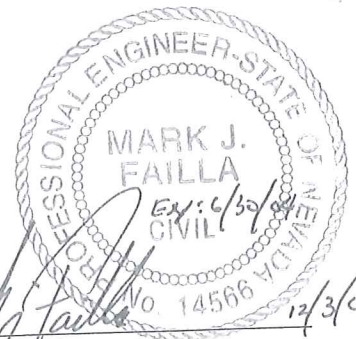
Job No.: PIN0402
Date: December 2004

Prepared By:

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Mark J. Failla
NV Professional Engineer No. 14566

Assisted by: Justin D. Stoker, E.I.

lane. Flow is introduced into Grand Canyon at Danville and San Ramon Creek totaling only 10-cfs in the interim condition and 16-cfs in the ultimate condition (CP.D3). Two 4-ft Type C drop inlets are more than sufficient in collecting the 7-cfs needed in the ultimate condition. Additional computations are included in Appendix B.

4. **Comment:** *The study is referencing the Capriana Study (HTE# 04-41249) which is not approved yet. It is the engineer's responsibility to provide the latest information relevant to the subject site in ongoing coordination with the referenced study.*

Response: Acknowledged. The Capriana Study was submitted for its third review on October 28, 2004. No hydrologic/hydraulic changes to the previously submitted reference material have been made, thus all related reference material previously submitted is still relevant.

5. **Comment:** *Note that since this site is relying on Capriana and Valley Crest developments as being fully constructed (as stated in Section 3.1 of the report), permits will not be issued for this project until substantial completion of the referenced projects.*

Response: Section 3.1 of the report does not state that this site is relying on Capriana and Valley Crest as being fully constructed. It states, "The existing condition considers the offsite drainage patterns as they exist in the present condition". Both Capriana and Valley Crest are further in the permitting process than Sable Creek, and it is assumed that either street improvements or mass grading from Capriana will intercept runoff west of Hualapai and divert the runoff to Farm and Severance. It is not necessary that Capriana be substantially complete. Sable Creek is in no way reliant upon construction of the Valley Crest project. The Valley Crest project is already substantially complete. Permits may be issued following street improvements or completion of pad grading from the Capriana project only.

6. **Comment:** *Provide geotechnical report and structural calculations for all proposed floodwalls and walls that include solid grouting exceeding 3 courses above FG elevation.*

Response: Acknowledged. Copies of the geotechnical report and required structural computations have been included with this submittal package.

7. **Comment:** *It is noted that the flow arrows for Basin OFE1 on Exhibit F should be pointing north to Farm Road.*

Response: The flow arrows on Exhibit F are correct as shown. Basin OF.E1 does not naturally flow to Farm Road, rather the basin drains to a lowpoint located approximately 200 feet south of the Farm Road centerline. The proposed Farm Road Collector channel intercepts flow from the lowpoint and conveys the storm flow back to Farm Road.

8. **Comment:** *Provide additional freeboard for all side weir collection channels along the western property line to account for sediment loading. It is noted that the flood protection is designed to the EGL, however an additional 6-inches of flood protection should account for sediment loading.* } additional freeboard

Response: As requested, an additional 6-inches of vertical flood protection has been added to the Farm Road Collector Channel in order to account for sediment loading. Per our 11/03/04 meeting, the additional flood protection has been added only on the portion of the facility adjacent to the proposed lots. Revised calculations can be found in Appendix C.

*additional
freeboard*

9. **Comment:** *The grading on sheet G-3 near the west end of Severance Lane does not appear to capture and convey the interim flow (53-cfs) within the Severance alignment. This flow must be contained within the ROW and not directed south. Additionally the Severance street flow calculations show overtopping outside of the south ROW line. Please revise design of roadside swales to fully contain the flow with the ROW and provide additional grading at the west end to capture this offsite flow.*

Response: An excavated ditch has been extended to the west in order to intercept the offsite flow and convey it to the east within the Severance alignment. Per our meeting discussion, it was agreed that the roadside ditch of Severance will conform to the AASHTO Roadway Design requirements although it does not necessarily have capacity to convey the entire 53 cfs. Revised hydraulic computations have been included in Appendix D.

10. **Comment:** *Jensen Street must be vacated. Provide the vacation documentation number on the plans.*

Response: Jensen Street is to be vacated per numbers VS-0626-04 & VS-0948-04. The vacation numbers have been placed in appropriate locations on the plans.

11. **Comment:** *It is required to provide street depth calculations for the non-urban standard perimeter street of Severance Lane, utilizing a fully developed street section (including curb, gutter and sidewalk) that is limited to the ROW width and using the worst case flow. This is because under future conditions when full offsite improvements may be required, the site needs to be protected and meet criteria. Provide the revised street flow calculations and verify that the proposed flood protection (solid grouted walls) meets criteria of twice the depth of flow up to 18-inches above the 100-year WSE.*

Response: This was accomplished in the previous submittal by completing a future fully developed street section using the Future CLV Northwest Neighborhood Study flowrate of 67-cfs. The flowrate of 67-cfs represents the worst-case flowrate. The section is entitled "NWS Section K: Severance Ln. (100-YR Future)". The flow depth from this section shows 0.60-feet or depth to the back of sidewalk. The plans, including Plan Section B on sheet D-1 call out 2-courses solid grouted along Severance Ln., satisfying the criteria. No additional sections or changes to the plans are required.

12. **Comment:** *Verify that the proposed 4-ft Type C drop inlet (DI #4 on sheet G-5) is located at the intersection low point.*

Response: The proposed Drop Inlet #4 is an extension from an existing 18-inch lateral and is appropriately located to intercept nuisance flows before crossing Grand Canyon Drive. The lateral proposed and constructed by the neighboring Terra Bella project was

Referenced Channel Computations

DATE: 11/29/2004
TIME: 15:51

F0515P
WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
PAGE 1

CARD	SECT	CHN	NO OF	AVE PIER	HEIGHT 1	BASE	ZL	ZR	INV	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CODE	NO	TYPE	PIERS	WIDTH	DIAMETER	WIDTH			DROP										
CD	1	5	0	0.00															

DATE: 11/29/2004
TIME: 15:51

F0515P
WATER SURFACE PROFILE - CROSS SECTION POINT LISTING
PAGE 2

CARD	SECT	NO OF	X(1), Y(1)	X(2), Y(2)	X(3), Y(3)	X(4), Y(4)	X(5), Y(5)	X(6), Y(6)	X(7), Y(7)
CODE	NO	POINTS	X(8), Y(8)	X(9), Y(9)	X(10), Y(10)	X(11), Y(11)	X(N), Y(N)	X(N+1), Y(N+1)	X(99), Y(99)
PTS	1	5	0.00 3.50	0.00 0.13	6.50 0.00	13.00 0.13	13.00 3.50		

F 0 5 1 5 P

PAGE NO 3

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SABLE CREEK COLLECTOR - PINNACLE HOMES

HEADING LINE NO 2 IS -

SLATER HANIFAN GROUP - PIN0402.001

HEADING LINE NO 3 IS -

NOVEMBER 29, 2004

PAGE NO 2

F 0 5 1 5 P

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	1 IS A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
				377.79	8.65	1	0.00	5.00	91.00	0.00	0
ELEMENT NO	2 IS A	REACH	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
				429.11	9.00	1	0.014	0.00	0.00	0.00	0
ELEMENT NO	3 IS A	REACH	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
				434.61	9.08	1	0.014	0.00	0.00	0.00	0
ELEMENT NO	4 IS A	SYSTEM HEADWORKS	U/S DATA	STATION	INVERT	SECT	W S ELEV				
				513.87	9.61	1	12.60				

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

PAGE 1

LICENSEE: SLATER HANIFAN GROUP

F0515P
WATER SURFACE PROFILE LISTING

SABLE CREEK COLLECTOR - PINNACLE HOMES
SLATER HANIFAN GROUP - PIN0402.001
NOVEMBER 29, 2004

STATION	INVERT	DEPTH	W.S.	Q	VEL	VEL	ENERGY	SUPER	CRITICAL	HGT/	BASE/	ZL	NO	AVBPR
	ELEV	OF FLOW	ELEV			HEAD	GRD.EL.	ELEV	DEPTH	DIA	ID NO.		PIER	
L/ELEM	SO					SF AVE	HF					NORM DEPTH	ZR	
377.79	8.65	3.046	11.696	632.0	16.31	4.131	15.827		4.253			1	0	0.00
51.32	0.00682					.009344	0.48					3.348		
429.11	9.00	2.976	11.976	632.0	16.70	4.330	16.306		4.253			1	0	0.00
5.50	0.01455					.009599	0.05					2.598		
434.61	9.08	2.990	12.070	632.0	16.62	4.290	16.360		4.253			1	0	0.00
513.87	9.61	2.990	12.600	632.0	16.62	4.290	16.890		4.253			1	0	0.00

SABLE CREEK COLLECTOR - PINNACLE HOMES
SLATER HANIFAN GROUP - PIN0402.001
NOVEMBER 29, 2004

377.79	.	I				W	H	C					E				R
380.57	.																
383.34	.																
386.12	.																
388.90	.																
391.68	.																
394.45	.																
397.23	.																
400.01	.																
402.78	.																
405.56	.																
408.34	.																
411.12	.																
413.89	.																
416.67	.																
419.45	.																
422.22	.																
425.00	.																
427.78	.																
430.56	.	I				W	H	C				E					R
433.33	.					W	H	C				E					R
436.11	.	I															
438.89	.																
441.66	.																
444.44	.																
447.22	.																
450.00	.																
452.77	.																
455.55	.																
458.33	.																
461.10	.																
463.88	.																
466.66	.																
469.44	.																
472.21	.																
474.99	.																
477.77	.																
480.54	.																
483.32	.																
486.10	.																
488.88	.																
491.65	.																
494.43	.																
497.21	.																
499.98	.																
502.76	.																
505.54	.																
508.32	.																
511.09	.																
513.87	.	I						W	H	C						E	R

NOTES

1. GLOSSARY

- I = INVERT ELEVATION
C = CRITICAL DEPTH
W = WATER SURFACE ELEVATION
H = HEIGHT OF CHANNEL
E = ENERGY GRADE LINE
X = CURVES CROSSING OVER
B = BRIDGE ENTRANCE OR EXIT
Y = WALL ENTRANCE OR EXIT

2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY

Farm Collector Outfall

Worksheet for Broad Crested Weir

Project Description

Worksheet	Farm Collector Outfall
Type	Broad Crested Weir
Solve For	Crest Length

Input Data

Discharge	632.0 cfs
Headwater Elevation	2.00 ft
Crest Elevation	0.50 ft
Tailwater Elevation	1.50 ft
Crest Surface Type	Paved
Crest Breadth	6.00 ft

Results

Crest Length	111.78 ft
Headwater Height Above Crest	1.50 ft
Tailwater Height Above Crest	1.00 ft
Discharge Coefficient	3.08 US
Submergence Factor	1.00
Adjusted Discharge Coefficient	3.08 US
Flow Area	167.7 ft ²
Velocity	3.77 ft/s
Wetted Perimeter	114.78 ft
Top Width	111.78 ft

Actual design weir length. = 135.5 ft.
∴ weir depth < 1.5 ft.

Farm Collector Outfall

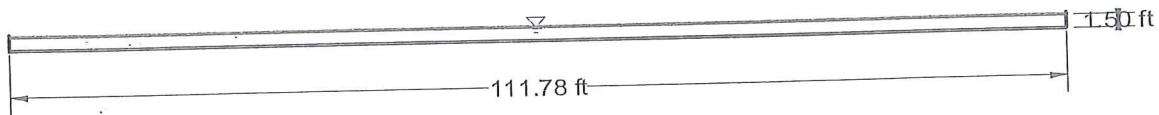
Cross Section for Broad Crested Weir

Project Description

Worksheet	Farm Collector Outfall
Type	Broad Crested Weir
Solve For	Crest Length

Section Data

Discharge	632.0 cfs
Headwater Elevation	2.00 ft
Crest Elevation	0.50 ft
Tailwater Elevation	1.50 ft
Crest Surface Type	Paved
Crest Breadth	6.00 ft
Crest Length	111.78 ft



V:1
H:1
NTS

Drainage Easement Collector: Pour Section Worksheet for Irregular Channel

Project Description	
Worksheet	Drainage Easement Collector: Pour Section
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Channel Slope	0.050000 ft/ft
Discharge	632.0 cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Water Surface Elevation	13.01 ft
Elevation Range	10.00 to 15.00
Flow Area	58.7 ft ²
Wetted Perimeter	61.28 ft
Top Width	60.34 ft
Actual Depth	3.01 ft
Critical Elevation	13.59 ft
Critical Slope	0.012313 ft/ft
Velocity	10.76 ft/s
Velocity Head	1.80 ft
Specific Energy	14.81 ft
Froude Number	1.92
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	1+18.00	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	15.00
0+10.00	10.00
0+14.00	11.00
0+20.00	12.00
0+36.00	12.00
0+64.00	13.00
0+91.00	14.00
1+18.00	15.00

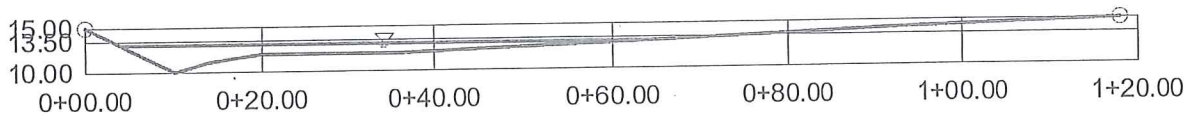
Drainage Easement Collector: Pour Section Cross Section for Irregular Channel

Project Description

Worksheet	Drainage Easement Collector: Pour Section
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data

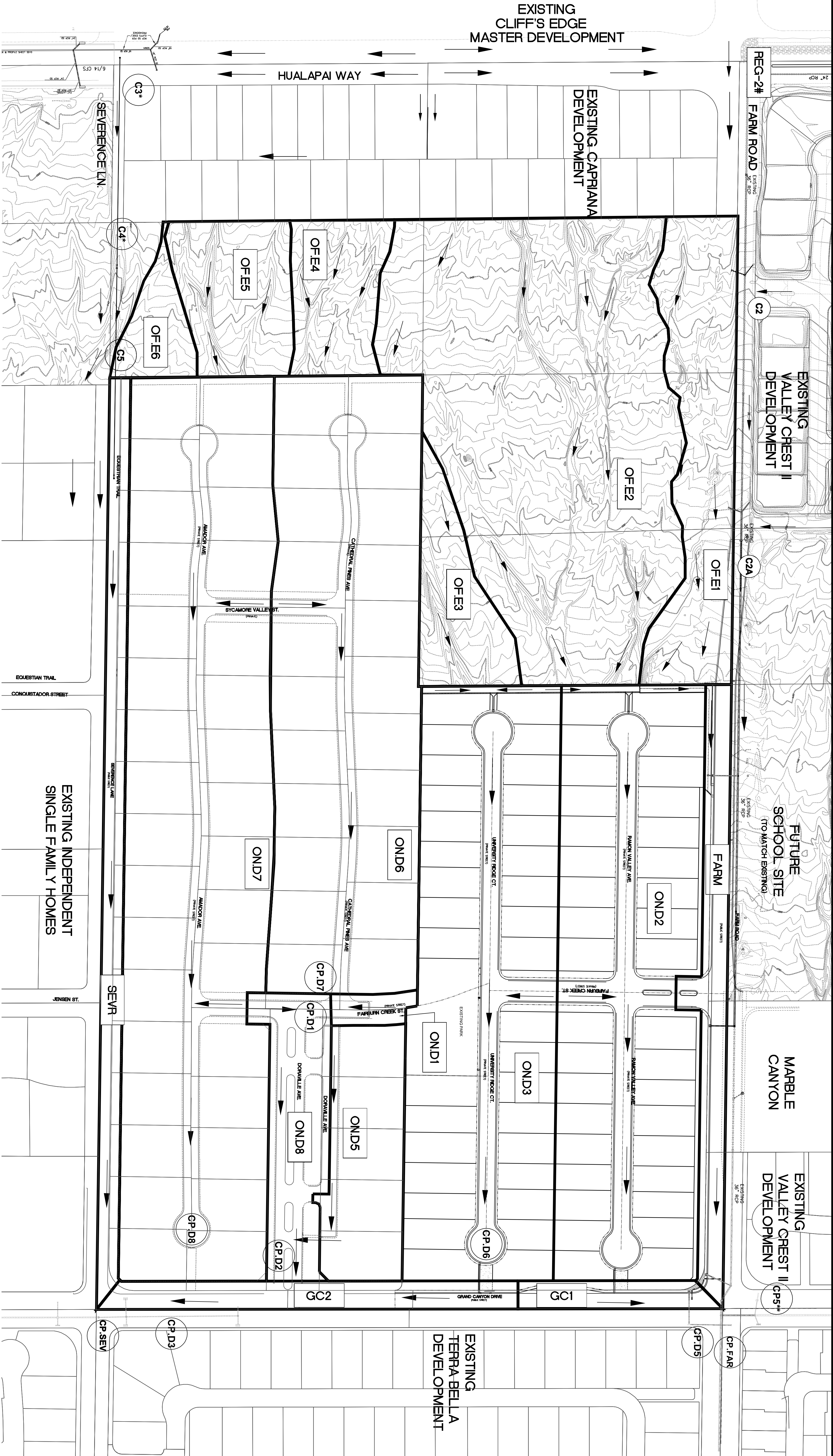
Mannings Coefficient	0.030
Channel Slope	0.050000 ft/ft
Water Surface Elevation	13.01 ft
Elevation Range	10.00 to 15.00
Discharge	632.0 cfs



V:1
H:1
NTS

APPENDIX B

Revised Drainage Exhibit



Flow Rates for Farm Collector Channel					
Revised Interim Condition					
Basin/Concentration Point ID	Area (ac)	Q ₁₀ (cfs)	Q ₅ (cfs)	Q ₂ (cfs)	Q ₁ (cfs)
C2A	N/A	550	550	220	220
36-inch Storm Drain in Farm	N/A	85	85	85	85
OF-E1	3.3	5	5	1	1
Channel Flow (C2A - SD Flow + OF-E1)	N/A	470	470	138	138

REVISED INTERIM CONDITION IS PRESENTED WITH UPDATE NO. 4 FOR THE PURPOSE OF ESTABLISHING A REDUCED FLOW RATE IN THE FARM COLLECTOR BASED ON THE ASSUMPTIONS THAT THE UPSTREAM OFFSITE BASINS ARE NOW IN ESSENTIALLY THEIR ULTIMATE CONDITIONS AND THAT THE 36-INCH STORM DRAIN IN FARM ROAD IS CONTINUOUS.

REFER TO EXHIBITS F2 AND G FROM UPDATE NO. 2 FOR FLOW RATES FOR OTHER BASINS AND CONCENTRATION POINTS.

SYMBOL KEY

OFF-1

DRAINAGE SUBBASIN

(C)

COMBINATION POINT

SUBBASIN BOUNDARY

=====

PHASE BOUNDARY

→

FLOW DIRECTION

→

STREET FLOW

→

CROSS SECTION

0 100 200

SCALE - 1"=100'

FEET

N

SLC

APPENDIX C

Referenced Channel Computations

Revised Flow Depth at System Headworks

Drainage Easement Collector: Pour Section Worksheet for Irregular Channel

Project Description	
Worksheet	Amy - Drainage Easement Collector: Pour Section
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Channel Slope	5.00 %
Discharge	470.0 cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Water Surface Elevation	12.81 ft
Elevation Range	10.00 to 15.00
Flow Area	47.1 ft ²
Wetted Perimeter	55.18 ft
Top Width	54.30 ft
Actual Depth	2.81 ft
Critical Elevation	13.31 ft
Critical Slope	1.28 %
Velocity	9.97 ft/s
Velocity Head	1.55 ft
Specific Energy	14.35 ft
Froude Number	1.89
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	1+18.00	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	15.00
0+10.00	10.00
0+14.00	11.00
0+20.00	12.00
0+36.00	12.00
0+64.00	13.00
0+91.00	14.00
1+18.00	15.00

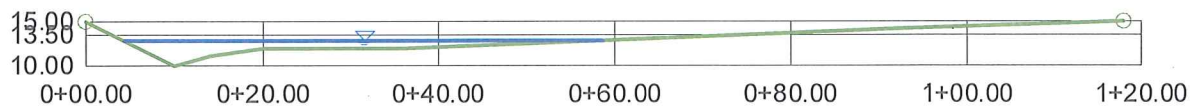
Drainage Easement Collector: Pour Section Cross Section for Irregular Channel

Project Description

Worksheet	Amy - Drainage Easement Collector: Pour Section
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.030
Channel Slope	5.00 %
Water Surface Elevation	12.81 ft
Elevation Range	10.00 to 15.00
Discharge	470.0 cfs



V:1
H:1
NTS

Revised WSPG Model

DATE: 6/ 4/2014
TIME: 9:38

SCREEK.OUT

F0515P
WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
-----------	---------	----------	-------------	----------------	-------------------	------------	----	----	----------	------	------	------	------	------	------	------	------	------	-------

CD	1	5	0	0.00															
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DATE: 6/ 4/2014
TIME: 9:38

F0515P
WATER SURFACE PROFILE - CROSS SECTION POINT LISTING

PAGE 2

CARD CODE	SECT NO	NO OF POINTS	X(1)	Y(1)	X(2)	Y(2)	X(3)	Y(3)	X(4)	Y(4)	X(5)	Y(5)	X(6)	Y(6)	X(7)	Y(7)	X(99)	Y(99)
-----------	---------	--------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------	-------

PTS	1	5	0.00	3.50	0.00	0.15	7.50	0.00	15.00	0.15	15.00	3.50						
-----	---	---	------	------	------	------	------	------	-------	------	-------	------	--	--	--	--	--	--

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

NORTH CREEK UPDATE NO. 4

HEADING LINE NO 2 IS -

SLATER HANIFAN GROUP - LEN1308.000

HEADING LINE NO 3 IS -

FARM COLLECTOR CHANNEL - WSPG FROM SABLE CREEK TDS
F 0 5 1 5 P

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	1 IS A SYSTEM OUTLET U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
		377.79	8.65	1		W S ELEV 0.00			
ELEMENT NO 2 IS A REACH U/S DATA	STATION 429.11	INVERT 9.00	SECT 1	0.014	5.00	91.00	0.00	0	
ELEMENT NO 3 IS A REACH U/S DATA	STATION 440.12	INVERT 9.08	SECT 1	0.014	0.00	0.00	0.00	0	
ELEMENT NO 4 IS A SYSTEM HEADWORKS U/S DATA	STATION 513.87	INVERT 9.61	SECT 1	*	W S ELEV 12.42				

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING[‡]
LICENSEE: SLATER HANIFAN GROUP

PAGE 1

F0515P
WATER SURFACE PROFILE LISTING
NORTH CREEK UPDATE NO. 4
SLATER HANIFAN GROUP - LEN1308.000
FARM COLLECTOR CHANNEL - WSPG FROM SABLE CREEK TDS

[illegible]

1. GLOSSARY

- I = INVERT ELEVATION
C = CRITICAL DEPTH
W = WATER SURFACE ELEVATION
H = HEIGHT OF CHANNEL
E = ENERGY GRADE LINE
X = CURVES CROSSING OVER
B = BRIDGE ENTRANCE OR EXIT
Y = WALL ENTRANCE OR EXIT

2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY $\frac{1}{2}$

0												
T1	NORTH CREEK UPDATE NO. 4											
T2	SLATER HANIFAN GROUP - LEN1308.000											
T3	FARM COLLECTOR CHANNEL - WSPG FROM SABLE CREEK TDS											
SO	377.79	8.65	1									
R	429.11	9.00	1	.014	5.00 91.00							
R	440.12	9.08	1	.014								
SH	513.87	9.61	1	12.42								
CD	1	5										
PTS	1	5	0.00	3.50	0.00	0.15	7.50	0.00	15.00	0.15	15.00	3.50

SCREEK.WSQ

0
Q

470.0

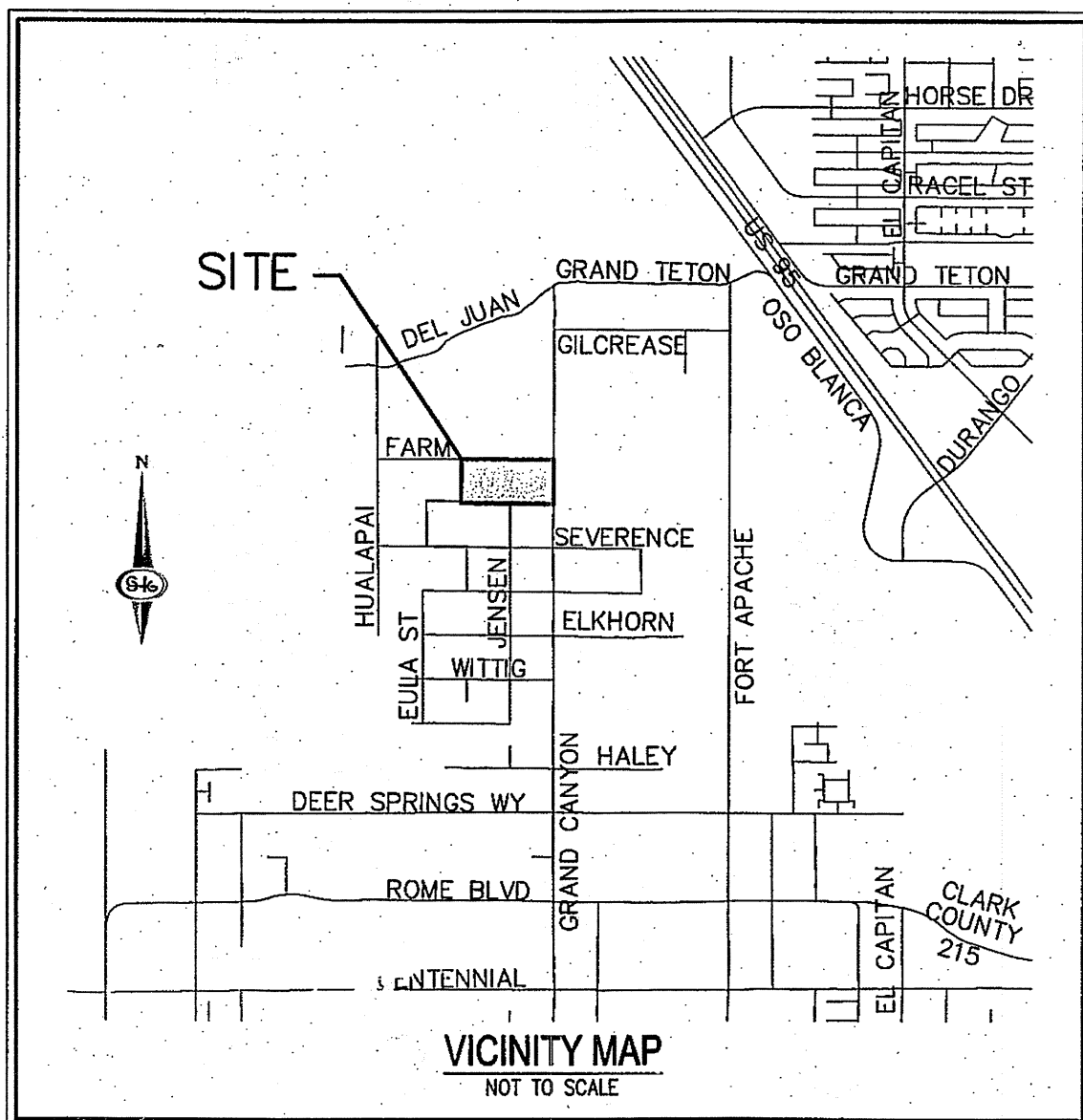
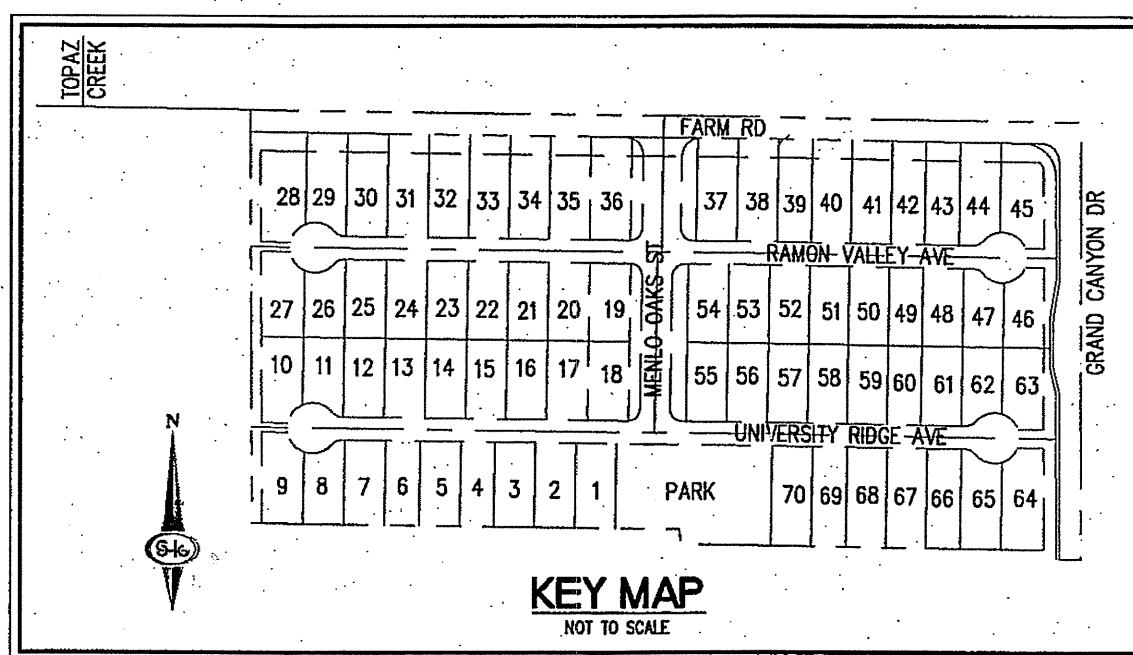
APPENDIX D

Previously Approved Improvement Plans

LENNAR®

IMPROVEMENT PLANS
FOR
NORTH CREEK

APN: A PORTION OF 125-18-301-025



SHEET INDEX		
NO.	SHEET	SHEET TITLE
1	C-1	COVER SHEET
2	C-2	GENERAL NOTES & QUANTITIES
3	C-1	GRADING PLAN I
4	C-2	GRADING PLAN II
5	D-1	GRADING DETAILS AND SECTIONS I
6	D-2	GRADING DETAILS AND SECTIONS II
7	D-3	GRADING DETAILS AND SECTIONS III
8	PP-1	PLAN AND PROFILE - FARM ROAD
9	PP-2	PLAN AND PROFILE - FARM ROAD
10	PP-3	PLAN AND PROFILE - FARM ROAD
11	PP-4	PLAN AND PROFILE - GRAND CANYON DRIVE
12	PP-5	PLAN AND PROFILE - STORM DRAIN
13	PP-6	PLAN AND PROFILE - DRAINAGE CHANNEL
14	PP-7	PLAN AND PROFILE - MENLO OAKS STREET
15	PP-8	PLAN AND PROFILE - RAMON VALLEY AVE
16	PP-9	PLAN AND PROFILE - RAMON VALLEY AVE
17	PP-10	PLAN AND PROFILE - UNIVERSITY RIDGE AVE
18	PP-11	PLAN AND PROFILE - UNIVERSITY RIDGE AVE
19	MU	MASTER UTILITY PLAN
20	U-1	UTILITY PLAN I
21	U-2	UTILITY PLAN II
22	T-1	TRAFFIC PLAN I
23	T-2	TRAFFIC PLAN II
24	L1.00	LANDSCAPE COVER SHEET
25	L1.01	LANDSCAPE PLANTING PLAN
26	L1.02	LANDSCAPE COVER SHEET
27	L1.03	LANDSCAPE COVER SHEET
28	L1.04	LANDSCAPE COVER SHEET
29	L1.05	LANDSCAPE COVER SHEET
30	L4.01	LANDSCAPE DETAILS

APPROVALS	
 CITY ENGINEER-DAVID BOWERS PE, PTOE #16736 DATE: 4/2/14	
APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHT-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIALLY LISTED UNDER DEVIATIONS FORM STANDARDS. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARDS IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, CLARK COUNTY AREA, NEVADA.	
 LAS VEGAS FIRE & RESCUE DATE: 3/5/14	
 CHRIS KNIGHT, DIRECTOR BUILDING AND SAFETY DEPARTMENT DATE: 4-2-14	
THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE PLANNING AND DEVELOPMENT DEPARTMENT.	
 MICHELLE R. TURNER DATE: 1-22-14	
THE AFFIXED EMBARQ APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND / OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.	
APPROVED FOR CONSTRUCTION J. S. HARRIS, DISTRICT ENGINEERING SERVICES MANAGER PROJECT NO. 121440 DATE: 3/12/14 LWWD APPROVED FIRE FLOW 1750 GPM AT 20 PSI RESIDUAL SHEETS: C-1, C-2, D-2, PP-1 THRU PP-11, MU, U-1 & U-2 (PP-6 NOT RECD)	
APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM LAS VEGAS VALLEY WATER DISTRICT.	
 NV ENERGY DATE: 01-22-2014	
NV ENERGY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NV ENERGY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.	
 SOUTHWEST GAS DATE: 2-6-14	
 COX COMMUNICATIONS LAS VEGAS, INC. DATE: 1/22/13	

PROJECT INFORMATION	
ZONING:	R-PD4
ACREAGE:	19.94 AC (GROSS) 18.10 AC (NET)
No. OF LOTS:	70
No. OF COMMON LOTS:	5
LOCATION:	CITY OF LAS VEGAS, NV A PORTION OF APN 125-18-301-025

OWNER	
LENNAR COMMUNITIES NEVADA 2400 PASEO VERDE PARKWAY, SUITE 120 HENDERSON, NV 89074 PH (702) 456-7700	
DEVELOPER	
LENNAR COMMUNITIES NEVADA 2400 PASEO VERDE PARKWAY, SUITE 120 HENDERSON, NV 89074 PH (702) 456-7700	
ENGINEER	
SLATER HANIFAN GROUP 5740 S. ARVILLE ST SUITE 216 LAS VEGAS, NV 89118 PH (702) 284-5300 FX (702) 284-5399	

BENCHMARK	
CITY OF LAS VEGAS BENCHMARK STATION: 6LV9018C4 BEING A RIVET AND PLATE IN THE TOP OF CURB AT SOUTHEAST CORNER OF GRAND CANYON DR. AND FARM RD. ELEVATION: 2785.35 US SURVEY FEET (NAVD88) 863.186 METERS	

BASIS OF BEARING	
THE BASIS OF BEARINGS FOR THIS SURVEY IS BASED ON THE FOUND AND HELD MONUMENTS MARKING THE SOUTHERLY LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE SOUTHEAST QUARTER (SE1/4) OF SECTION 13, T10S, R08E, M04N, CLARK COUNTY, NEVADA PER RECORD OF SURVEY BOOK 123, PAGE 32, CLARK COUNTY RECORDER'S OFFICE AS SOUTH 88°46'46" EAST.	

NOTE
ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: [HTTP://WWW.STATE.NV.US/BWPC/STORM01.HTM](http://www.state.nv.us/bwpc/storm01.htm) PROJECTS THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVRI00000 ALONG WITH THE APPROPRIATE FILING FEE.

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD

1-702-227-2929

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS. IT'S COSTLY.
Call before you do Underground

1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS AND
1-702-432-5300
LAS VEGAS AREA
COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call

OR
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-7544

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

LENNAR®
NORTH CREEK
COVER SHEET

CITY OF LAS VEGAS, NEVADA

DATE: 01/20/14
DRAFTER: KS
DESIGNER: KS
CHECKED: STS
PROJECT NO.
LEN1308-001

C-1
SHEET 1 OF 30
10744993

2.1 CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST EDITION, THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION, THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA, AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY, THE UNIFORM BUILDING CODE, AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM C.L.V PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCES WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COSTS AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE. FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TIME V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS (X)'S.
9. CURB AND GUTTER FLOW TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING STRUCTURES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY GEOTECH REPORT #9942-LVS, JUNE 4, 2010 APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SANUIT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.
15. UTILITY COMPANY METERS, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APPROXES, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER. ALL ABOVE GROUND UTILITY APPEARANCES SHALL CONFORM TO THE REQUIREMENTS OF 18.12.040.
- WALL NOTES:**
16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL, AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF MORT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLS, LOCATING RIBBON, ETC., THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
21. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE OFFSITE INSPECTION AND TESTING SECTION PRIOR TO PROJECT ACCEPTANCE. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, AND THE LOCATION OF SEWER SERVICE LATERALS TO THE SEWER MAIN WHERE THE SEWER SERVICE LATERALS EXITS THE PUBLIC RIGHT-OF-WAY. THE LOCATION SHALL BE DESCRIBED BY STATE PLANE COORDINATES WHICH SHALL BE BASED ON THE "NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE" AS DEFINED BY THE NEVADA REVISED STATUTES CHAPTER 327, AND TIED TO THE CITY OF LAS VEGAS VERTICAL CONTROL. BENCHMARK NETWORK COORDINATES MUST BE CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTANTIES OF +/- 0.1 METER (+/- 0.3 FEET). A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).
22. SANITARY SEWER SERVICE LATERALS REQUIRE THE INSTALLATION OF A MARKER BALL AT THE CONNECTION OF THE SEWER SERVICE LATERAL TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERAL EXITS THE PUBLIC RIGHT-OF-WAY. STORM DRAIN LATERALS REQUIRE THE INSTALLATION OF A MARKER BALL AT THE CONNECTION OF THE STORM DRAIN LATERAL TO THE STORM DRAIN MAIN AND WHERE THE STORM DRAIN LATERAL EXITS THE PUBLIC RIGHT-OF-WAY OR WHERE THE STORM DRAIN LATERAL CONNECTS TO A DROP INLET. THE MARKER BALL SHALL BE 3M 4" MARKER BALL 1404-XR OR APPROVED EQUAL.
23. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST ADDITION.
24. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

2.2 CITY OF LAS VEGAS SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W SHALL REQUIRE RETROFIT PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER CONNECTIONS TO LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVMD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

2.3 CITY OF LAS VEGAS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADES, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCLOSED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF DETERMINES A NEED FOR STUDENTS TO BE ASSISTED IN A SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKINGS, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE P.V. CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREET NAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM TO THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SUPPORT, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER. REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND STOP SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK AREA. THE CONTRACTOR SHALL HAVE A CERTIFIED ATESA TRAFFIC CONTROL TECHNICIAN OR INEA WORK ZONE SAFETY SPECIALIST IN TRAFFIC CONTROL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLACEMENT OF ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3443) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.
14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECTS OFFSITE INSPECTION PRIOR TO INITIATING PAVING TO REDUCE DISRUPTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED FINAL PAVEMENT. THE CONTRACTOR SHALL PROVIDE ADVANCE NOTICE TO THE TRAFFIC ENGINEERING DIVISION OF ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT: ADEQUATE TRANSITIONS AND LAKE TERMINATIONS BETWEEN ADJACENT ROADWAYS ARE CONSTRUCTED.

2.5 CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
3. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION, ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAUSE OF THE EXCAVATION.
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMITS.
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:
- | | HORIZONTAL | VERTICAL | COMPACTION |
|---------------------------|------------|---------------|------------------|
| A. PAVEMENT AREA SUBGRADE | 0.1" | +0.0 TO -0.1" | SEE SOILS REPORT |
| B. ENGINEERED FILL | 0.5" | +0.1 TO -0.1" | SEE SOILS REPORT |
- TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.
7. ALL THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
8. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF OIL OR ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
9. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEMS ON THE CITY ENGINEER'S AND DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERM, ROAD SIGNS AND BARRICADES, ETC.

ABBREVIATIONS

AC	ASPHALTIC CONCRETE OR ACRE	GV	GATE VALVE	R	RADIUS
AGG	AGGREGATE BASE	HDPE	HIGH DENSITY POLYETHYLENE	RCA	REINFORCED CONCRETE ARCH
APN	ASSESSORS PARCEL NUMBER	HOA	HOME OWNERS ASSOCIATION	RCD	REINFORCED CONCRETE BOX
APPROX OR ~	APPROXIMATE	HORZ	HORIZONTAL	RCP	REINFORCED CONCRETE PIPE
Ø	DIAMETER	HVL	HIGH WATER LEVEL	ROW	ROADWAY EASEMENT
BC	BEGIN CURVE OR BACK OF CURB	HOWL OR HW	HEADWALL	RCD	REQUIRED
BCR	BEGINNING OF CURB RETURN	HYD	HYDRAULIC OR HYDRANT	REV	REVISION
BHW	BOTTOM OF HEADWALL	ID	INSIDE DIAMETER	RT OR R	RIGHT
BLDG	BUILDING	IN	INCH	R/W, ROW	RIGHT OF WAY
BLVD	BOULEVARD	INT	INTERSECTION	SCH	SCHEDULE
BNC	BENCH MARK	INV	INVERT ELEVATION	SD	STORM DRAIN
BVC	BEFORE VERTICAL CURVE	P	PERCENT	SDMH	STORM DRAIN MANHOLE
BWV	BACK WATER VALVE	IRRG	IRRIGATION	SEC	SECTION
CC	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS	LP	LINEAR FEET	SF	SQUARE FEET
CDMSD	CLARK COUNTY REGIONAL FLOOD DISTRICT	LT OR L	LEFT	SHT	SHEET
CE	COMMON ELEMENT	LWL	LOW WATER LEVEL	SLO	SLOPE
C/LC/LC	CENTERLINE	MAX	MAXIMUM	SNWA	SOUTHERN NEVADA WATER AUTHORITY
CL	CLEAR OR CLEARANCE	MECH	MECHANICAL	SPEC	SPECIFICATIONS
CLM	CONTROLLED LOW STRENGTH MATERIAL	MNH	MANHOLE	ST	STREET
C/M&C	CEMENT MORTAR LINED AND COATED	MIN	MINIMUM	SDMH	SANITARY SEWER MANHOLE
CMU	CONCRETE MASONRY UNIT	MISC	MISCELLANEOUS	STA	STATION
CONC	CONCRETE	MUN	MUNICIPAL UTILITY EASEMENT	STD	STANDARD
CT	COURT	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	STL	STEEL OR STREET LIGHT
CY OR CU YD	CUBIC YARD	NIS	NOT TO SCALE	SW	SIDEWALK
DCSWS	DESIGNATED CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS	NUE	NON-EXCLUSIVE UTILITY EASEMENT	SWG	SOUTHWEST GAS
DET	DETAIL	NVE	NEW VENT	SY	SANITARY SEWER
DIA Ø	DIAMETER	OC	ON CENTER	SY	SQUARE YARD
DR	DRIVE	OD	OUTSIDE DIAMETER OR OVERALL DIMENSION	TAN	TANGENT
DWG(S)	DRAWING	OFST	OFF SET	TO	TOP OF CURB
EAS	EASEMENT	ORIG	ORIGINAL	TF	TOP OF FLOOR OR TOP OF FOOTING
EDR	EXISTING DRAIN RETURN	PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT	TG	TOP OF GRATE
EG	EDGE OR PAVEMENT	FB	PULL BOX	THRU	THROUGH
EL	ELEVATION	EW	POINT OF CURVE	THW	TOP OF HEADWALL
ESMT	EASEMENT	PCC	POINT OF COMPOUND CURVE	TP	TOP OF PIPE
EP	EDGE OR PAVEMENT	PDR PL	PUBLIC DRAINAGE EASEMENT	TW	TOP OF WALL
EX OR EXIST	EXISTING	POB	POINT OF BEGINNING	TR	TYPICAL
FC	FACE OF CURB	PCC	POINT OF CURVATURE	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
FF	FINISHED GRADE	PCE	POINT OF ENDING	VC	VERTICAL
FG	FINISHED GRADE	PC	POINT OF REVERSE CURVATURE	VERT	VERTICAL
FL	FIRE HYDRANT	PRELIM	PROPOSED	VG	VALLEY GUTTER
FL	FEET OR FOOT	PROP	PRELIMINARY	W	WATER
FUT	FOOT	PRV	PRESSURE REDUCING VALVE	WI	WIDENING IRON
GB	GRADE OR GROUND	PUE	PUBLIC UTILITY EASEMENT	WL	WATER LINE
GB	GRADE BREAK OR GRADE CHANGE	PT	POINT OF TANGENT OR POINT	WPZ	WATER PRESSURE ZONE
		PVC	POLYVINYL CHLORIDE	WT	WEIGHT
		PW	POINT OF VERTICAL INTERSECTION	WTR	WATER LINE
		QTY	QUANTITY		

CITY OF LAS VEGAS FIRE AND RESCUE GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE # 6124 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. AUTHORIZED FIRE HYDRANTS ARE AS FOLLOWS:
- KENNEDY - GUARDIAN MODELS KB1A AND KB1D
 - MUELLER - SUPER CENTURION 250, MODEL A-423
 - CLOW - MEDALLION MODEL F-254BLVD
 - U.S. PIPE - METROFLOW/M-03
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING WORK SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK.
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. SFC #9124, SECTION 412.
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANT. SFC #8124 SECTION 507.5.3
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL.
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U/L LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE RATED FIRE FLOW WORKING PRESSURE. SFC 507.2.1, NFPA 24.
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE. FIRE PREVENTION DIVISION IFC 507; SFC 507.5.7
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. SFC 507.5.7.1
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE. FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC 507; SFC 507.1
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: SFC C102
- RESIDENTIAL - 500 FT (UNSPRINKLED); 600 FT (SPRINKLED)
 - COMMERCIAL - 300 FT (UNSPRINKLED); 400 FT (SPRINKLED)
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES/FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS, WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE A MORE TRAFFIC LANES AND HAVE A TRAFFIC CUTOFF OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. SFC C102.14
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, OR ELECTRICAL OR ANY OTHER OBSTRUCTION. SFC C102.12
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. SFC 102.4
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY CONNECTION (FDC) SHALL NOT EXCEED 10 FT, AS MEASURED BY AN APPROVED ROUTE. SFC C1 02.7
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. SFC 102.6
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS CAN BE OUT OF SERVICE DUE TO A BREAK IN A WATER MAIN.
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. SFC 503.2.3
20. THE GRADIENT FOR ALL FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. SFC 503.2.7 / 503.2.8
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. SFC 503.2.4
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13 FT 6 INS. SFC 503.2.1.1 IFC 503
23. FIRE DEPARTMENT ACCESS ROADS IN ALL RESIDENTIAL DEVELOPMENTS (EXCEPT APARTMENT BUILDINGS) SHALL HAVE A MINIMUM UNSTRUCTURED WIDTH OF NOT LESS THAN 36 FT FLOW LINE TO FLOW LINE (THIS WIDTH MAY BE REDUCED TO 24 FT IF ALL BUILDINGS FRONTING THE STREET ARE SPRINKLERED FOR MAIN RESIDENTIAL STREETS, WITH PARKING PERMITTED ON BOTH SIDES OF THE STREET. PRIVATE DRIVE ALLEYS, DRIVEWAYS, ETC. SHALL BE ALLOWED TO BE REDUCED TO A MINIMUM WIDTH OF 24 FT FLOW LINE TO FLOW LINE WHEN SERVING NO MORE THE 6 RESIDENTS, AND WHEN ON STREET PARKING IS DISALLOWED. SFC 503.2.1 / 503.2.1.1
24. ALL FIRE APPARATUS ACCESS ROADS IN COMMERCIAL, DEVELOPMENTS AND APARTMENT COMPLEXES SHALL HAVE A MINIMUM UNSTRUCTURED WIDTH OF NOT LESS THAN 24 FT (FLOW LINE TO FLOW LINE). PROVIDED NO PARKING IS ALLOWED ON EITHER SIDE. 32 FT (FLOW LINE TO FLOW LINE), WITH PARALLEL PARKING ON ONE SIDE, AND 36 FT (FLOW LINE TO FLOW LINE) IF PARALLEL PARKING IS ALLOWED ON BOTH SIDES. THESE WIDTHS MAY BE REDUCED TO 24 FT IF SPRINKLERED. SFC 503.2.1.1
25. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. THIS DISTANCE COULD BE INCREASED TO 250 FT IF THE BUILDING IS SPRINKLERED. IFC 503.1.1.1 SFC 503.1.1
26. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR WITH A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT, AND FOR ALL COMMERCIAL, INDUSTRIAL, AND MULTI-FAMILY RESIDENTIAL DEVELOPMENTS. SFC 503.1.2
27. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LINES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. SFC 503.2.5
28. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LINE, ONE SIGN AT THE END OF THE FIRE LINE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LINES. SIGNS SHOULD BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING OR OTHER OBSTRUCTION. SIGNS TO BE INSTALLED NO HIGHER THAN 8 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. SFC 503.3
29. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED ENGINEERED VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF LAS VEGAS GUIDELINES FOR AUTOMATIC ENGINEERED VEHICLE ACCESS GATES. IFC 1 SFC 503.6

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

- LVVWD PROJECT # 121440
1. NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FOLLOWING WATER PLAN APPROVAL, NOTICE SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (258-7171) TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN BY 2:00 P.M. PRIOR TO THE REQUESTED LVVWD INSPECTION. WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFIED ABOVE.
2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS), THE LATEST EDITION OF UDACS SHALL SUPERSEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.
3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.
14. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS.
9. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD DISTRIBUTION SYSTEM.
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 258-3152 OR 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.
11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVWD PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES. LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2600.
14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (LVVWD) MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORM STANDARDS, INCLUDING THE PLACEMENT OF ASPHALT PAVING STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVWD TO THE MUNICIPAL WATER FACILITIES WILL INCLUDE THE PLACEMENT OF AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.
- ANY DECORATIVE PAVING SURFACE WITHIN THE STREET IS THE RESPONSIBILITY OF THE OWNER'S ASSOCIATION, OR THE INDIVIDUAL PROPERTY OWNERS IF NO OWNER'S ASSOCIATION IS IN EXISTENCE, OR THE AGENCY HAVING JURISDICTION. DECORATIVE SURFACE MATERIALS PLACED WITHIN THE TEN FOOT EASEMENT ADJACENT TO A PUBLIC OR PRIVATE STREET, IF DISTURBED BY THE LVVWD DURING THE REPAIR OR OPERATION OF ITS FACILITIES, WILL BE REPLACED BY LVVWD WITH AN APPROPRIATELY SIZED PLAIN FINISH CONCRETE PATCH. THE LVVWD WILL NOT RESTORE, AND WILL NOT BE RESPONSIBLE FOR THE RESTORATION OF, ANY DECORATIVE PAVING SURFACE WITHIN THE STREET. THE LVVWD WILL NOT ATTEMPT TO MATCH COLOR OR FINISH OF ANY ADJACENT MATERIALS.

LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDELINES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATED IN, THE PUBLIC RIGHTS OF WAY OF THE CLARK COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN TITLE 24.40 AND IN LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NR000000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, AND ALL CLARK COUNTY DEPT. OF PUBLIC WORKS, TEMPORARY CONSTRUCTION ITEMS INCLUDE: PAVEMENT TRANSITIONS, PROTECTIVE DITCHES AND BERM, ROAD SIGNS AND BARRICADES, ETC.
5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

APPROVED FOR CONSTRUCTION

7. JENNAR FOR DESIGN

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

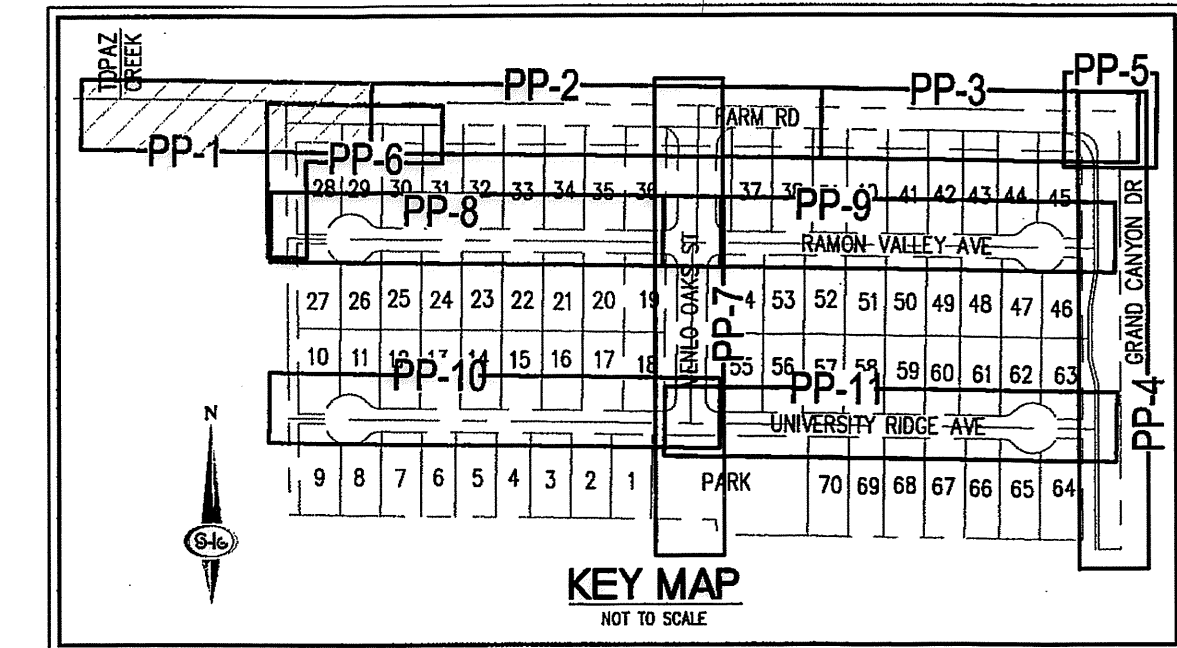
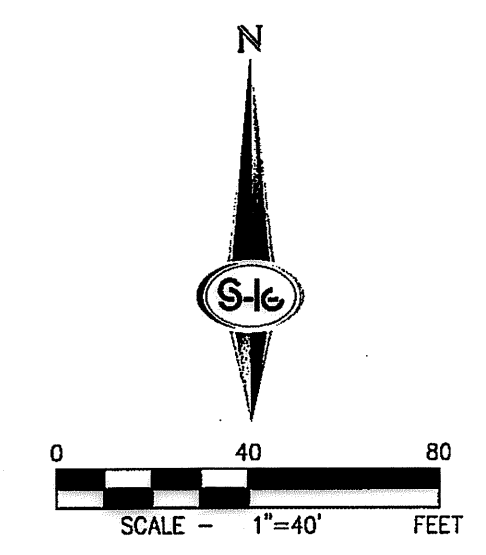
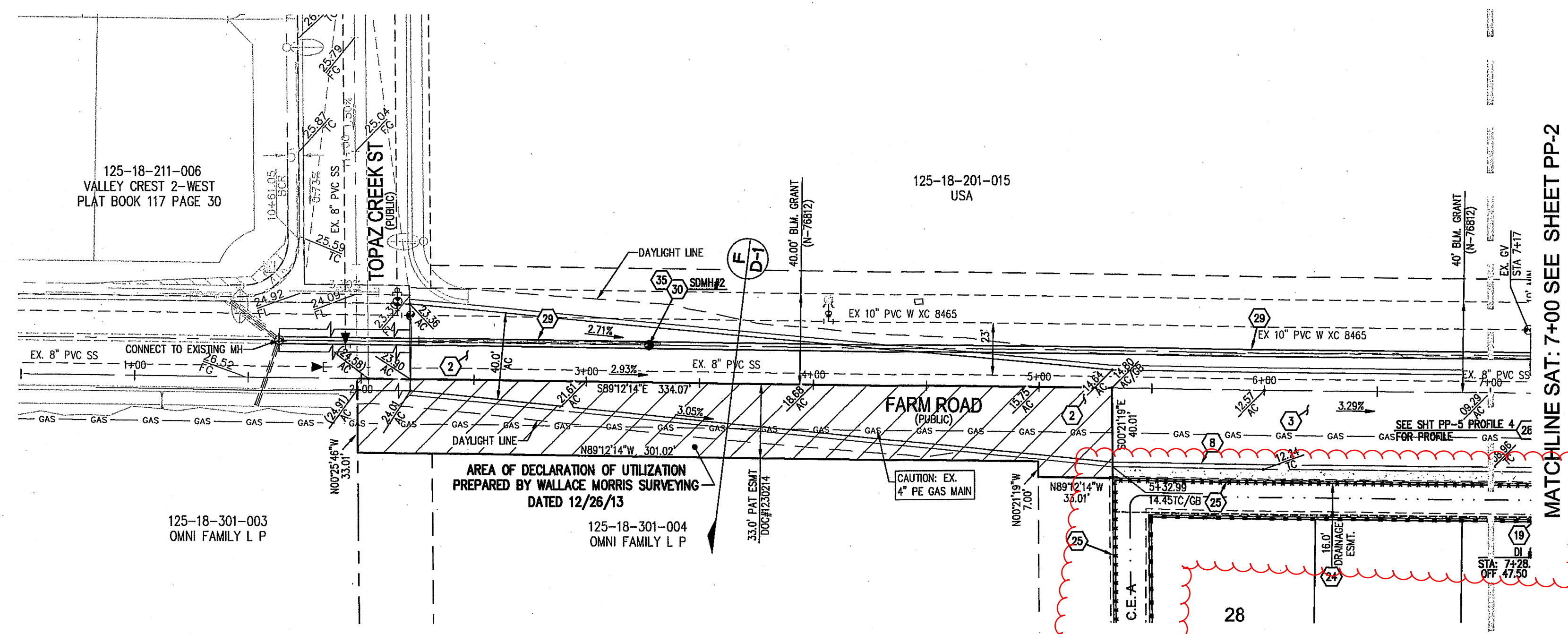
PROJECT NO. -121440 DATE 3/12/14

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU DO OVERHEAD

1-702-227-2929

QUANTITIES		PRIVATE	PUBLIC
DRAINAGE			
1. "L" TYPE CURB AND GUTTER W/6" TYPE I AGGREGATE BASE	LF	466	--
2. REMOVEABLE BOLLARDS	EA	8	--
3. WROUGHT IRON FENCE	LF	892	--
4. RIP RAP D50=12" THICKNESS=24"	CY	45	--
5. 8" CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	847	2541
6. SIDEWALK DRAIN	EA	8	--
7. 3' WIDE CONCRETE CHANNEL	SF	359	--
8. 18" CLASS III RCP SD	LF	--	132
9. 36" CLASS III RCP SD	LF	--	790
10. 36" C900 (WATER QUALITY) SD	LF	--	245
11. 60S TYPE I SD MANHOLE	EA	--	4
12. DRAINAGE CONCRETE	SF	2,989	--
13. NW MAJOR FLOOD CONTROL FACILITIES CONCRETE	SF	5,506	--
14. 5.0' TYPE "D" DROP INLET	EA	--	1
15. NDOT TYPE II DROP INLET	EA	--	1
STREET IMPROVEMENTS			
1. 2" A.C. PAVEMENT W/4" TYPE II OVER 6" TYPE II AGGREGATE BASE	SY	11,461	--
2. 3" A.C. PAVEMENT W/4" TYPE II AGGREGATE BASE	SY	--	6,580
3. 4" A.C. PAVEMENT W/4.5" TYPE II AGGREGATE BASE	SY	--	2,706
4. 24" TYPE "L" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	--	1,928
5. 18" TYPE "I" ISLAND CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	107	--
6. "A" CURB W/6" TYPE I AGGREGATE BASE	LF	107	--
7. STANDARD 30" ROLL CURB W/6" TYPE I AGGREGATE BASE	LF	5,533	--
8. 5" WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	27,685	9,645
9. SIDEWALK RAMPS	SF	7	3
SEWER SYSTEM			
1. 8" PVC SEWER PIPE (PUBLIC)	LF	--	6,859
2. 8" PVC (C900) SEWER PIPE (PUBLIC)	LF	--	275
3. 4" PVC SEWER LATERAL (PRIVATE)	LF	2,255	--
4. STANDARD 48" SEWER MANHOLE (PUBLIC) PER DCSWCS SD-1A	EA	--	106
5. BACK WATER VALVE (PRIVATE) PER DCSWCS SD-29	EA	44	--
WATER SYSTEM			
1. FIRE HYDRANT ASSEMBLY W/6" GATE VALVE PER UDACS PLATE NO. 40	EA	--	6
2. 6" PVC WATER PIPE (CLASS 150)	LF	--	553
3. 6" PVC WATER PIPE (CLASS 150)	LF	--	8,980
4. 8" DIP WATER PIPE (CLASS 53)	LF	--	360
5. 8" GATE VALVE WITH VALVE BOX PER UDACS PLATE NO. 30 & 39	EA	--	5
6. 8" x 8" TEE PER UDACS PLATE NO. 31	EA	--	2
7. 8" x 6" TEE PER UDACS PLATE NO. 31	EA	--	4
8. 8" x 6" REDUCER PER UDACS PLATE NO. 30	EA	--	3
9. 11.25 DEGREE BEND PER UDACS PLATE NO. 31	EA	--	5
10. 45 DEGREE BEND PER UDACS PLATE NO. 31	EA	--	2
11. 90 DEGREE BEND PER UDACS PLATE NO. 31	EA	--	2
12. CAP AND 2" BLOW-OFF ASSEMBLY W/CAP PER UDACS PLATE NO. 36	EA	--	3
13. 8" TAPPING SLEEVE W/ 8" TAPPING VALVE PER UDACS PLATE NO. 34 & 39	EA	--	2
14. 1" COPPER SERVICE W/ 3/4" METER PER UDACS PLATE NO. 4	EA	--	70
15. 1" COPPER SERVICE W/ 3/4" METER & 1" RPPA PER UDACS PLATE NO. 4 & 8	EA	--	1
16. PRESSURE REDUCING VALVES (PRIVATE)	EA	28	--
17. 8" x 8" CROSS PER UDACS PLATE NO. 31	EA	--	1
TRAFFIC			
1. 30" STOP SIGN WITH POST (R1-1) W/ (2) 9" STREET NAME SIGN (D-3)	EA	5	--
2. OBJECT MARKER SIGN (OM-3R)	EA	--	8
3. 6" WIDE SOLID WHITE EDGELINE	LF	--	2,195
4. PAVEMENT STRIPING - COLLECTOR	LF	--	1,235
5. FILM FOR CROSSWALKS, STRIPING	SF	--	912
6. BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKER	EA	6	--
7. 150W H.P.S. LUMINAIRE STREET LIGHT W/11 GA. POLE	EA	--	10
8. 400W H.P.S. LUMINAIRE STREET LIGHT W/11 GA. POLE	EA	--	1
9. 3" PVC SILT CONDUIT W/ (2) #4 AND (1) #8 CONDUCTORS (PUBLIC)	LF	--	2,025
10. F.A.S.T. INTERCONNECT CONDUIT	LF	--	2,025
11. NO. 3-1/2" PULL BOX W/METAL COVER	EA	--	6
12. 200 AMP SERVICE PEDESTAL	EA	--	--



LEGEND

	BOUNDARY LINE (GROSS ACREAGE)
	MATCHLINE
	ROADWAY CENTERLINE
	RIGHT-OF-WAY
	PROPERTY LINE
	CURB AND GUTTER
	EXISTING CURB AND GUTTER
	FLOWLINE
	EDGE OF PAVEMENT (EP)
	SAWCUT LINE PER CCAUSD NO. 503
	PROPOSED ELEVATION
	EXISTING ELEVATION
	FUTURE ELEVATION
	EXISTING CONTOUR (5-Ft)
	EXISTING CONTOUR (1-Ft)
	CUT/FILL TRANSITION LINE
	FIRE HYDRANT ASSEMBLY
	SIGHT VISIBILITY ZONE
	WROUGHT IRON FENCE
	CHAIN LINK FENCE
	RETAINING WALL
	DECORATIVE PERIMETER WALL
	RETAINING WALL
	PONY WALL

SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

GENERAL NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2006, SECTION 2304.1.2.2.
2. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
3. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
4. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
5. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
6. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
7. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CLARK COUNTY BUILDING DEPARTMENT.
8. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLACING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
9. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- GRADING NOTES**
1. CONSTRUCT 6\"/>

DISCLAIMER NOTE

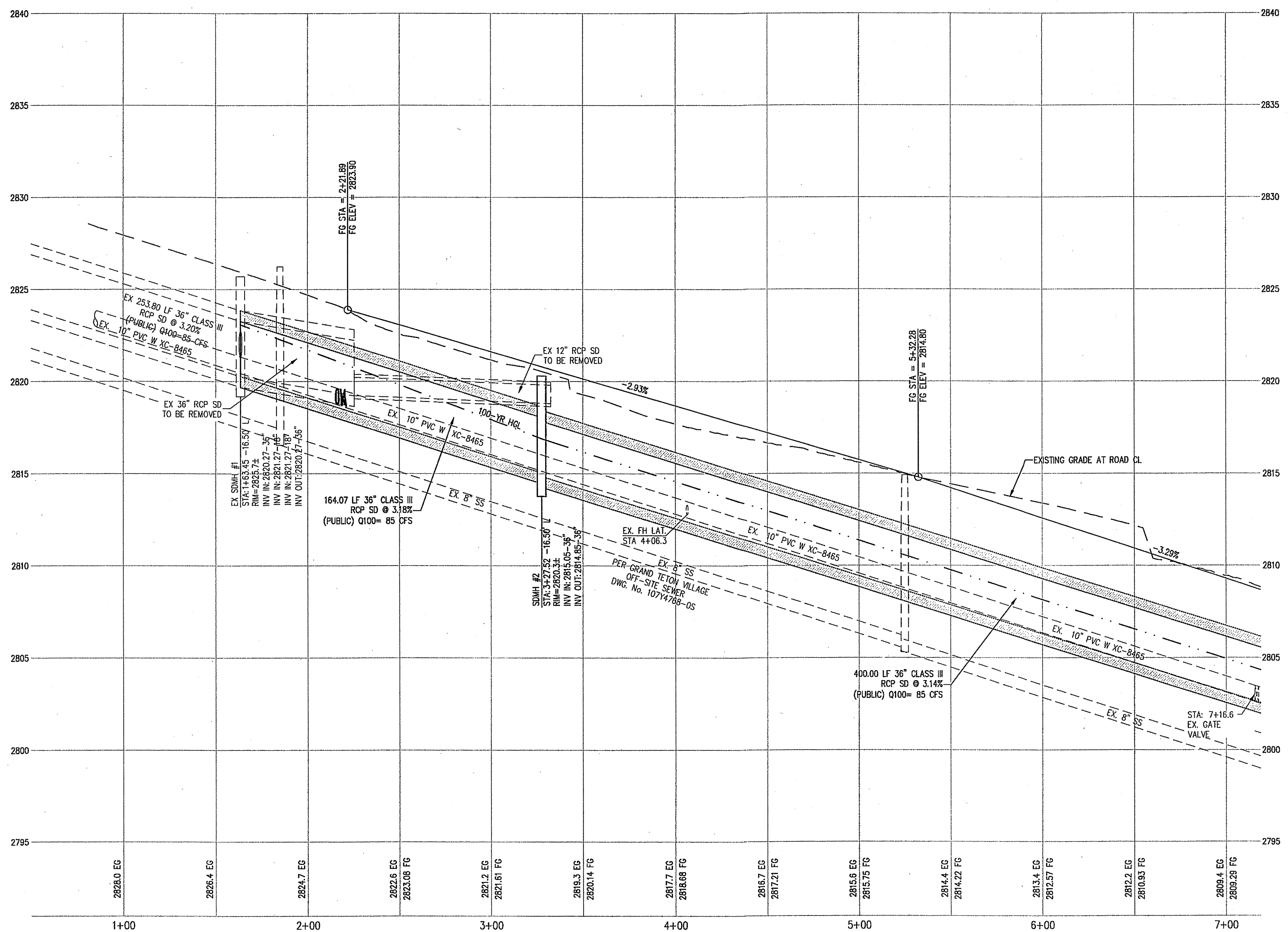
EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXCEPT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

NOTE:

GAS MAIN DEPICTED PER BEST AVAILABLE INFORMATION AND POT-HOLE DATA. ENGINEER ASSUMES NO RESPONSIBILITY FOR LOCATIONS & ALIGNMENTS SHOWN HERE ON. CONTRACTOR SHALL USE EXTREME CAUTION!

NOTE

ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY HOA.



PROFILE
HOR. : 1"=40'
VERT. : 1"=4'

MINIMUM 24" COVER PER UDACS SEC. 2.08.04
GRADING MUST BE COMPLETED PRIOR TO
WATERLINE INSTALLATION (typ)

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS. IT'S COSTLY.

Call before you do UnderGround
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS AND
1-702-432-5300
LAS VEGAS AREA
COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call
811
OR
1-800-227-2600
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-7544

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

BENCHMARK
CITY OF LAS VEGAS BENCHMARK STATION: 6LV9018C4
BEING A RIVET AND PLATE IN THE TOP OF CURB AT SOUTHEAST CORNER OF GRAND CANYON DR. AND FARM RD.
ELEVATION: 2786.35 US SURVEY FEET (NAVD88)
843.186 METERS

BASIS OF BEARING
THE BASIS OF BEARINGS FOR THIS SURVEY IS BASED ON THE FOUND AND HELD MONUMENTS MARKING THE SOUTHERLY LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE SOUTHWEST QUARTER (SE1/4) OF SECTION 13, T19S, R6E, MDM, CLARK COUNTY, NEVADA PER RECORD OF SURVEY BOOK 123, PAGE 32, CLARK COUNTY RECORDER'S OFFICE AS SOUTH 88°48'46" EAST.

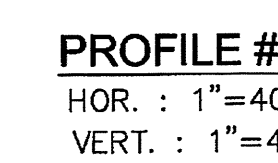
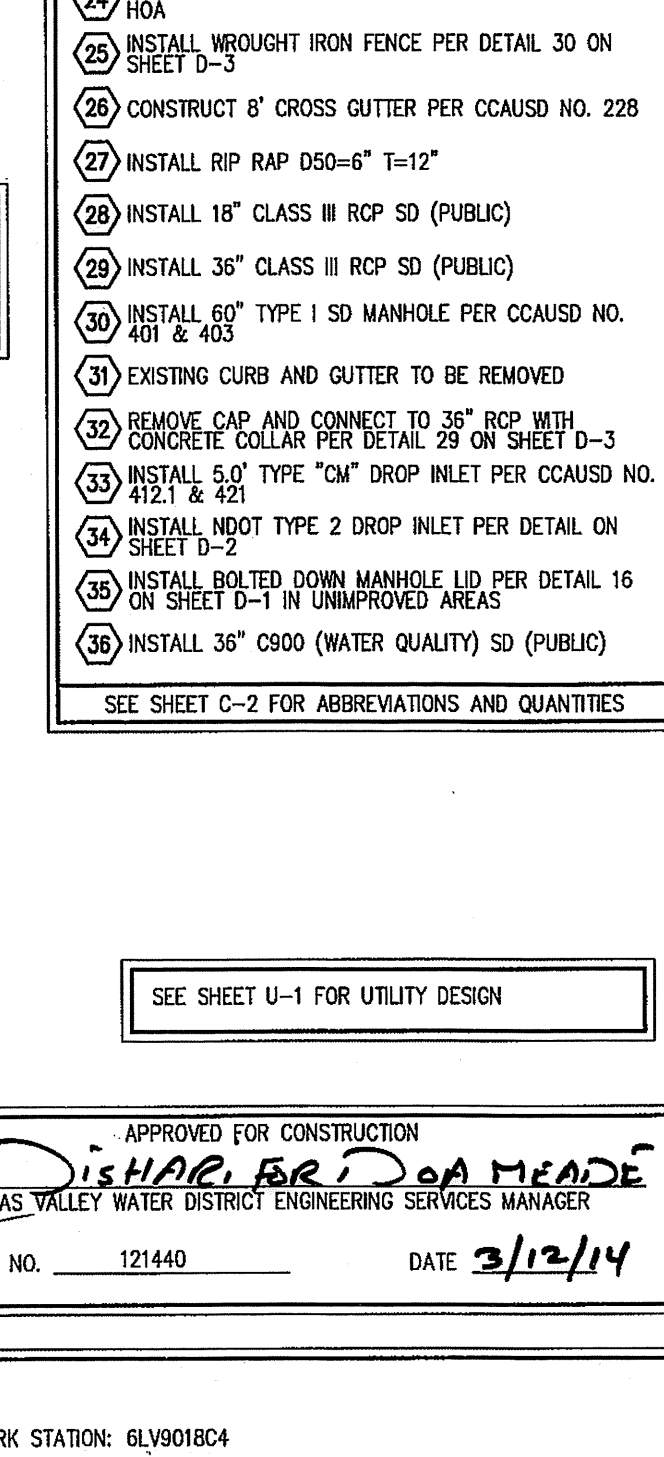
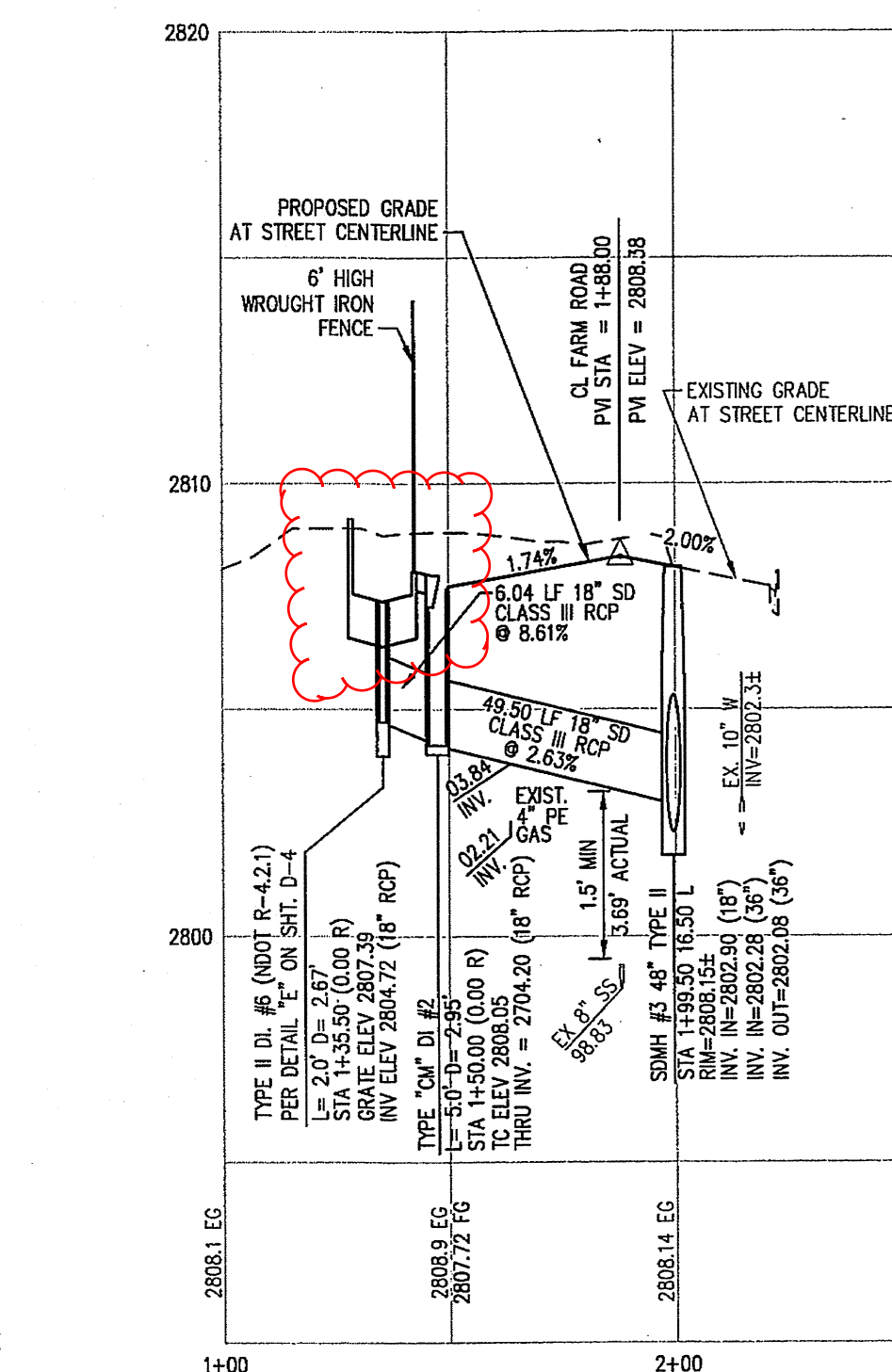
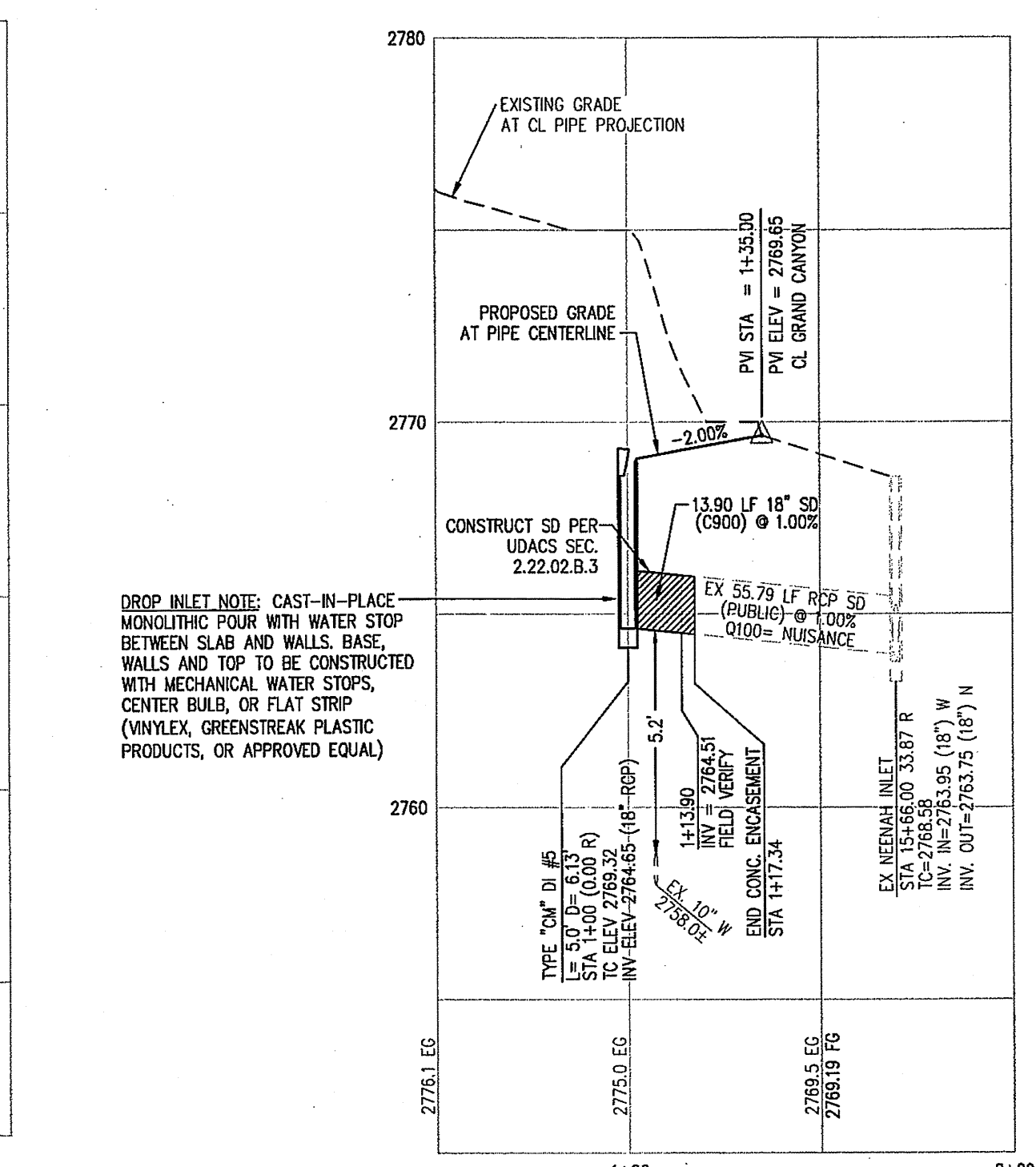
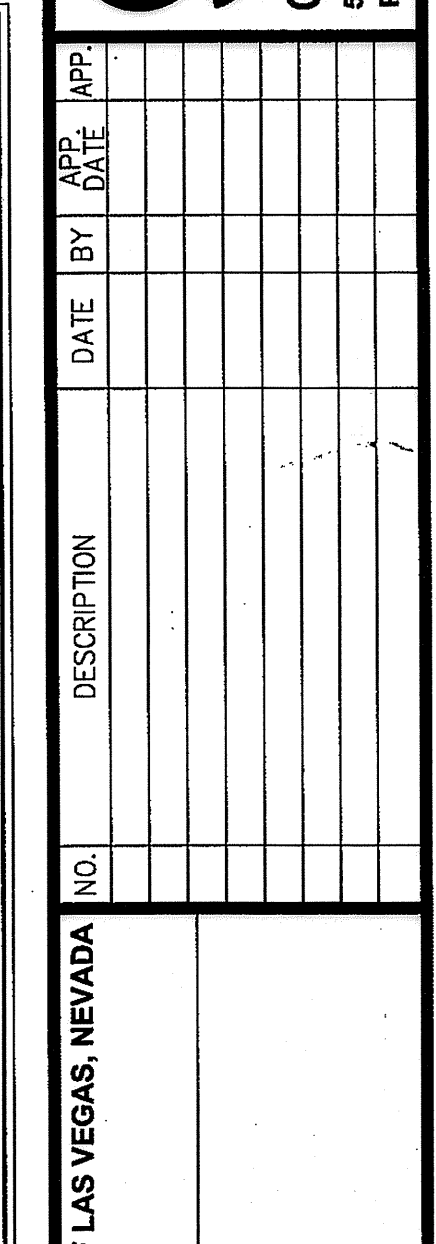
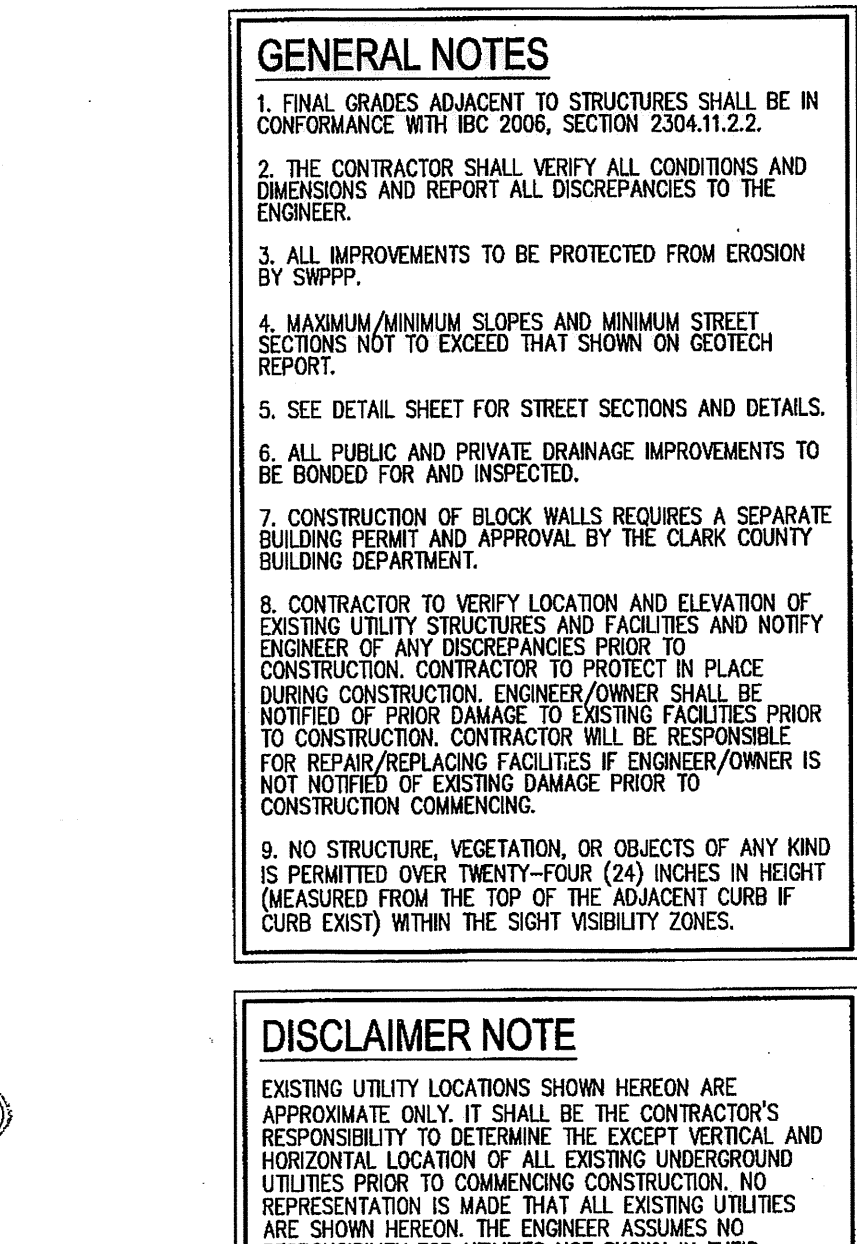
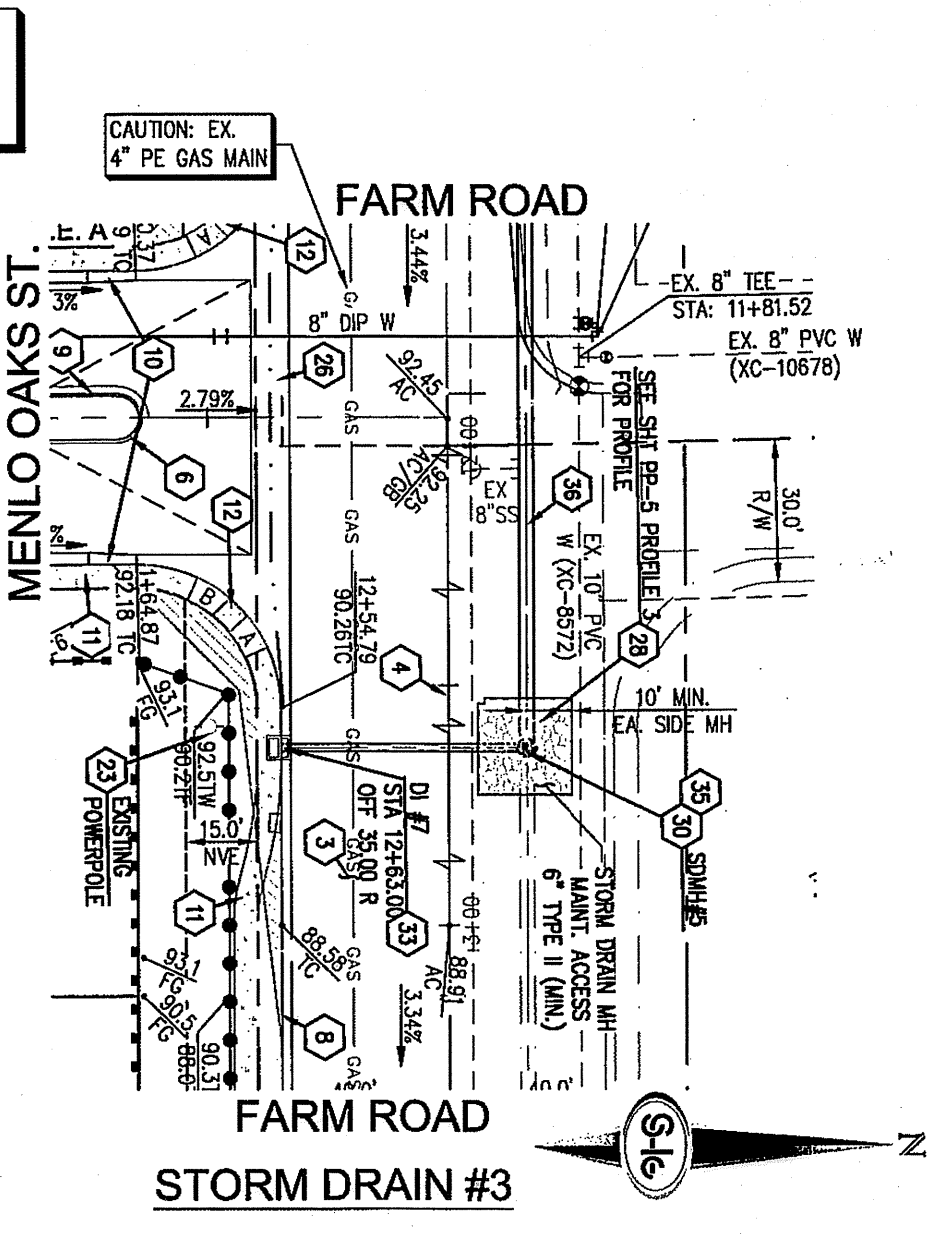
APPROVED FOR CONSTRUCTION
7. DISAPOR BRIDGEMAN
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 121440 DATE 2/12/14

SLATER HANFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5300

LENNAR
NORTH CREEK
PLAN AND PROFILE - FARM ROAD

DATE	BY	DESCRIPTION
02/27/14	KS	DRAFTER
	KS	DESIGNER
	STS	CHECKED
PROJECT NO. LEN1308-001		

PP-1
SHEET 8 OF 30



DISCLAIMER NOTE

EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXCEPT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER
EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE
PRIVATELY MAINTAINED BY HOA.

SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

APPROVED FOR CONSTRUCTION
7 DISHAR, BR DOA MEADE
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 121440 DATE 3/12/14

BENCHMARK
CITY OF LAS VEGAS BENCHMARK STATION: 6LY9018C4
BEING A RIVET AND PLATE IN THE TOP OF CURB AT SOUTHEAST CORNER OF GRAND CANYON DR.
AND FARM RD.
ELEVATION: 2766.35 US SURVEY FEET (NAVD88)
843.166 METERS

BASIS OF BEARING
THE BASIS OF BEARINGS FOR THIS SURVEY IS BASED ON THE FOUND AND HELD MONUMENTS MARKING THE SOUTHERLY LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE SOUTHEAST QUARTER (SE1/4) OF SECTION 13, T19S, R60E, MDM, CLARK COUNTY, NEVADA PER RECORD OF SURVEY BOOK 123, PAGE 32, CLARK COUNTY RECORDER'S OFFICE AS SOUTH 88°46'46" EAST.

Call before you Dig
Avoid cutting underground
utility lines. It's costly.

Call

811

OR

1-800-227-2600

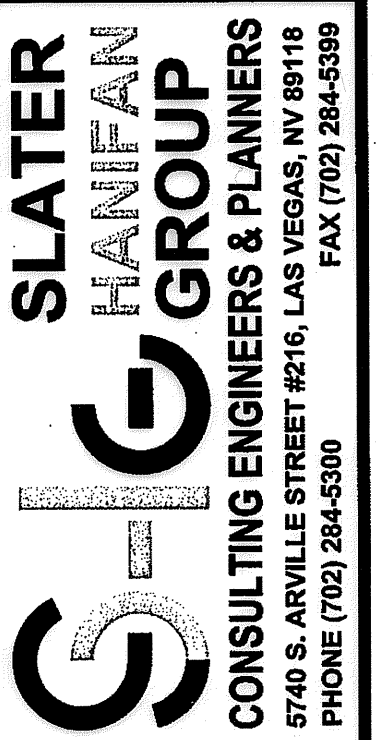
AND

CLARK COUNTY TRAFFIC OPERATIONS

1-702-455-7544

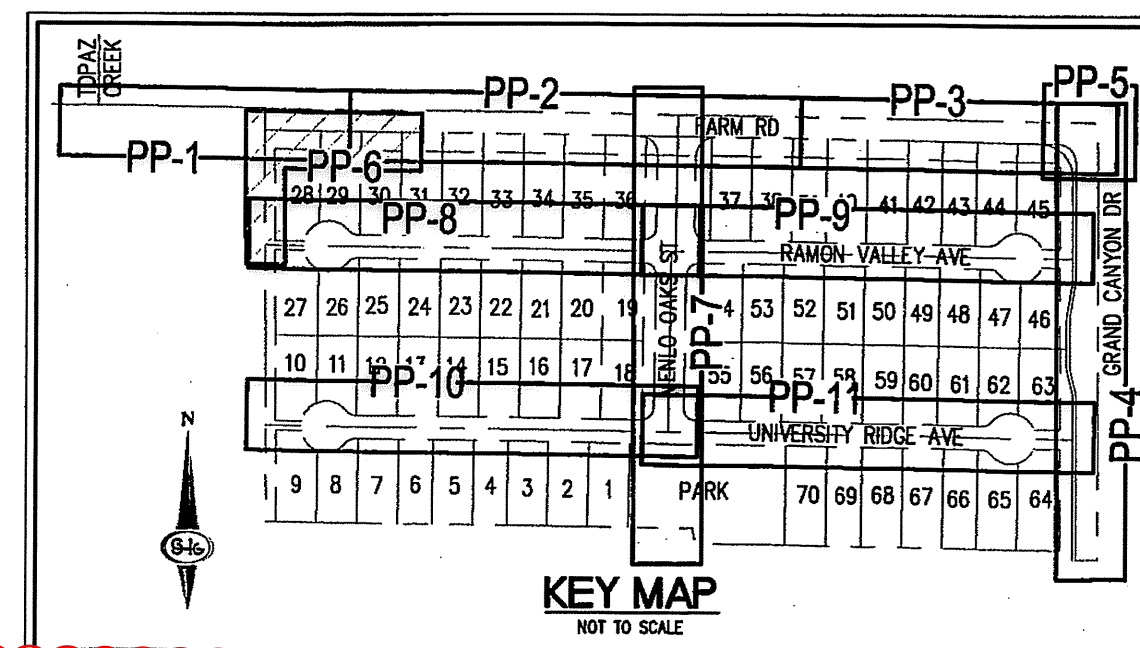
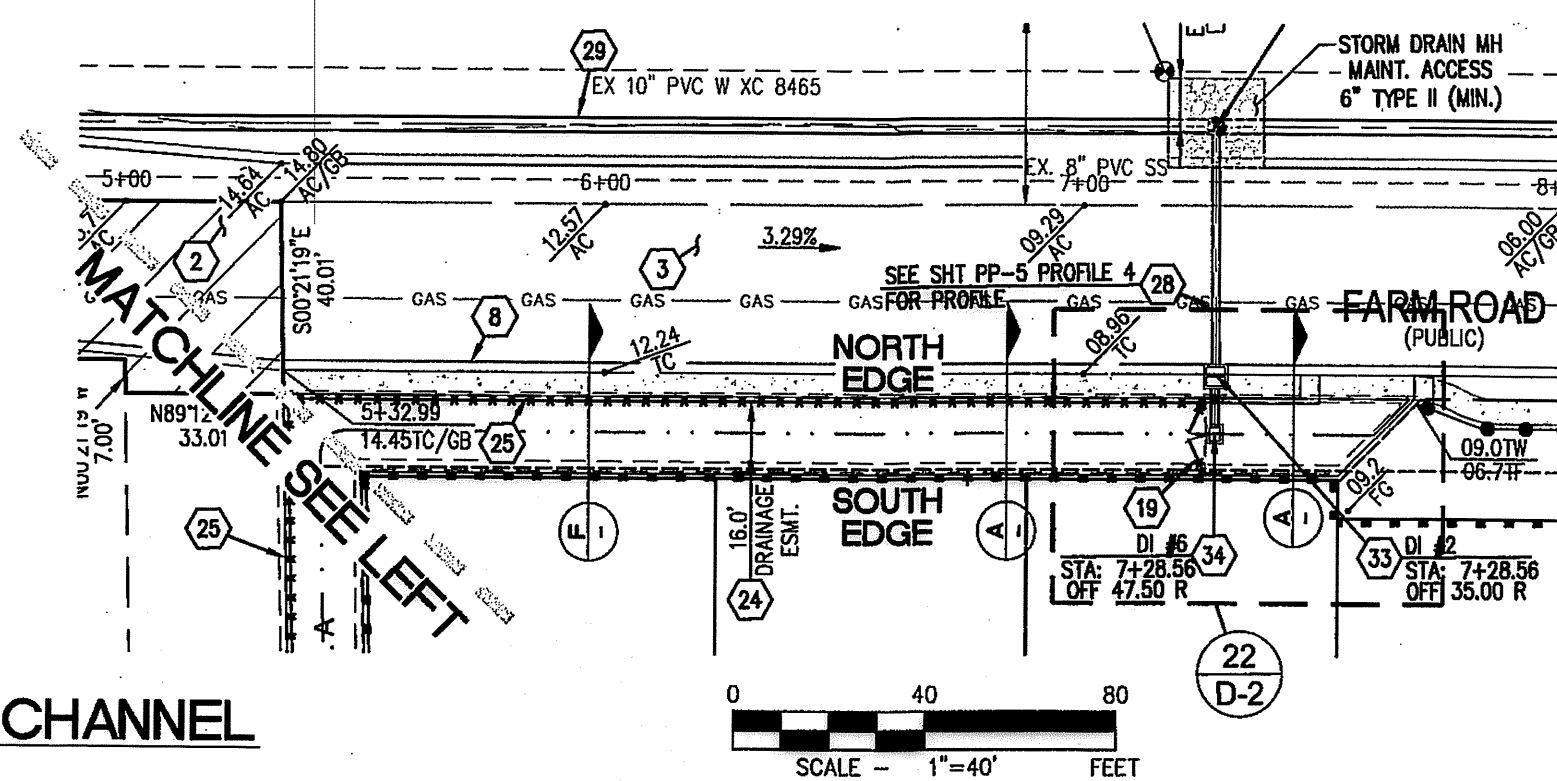
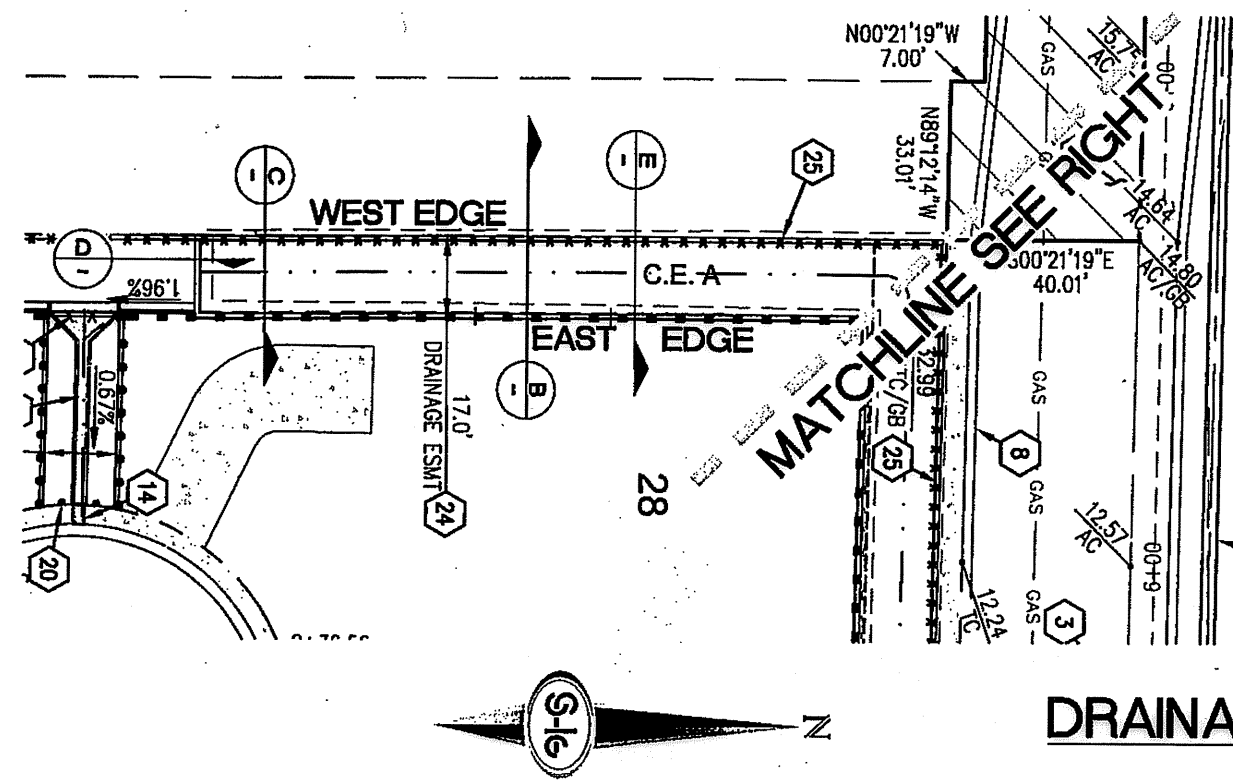
AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.
**CALL BEFORE
YOU DO
OVERHEAD**

1-702-227-2929

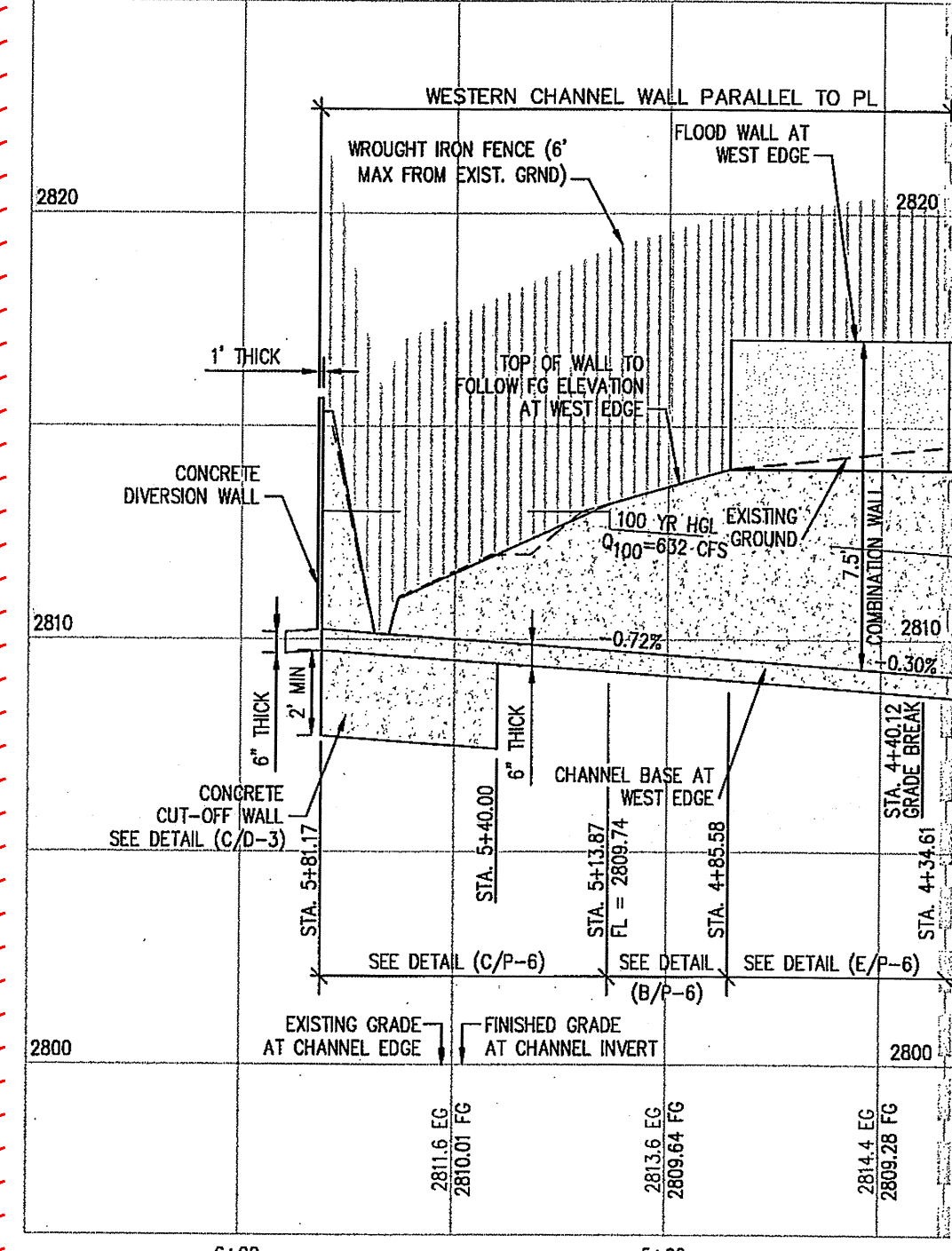
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LENNAR®
NORTH CREEK
PLAN AND PROFILE - STORM DRAIN

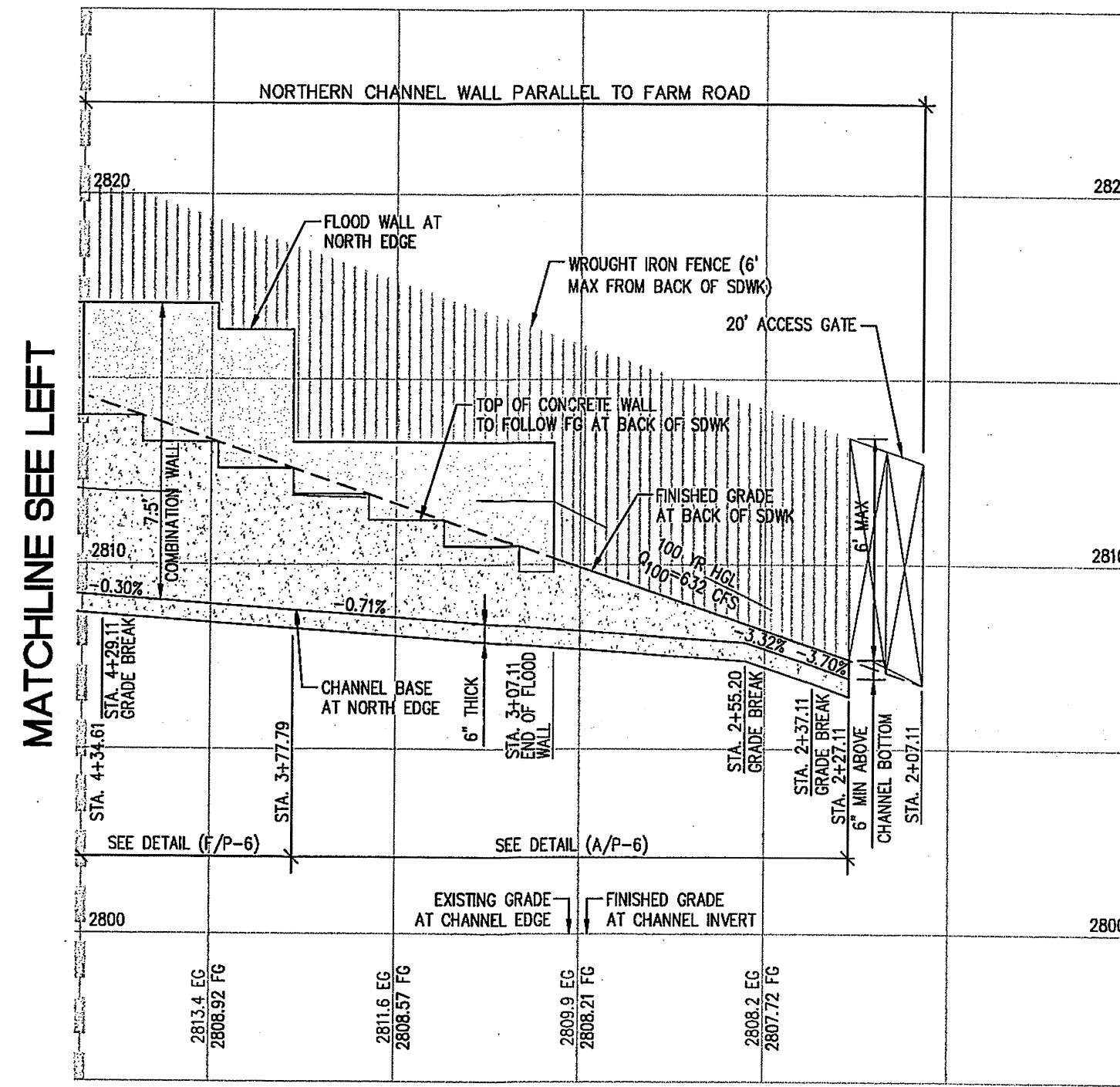
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DATE:	02/27/14
DRAFTER:	KS
DESIGNER:	KS
CHECKED:	STS
PROJECT NO.	LEN1308-001
PP-5 SHEET 12 OF 30	



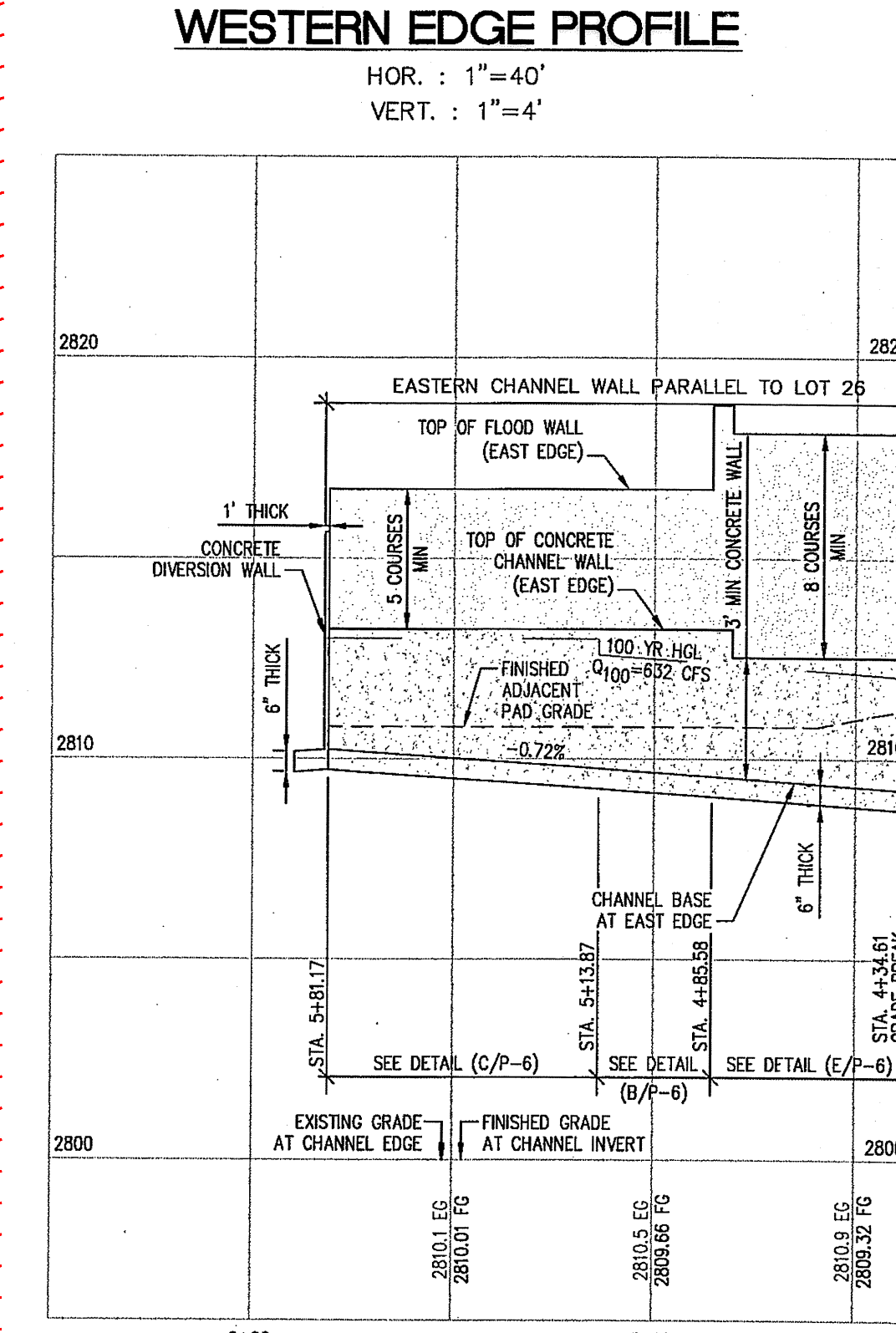
CHANNEL MODIFIED BASED ON
REDUCED FLOW RATE
ALSO REMOVED NORTH EDGE
WALL ABOVE SIDEWALK



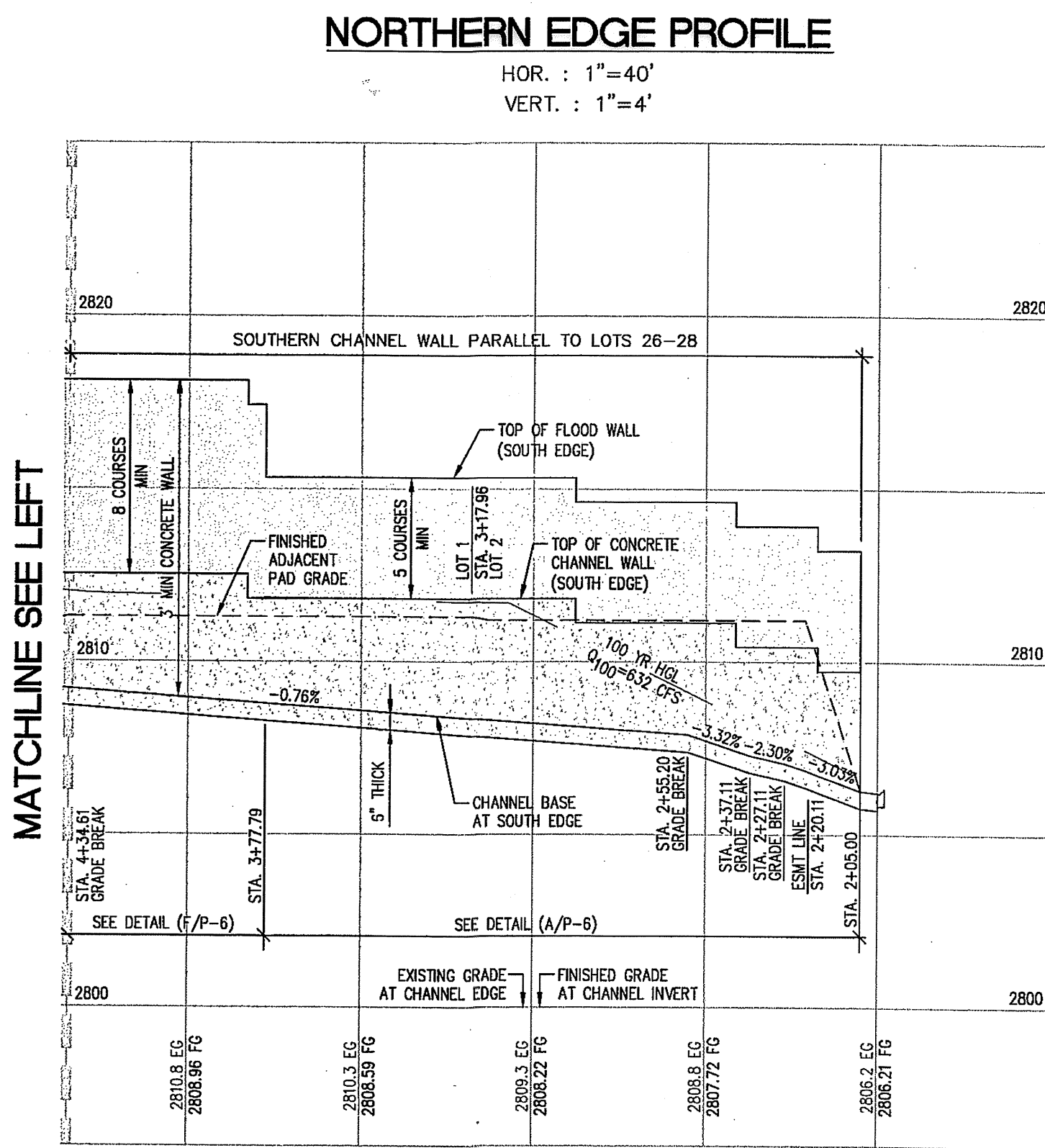
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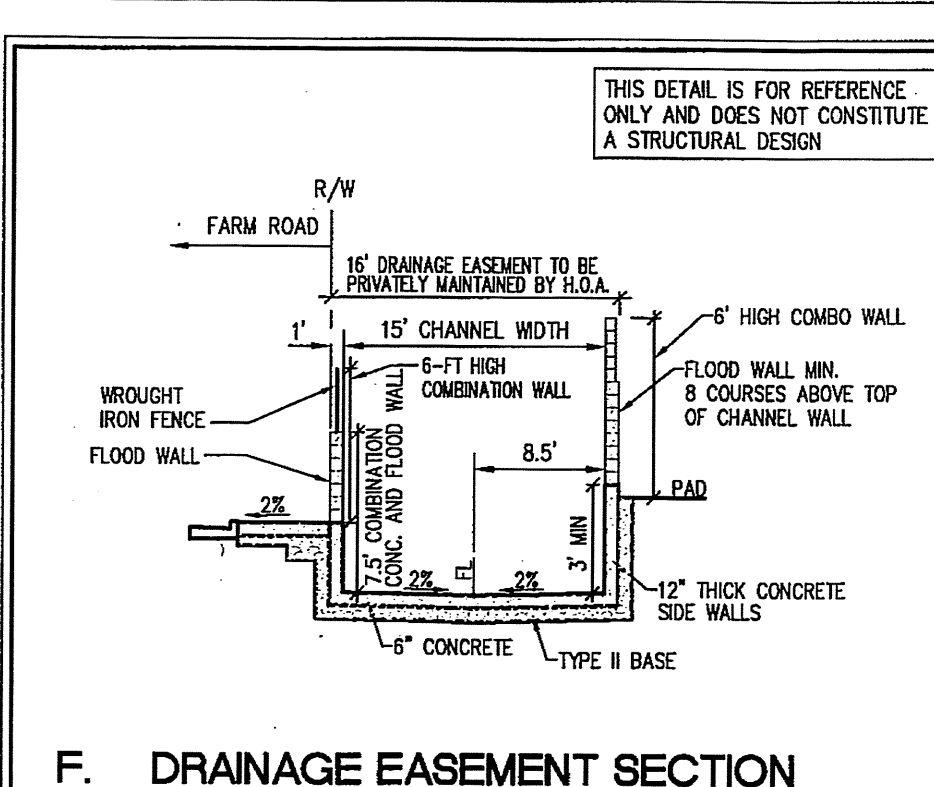
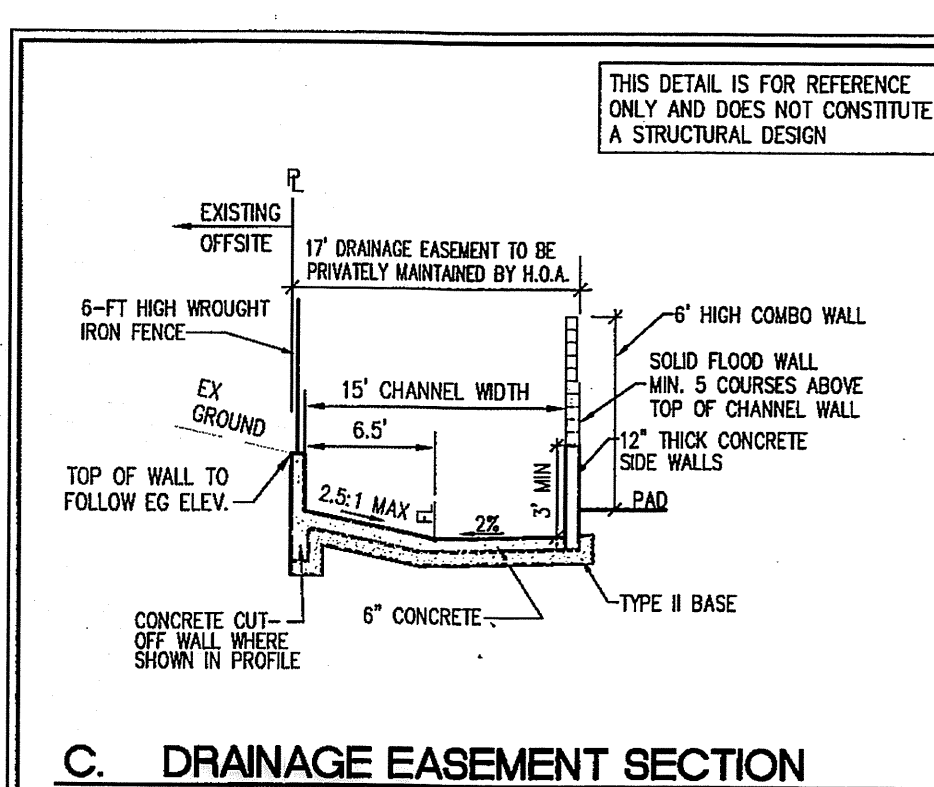
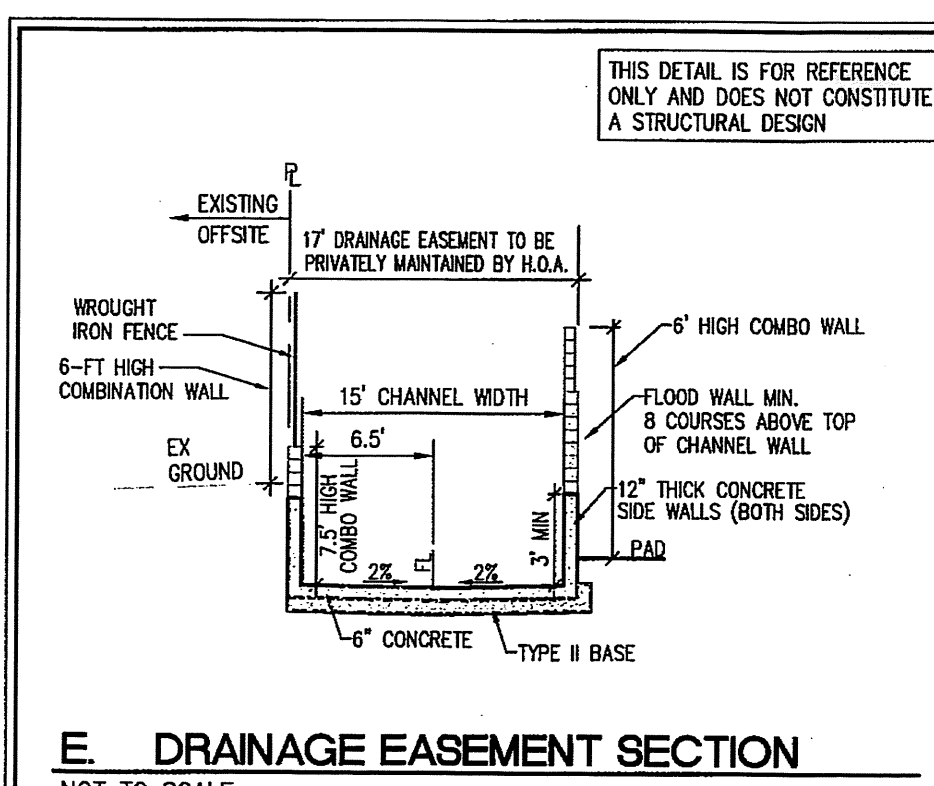
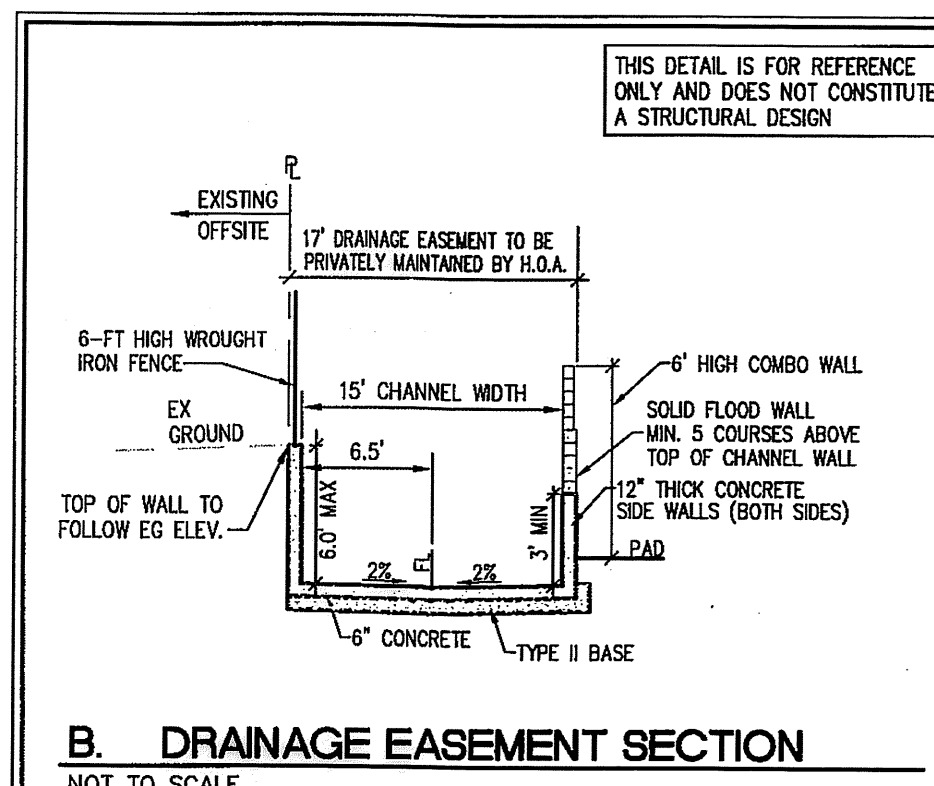
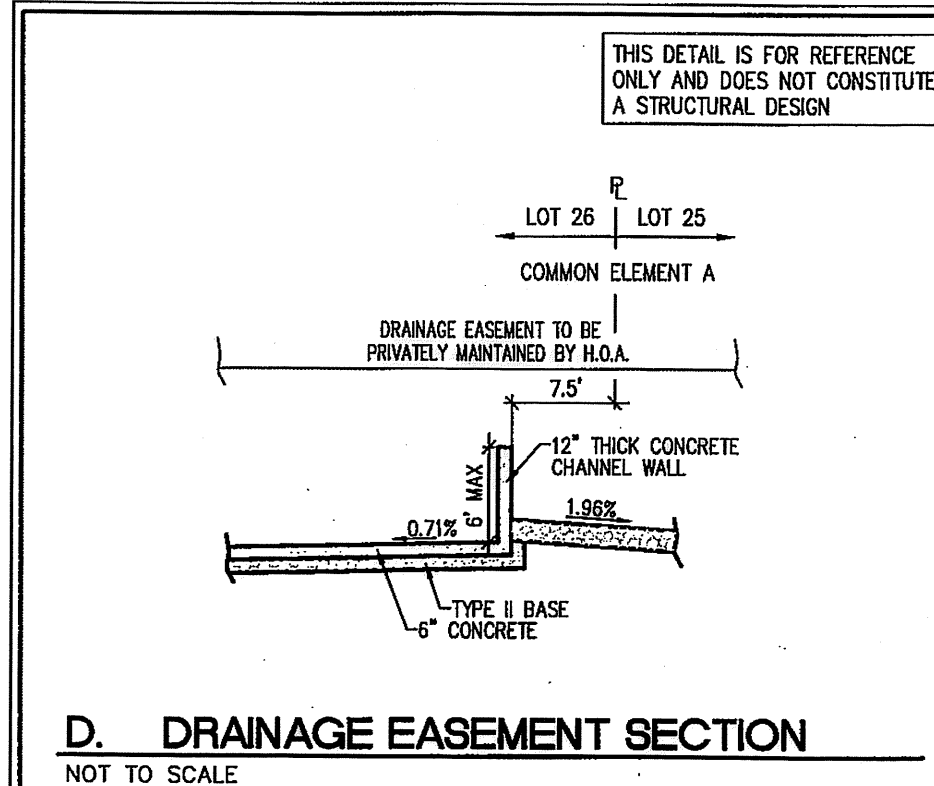
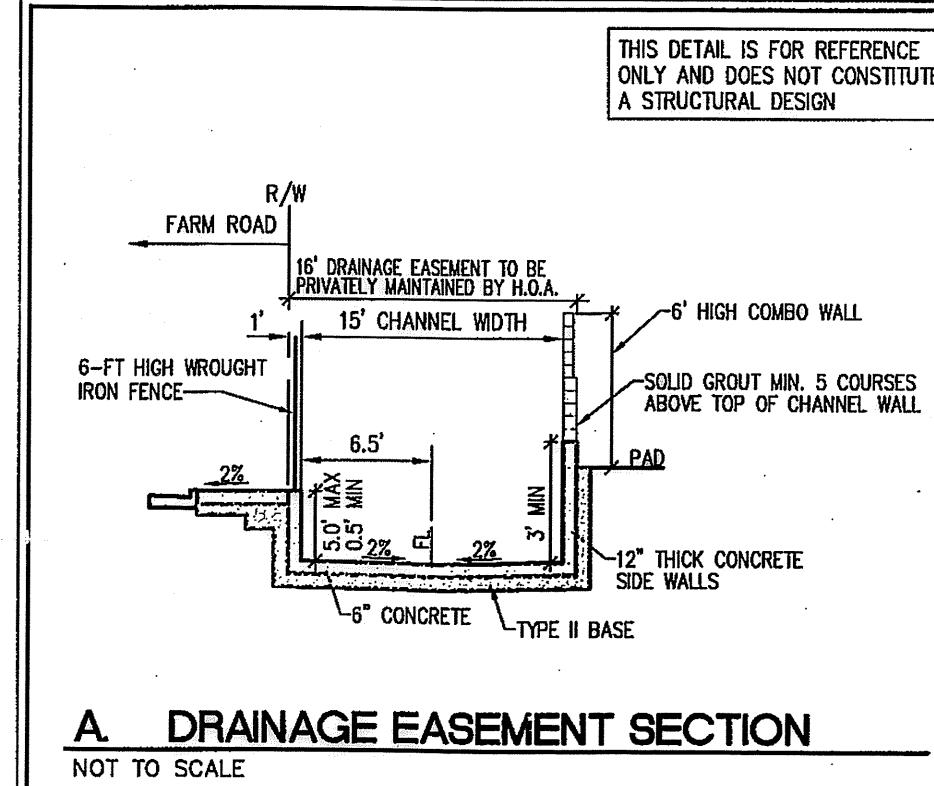
MATCHLINE SEE LEFT



MATCHLINE SEE RIGHT



MATCHLINE SEE LEFT



- ### GRADING NOTES
- CONSTRUCT 2" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
 - CONSTRUCT 3" AC PAVEMENT WITH 4.5" TYPE II AGGREGATE BASE
 - CONSTRUCT 4" AC PAVEMENT WITH 4.5" TYPE II AGGREGATE BASE
 - SAUCUT AND MATCH EXISTING IMPROVEMENTS PER CCAUSD NO. 503 & 500.4
 - CONSTRUCT STANDARD 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.51
 - CONSTRUCT 4" TYPE CURB AND GUTTER PER CCAUSD NO. 219
 - CONSTRUCT DEEPENED 30" ROLL CURB PER DETAIL 23 ON SHEET D-3
 - CONSTRUCT 1" TYPE CURB AND GUTTER PER CCAUSD NO. 216
 - CONSTRUCT 1" TYPE ISLAND CURB PER CCAUSD NO. 216
 - CONSTRUCT 10' TRANSITION FROM 1" CURB TO STANDARD ROLL CURB PER DETAIL 27 ON SHEET D-3
 - CONSTRUCT 4" WIDE SIDEWALK PER CCAUSD NO. 234
 - CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOWNS OR EQUIVALENT CCAUSD NO. 235, CASE 1 & 2.5.1
 - CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOWNS PER DETAIL 26 ON SHEET D-3
 - SIDEWALK DRAIN PER CCAUSD 236
 - FIELD VERIFY AND CONNECT TO EXISTING CURB, GUTTER AND SIDEWALK
 - CONSTRUCT MODIFIED 6" CROSS GUTTER PER DETAIL 31 ON SHEET D-3
 - INSTALL 24" WIDE DRIVEWAY APPROACH PER CCAUSD NO. 22
 - CONSTRUCT TYPICAL BUS TURN-OUT PER CCAUSD NO. 234.1
 - INSTALL 6" HIGH WROUGHT IRON FENCE W/ GATE FOR EMERGENCY ACCESS PER DETAIL 22 ON SHEET D-3
 - INSTALL REMOVABLE BOLLARD PER DETAIL 27 ON SHEET D-3
 - EXISTING DROP INLETS PROTECT IN PLACE
 - INSTALL CONCRETE CHANNEL PER DETAIL 13 ON SHEET D-1
 - FIELD VERIFY EX. UTILITIES
 - DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY HOA
 - INSTALL WROUGHT IRON FENCE PER DETAIL 30 ON SHEET D-1
 - CONSTRUCT 6" CROSS GUTTER PER CCAUSD NO. 228
 - INSTALL RIP RAP D50=6" T=12"
 - INSTALL 36" CLASS III RCP SD (PUBLIC)
 - INSTALL 60" TYPE I SD MANHOLE PER CCAUSD NO. 401 & 403
 - EXISTING CURB AND GUTTER TO BE REMOVED
 - REMOVE CAP AND CONNECT TO 36" RCP WITH CONCRETE COLLAR PER DETAIL 29 ON SHEET D-3
 - INSTALL 5.0' TYPE "CM" DROP INLET PER CCAUSD NO. 216
 - INSTALL 60" TYPE I SD MANHOLE PER DETAIL 16 ON SHEET D-1 IN UNIMPROVED AREAS
 - INSTALL 36" CSDD (WATER QUALITY) SD (PUBLIC)
- SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

BENCHMARK
CITY OF LAS VEGAS BENCHMARK STATION: 6LV9018C4
BEING A RIVET AND PLATE IN THE TOP OF CURB AT SOUTHEAST CORNER OF GRAND CANYON DR. AND FARM RD.
ELEVATION: 2766.35 US SURVEY FEET (NAVD83)
843.186 METERS

BASIS OF BEARING
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Call before you Dig
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
1-702-432-5300
LAS VEGAS AREA
COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig
1-800-227-2600
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-7544

Call before you Dig
1-702-227-2929

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5309

LENNAR
NORTH CREEK
PLAN AND PROFILE - DRAINAGE CHANNEL

DATE: 02/27/14
DRAFTER: KS
DESIGNER: KS
CHECKED: STS
PROJECT NO.
LEN1308-001

PROFESSIONAL ENGINEER
TODD J. STEADHAM
Exp. 06/20/2014
CIVIL
No. 15291

PP-6
SHEET 13 OF 30

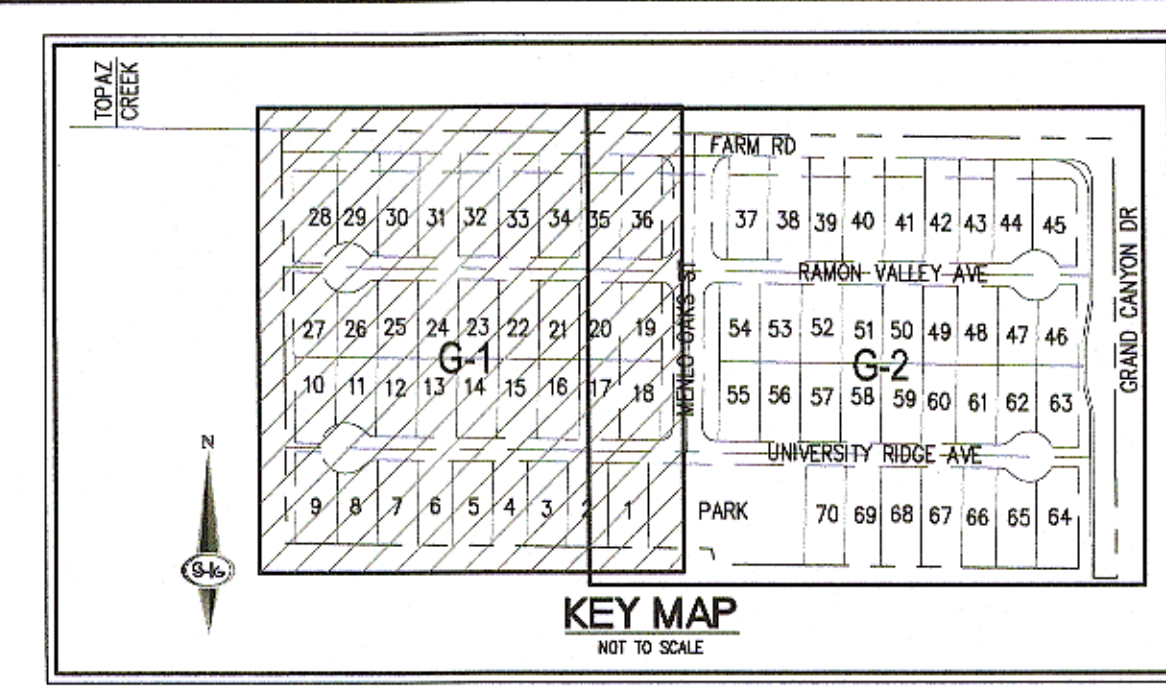
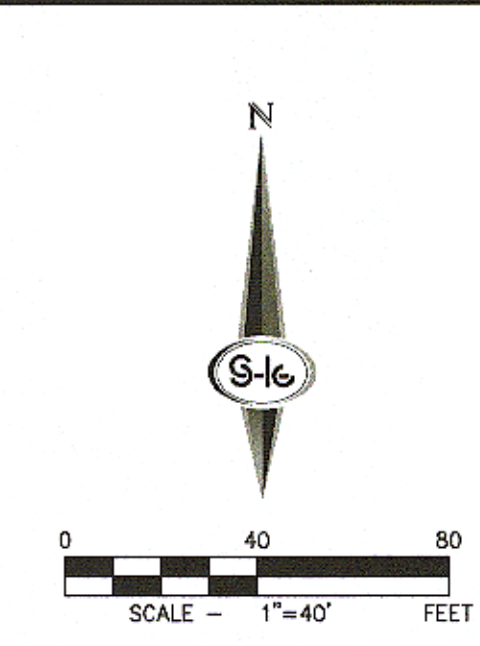
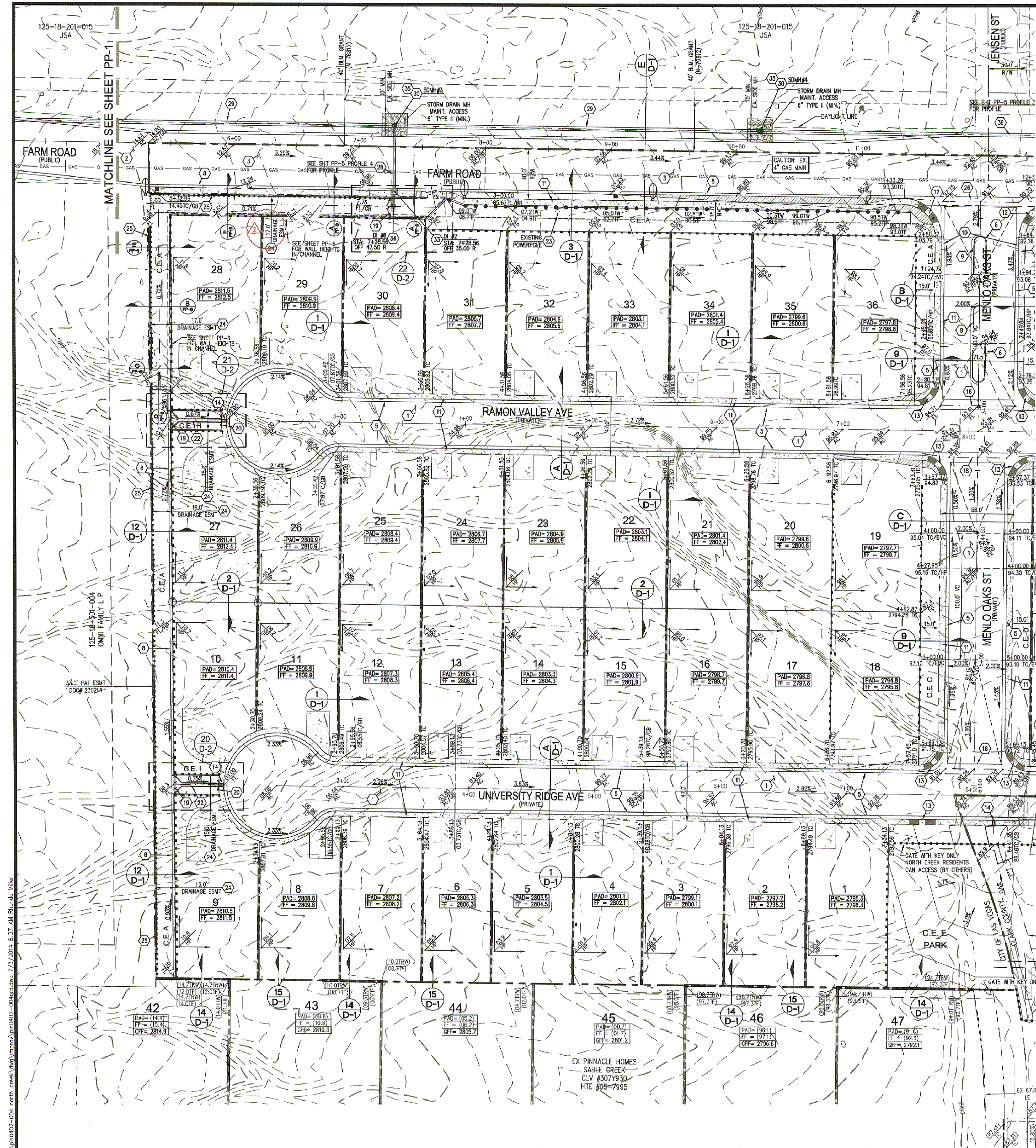
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APPENDIX E

Field Documentation of Channel Width

APPENDIX F

Revised Improvement Plans



- LEGEND**
- BOUNDARY LINE (GROSS ACRES)
 - MATCHLINE
 - ROADWAY CENTERLINE
 - RIGHT-OF-WAY
 - PROPERTY LINE
 - CURB AND GUTTER
 - EXISTING CURB AND GUTTER
 - FLOWLINE
 - EDGE OF PAVEMENT (EP)
 - SAWTOOTH LINE PER CCAUSO NO. 503
 - PROPOSED ELEVATION
 - EXISTING ELEVATION
 - FUTURE ELEVATION
 - EXISTING CONTOUR (5'-FT)
 - EXISTING CONTOUR (1'-FT)
 - CUT/FILL TRANSITION LINE
 - FIRE HYDRANT ASSEMBLY
 - SIGHT VISIBILITY ZONE
 - WROUGHT IRON FENCE
 - CHAIN LINK FENCE
 - RETAINING WALL
 - DECORATIVE PERIMETER WALL
 - RETAINING WALL
 - POINT WALL
- SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

GENERAL NOTES

- FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2006, SECTION 2304.11.2.2.
- THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
- ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
- MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
- SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
- ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
- CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CLARK COUNTY DEPARTMENT.
- CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLACING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
- NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

DISCLAIMER NOTE

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SOLS REPORT BY NOVA GEOTECHNICAL & INSPECTION SERVICES PROJECT NO. E-04-296, DATED 10/29/12

EARTHWORK QUANTITIES (RAW):
CUT=20,720 CU YDS/FILL=20,059 CU YDS

NOTE

ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY HOA.

- GRADING NOTES**
- CONSTRUCT 2" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
 - CONSTRUCT 3" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
 - CONSTRUCT 4" AC PAVEMENT WITH 4.5" TYPE II AGGREGATE BASE
 - SAWTOOTH AND MATCH EXISTING IMPROVEMENTS PER CCAUSO NO. 503 & 500.4
 - CONSTRUCT STANDARD 30" ROLL CURB AND GUTTER PER CCAUSO NO. 217.51
 - CONSTRUCT "A" TYPE CURB AND GUTTER PER CCAUSO NO. 219
 - CONSTRUCT DEEPENED 30" ROLL CURB PER DETAIL 23 ON SHEET D-3
 - CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSO NO. 216
 - CONSTRUCT "L" TYPE ISLAND CURB PER CCAUSO NO. 219
 - CONSTRUCT 10" TRANSITION FROM "L" CURB TO STANDARD ROLL CURB PER DETAIL 27 ON SHEET D-3
 - CONSTRUCT 4" WIDE SIDEWALK PER CCAUSO NO. 234
 - CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE, TRUNCATED DUMPS OR EQUIVALENT CCAUSO NO. 235, CASE 1 & 2
 - CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE, TRUNCATED DUMPS PER DETAIL 26 ON SHEET D-3
 - SIDEWALK DRAIN PER CCAUSO 236
 - FIELD VERIFY AND CONNECT TO EXISTING CURB, GUTTER AND SIDEWALK
 - CONSTRUCT MODIFIED 8" CROSS GUTTER PER DETAIL 31 ON SHEET D-3
 - INSTALL 24" WIDE DRIVEWAY APPROACH PER CCAUSO NO. 224
 - CONSTRUCT TYPICAL BUS TURN-OUT PER CCAUSO NO. 234.1
 - INSTALL 6" HIGH WROUGHT IRON FENCE W/ GATE FOR EMERGENCY ACCESS PER DETAIL 22 ON SHEET D-3
 - INSTALL REMOVABLE BOLLARD PER DETAIL 27 ON SHEET D-3
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 - DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY HOA
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 - INSTALL 18" CLASS III RCP SD (PUBLIC)
 - INSTALL 36" CLASS III RCP SD (PUBLIC)
 - INSTALL 60" TYPE I SD MANHOLE PER CCAUSO NO. 401 & 403
 - EXISTING CURB AND GUTTER TO BE REMOVED
 - REMOVE CAP AND CONNECT TO 36" RCP W/ CONCRETE COLLAR PER DETAIL 29 ON SHEET D-3
 - INSTALL 5.0" TYPE "CM" DROP INLET PER CCAUSO NO. 412.1 & 421
 - INSTALL NOOT TYPE 2 DROP INLET PER DETAIL ON SHEET D-2
 - INSTALL BOLTED DOWN MANHOLE LID PER DETAIL 16 ON SHEET D-1 IN UNIMPROVED AREAS
 - INSTALL 36" C500 (WATER QUALITY) SD (PUBLIC)
- SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

FEMA FLOOD ZONE DESIGNATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (AREA OUTSIDE THE 500-YEAR FLOOD PLAIN), PER FIRM PANEL 32003C174SE, DATED SEPTEMBER 27, 2002.

FLOOD CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED FLOOD STUDY DS4819 ON FILE AT CITY OF LAS VEGAS, NEVADA FOR THE SUBJECT PROJECT.

JERRY J. SLATER P.E. 14167 DATE 7-3-14

BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION: 6LV9018C4
BEING A BOLT AND PLATE IN THE TOP OF CURB AT SOUTHEAST CORNER OF GRAND CANYON DR. AND FARM RD.
ELEVATION: 7766.35 US SURVEY FEET (NAVD83)
843.16 METERS

BASIS OF BEARING

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AVOID HITTING UNDERGROUND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS. IT'S COSTLY.

Call before you do UnderGround

1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-432-5300
LAS VEGAS AREA
COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig

Avoid cutting underground utility lines. It's costly.

Call 811

1-800-227-2600
OR
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-7544

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CALL BEFORE YOU DO OVERHEAD

1-702-227-2929

SLATER HANIFAN GROUP

CONSULTING ENGINEERS & PLANNERS

5740 S. ARVILLE STREET #216 LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

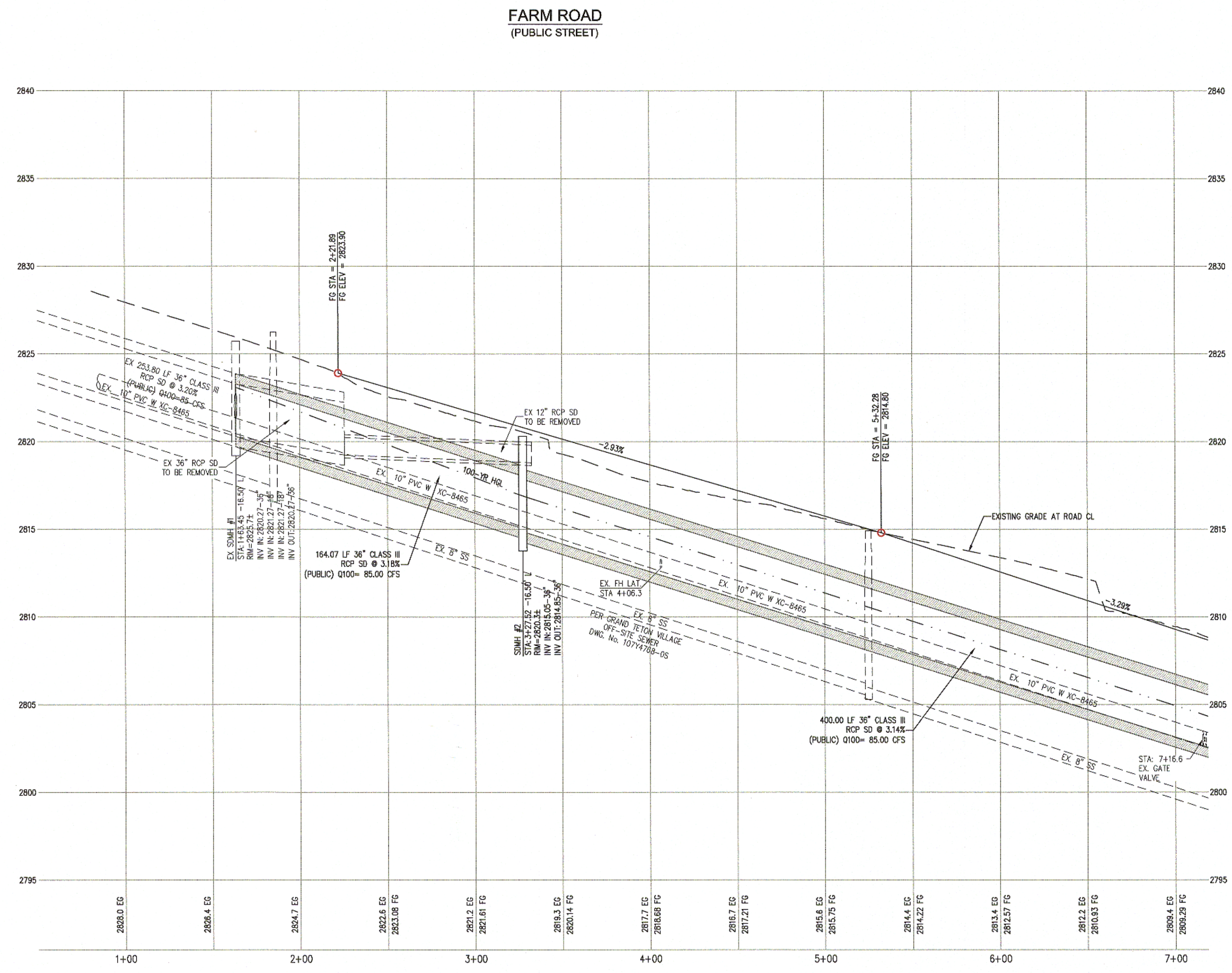
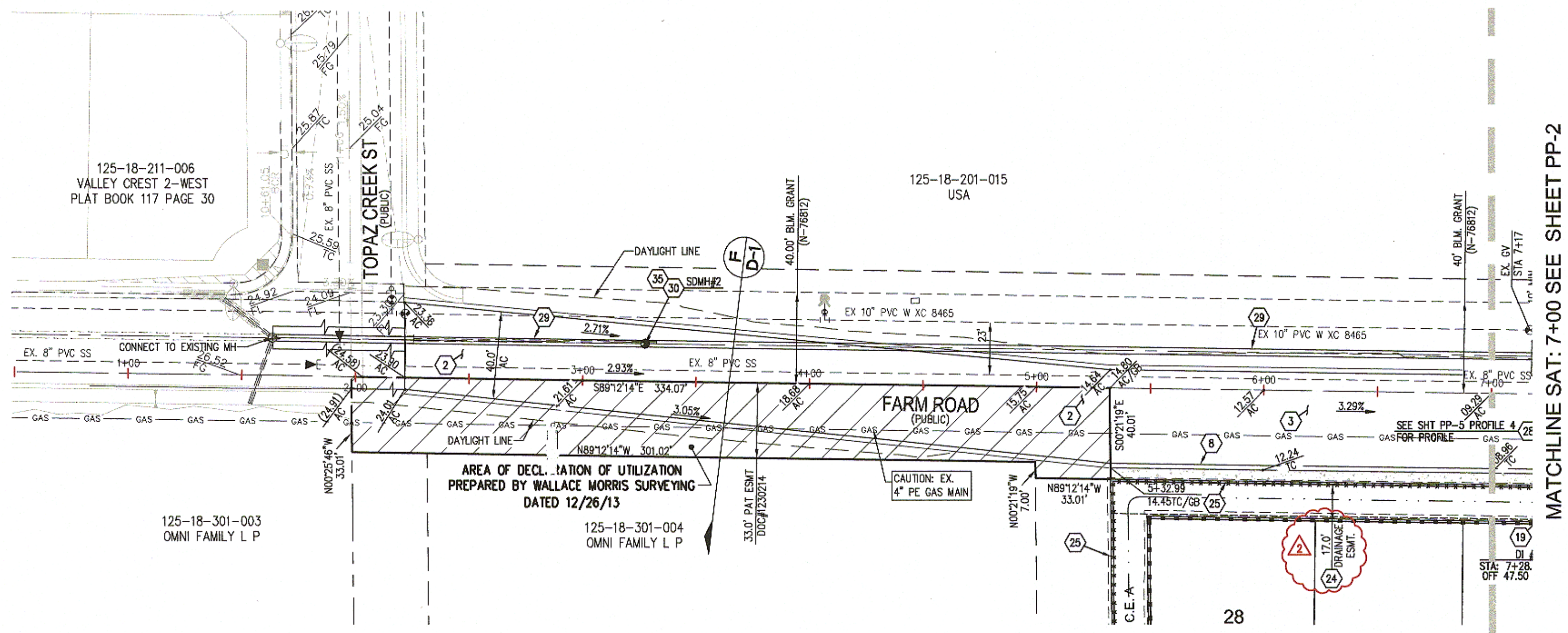
DATE	BY	APP.	DESCRIPTION
03/11/14	KS		DRAFTER: KS
	KS		DESIGNER: KS
	STS		CHECKED: STS
			PROJECT NO. LEN1308-001

PROFESSIONAL ENGINEER - STATE OF NEVADA

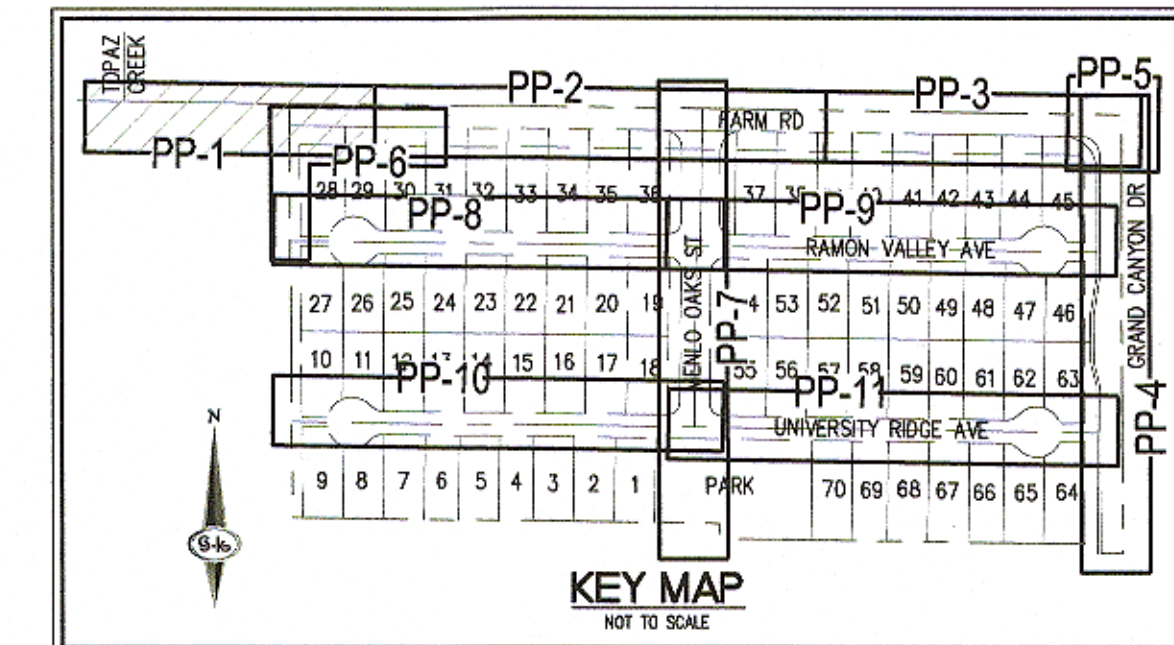
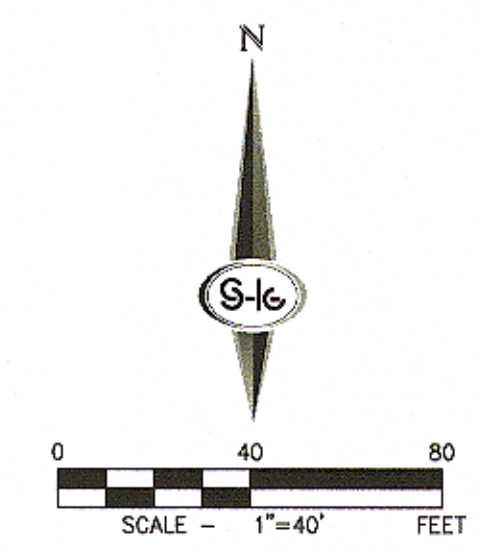
JERRY J. SLATER
No. 14167 EXPI. 06/30/2016

G-1

SHEET 3 OF 30



PROFILE
HOR. : 1"=40'
VERT. : 1"=4'



LEGEND	
	BOUNDARY LINE (GROSS ACREAGE)
	MATCHLINE
	ROADWAY CENTERLINE
	RIGHT-OF-WAY
	PROPERTY LINE
	CURB AND GUTTER
	EXISTING CURB AND GUTTER
	FLOWLINE
	EDGE OF PAVEMENT (EP)
	SAWCUT LINE PER CCAUSD NO. 503
	PROPOSED ELEVATION
	EXISTING ELEVATION
	FUTURE ELEVATION
	EXISTING CONTOUR (5-Ft)
	EXISTING CONTOUR (1-Ft)
	CUT/FILL TRANSITION LINE
	FIRE HYDRANT ASSEMBLY
	SIGHT VISIBILITY ZONE
	WROUGHT IRON FENCE
	CHAIN LINK FENCE
	RETAINING WALL
	DECORATIVE PERIMETER WALL
	RETAINING WALL
	DECORATIVE PERIMETER WALL
	PONY WALL
SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES	

GENERAL NOTES

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9. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

DISCLAIMER NOTE

EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXCEPT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

NOTE:

GAS MAIN DEPICTED PER BEST AVAILABLE INFORMATION AND POTENTIAL DATA. ENGINEER ASSUMES NO RESPONSIBILITY FOR LOCATIONS & ALIGNMENTS SHOWN HERE ON. CONTRACTOR SHALL USE EXTREME CAUTION!

NOTE

ALL PRIVATE STREETS ARE P.U.E. PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY HOA.

- GRADING NOTES**
1. CONSTRUCT 2" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
 2. CONSTRUCT 3" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
 3. CONSTRUCT 4" AC PAVEMENT WITH 4.5" TYPE II AGGREGATE BASE
 4. SAWCUT AND MATCH EXISTING IMPROVEMENTS PER CCAUSD NO. 503 & 500.4
 5. CONSTRUCT STANDARD 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.51
 6. CONSTRUCT "A" TYPE CURB AND GUTTER PER CCAUSD NO. 219
 7. CONSTRUCT DEPRESSION 30" ROLL CURB PER DETAIL 23 ON SHEET D-3
 8. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD NO. 216
 9. CONSTRUCT "L" TYPE ISLAND CURB PER CCAUSD NO. 219
 10. CONSTRUCT 10" TRANSITION FROM "L" CURB TO STANDARD ROLL CURB PER DETAIL 27 ON SHEET D-3
 11. CONSTRUCT 4" WIDE SIDEWALK PER CCAUSD NO. 234
 12. TRUNCATED DOWNS OR EQUIVALENT CCAUSD NO. 235, CASE 1 & 235.1
 13. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOWNS PER DETAIL 28 ON SHEET D-3
 14. SIDEWALK DRAIN PER CCAUSD 236
 15. FIELD VERIFY AND CONNECT TO EXISTING CURB, GUTTER AND SIDEWALK
 16. CONSTRUCT MODIFIED 8" CROSS GUTTER PER DETAIL 31
 17. INSTALL 24" WIDE DRIVEWAY APPROACH PER CCAUSD NO. 224
 18. CONSTRUCT TYPICAL BUS TURN-OUT PER CCAUSD NO. 234.1
 19. INSTALL 6" HIGH WROUGHT IRON FENCE W/ GATE FOR EMERGENCY ACCESS PER DETAIL 22 ON SHEET D-3
 20. INSTALL REMOVABLE BOLLARD PER DETAIL 27 ON SHEET D-3
 21. EXISTING DROP INLETS PROTECT IN PLACE
 22. INSTALL CONCRETE CHANNEL PER DETAIL 13 ON SHEET D-1
 23. FIELD VERIFY EX. UTILITIES
 24. DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY HOA
 25. INSTALL WROUGHT IRON FENCE PER DETAIL 30 ON SHEET D-3
 26. CONSTRUCT 8" CROSS GUTTER PER CCAUSD NO. 228
 27. INSTALL RIP RAP D50=6" T=12"
 28. INSTALL 18" CLASS III RCP SD (PUBLIC)
 29. INSTALL 36" CLASS III RCP SD (PUBLIC)
 30. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD NO. 401 & 403
 31. EXISTING CURB AND GUTTER TO BE REMOVED
 32. REMOVE CAP AND CONNECT TO 36" RCP WITH CONCRETE COLLAR PER DETAIL 29 ON SHEET D-3
 33. INSTALL 5.0" TYPE "CM" DROP INLET PER CCAUSD NO. 412.1 & 421
 34. INSTALL 180" TYPE 2 DROP INLET PER DETAIL ON SHEET D-2
 35. INSTALL BOLTED DOWN MANHOLE LID PER DETAIL 16 ON SHEET D-1 IN UNIMPROVED AREAS
 36. INSTALL 36" C900 (WATER QUALITY) SD (PUBLIC)
- SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

SEE SHEET U-1 FOR UTILITY DESIGN

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO. 121440 DATE

BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION: 6LV901804

BEING A RIVET AND PLATE IN THE TOP OF CURB AT SOUTHEAST CORNER OF GRAND CANYON DR. AND FARM RD.

ELEVATION: 2766.35 US SURVEY FEET (NAVD83)
843.186 METERS

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS BASED ON THE FOUND AND HELD MONUMENTS MARKING THE SOUTHERLY LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE SOUTHEAST QUARTER (SE1/4) OF SECTION 13, T19S, R6E, MDM, CLARK COUNTY, NEVADA PER RECORD OF SURVEY BOOK 123, PAGE 32, CLARK COUNTY RECORDER'S OFFICE AS SOUTH 88°46'48" EAST.

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS. IT'S COSTLY.

Call before you do UnderGround

1-702-455-7511

CLARK COUNTY TRAFFIC OPERATIONS AND

1-702-432-5300

LAS VEGAS AREA

COMPUTERIZED TRAFFIC SYSTEM

Call before you Dig

Avoid cutting underground utility lines. It's costly.

Call

811

1-800-227-2600

AND

CLARK COUNTY TRAFFIC OPERATIONS

1-702-455-7544

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU DO OVERHEAD

1-702-227-2929

SLATER HANFAN GROUP

G-I-G

CONSULTING ENGINEERS & PLANNERS

5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89115

PHONE (702) 284-5300 FAX (702) 284-5399

DATE	BY	APP.	DESCRIPTION	NO.
06/16/14	LEN		REUSE DRAINAGE EASEMENT WITH	

CITY OF LAS VEGAS, NEVADA

LENNAR

NORTH CREEK

PLAN AND PROFILE - FARM ROAD

DATE: 03/11/14

DRAFTER: KS

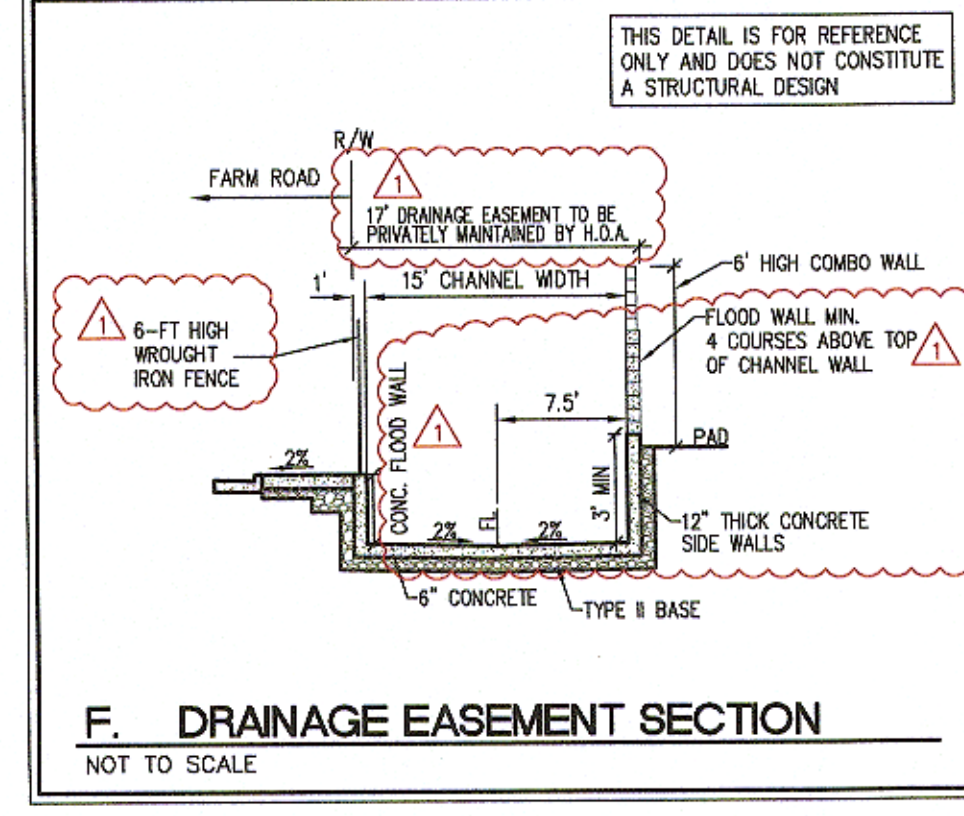
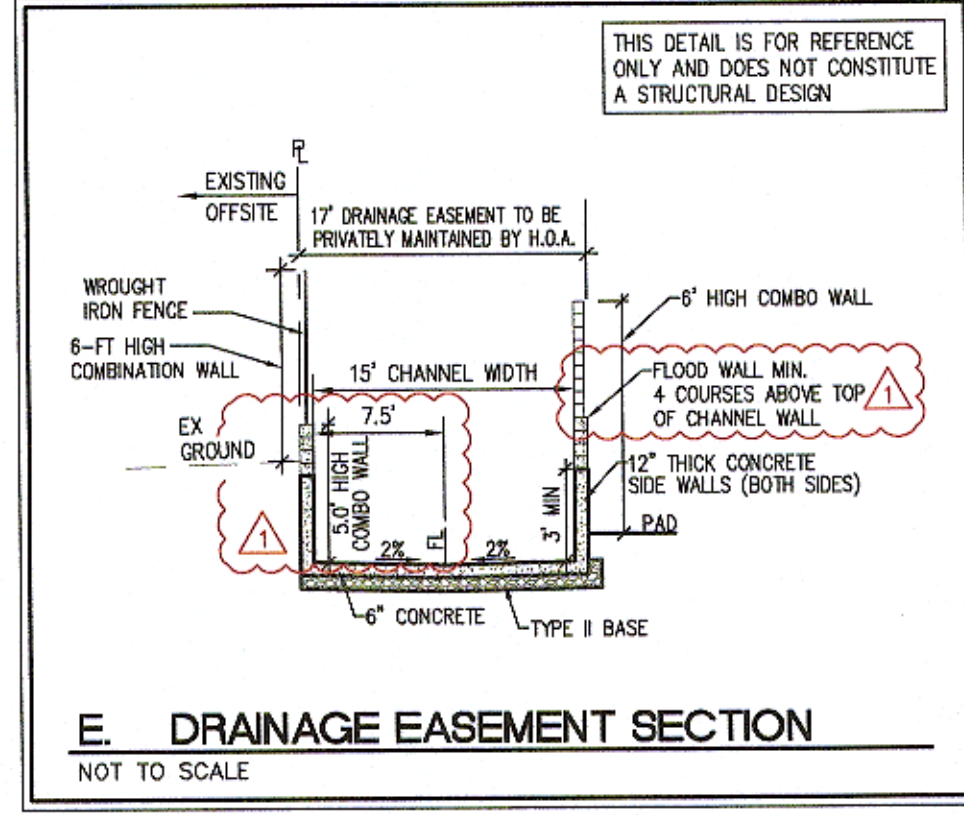
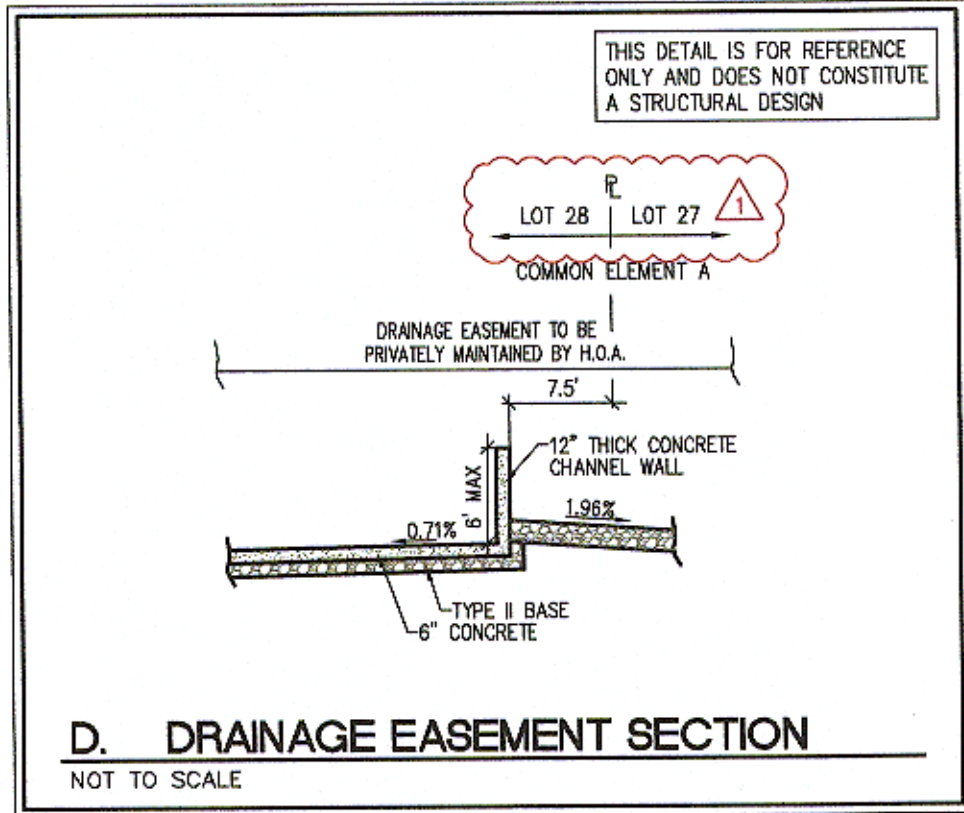
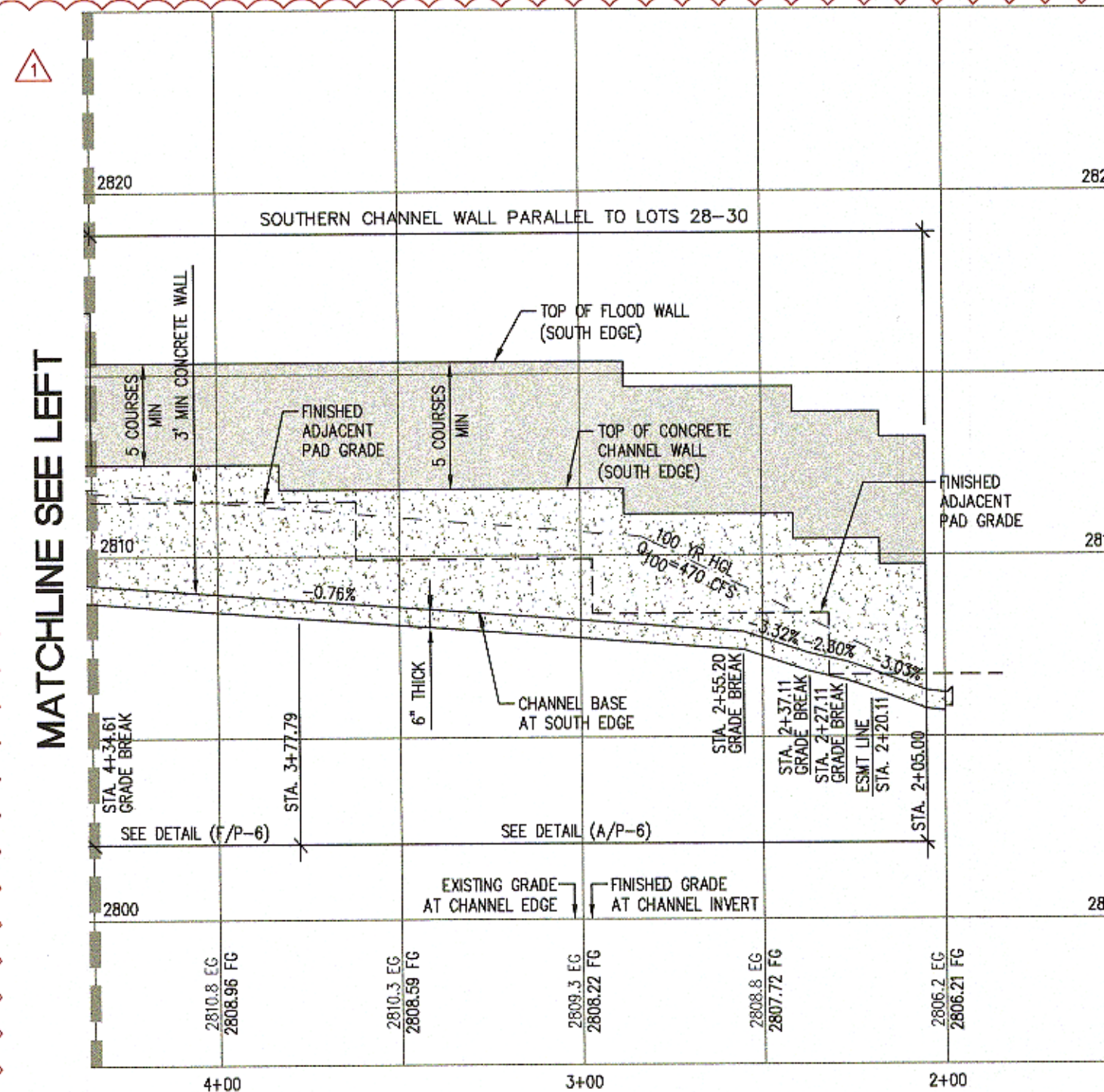
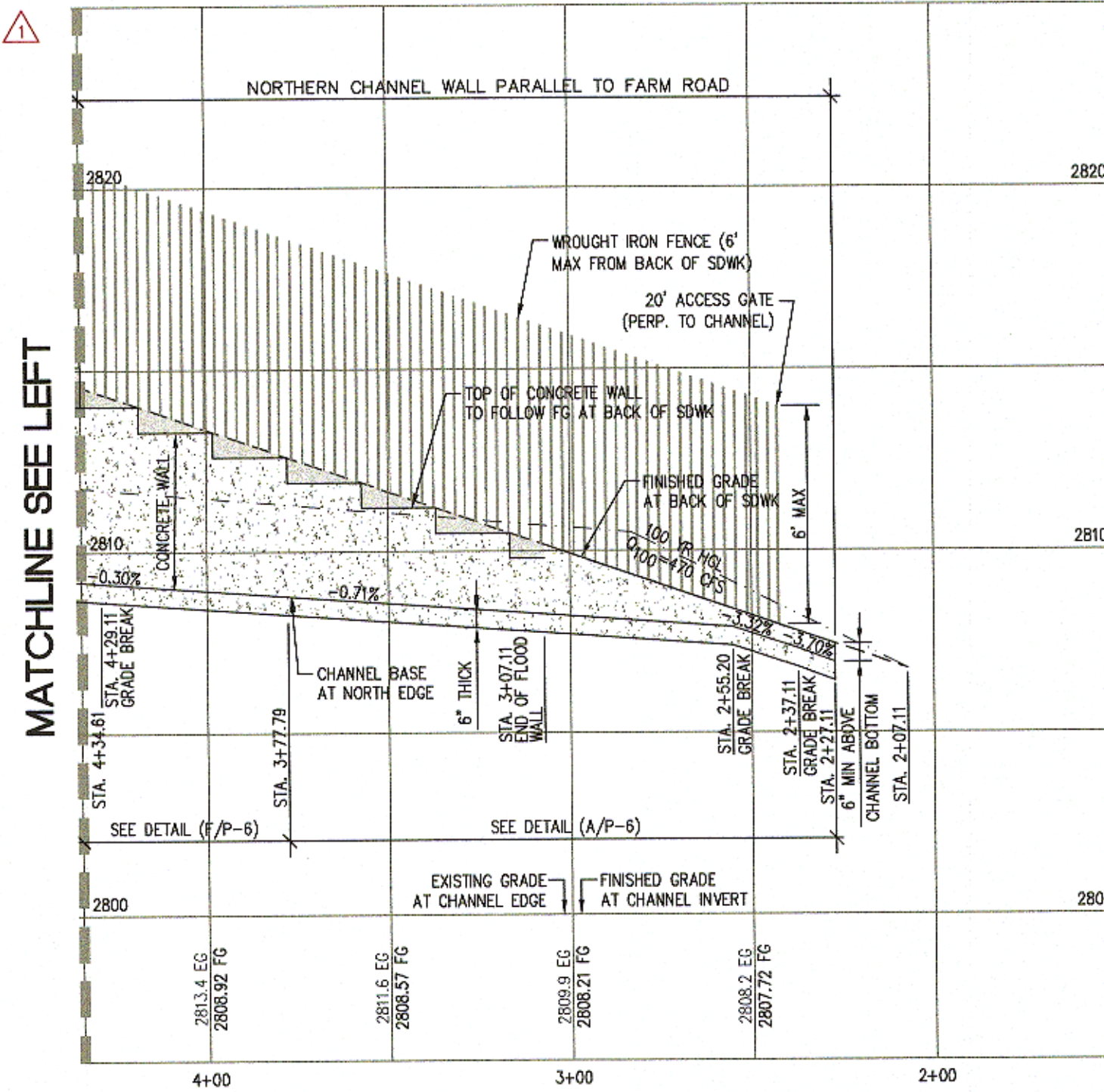
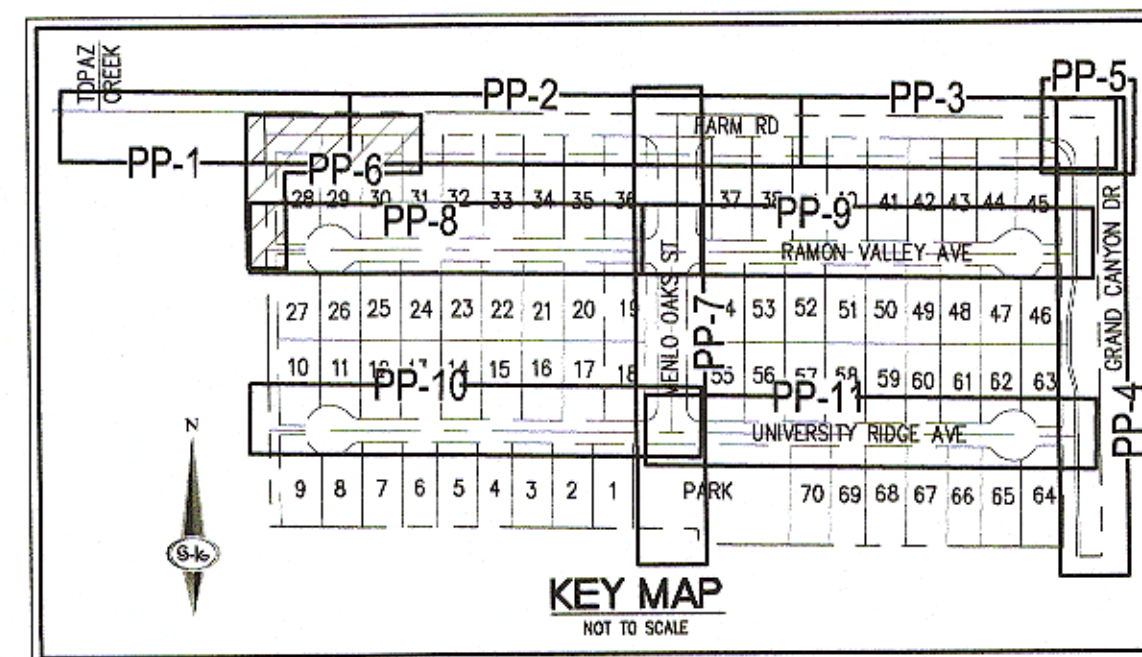
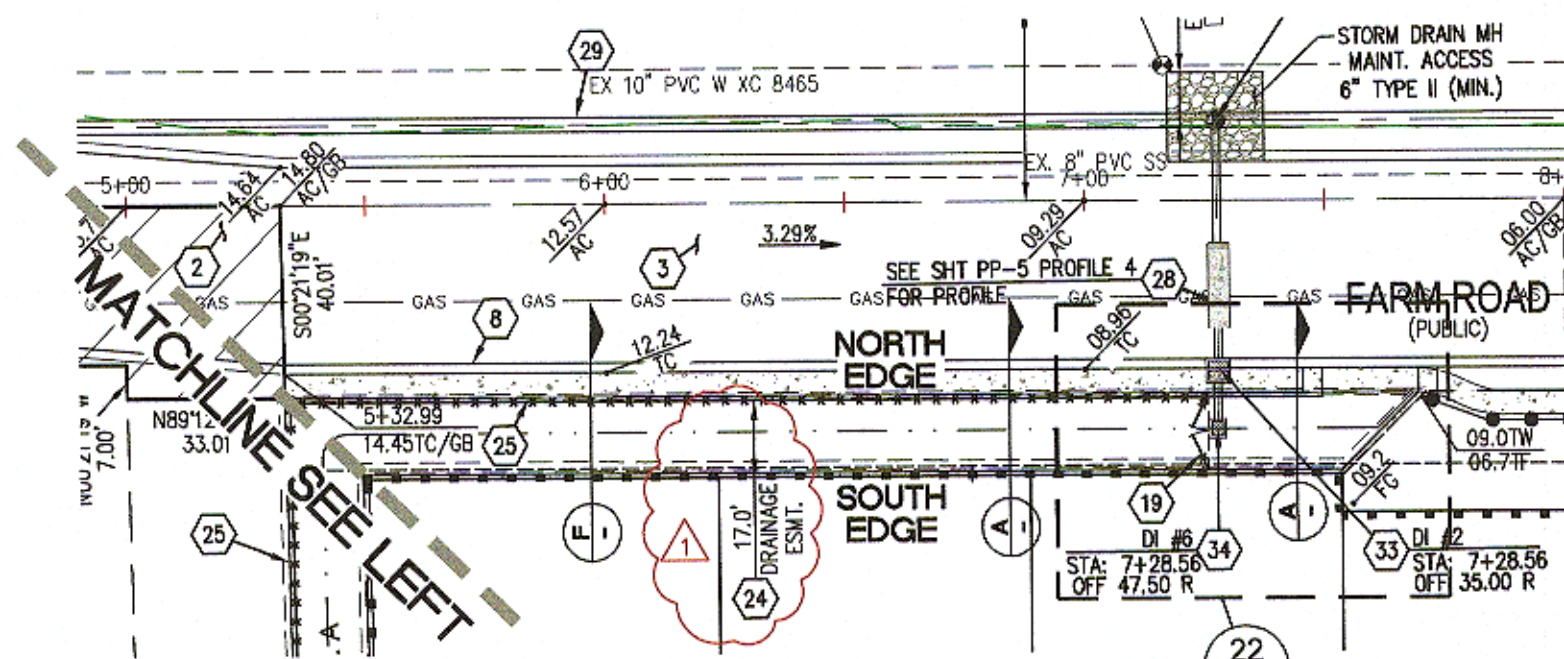
DESIGNER: KS

CHECKED: STS

PROJECT NO. **LEN1308-001**

PP-1

SHEET 8 OF 30



GRADING NOTES

- (1) CONSTRUCT 2" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
- (2) CONSTRUCT 3" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
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- (6) CONSTRUCT "A" TYPE CURB AND GUTTER PER CAUSD NO. 217
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- (8) CONSTRUCT "L" TYPE CURB AND GUTTER PER CAUSD NO. 219
- (9) CONSTRUCT "L" TYPE ISLAND CURB PER CAUSD NO. 219
- (10) CONSTRUCT 10' TRANSITION FROM "A" CURB TO 30" ROLL CURB PER DETAIL 27 ON SHEET D-3
- (11) CONSTRUCT 4" WIDE SIDEWALK PER CAUSD NO. 234
- (12) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT CAUSD NO. 235, CASE & 235
- (13) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES PER DETAIL 26 ON SHEET D-3
- (14) SIDEWALK DRAIN PER CAUSD 236
- (15) FIELD VERIFY AND CONNECT TO EXISTING CURB, GUTTER AND SIDEWALK
- (16) CONSTRUCT MODIFIED 8" CROSS GUTTER PER DETAIL 31 ON SHEET D-3
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- (26) CONSTRUCT 6" CROSS GUTTER PER CAUSD NO. 228
- (27) INSTALL RIP RAP D50=6" T=12"
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- (30) INSTALL 60" TYPE I SD MANHOLE PER DETAIL ON 401 & 403
- (31) EXISTING CURB AND GUTTER TO BE REMOVED
- (32) REMOVE CAP AND CONNECT TO 36" RCP WITH CONCRETE COLLAR PER DETAIL 29 ON SHEET D-3
- (33) INSTALL 2" TYPE "CM" DROP INLET PER CAUSD NO. 412.1 & 412.2
- (34) INSTALL NOOT TYPE 2 DROP INLET PER DETAIL ON SHEET D-2
- (35) BOULED DOWN MANHOLE 10' PER DETAIL 16 ON SHEET D-1 IN UNIMPROVED AREAS
- (36) INSTALL 36" CSOD (WATER QUALITY) SD (PUBLIC)

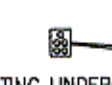
SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

BENCHMARK
CITY OF LAS VEGAS BENCHMARK STATION: 6LV9018C4
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TRAFFIC SIGNAL SYSTEMS
AND STREET LIGHT SYSTEM
CONDUITS. IT'S COSTLY.



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do UnderGround**
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CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-432-5300
LAS VEGAS AREA
COMPUTERIZED TRAFFIC SYSTEM

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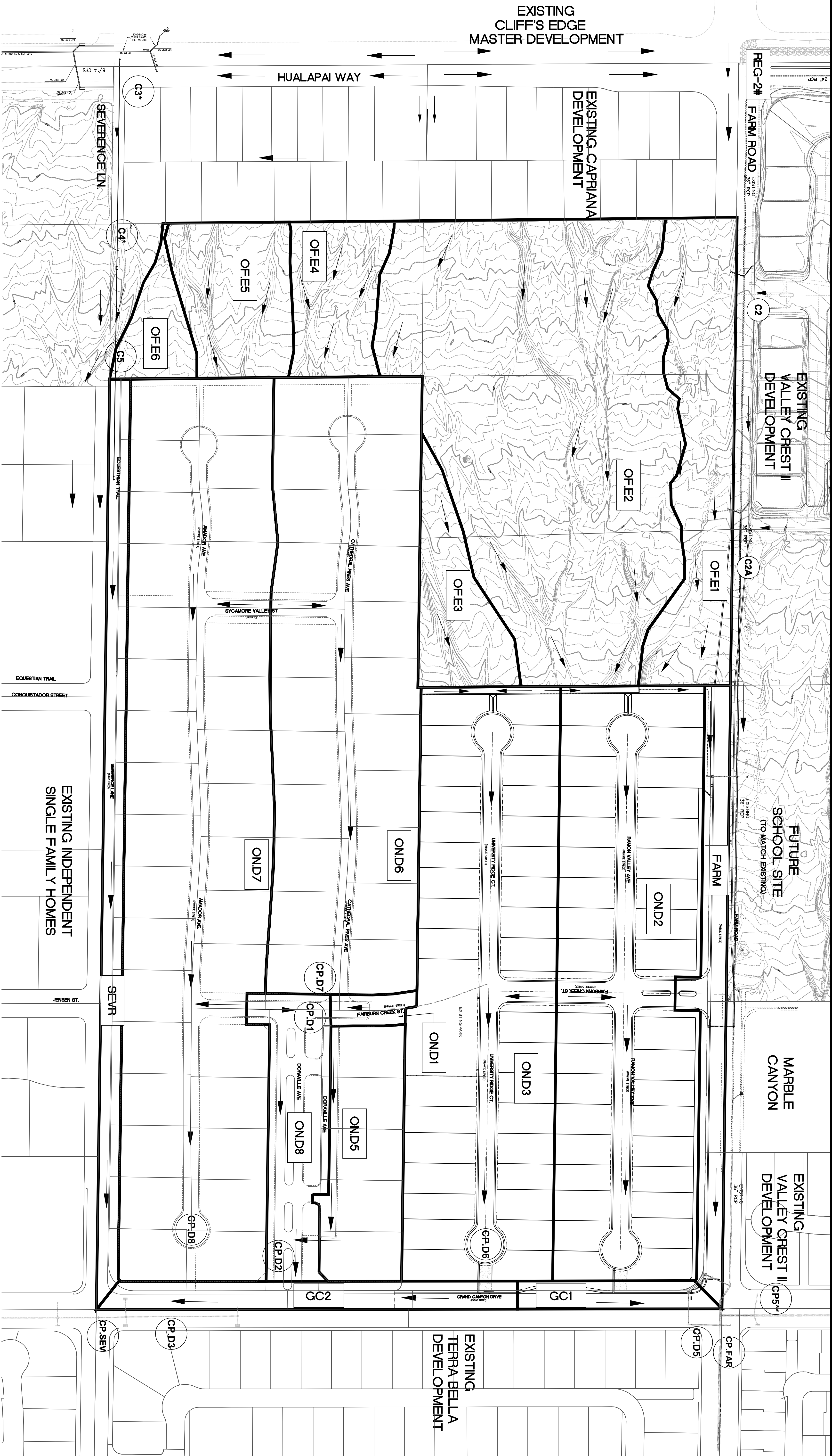


OR
1-800-227-2600

AND
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-7544

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.
CALL BEFORE
YOU DO
OVERHEAD

1-702-227-2929



Flow Rates for Farm Collector Channel			
Revised Interim Condition			
Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₀ (cfs)
CZA	N/A	550	220
36-inch Storm Drain in Farm	N/A	85	85
OF E1	3.3	5	1
Channel Flow (CZA + OF E1)	N/A	470	136

[illegible]

**S-I-G SLATER
HANIFAN
GROUP**
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

LENNAR HOMES

NORTH CREEK

REVISED INTERIM CONDITIONS MAP

DATE:	JUN
DRAFTER:	ARP
DESIGNER:	ARP
CHECKED:	ARP
PROJECT NO.	LEN1300

PROJECT NO.
LEN1308-000

EXHIBIT F3
SHEET 1 OF 1
UPDATE NO. 4